EMERGING POWERS AND SYSTEMIC CHANGE: CHINA’S IMPACT ON
GLOBAL COMMODITY MARKETS

by

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ABSTRACT

How are global economic institutions transformed at times of power transition? Why have some international markets for important raw materials undergone fundamental change in the way they operate as a result of China’s emergence, while other such markets have been more resilient to change? The goal of this dissertation is to explain diverging global outcomes from the dramatic and contemporary expansion of China’s economy. By doing so, I shed new light on the political economy of global markets, why they operate the way they do now, and how they have evolved over time.

I trace key variances in China’s effect on global markets to the interaction of Chinese domestic industrial structures and the pre-existing structures of global commodity markets. The structure of key industries within China varies: some are concentrated, some fragmented, some very sensitive to price signals, and others less so. Likewise, the structures of various global commodity markets varied significantly before China’s emergence as a dominant global consumer in the twenty-first century.

I argue that transformations in market power relations between consumers and suppliers increase the likelihood of institutional change in global markets. Price trends influence market stakeholders’ preferences for global pricing regimes, but they cannot fully explain the direction of change. Market power – including the capacity to coordinate others and the capacity to extract rent – also motivates behaviour.

Combining comparative case analysis of the iron ore, potash and uranium markets with careful process-tracing, I unveil the full picture, from domestic variables to international-level outcomes. I show the tremendous concentration of market power in global markets prior to China’s emergence; that China’s market power, despite its economic size, is in many ways weak; that some of the largest systemic changes have been the result of this Chinese position of weakness; and that China’s emergence has led to marketization, despite it being a state-led hybrid economy.

This is a study of institutional resonance and complementarity between global markets and their systemically relevant consumers. More broadly, this dissertation seeks to contribute to ongoing debates about the systemic resilience of global market structures, and the domestic determinants of global economic power.
PREFACE

This dissertation is an original intellectual product of the author, Pascale Massot. Field research for this dissertation was conducted under the title “China and Global Commodity Markets” (H11-03440), which was approved by the UBC Behavioural Research Ethics Board on January 23, 2012 (Principal Investigator, Yves Tiberghien).

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TABLE OF CONTENTS

ABSTRACT .................................................................................................................................................. ii
PREFACE ....................................................................................................................................................... iii
TABLE OF CONTENTS ................................................................................................................................. v
LIST OF TABLES ........................................................................................................................................... viii
LIST OF FIGURES ....................................................................................................................................... ix
ACKNOWLEDGEMENTS .............................................................................................................................. xi
DEDICATION .................................................................................................................................................. xiv

CHAPTER 1 – EMERGING POWERS AND SYSTEMIC CHANGE .............................................................. 1
1.1 EXISTING APPROACHES TO THE STUDY OF POWER TRANSITION AND GLOBAL MARKET CHANGE 4
1.2 RESEARCH QUESTIONS .......................................................................................................................... 7
1.3 ARGUMENT ........................................................................................................................................... 8
1.4 WHY EXTRACTIVE COMMODITY MARKETS? ...................................................................................... 13
1.5 WHY CHINA? ....................................................................................................................................... 15
1.6 METHODOLOGY .................................................................................................................................. 17
   1.6.1 Case selection ................................................................................................................................. 19
   1.6.2 Data ............................................................................................................................................... 20
1.7 DISSERTATION OUTLINE ....................................................................................................................... 21

CHAPTER 2 – GLOBAL MARKETS .......................................................................................................... 23
2.1 WHAT MARKETS ARE ........................................................................................................................... 27
2.2 GLOBAL MARKETS AS INSTITUTIONAL SYSTEMS ........................................................................... 29
2.3 TYPOLOGY OF GLOBAL MARKETS .................................................................................................... 32
2.4 THE IMPACT OF A DOMINANT EMERGING CONSUMER .................................................................... 35
2.5 DEPENDENT VARIABLE: GLOBAL PRICING REGIMES ..................................................................... 36
2.6 MARKETIZATION .................................................................................................................................. 39
2.7 WHEN DO MARKET ACTORS PREFER MARKETIZATION? ................................................................. 46
   2.7.1 Open economy politics .................................................................................................................. 47
   2.7.2 German historical school .............................................................................................................. 48
   2.7.3 Relationship with price trends .................................................................................................... 49

CHAPTER 3 – TWO-LEVEL POLITICAL ECONOMY OF GLOBAL MARKET CHANGE ..................... 54
3.1 ALTERNATIVE EXPLANATIONS .......................................................................................................... 54
   3.1.1 Liberal approaches ........................................................................................................................ 55
   3.1.2 Hegemonic Stability Theory ......................................................................................................... 57
3.2 FOUNDATIONAL SCHOLARSHIP ........................................................................................................ 60
   3.2.1 Domestic vs two-level explanations .............................................................................................. 60
   3.2.2 International political economy of resources .............................................................................. 63
   3.2.3 Comparative political economy – convergence/divergence debate ........................................... 63
   3.2.4 IPE literature on the domestic determinants of global economic trends ................................... 64
3.3 THE KEY PLAYERS ............................................................................................................................... 65
   3.3.1 Beyond the unitary actor .............................................................................................................. 65
   3.3.2 The Chinese state ........................................................................................................................ 66
3.4 METHODOLOGY .................................................................................................................................. 68
   3.4.1 Case selection ............................................................................................................................... 68
   3.4.2 Explanatory variables at both levels are necessary to explain outcomes .................................. 74
3.5 ARGUMENT .......................................................................................................................................... 76
LIST OF TABLES

TABLE 1 - TWO-LEVEL MARKET POWER ASYMMETRIES IN DOMESTIC AND INTERNATIONAL MARKETS
.............................................................................................................................................. 10
TABLE 2 - CHINA’S PROJECTED DEPENDENCE IN MINERALS UP TO 2050 ....................................... 16
TABLE 3 - KEY CHARACTERISTICS OF GLOBAL MARKETS .................................................................. 33
TABLE 4 – DV: GLOBAL PRICING REGIME CHANGE AS A RESULT OF CHINA’S AND JAPAN’S EMERGENCE
.............................................................................................................................................. 37
TABLE 5: CODE CO-OCCURRENCE ........................................................................................................ 38
TABLE 6 - PRICING REGIMES (DV INDICATORS) .................................................................................. 40
TABLE 7: PRICING REGIMES (DV INDICATORS), OPERATIONALIZATION ............................................ 41
TABLE 8 - DEDUCTIVE PRICING REGIME PREFERENCES (PRODUCERS AND CONSUMERS), BY PRICE
TREND.............................................................................................................................................. 50
TABLE 9 - LEVEL OF ANALYSIS IN THE IPE OF RESOURCES ................................................................. 63
TABLE 10 - CASES .................................................................................................................................. 69
TABLE 11 - SUMMARY OF SIMILARITIES ACROSS THE GLOBAL POTASH AND IRON ORE MARKETS PRIOR
TO CHINA’S EMERGENCE ................................................................................................................ 70
TABLE 12 - ASYMMETRIES AND CASES ................................................................................................. 72
TABLE 13 - TWO-LEVEL ASYMMETRIES IN DOMESTIC AND INTERNATIONAL MARKETS, AND ENSUING
OUTCOMES ........................................................................................................................................... 77
TABLE 14 - IMPLICATIONS OF THEORETICAL MODEL .......................................................................... 83
TABLE 15 - GLOBAL COMMODITY MARKET CONCENTRATION BEFORE AND AFTER CHINA’S EMERGENCE
AS DOMINANT CONSUMER .................................................................................................................. 85
TABLE 16 - INDEPENDENT VARIABLE, INTERNATIONAL MARKETS / CONCENTRATION LEVELS ........ 87
TABLE 17 - INDEPENDENT VARIABLE: DOMESTIC MARKETS / CONCENTRATION LEVELS ............... 88
TABLE 18 - INTERNATIONAL MARKETS - COORDINATION LEVELS ..................................................... 89
TABLE 19 - DOMESTIC MARKETS – COORDINATION LEVELS ................................................................. 90
TABLE 20 - DOMESTIC MARKETS - CONCENTRATION AND COORDINATION LEVELS .................... 91
TABLE 21 - CODE CO-OCCURRENCE IN INTERVIEWS ......................................................................... 93
TABLE 22 - TWO-LEVEL MARKET POWER ASYMMETRIES IN THE IRON ORE MARKET ..................... 99
TABLE 23 – CHINA’S IRON ORE IMPORTS BY COUNTRY, WITH PRICE PAID (2008) ...................... 108
TABLE 24 - COMPARATIVE FRAGMENTATION LEVELS IN THE CHINESE IRON ORE AND POTASH
INDUSTRIES ........................................................................................................................................... 111
TABLE 25 - CHINESE IRON ORE IMPORTS BY COUNTRY AND PRICE PAID (2008) ......................... 118
TABLE 26 - TWO-LEVEL MARKET POWER ASYMMETRIES IN THE POTASH CASE ............................ 149
TABLE 27 - CHINESE POTASH IMPORTS AND PRICE PAID (2001) ..................................................... 155
TABLE 28 - COMPARATIVE FRAGMENTATION OF THE IRON ORE AND POTASH INDUSTRIES IN CHINA
(2007) .................................................................................................................................................. 166
TABLE 29 - TWO-LEVEL MARKET POWER ASYMMETRIES IN THE URANIUM CASE ....................... 194
TABLE 30 - REACTORS OPERABLE, UNDER CONSTRUCTION, PLANNED AND PROPOSED, AND URANIUM
REQUIREMENTS .................................................................................................................................... 195
TABLE 31 - URANIUM MINES IN OPERATION IN MAINLAND CHINA (2010) ..................................... 198
TABLE 32 - GLOBAL NATURAL URANIUM PRODUCTION (2009 - 2011) ........................................... 199
LIST OF FIGURES

Figure 1 - Systemic Change at the Global Level as a Result of China’s Emergence as Dominant Player .......................................................... 8
Figure 2 - Relative Impact of China and India on Global Mining Markets ......... 17
Figure 3 - China’s Potash and Iron Ore Import Dependency Ratios (2000-2011) ... 20
Figure 4 - Typology of Global Markets ........................................... 34
Figure 5 - China as Share of Global Iron Ore Imports .......................... 36
Figure 6 - Extent and Direction of Pricing Regime Change as a Result of China’s and Japan’s Emergence ........................................... 38
Figure 7 - Commodity Prices (1980-2012) ....................................... 49
Figure 8 - Chinese Import Dependence in the Markets of Iron Ore, Potash and Uranium .......................... 71
Figure 9 - Nationality of Interviewees .............................................. 73
Figure 10 - Work Units, by Interviewee .............................................. 73
Figure 11 - Nature of Ownership, by Work Unit ............................... 74
Figure 12 - Language Used, by Interview .......................................... 74
Figure 13 - Chinese Domestic Commodity Markets, Comparative Concentration Levels ... 88
Figure 14 - China’s Iron Ore Import Dependence ............................. 103
Figure 15 - Iron Ore Exporters World Market Share ............................. 104
Figure 16 - Chinese Iron Ore Imports by Country (2001-2010) .......... 105
Figure 17 - Top Five Seaborne Iron Ore Producers (1997 - 2007) ........ 105
Figure 18 - Main Steel Consuming Sectors in China (2011) ................ 109
Figure 19 - Chinese Iron Ore Annual Production and Imports (2000-2010) ... 110
Figure 20 - Domestic Fragmentation Levels - Top Four Chinese Crude Steel Producers (2000 - 2010) ................................................... 111
Figure 21 - Share of Total Iron Ore Imports by Top 2 Chinese Firms (2001 - 2011) ....... 115
Figure 22 - Iron Ore Prices Benchmark and Spot Pricing Regimes (1975 - 2015) .......... 124
Figure 23 - Dry Bulk Vessel Categories, Iron Ore Trade with China .......................... 129
Figure 24 - Share of Global Potash Consumption by Country (2011) .......... 152
Figure 25 - Chinese Share of Global Imports as % of World Exports (1992-2013) ...... 152
Figure 26 - Chinese Potash Imports as Share of Global Exports 1980 - 2013 .......... 153
Figure 27 - China’s Potash Import Dependence (2000 - 2011) ................ 154
Figure 28 - Potash Prices (1960 - 2014) ........................................... 156
Figure 29 - World Shares of Potash Exports (2012) ................................ 157
Figure 30 - Chinese Potash Production, Consumption and Imports ........ 163
Figure 31 - Chinese Potash Supply Sources ....................................... 163
Figure 32 - Potash Prices in China (2011 - 2012) ................................. 165
Figure 33 - Share of Potash Imports by Top Two Chinese Companies (2001 - 2011) ....... 174
Figure 34 - Share of Potash Imports by the Top 10 Chinese Companies (2001 – 2011) ... 175
Figure 35 - Uranium Production in China (1998 - 2011) ......................... 197
Figure 36 - Chinese Uranium Imports (2009 - 2013) ........................... 200
Figure 37 - Uranium Production by Country (2011) .............................. 201
Figure 38 - Uranium Prices (1969 - 2012) ......................................... 204
Figure 39 - Chinese Uranium Imports by Company (2011) .................... 205
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CHAPTER 1 – EMERGING POWERS AND SYSTEMIC CHANGE

How are global economic institutions transformed by dominant emerging economies at times of power transition? Why have some international markets for important raw materials undergone fundamental change in the way they operate as a result of China’s emergence, while other such markets have been more resilient to change? The goal of this dissertation is to explain diverging global outcomes from the dramatic contemporary expansion of China’s economy. By doing so, my objective is to shed new light on the political economy of global markets; why they operate the way they do now, and how they have evolved and changed over time.

The structure of key industries within China varies: some are concentrated, some fragmented, some very sensitive to price signals, and others less so. Likewise, the structures of global markets in various commodities varied significantly before the emergence of China as dominant global consumer in the twenty-first century. My central thesis supports the view that China has had a powerful effect on global markets, but suggests that the effect has varied from market to market. I trace key variances to the interaction of Chinese domestic industrial structures and the pre-existing structures of global commodity markets.

We stand at a time of transition, when emerging economies are playing an increasingly important role in the global economy. One of the areas of the global economy over which emerging powers have the most palpable impact is global commodity markets. A case in point is China, which has gone from being an almost complete outsider to the most important player in many such global markets within a very short period of time. The (re)emergence of China offers a great opportunity to investigate global market change, since rarely does a country have such a decisive impact on global markets in such a short period of time. Yet the political economy of China’s behaviour and its impact on global markets is poorly understood. There is still much space within the literature for a more nuanced assessment of the diverse impacts China is having on global markets.

Since the institutional arrangements underpinning global markets were brokered during the second half of the twentieth century, before China’s rise, and since China has quickly become the key stakeholder and actor in many of these markets, we are essentially observing a quasi-experiment. China’s emergence and impact has occurred quickly and has been dramatic in scope across a variety of distinct, yet comparable, market structures. This is
an ideal empirical situation for a comparative study, and a great opportunity to investigate exactly how dominant emerging states impact the fabric of the international economy and how their impacts vary across markets.

The dynamics of China’s impacts on global commodity markets force us to profoundly re-evaluate several widespread assumptions. This includes assumptions about global market institutions prior to China’s arrival (contrarily to widespread assumptions, they were not competitive in a classical sense); Chinese domestic markets (contrarily to widespread assumptions, there is great variation in concentration levels across commodity markets); China’s global market power (contrarily to widespread assumptions, despite its economic size, its position is often weak, both domestically and in terms of global economic relations of power); and the direction of institutional change that is expected as a result of China’s emergence (contrarily to widespread assumptions, China’s state-led hybrid economy does not necessarily have a mercantilistic effect on global markets). The impacts observed are substantial and do destabilize established global power relationships, but they consist at times of a “marketization impulse.”

This dissertation investigates the intensity and direction of change in comparable international markets as a result of China’s emergence as a dominant consumer over the past decade. I argue that the impact of China’s emergence as a systemically relevant player in a global market is explained by the interplay of system-level and domestic-level variables. More specifically, I argue that 1) asymmetries between domestic (Chinese) and international market structures have a determining impact on global market institutional stability, and that 2) positions of market power at the domestic level influence preferences for pricing regimes at the global level. By tracing China’s global impacts back to its domestic roots, I unveil the full picture, from Chinese domestic market variables to the international-level outcomes in global markets.

In this dissertation, I develop conceptual tools to theorize about the divergent impacts a systemically relevant country can have on market institutions at the global level. First, I develop a typology of global market institutions, and identify their level of concentration and coordination as determining features. I also develop a multi-pronged definition of marketization as a measure of institutional change in markets at the global level. Lastly, I
provide a comparative assessment of procurement dynamics at the interface between Chinese and global commodity markets.

This project is unique because it combines classical and comparative political economy, economic sociology and Chinese politics approaches to answer classical International Political Economy (IPE) questions, with an empirical focus on commodity markets. China’s impact on the political economy of global commodity market institutions (their pricing regimes, power relations between key actors, oligopolistic practices, transport structures) has been identified by some as an important area of research (Zweig and Bi, 2005; Garnaut and Song, 2006; Song and Li, 2009; Rosen and Houser, 2007; Helleiner and Clapp, 2012; Economy and Levi, 2014).

This research contributes to four key debates in the political science literature. First, I propose a reconceptualization of global market institutions (Fliqstein, 2001, 2008; Ebner and Beck, 2008; Krasner, 1974; Rodrik, 1982). Second, I contribute to the theorization of systemic change by working within the IPE inside-out literature and incorporating interactive components (Katzenstein, 1985; Krasner, 1976; Putnam, 1988; Gilpin, 1977), as well as institutional comparative political economy insights (Hall and Soskice, 2001; Esping-Andersen, 1990; Thelen and Hall, 2009; Aoki, 2001; Streeck and Yamamura, 2001). Third, I contribute to the existing literature on “fragmented” foreign economic engagement, specifically in the context of Chinese politics (Lieberthal, 2004; Lieberthal and Lampton, 1992; Oksenberg and Lieberthal, 1988; Mertha, 2009; Shambaugh, 2011; Tiberghien, 2012; Kennedy and Cheng, 2012). To do this, I draw from a wide range of scholarship on Chinese foreign relations (e.g., status quo vs. revisionist power, rule taker vs. rule maker vs. rule shaper), but develop a nuanced and counter-intuitive model of Chinese behaviour.

Much has been written on China’s struggle to secure the supply of commodities that are key to its continued economic development. But this dissertation takes the discussion one step further, and seeks to build a systematic political economic theory of the variation in Chinese behaviour and impacts on commodity markets, and to draw generalizable conclusions.

The vast majority of the empirical material gathered for this dissertation concerns the interactions between China and global commodity markets (the exception is a comparison with Japan’s emergence as a dominant commodity consumer in Chapter 4). However, the
theoretical model is constructed with the aim of capturing the interactional dynamics between *any* dominant emerging consumer and its global suppliers. The scope of cases it applies to is very specific: large consuming emerging economies at times of power transition within a given commodity market. As such, this research reflects awareness of the main protagonist’s stage of economic development when its impacts on global markets are being evaluated. In fact, many of the dynamics observed are inextricable from the underlying conditions of economic development (Gerschenkron, 1962; List, 1909).

Significant theoretical value can be derived from considering China as a basis for comparison. It is up to future researchers to test the full extent of the model’s theoretical reach, an obvious candidate being the United States when it emerged as key consumer of global commodities.¹

The study of institutional resonance and complementarity between global markets and their systemically relevant consumers points to broader patterns we can expect to see as China tries to carve out a place for itself that is commensurate with its purchasing power in the global economy. This dissertation seeks to contribute to ongoing debates about the systemic resilience of global market structures, as well as on the domestic determinants of global economic power.

### 1.1 Existing Approaches to the Study of Power Transition and Global Market Change

Dominant theories of China’s impact on the global economy usually fall into one of two camps. On the one hand, conflict scenarios foresee China’s rise, its thirst for resources and its state-centred economic development as leading to destabilizing, protectionist or mercantilist behaviour on the global stage, and to economic conflict (Vivoda, 2009; Economy, 2010; Calder, 1996; Kane and Serewicz, 2001; Andrews-speed et al., 2004; Bremmer, 2010). For instance, Vivoda argues that “China is… undermining the Western-dominated neoliberal capitalist system” (Vivoda, 2009). As enunciated – and then refuted – by Kenney and Cheng: “A more powerful China, the thinking goes, is likely to promote a statist and more hierarchical brand of international governance that is inconsistent with the

¹ See Foot and Walter for an interesting comparison between the US and Chinese behaviour on the global stage (Foot and Walter, 2010).
open, multilateral governance architecture that has emerged and developed since the end of World War II under American and European guidance” (Kennedy and Cheng, 2012, 9).

On the other hand, status quo scenarios predict that China will not disrupt existing international institutions (Ikenberry, 2008; Johnston, 2013; Buzan and Cox, 2013; Steinfeld, 2010; Bergsten et al., 2008). For instance, Ikenberry argues that “China [will] integrate into the liberal international order” (Ikenberry, 2008).

I argue that the two sides of the debate outlined here have three key shortcomings. First, both view global markets as uniform. In other words, both sides of the debate tend to overlook the political economy of global markets. In contrast, I make the case that global markets vary significantly in their institutional structure. A critical precondition to correctly diagnosing China’s impact on global market structures is an accurate description of the variation across market structures internationally. There is a variety of pricing regimes in commodity markets today. Some commodities, such as copper, are more financialized and are traded on spot and futures markets. Other commodities, such as uranium or potash, still use long-term negotiated benchmark pricing systems in which prices are negotiated between producers and consumers, are valid over longer periods of time, and in which only a small percentage of total trades occur on the spot market.

Second, both sides of this debate characterize global markets as liberal. This is explained in part by the powerful liberal tradition, which highlights the continuing presence of post-hegemonic yet dominant US economic power, combined with path-dependent global liberal economic institutions that remain too entrenched for any challenger to disrupt (Ruggie, 1982; Ikenberry, 2008). I make the case that characterizing current global markets as liberal is an oversimplification. Indeed, extractive markets in particular are very oligopolistic and leave more room for strategic coordination than is usually acknowledged (Nolan, 2012; Fligstein, 1996; Foster and McChesney, 2012). If all markets are not liberal, it follows that China’s emergence can actually lead to the liberalization of market institutions, a possibility that is overlooked by the debate in its most common incarnations. This dissertation in fact turns Ikenberry’s liberal argument on its head. Ikenberry predicts a co-optation of emerging economies into existing liberal global economic institutions (Ikenberry, 2008); I argue that an emerging economy has led to the liberalization of global economic institutions.
Third, both arguments expect China’s impact on the functioning of the global economy to be uniform across markets: either statist or nil. In contrast, I will show that China’s impacts vary significantly across markets. On the liberal side of the debate, arguments put the agency firmly in the hands of the Chinese state and business leaders as making a conscious rational policy choice to integrate into existing global institutions (Steinfeld, 2010; Bergsten et al., 2008; Johnston, 2003; Johnston, 2013). Others in the liberal tradition predict that China will integrate into global liberal market institutions because it has a weak capacity for shaping global institutions or effecting global change. For instance, Nolan argues that China will not be able to have much impact on the global economy, as global firms and institutions are too powerful. “We are already inside them, they are not inside us” (Nolan, 2012). Both of these variants make the case that China’s effect (or lack thereof) will be similar across markets. The modern liberal argument, derived from the theory of economic interdependence, predicts that China’s dependence on the global economy will lead to its integration into existing market structures and stability in global economic regimes (Keohane and Nye, 1977).

On the other side of the debate, Hegemonic Stability Theory (HST) scholars argue “that large dominant states possess strong preferences for free and open international exchange, and, in turn, coerce, induce or persuade other states into opening their markets to foreign trade and investment” (Krasner, 1976; Gilpin, 1987, in; Lake, 2009, 224, emphasis added). Although HST allows for a diagnosis of current global market institutions as illiberal in theory, which is worthy of note, recent realist endeavours do not tend to explore this possibility as a basis for argumentation. HST also posits that dominant emerging economies will tend to prefer open and free exchanges. Therefore, the argument does not allow for wide variation in the emerging power’s international preferences and behaviour, depending on the global context. My cases show that the diverging preferences and market power of Chinese domestic interest groups need to be taken in to account. Various market actors do not prefer the same global outcomes, a reality made clear by the Open Economy Politics framework (Bates, 1997; Rogowski, 1989), and this highlights the limitations of unitary state approaches in answering the questions motivating this study.

In sum, I argue that the likelihood of change in global market institutions, and the direction of change as a result of China’s rise, cannot be predicted based only on assumptions
that a) global market institutions are both uniform and b) liberal, and that c) Chinese market players have the same preferences across the board. By taking into account the variation in global and Chinese market institutions and their relative asymmetry, we can arrive at a better understanding and more satisfying explanations of outcomes at the global level. The question should not be \textit{whether} China will cause institutional change at the global level, but when, how and why it does have an impact on global market institutions.

1.2 Research Questions

This dissertation contributes to the current scholarship on the impact China is having on the global economy. As such, it inserts itself within classical political economic debates about power transition and the preferences and impacts of a dominant emerging economy on global markets. I use as my starting point the \textit{raison d’être} of classical International Political Economy, which is to investigate “the reciprocal and dynamic interaction in international relations of the pursuit of wealth and the pursuit of power” (Gilpin, 1975: 43) in (Cohen, 2007).

This dissertation seeks to answer two research questions. The first has to do with the \textit{likelihood} of change in global market institutions as a result of China’s emergence. Under what conditions will a large emerging economy cause disruption in global market institutions? Why have some global markets undergone systemic change following China’s emergence as dominant player, whereas other markets, under similar circumstances, have been more resilient to change?

The second question has to do with the \textit{direction} of change in global market institutions as a result of China’s emergence as the dominant consumer. Indeed, some markets have undergone change in the direction of marketization, whereas others have undergone change in the opposite direction. Under what conditions will dominant market players push for change in one direction rather than another? What explains preferences for market coordination, as opposed to strategic coordination, in global market institutions?

The figure below illustrates the context in which the relationships of interest in this dissertation take place, as well as the direction of change I am trying to explain.
As a result of the empirical research conducted for this dissertation, additional empirical puzzles have arisen. For instance, how is it that China, a state-led hybrid market economy, has led to the *marketization* of some global commodity markets? And why is it that we observe the most dramatic change in global market institutions in the cases in which key Chinese stakeholders were the weakest? This dissertation addresses these questions in turn.

### 1.3 Argument

In the case of a power transition from one dominant consumer to another in a given market, international market structures are vulnerable to systemic change. I argue that market power asymmetries between Chinese and global market players have a determining impact on global market institutional stability. This is because changes in specific patterns of two-level encounters between the emerging country’s stakeholders and the global markets’ stakeholders recast relations of power, and incentives. Only by understanding relative positions of power within markets and internationally can we explain variation in behaviour and outcomes.
To explain the likelihood of change at the global level, I argue that power transitions that entail a profound change in consumer-producer power relations are more likely to be disruptive than power transitions that entail a continuation of two-level power relations. In addition, a change towards asymmetric positions of power tends to be more unstable than a change towards symmetric positions of power.

An example of change that resulted from China’s emergence as the dominant consumer is the marketization (liberalization and financialization)\(^2\) of global commodity market pricing regimes, despite China’s own statist proclivities. Yet, we also see change in the other direction. Why? Price trends influence market stakeholders’ preferences for global pricing regimes, but they cannot account for all the variation observed. Market power – including the capacity to coordinate other market stakeholders’ behaviour, and the capacity to extract rent – also motivates behaviour.

To explain the direction of change at the global level, I argue that market players’ preferences for pricing regimes are influenced by the relative position of market power they occupy in their own market as well as relative to international market players. Asymmetric positions of power provide strategic advantages, since the dominant side’s preferences for market institutions at the global level are more easily expressed.

A domestic position of power occupied by key resource importers with rent-extracting privileges provides these importers with disincentives to push for the marketization of pricing regimes, regardless of price levels. Domestic market stakeholders’ preference for the marketization of pricing regimes is more likely to occur when they are occupying a weak position of market power relative to suppliers, as well as relative to their own peers. On the other hand, international market stakeholders’ preference for the marketization of pricing regimes is most likely to occur when they are occupying a dominant position of market power relative to the consumers, as well as relative to their own peers. At the domestic level, the opposite is true.

Going beyond simple inside-out and outside-in approaches, and leveraging the comparative method and in-depth case studies to shed light on key international political

\(^2\) See p. 39 for a definition.
economy questions, I develop a two-level model to explain diverging outcomes at the global level.

For the purpose of this dissertation, I differentiate between global and domestic market structures according to their respective levels of market concentration. Structural power asymmetries set the conditions for systemic change. Fundamental market conditions at the domestic or international level – the fragmented or concentrated structures of markets – are the result of path-dependent historical set-ups. But these structural characteristics merely create the conditions for strategic behaviour. The key causal mechanism at play is the relative capacity for market coordination of commodity market stakeholders at both levels. It is really the strategic behaviour by key global and Chinese stakeholders (private firms, State-Owned Enterprises (SOEs), relevant state organs, industry associations, etc.) that determines whether attempts to coordinate market stakeholders’ behaviour succeed or not.

### Table 1 - Two-Level Market Power Asymmetries in Domestic and International Markets

<table>
<thead>
<tr>
<th>International market (Producers) ➔ Domestic market (Consumers) ↓</th>
<th>Fragmentation</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fragmentation</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Symmetry</td>
<td>Asymmetry</td>
</tr>
<tr>
<td></td>
<td>Stable</td>
<td>in favour of producers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unstable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Case: China/iron ore pricing</td>
</tr>
<tr>
<td>Concentration</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Asymmetry</td>
<td>Symmetry</td>
</tr>
<tr>
<td></td>
<td>in favour of consumers</td>
<td>Stable</td>
</tr>
<tr>
<td></td>
<td>Unstable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Case: China/uranium market, Japan/iron ore pricing and shipping</td>
<td>Cases: China/iron ore shipping, China/potash pricing</td>
</tr>
</tbody>
</table>

Following Bates, “political institutions create, or deny, strategic opportunities. Within the game they define, they help to determine the power of particular interests. They do so by rendering them, or preventing them from becoming, politically pivotal” (Bates, 1997, 164).
Table 1 illustrates the schematic universe of possible two-level combinations of market power relations. When a power transition occurs from one dominant consumer to another, two-level power relations are either maintained from one period to the next, or they are transformed.

Transitions towards different two-level relations of market power (different quadrants) are more likely to bring instability to global pricing regimes. Transitions to asymmetric positions of power (Quadrants 2 and 3) are also more likely to bring instability than they are transitions towards symmetric positions of power. For instance, cases in which a fragmented Chinese domestic market emerges to face a concentrated and coordinated international market (Quadrant 2) create instability and open the way for systemic change at the global level. This also creates an opportunity for the expression of international suppliers’ preferences. In the opposite scenario, in cases in which concentrated Chinese domestic market actors emerge to face weakly concentrated international market actors (Quadrant 3), change remains highly likely. This time around, however, it creates space for Chinese stakeholders’ agency and expression of their preferences.

In cases of a change towards symmetry between market power structures in international and domestic realms, change is of course still possible (Quadrant 4). However, this change is less likely to be sudden, and more likely to be incremental, as the result of an alignment of preferences, or of strategic bargaining. Yet, as this combination involves equally powerful positions of power in both market realms, it is also the least predictable, as there is the possibility of deadlock or conflict between dominant players at the international and domestic levels.

The dynamics through which this gets expressed on the ground can be unexpected. Let us look at empirical narratives. China’s emergence has led to unequal systemic change in pricing regimes in the iron ore and potash markets.

In the iron ore market, China played a key part in the collapse of the benchmark pricing regime in 2010 and the subsequent move towards spot-market pricing. In contrast to the concentrated and coordinated nature of the Japanese iron ore importers prior to China’s emergence, the Chinese iron ore industry remains deeply fragmented. Thus, the transition from Japanese to Chinese dominance in the global iron ore import market saw a significant
change in two-level relations of market power between suppliers and consumers (Quadrant 3 to Quadrant 2).

At key transition moments between the Japanese and Chinese tenure as the world’s dominant consumer, Chinese negotiators were unable to coordinate iron ore procurement behaviour. This failure of collective action, coupled with the sheer volumes of Chinese imports, allowed small Chinese iron ore importers without a license to have a profound and destabilizing impact on global market institutions. After only a few repeated interactions, the global mining firms started breaking rank one by one and selling to individual Chinese importers on what became the quarterly, then spot, market. In fact, just six years after China replaced Japan as the world’s number one iron ore importer, the decades-long coordinated benchmarking pricing regime that had defined the global iron ore market had fallen apart. The fragmented behaviour of Chinese importers disrupted global benchmarking negotiations and provided the three main suppliers with a window of opportunity to usher in a more volatile pricing regime, against the will of larger Chinese iron ore importers and state negotiators.

In the potash market, China’s emergence has led to an increase in the frequency of benchmarking negotiations, the emergence of new producers, and the fall of a suppliers’ cartel; however, the benchmark pricing system itself has survived. In that case, we see successful coordination of the Chinese domestic interface with global market stakeholders and the continued tight management of procurement behaviour by Chinese firms. This has afforded the Chinese importers more room for manoeuvre in international benchmark negotiations, whereas the international behaviour of global suppliers has been unequal, despite the position of strength they started with in the early 2000s. In that case, we see more effective translation of Chinese procurement objectives into market outcomes.

China’s emergence has also had an unequal effect on the direction of change in pricing regimes in the iron ore and potash markets. As indicated above, the relative position of market power of given firms in their own markets explains preferences for global pricing regimes and how they differ from expected “price-determined preferences.” In the Chinese iron ore case, the presence of powerful rent-extracting privileges in China’s domestic market explains the reluctance of large steel firms to push for the marketization of the global pricing
regime in the 2000s. In 2009, large Chinese iron ore importers continued to express their preference for the iron ore benchmarking regime *despite* falling iron ore prices.

In the potash case, because of the tightly controlled licensing system, the top Chinese importers maintain a privileged position of market power by holding exclusive rights to the import and reselling of internationally acquired potash to domestic distributors. That position of market power explains at least in part why the license-holding potash importers have supported the global benchmarking regime despite price fluctuations (i.e., drop in prices) in their favour.

In sum, within- and across-market power asymmetries between domestic and global market structures profoundly affect market players’ incentive structures and preferences for pricing regimes, as well as create the conditions for systemic change. A deep understanding of the political economy of Chinese domestic commodity markets is key to understanding global market outcomes. Chinese domestic market dynamics have now become a determining feature of the global economy.

### 1.4 Why Extractive Commodity Markets?

Global extractive commodity markets are one of the areas of the global economy in which the impact of rising powers has been the most palpable. Global commodity markets are among the first in the global production chain to react to global changes in demand for finished products, and are critical for economic development. They are therefore a good candidate for examining an emerging economy’s impact on global markets. “Movements in commodity prices are a key determinant of the performance of the world economy. They affect the level and stability of export incomes earned by developing countries, the cost of inputs to production in industrial countries, the allocation (sectoral and spatial) of world capital flows, and in particular rates of national economic growth” (Cashin et al., 2000). Extractive commodities must be extracted from nature, rather than produced (Le Billon, 2012), and their geographical concentrations cannot be ignored without large amounts of

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3 Extractive commodity markets are defined here as markets for primary commodities or materials in their raw or unprocessed state. Their status as commodities is partly defined by the fact that they are, in their refined form, indistinguishable from one another (i.e., copper is copper, and it is measured by concentration). This gets more complicated, however, in many extractive commodity markets, as different moisture content, grades, or the overall quality of the resource play a role in differentiating one commodity’s source from another. However, it remains that the boundaries between commodity markets are easily identifiable and distinguishable from one another. Furthermore, it is difficult, if not impossible, to find a substitute for most commodities.
unproductive energy being spent. Global extractive commodity markets are also unique in that they have largely remained outside of global regulatory structures.

All major emerging economies have seen their demand for commodities increase dramatically in the past decade. “This is a topic of great importance, given that about 25 percent of world merchandise trade consists of primary commodities, and both long-term trends and short-term fluctuations in primary commodity prices are key determinants of developments in the world economy” (Cashin et al., 2000).

Commodity markets thus offer a unique angle for analysis, as they are essential to economic activity and national security.4 Their arrangements are also unequal and varied. Certain global commodity markets have evolved coordinated and strategic market institutions – cartels, in some cases, to regulate production and sales – whereas others have evolved market institutions based on global commodity exchanges.

Commodity markets are a promising area of research for another reason: whereas the current international political economy literature theorizes about international markets at length, it tends to focus on the global trade, monetary and financial architectures. A comparable body of literature cannot be found for physical commodities in the primary sector of the economy. Extractive commodity markets have undergone systemic institutional change in the past decade, yet the IPE/CPE literatures have not yet caught up with this intense empirical activity. The only exception to this is the IPE literature on the oil market, which has continued to produce scholarship, especially on the role of the Organization of Petroleum Exporting Countries (OPEC) and broader questions about energy security. In the field of the IPE of resources, more generally, there is a literature on the resource curse, and on the political economy of renewables, but much less on extractive commodity markets.

This dearth of analysis in the IPE literature on extractive markets dates from the 1980s, when commodity prices stabilized for two decades. Yet the field of IPE itself was born in part as a result of the inescapable relevance of politics in the study of global commodity markets following the oil crisis in the early 1970s. Indeed, the core question for much of the scholarship of that era was whether competition for resources would lead to war.

The IPE of resources highlighted the need to reintroduce politics into the study of international economic patterns, and this unleashed a dynamic period of scholarship (Krasner, 1974; Rodrik, 1982; Olson, 1963; Bergsten, 1974; Huntington and Manshel, 1974; Moran, 1973; Zacher, 1987). This early IPE literature was also preoccupied with the potential for developing countries rich in natural resources to create powerful producers’ cartels. It was also aware of the diversity of existing natural resources market arrangements and included a debate about the normative value of cartelized markets (for the sake of stability).5 The end of the Cold War and the rise of the global liberal order established that the first preoccupation was overstated, but led to the neglect of the two other topics (the study of global market diversity and the normative value of market arrangements other than the classical liberal arrangement), with few exceptions (Bates, 1997).

China’s emergence has revived the need for an IPE of resources. The context is different – cartels are less numerous – but the role of power is still relevant, even with the disappearance of most producers’ cartels. And China’s interaction with global commodity markets highlights the remaining variation across markets. The IPE of resources has been identified in recent review articles as a research area in crucial need of revitalization (Helleiner and Clapp, 2012; Hancock and Vivoda, 2014). For recent endeavours, see (Petkova, 2006; Hughes, 2014; Richardson, 2009; Peine, 2013; Dauvergne and Neville, 2009; Moran, 2010; Economy and Levi, 2014). This dissertation thus revives the international political economy of resources scholarship that today has returned to relevance.

1.5 Why China?

China is a large and systemically significant economy. In terms of its economic weight in the global economy, China’s relevance is inescapable. But before the creation of the Asian Infrastructure Investment Bank in 2014, it was not easy to identify instances in which China was having a determining impact on global economic institutions. Yet, China has had an impact on the global market institutions of various commodities. Understanding how and why is key to understanding the dynamics behind one of the major drivers of change in the global economy for the foreseeable future.

5 I thank Louis W. Pauly for his useful comments on this section.
We have witnessed a profound transformation in the balance of power of the global political economy in the past decade: the emergence of China from a complete outsider to the single most important economic actor in most global commodity markets within the span of the past 15 years. “Up until the late 1980s, China’s energy woes were essentially a domestic issue, in light of the country’s self-sufficiency with coal, oil and hydropower. But since the beginning of the reform and opening up era in 1978, China’s demand for natural resources and for imported energy has risen at an increasing pace, culminating in the late 1990s and early 2000s and turning China’s energy consumption patterns into a global issue” (Meidan, M., Ed. (2007).

Table 2 - China’s projected dependence in minerals up to 2050

<table>
<thead>
<tr>
<th>Dependence</th>
<th>Number</th>
<th>Main commodities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serious shortage</td>
<td>5</td>
<td>Chromite, Cobalt, Platinum, Potash, Diamond</td>
</tr>
<tr>
<td>Unable to fulfill domestic needs</td>
<td>21</td>
<td>Iron ore, Manganese, Copper, Lead, Zinc, Thorium, Tin, Gold, Silver, Strontium, Fluorite, Boron, Barite, Oil, Uranium, Nickel, Antimony, Refractory Material, Sulphur, Cement Limestone, Kaolin</td>
</tr>
<tr>
<td>Almost able to fulfill domestic needs</td>
<td>10</td>
<td>Coal, Titanium, Tungsten, Molybdenum, Phosphate, Siliceous Rock, Stone, Gypsum, Diatomite</td>
</tr>
<tr>
<td>Able to fulfill domestic needs</td>
<td>9</td>
<td>Natural gas, Rare Earths, Magnesite, Sodium Salt, Mirabilite, Bentonite, Graphite, Talc, Refractory Silica</td>
</tr>
</tbody>
</table>

Source: China up to 2050, Chinese Academy of Sciences, 2009. Author’s translation.

By 2005, China ranked first in the world in its consumption of all main metals (it accounted for between 15% and 33% of global consumption of aluminum, zinc, copper, iron ore, tin, nickel and lead), and it has since reached even higher levels. China is the world’s largest exporter of rare earths and aluminum and the largest importer of iron ore, potash and copper. In 2011, it became the largest energy consumer in the world, at 20.3% of global energy consumption. China’s average consumption growth per annum between 1990 and 2005 ranged between 16% and 24% for all main metals (Streifel, 2006). “Demand in the rich world may be dropping, but (...) steel consumption will not peak in China until 2026” (The lore of ore, 2012).
The Chinese Academy of Sciences has identified that the country will fall “seriously short,” or be “unable to fulfill domestic needs,” in 26 commodities, at least until the year 2050 (see Table 2). Potash and iron ore fall into the first and second of these two categories, respectively.

What about other emerging economies? The fact is that China has emerged as a dominant actor in the world’s commodity markets in a way that has almost eclipsed the significance of other emerging economies until now. For instance, between 1999 and 2005, China accounted for nearly two-thirds of the growth in global demand of refined metals consumption, compared with less than 10% for India (Figure 2) (Streifel 2006).

**Figure 2 - Relative Impact of China and India on Global Mining Markets**

![Growth of Refined Metals Consumption 1990-2005](source)

Source: Development Prospects Group, World Bank, reproduced from Streifel, 2006, p. 19

This dissertation does not contend that China is the only variable of interest in studying commodity-market change over the past decade, but that its impact on commodity markets is large enough to be systemic. This means that changes in global commodity markets during this period are likely to have something to do with China’s rapid emergence as a dominant consumer (a process which can be traced).

### 1.6 Methodology

“For social scientists who enjoy comparisons, happiness is finding a force or event which affects a number of societies at the same time. Like test-tube solutions that respond differently to the same agent, these societies reveal their
characters in divergent responses to the same stimulus.” (Gourevitch, 1977, p.281)

This dissertation adopts a two-level (domestic-international) institutional political economy approach to unveil the conditions under which change in global market institutions is most likely, that is, in the context of a power transition.

My approach thus broadly builds on Peter Katzenstein’s early efforts to combine domestic and international levels of analysis (Katzenstein, 1978, 1985). As Cohen describes, “Waltz’s second image had to be synthesized with his third image for the picture to be complete” (Cohen, 2008, 126). Waltz (1959) outlined three categories of explanations for the causes of war. The first image referred to individual leaders, the second image to the role of domestic politics and the third image to systemic explanations. My project seeks to leverage both the second and third images by incorporating the role of domestic and system-level structures on global market outcomes. Cohen continues in saying that the frontier of research in IPE remains at the level of interaction between international and domestic variables.

The Open-Economy Politics (OEP) framework is also relevant to this approach (Bates, 1997; Lake, 2009), albeit with two qualifications. First, my approach is closer to classical political economy understandings of the role of power in markets (Gilpin, 1977; Hirschman, 1945; Viner, 1948), than are OEP’s assumptions of “market as arena” (see discussion in Chapter 2). Second, Cohen argues that over the years, OEP scholarship has tended to “drift toward mainly midlevel theory” and “focus on more and more narrowly defined relationships and variables” (Cohen, 2008, 127). Lake has argued that OEP should consider “relaxing the small country (...) assumption of traditional economic theory” (Lake, 2009). Similarly, Keohane has argued that OEP “fails to pay sufficient attention, or, worse, is blinded to big, macro-level changes in the international economy” (Keohane, 2009). This dissertation, taking note of these criticisms, aims to go beyond micro-level theorizing and small-state assumptions, and rejoin earlier classical political economy’s macro-level questions, attention to systemic change, and focus on major, systemically relevant, economies.

This research employs a mixed-methods approach (process-tracing with an emphasis on field research and interviews, document analysis and comparative/descriptive statistical analysis) to carry out a comparative study of Chinese and international commodity market
institutions and Chinese procurement policies in the markets of iron ore, potash and uranium. My case selection follows a small-n, comparative (method of difference) approach, and focuses on two key markets – iron ore and potash – which share important institutional characteristics, yet towards which China has developed distinct procurement policies. A shadow case – uranium – was selected to ensure a wider variation on the independent and dependent variables, as it does not share global market characteristics with the two others. A plausibility probe is conducted with the emergence of Japan as the number one iron ore consumer in the late 1960s.

I combine a two-level political economy approach with the power of small-n, comparative case studies, and use process tracing to unveil the causal pathways that lead to systemic market changes at the global level. In brief, I leverage two-level institutional political economic theorizing, the comparative method, and in-depth case studies and process tracing to resolve puzzles situated at the systemic level.

1.6.1 Case selection

In order to ensure that in the cases presented here, China is indeed the primary driver of institutional change over the past 15 years, I selected my cases among a universe of commodity markets where China has quickly become the dominant consumer and importer (and thus is having a critical and undeniable systemic impact on the relevant global markets). The two markets that form the main comparison for the purpose of this dissertation are the potash and iron ore markets.

The potash and iron ore markets exhibit strong comparative potential. They were selected according to Mill’s method of difference, as the two markets shared striking similarities, yet were transformed differently by China’s rise as the dominant importer of both resources. First, both markets are bulk commodities, and their extraction is a capital-intensive process. Second, the majority of their global supply is concentrated geographically in two or three countries: Brazil and Australia in the case of iron ore, and Russia, Belarus and Canada in the case of potash (one BRICS economy and one Asia-Pacific economy in each case). Third, both commodities are vital, one for industry and the other for agriculture, and both have no substitutes. What is more, China has a similar level of import dependence on the two commodities, hovering above 50% for both iron ore and potash. Finally, before
China’s emergence as dominant consumer, both markets were controlled by strong oligopolies, and were home to annual price benchmarking systems.

**Figure 3 - China's Potash and Iron Ore Import Dependency Ratios (2000-2011)**

> Despite the striking similarities between global iron ore and potash markets, China’s impact on these markets has varied significantly.

An additional benefit of focusing on the global potash market is that it is a key global fertilizer market that is absolutely essential for food security, yet it remains understudied. This dissertation may in fact be the first in-depth English-language political economic analysis of China’s potash procurement dynamics and associated global market institutions.

**1.6.2 Data**

Much of the primary data for this dissertation was gathered during three stints of 2-4 months in China (for a total of over eight months), part of which was spent as a visiting scholar at the Chinese Academy of Social Sciences (World Institute of Economics and Politics) in Beijing, and part as a Senior Visiting Student (高级进修生) at Peking University’s Center for International Political Economy.

My field research in China included interviews in Beijing, Shanghai, Nanning (Guangxi), Tianjin, and Nanjing. I also conducted interviews in Canada, at industry conferences, by phone and by email. The data gathered includes 127 interviews with Chinese and foreign officials (diplomats, bureaucrats, managers), industry practitioners, private-sector
employees, managers and executives, industry analysts, specialized journalists and other experts. Interviews were always conducted in the interviewee’s preferred language, whether Mandarin Chinese, English or French. Data gathered also includes statistical data from various sources, including the Chinese Customs Department, Chinese and international industry associations, industry conference presentations by government officials, state-owned enterprise representatives, private industry insiders, Chinese statistical yearbooks, consultant firms and media sources. In addition, it includes a review of relevant official Chinese policy documents, notices, regulations, press releases and speeches, as well as a review of the Chinese-language academic literature on the respective Chinese resource procurement policies in each market. Finally, the data also includes Chinese- and English-language business literatures on the subject (corporate reports, strategic policy documents, press releases). This dissertation includes a review not only of novel raw interview data, but also of official Chinese policy documents as well as Chinese media, industry and academic literatures that for the most part have been scarcely referenced, if at all, in previous English-language publications.

1.7 Dissertation Outline

In Chapter 2, I look to push the frontier of conceptualization and analysis of global markets. To evaluate change at the global level, I develop a series of characteristics to define global market structures and a typology of global markets. The chapter also provides a definition of my dependent variable – pricing regimes – for which I develop a series of indicators. Finally, the chapter concludes with a discussion of the concept of marketization. Chapter 3 provides a review of my theoretical model and argument, as well as a discussion of possible alternative answers from the political economy literature on systemic change in the global economy. It includes a discussion of how the structural market characteristics at both levels have shaped coordination capacity and market behaviour of key stakeholders in both the Chinese domestic and global markets. It also provides a definition and measure of the market characteristics I select as explanatory variables. Then, I present variation over time across seven global commodity markets along some of the same indicators. This allows me to comment more broadly on the variation across different global commodity market structures. I also provide an analytical overview of the variation across my two main cases – the iron ore and potash markets – and a more in-depth justification of my case selection. Chapter 4
provides a discussion of the iron ore market, with an analysis of three within-market cases: the global iron ore pricing regime, the global iron ore shipping regime, and comparison with Japan’s impact on the global iron ore pricing regime in the 1960s. Chapter 5 discusses China’s impact on the global potash pricing regime, with a review of specific within-case events, including the fall of the Belarus-Russia cartel in 2013. Chapter 6 discusses the applicability of my theoretical framework to a third global market: the global uranium market. Chapter 7 provides a discussion of broader trends in China’s procurement dynamics overseas, beyond its impact on actual pricing regimes. Chapter 8 provides a discussion of conclusions and implications of this research for the study of China’s impact on the global economy.
CHAPTER 2 – GLOBAL MARKETS

This chapter offers an in-depth discussion of the concepts of market and marketization. I first discuss the current state of the political science literature on markets. Second, I present a few foundational assumptions behind my definition of global markets, and identify a list of core characteristics of global markets. Third, I introduce a novel typology of global market structures, one that allows us to think about systemic changes in global markets in different ways. Fourth, I specify my dependent variable, marketization, define it in relation to other related terms, such as globalization, liberalization and financialization, and then specify observable implications derived from the global market typology I developed. Finally, the questions of whether marketization trends are natural, what influences preferences for pricing regimes, and whether we should expect such impact from China’s emergence in the global economy are discussed.

Markets are as central to political economy as states are to politics. They are ubiquitous in daily life, in policy-making, in domestic politics and in international relations. Yet, whereas defining the concept of “the state” has occupied much space in the literature (Levi, 2002; Evans et al., 1985; Scott, 1999; Spruyt, 1996), there has not been a similar collective effort devoted to defining what markets are.

The effort that comes closest can be found in the comparative political economy literature, in the Varieties of Capitalism (VOC) research program, which argues that there is systemic variation across national capitalist economies. This literature is not devoted to the comparative study of markets outside of their national polities, however.

The strength of the VOC literature lies in the fact that scholars from a wide variety of epistemological and methodological perspectives have tackled the same fundamental question: why are there persisting divergences in national systems of political economy? Why do these divergences persist despite the fact that states are being subjected to the forces of economic globalization? Marxist, rational institutionalist, historical or party politics approaches provide a variety of arguments, all of which build on an understanding that national systems of political economy have distinct complementary features (Hall and Soskice, 2001; Hall and Gingerich, 2004; Katzenstein, 1985; Zysman, 1983; Albert, 1991; Esping-Andersen, 1990; Garrett, 1998). “Complementarities is what makes taxonomies of capitalisms possible. Different configurations are associated with distinct comparative
institutional advantages for particular kinds of innovation, production strategies, or distributional outcomes” (Jackson and Deeg, 2011, p. 683).

The VOC literature provides us with ideal-type categories of domestic systems of political economy, whether categorized as Liberal and Coordinated Market Economies (Hall and Soskice, 2001), or Liberal, Corporatist and Social-Democratic Welfare Capitalisms (Esping-Anderson, 1990), among other typologies. We can use these categories to compare domestic types of political-economic systems, and theorize about their trajectories. However, the VOC literature’s typologies and tools are rooted in domestic politics and are not suited to investigating similarities and differences in transnational market structures.

Similarly, there is much valuable work on multinational corporations in IPE, which acknowledges variation; however, it also rests on the idea of structurally differentiated home markets, the key insight being that “different home environments produce different sorts of multinational corporations” (Lall, Sanjaya, 1983, p. 267-268, in Doremus et al., 1999, p.13).

In the international and comparative political economy literatures, there is a tendency to consider national markets as subjected to national political dynamics and institutions – and thus prone to divergence – and international markets as being subjected to international institutions, dynamics and regulatory structures – and thus less likely to diverge from one another. Indeed, much of the IPE literature since the 1980s has moved away from attempts to define distinct types of market structures, and overwhelmingly adopted the definition of “markets as arena.” An rare example of a formal definition of the “market as arena” is given by Gilpin when, quoting Cournot, he defines a market as: “the whole of any region in which buyers and sellers are in such free intercourse with one another that the prices of the same goods tend to equality easily and quickly” (Gilpin, 1987, p. 18).

More often than not, the definition of markets as “arenas” where economic exchange occurs is implicit in scholarly work. For example, the top five articles that result from a simple search (by relevancy) for “market” in the journal International Organization are as follows (as of 2014): “Food markets and their regulation,” Gary Steevers, 1978; “World oil marketing in transition,” Brian Levy, 1982; “Central American Common Market,” 1962, “The European Common Market Proposal,” Raymond Bertrand, 1956; and “World politics

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I thank Louis W. Pauly for bringing this to my attention.
and international energy markets,” Ernest Wilson, 1987. None of these articles make a point of defining the concept of market itself, which simply highlights that there is no tradition in the political science or IPE literatures of discussing and debating the nature and characteristics of global markets. By and large, the consideration of market structures themselves has gradually receded into the background, giving way to the study of the agency or ideas of individuals, companies or states that operate “within” them.

As an area of inquiry so devoted to the study of cooperation and conflict, why is it that we have not applied more of the tools of political science to the study of international market structures? As Gerring argues, “concepts are the building blocks of all inferences, and the formation of many concepts is clearly, and legitimately, theory-driven” (Gerring, 1999, p.364). Thus, it may be that the concept of market is underspecified in the political science literature because scholarship tends to ask questions that are set “in” or work “through” markets, but does not as a rule inquire about market structures as dependent or independent variables in themselves.

This trend is partly the result of international political developments in the last quarter of the twentieth century, including the rise of neoclassical economics, neoliberalism (in economic policy making as well as in international relations), and a gradual movement towards delegating the study of the functioning of markets per se to economists, or to political scientists who adopt econometric tools of analysis and a “market as arena” definition. Underlying these trends is the widespread assumption that markets are not a political economic structure in and of themselves, but rather simply a locus where “market forces” operate, or where the automatic coordination of individuals' utility-maximization impulses occur.

One body of literature in political science that devoted quite a bit of energy to global markets as differentiated institutions is the early IPE literature on resource markets (see discussion in Chapter 1). But as explained above, this body of literature has faded away as many producers’ cartels disappeared over the course of the second half of the twentieth century, as if the relevance of this inquiry was predicated on the survival of one particular form of market structure. Since then, there has been a gradual departure from inquiries into variation of global market structures. Susan Strange discussed cartels and the relationship between power and markets in the international political economy, and this dissertation is
very much in tune with her analysis. Even then, her 1996 analysis argued that “power over outcomes is exercised impersonally by markets and often unintentionally by those who buy and sell and deal in markets” (Strange, 1996, p. 149). As Van Schothorst argues, “after challenging the established definitions of power and state and broadening the scope of examination for these concepts, she fails to take the extra step to define the market” (Van Schothorst, 2005).

On the other hand, many in the economics literature have pointed to dynamics that complexify, bound or obfuscate neoclassical assumptions, among whom are scholars of the New Institutional Economics literature (North, 1990; Balleisen and Moss, 2010; Coase, 1988; Rodrik et al., 2004) and the philosophy of economics literatures (Schabas, 2005, Macloed, 2006). In some ways, and ironically, part of the economics literature is more sophisticated in its acknowledgement of the need for a more complicated view of markets, whereas “noneconomists have been fixated on a stylized reading of the neoclassical view of perfect competition” (Fligstein, 2001, p.8). The field of economics has also developed a literature in organizational economics and behavioural economics that seeks to identify varying market structures. However, the great majority of the economics literature functions under the assumption that outcomes are efficient, as opposed to historically derived and bound by path dependence, and underestimates the pursuit of power to the benefit of the pursuit of profits.

The emerging literature on global commodity/value chains is another interesting literature that is devoting some thought to market structures. It identifies variation among, and provides us with valuable insights on, the structure of global commodity chains (Gereffi et al., 2005). For instance, Gereffi and Sturgeon identify the governance type for five global values chains, from “market” to “hierarchical,” along a continuum of “degree of explicit coordination and power asymmetry.” This is an approach that is germane to the VOC literature and to the approach adopted here, with the exception that the continuum ends with the most integrated, hierarchical option being an individual, fully integrated, firm. In other words, whereas the VOC literature theorizes about national systems of political economy and not beyond, the Global Values Chains literature theorizes about singular value chains, which at one end of the spectrum, can be subsumed within one firm, as opposed to theorizing about global markets, which are often made up of many such integrated, hierarchical firms.
In the classical political economy literature, both Polanyi (1944) and Gilpin (1977) have provided rich theories of market systems, but they have proceeded to define distinct market systems in a temporally sequential way. For example, Gilpin provides a review of exchange systems that have existed throughout history: systems based on reciprocity, redistribution and eventually mobilization before the emergence of the current market economy (Fligstein, 2001, p. xiii), while Polanyi also discusses systems that predated attempts to usher in a market society. Few authors in political science have attempted to theorize about the existence of diverging yet concurrent global market systems. In IPE, Geoffrey Garrett’s analysis of globalization (2000) provides inspiration as he identifies different concurrent dynamics at play in the areas of trade, finance and multinational production at the global level, and different paths to their respective globalization.

Inasmuch as scholarship in political science has been critical of the “market as arena” approach, it has mostly tended to focus on dynamics that occur outside of the markets themselves. That is, scholars who have found the “market as arena” conceptualization insufficient have usually focused instead on something other than markets (e.g., importance of elections, culture or state power).

The need to define markets thus remains pressing. Paraphrasing Neil Fligstein, who asked a similar question from a sociology of economics perspective: What is a market from a political science point of view? A political science perspective can contribute to the study of markets by bringing back the importance of power and politics in the study of global markets.

2.1 What Markets Are

Without a fuller, more sophisticated definition of global markets, how are we to investigate their evolution over time? How are we to identify the market variables that have causal impact, or the market variables that can be fruitfully compared across markets? How can we create useful typologies of global markets? How can we even ask questions about market structures themselves?

This chapter is but a first step towards the creation of a research program devoted to the study of global markets. It by no means claims to have filled the gap. Citing Fligstein, who has launched such a program in the sociology of economics literature, the goal here is “to create an alternative sociological political economic view of markets in capitalist society.”
the global economy. But to do so requires that one look at these social relations power relations in markets from a sociological political economy point of view” (Fligstein, 2001, p. xiii) (italics and strikethroughs added by the author).

To fully account for China’s impact on global markets, we need to be able to describe these markets in a more multidimensional way. For this, the tools of comparative political economy can be fruitfully applied to the study of transnational markets, from defining them to comparing them and to theorizing about their embedded power relations. The VOC literature has argued that qualitatively different political economic systems coexist under the broader umbrella of a capitalist world economy and that they are not necessarily converging toward a single ideal type (Zysman, 1983, Hall and Soskice, 2001, Katzenstein, 1985, Esping-Andersen, 1990; Gerlach, 1992). My comparative analysis of global markets is similarly motivated by the observation that different global market systems, which exhibit different characteristics and dynamics, coexist in the global economy.

As such, my approach to characterizing global commodity markets is germane to the literature on the persistence of divergence between national systems of political economy despite powerful globalization forces, or the ‘divergence’ school, in IPE (Keohane et al., 1996; Tiberghien, 2007; Core et al., 1996). “Industrial countries are not converging toward a single form (Fligstein and Freeland 1995). Instead a plurality of social relations has been observed that structure markets within and across societies. These observations have challenged the neoclassical economists’ view that markets select efficient forms which, over time, converge to a single form.” (Fligstein, 1996, 657) In the words of Gourevitch:

“Our account of incentives makes us skeptical about arguments that predict convergence towards a single model. Much talk about the world economy assumes a single, optimal pattern, a single equilibrium, a unique and perfect way of combining all the ingredients of the economy, so that market competition will force all countries to converge. We are doubtful. The economy is too complex, there are too many ways of putting the pieces together. (…) Since countries vary in their internal political dynamics – institutions, preferences, parties, and interest groups – their policy outcomes vary. And thus their corporate governance systems will differ. Change may occur, but not necessarily toward convergence on a single model of governance.” (Gourevitch et al. 2005, p.12)

Market structures, as well as the behaviour of stakeholders in the same global commodity market, vary. The global iron ore and uranium markets are structured quite
differently, but even within the global iron ore market, key actors also respond differently to the same event, such as the fall of the benchmarking regime in 2010.

The aim of this chapter is to contribute to a concept-refining, typology-building exercise for global markets.

2.2 Global Markets as Institutional Systems

**Key assumptions about markets**

1) **Markets are created** (Gilpin, 1970, Polanyi, 1944, Fligstein, 2002, 2008). The idea of a self-regulating market is a myth. This is a position that contrasts with the perception of markets as natural, and of market stakeholders’ behaviour as naturally converging towards competitive markets. “Normatively, I value the critical spirit of British IPE, and of Susan Strange and Robert Cox, because, like them, I am unwilling to accept the contemporary political-economic system as either natural or good” (Keohane, 2011, p. 43).

I draw my analysis of markets as “created” as opposed to “natural” from Fligstein (2002, 2008), Polanyi (1944) and Gilpin (1970). The idea of self-regulating markets is not useful because it does not describe reality (it is useful in research, however, inasmuch as it consists of a belief system that influences individuals’ behaviours and/or policy). This is a position that contrasts with the neoliberal position (IR), which argues that the perfect market is an arena, or a space, not an institutional system.

2) **There is a fragmentation of the global market economy into different market institutions or systems,** which have different dynamics. I build on Garrett’s analysis of globalization (2000), in which he identifies different dynamics at play in the areas of trade, finance and multinational production. I also build on the VOC literature, which shows that qualitatively different political economic systems coexist under the umbrella of a global world economy (Zysman, 1983, Hall and Soskice, 2001, Katzenstein, 1985, Esping-Andersen, 1990, etc.).

3) **Power relations** and exchange relations are both **partie prenante** of all markets because individuals, firms, industry associations and states – all market stakeholders –

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7 I adopt Susan Strange’s definition of power: “Power is simply the ability of a person or group of persons so to affect outcomes that their preferences take precedence over the preferences of others” (Strange, 1996, p. 17).
negotiate these two fundamental forces concomitantly (Gilpin, 1977; Kirschner, 2003; Vilner; Carr, 1939; List, 1841).

**Definition**

The position adopted here is that global markets can be fruitfully conceived of as institutional systems (Fligstein 2002, Ebner and Beck 2008), which are the result of their material and geographical characteristics, their different institutional histories, the nature of the main actors, embedded power relationships, various local political systems, coordination mechanisms and shared values.

I define global markets as 1) distinct, coexisting, transnational institutional systems of exchange built on asymmetric relations of power, 2) which are subject to path dependence, vary along variables such as concentration, coordination, governance structures, role of the state and systemic stability (Fligstein, 2001; Polanyi, 1944; Rodrik, 1982; Peine, 2013; Krasner, 1974; Baumgartner et al., 1991; Fligstein, 2008) and 3) of which modes of price formation are a critical, but not exclusive, determining feature. This broader definition of global markets allows us to evaluate and characterize global market structures, as well as systemic change, more fully than by relying on a “market as arena” definition.

Therefore, I am not simply saying that markets are subjected to varying degrees of political distortion, which implies that if markets were free from politics, they would tend towards an ideal of competitiveness. This would be a “negative view of institutions” (Duina, 2011), which is nested in neoclassical economics assumptions about institutions and politics as constraints on the efficient functioning of markets.

Instead, this reconceptualization is nested in the view that “markets by themselves are neither morally nor politically neutral; they embody the values of society and the interests of powerful actors” (Gilpin, 2000, p.50). A “more complete picture helps us understand why a particular market structure came into existence [as well as] evaluate how the firms that dominate a particular industry came to occupy that position” (Fligstein, in Ebner and Beck, p.133).

As such, my research seeks to contribute to debates about the existence of multiple stable equilibria, the comparative study of distributive consequences of different market structures, as well as to discussions of the moral status of different market systems. By showing that global markets are fundamentally different complex institutional systems
consisting of deep and durable power asymmetries, this dissertation contributes to research which seeks to explain persisting variation among global markets, a research program that is not feasible if one assumes global markets to be symmetric in structure. It also seeks to contribute to debates about economic behaviour. This is in line with the view that “market rationality is neither universal nor apparent as the neoclassical paradigm assumes. On the contrary, the ideal types of market rationalities are multiple and contested” (Kwon, Hyeong-Ki, 2004, p.98).

In thinking about global market types, it is important to differentiate between concentration levels and governance structures. The fragmentation of a market into many actors (low concentration levels) is not necessarily equivalent to the ideal notion of competitive markets. A fragmented market can be a market with high transaction costs, inefficient transportation structures, poor regulatory context, presence of information asymmetries, and other inefficiencies, just as in the case of a concentrated market. In other words, the concentration levels and the well-functioning of a market do not necessarily go hand in hand. Indeed, two markets can be equally concentrated without nearly the same amount or type of coordination among producers, and vice-versa. For instance, the top four firms in the global potash market controlled 68% of global exports in 2012 (Chen, 2014), whereas the top four firms in the global uranium market controlled 81.8% of exports in 2009 (Global Key Uranium, 2011). However, until 2013, the potash market was composed of two highly institutionalized market structures, cartel-like organizations, whereas the uranium market is much more fragmented and lacks formal coordination mechanisms among producers.

Finally, this research contributes to debates about the underlying tendencies of markets towards competition or concentration. Streeck (2009) argues that there is a natural tendency towards competition in markets. In the same line of argument, others, such as Krasner (1974), argue that there is a natural tendency towards the break-up of cartels. At the other end of the debate, others argue that the natural tendency in capitalist markets is towards concentration and coordination (Foster and McChesney, 2012; Nolan, 2012; Strange, 1996). Fligstein also argues that when legal frameworks allow it, cartel arrangements become the major strategy for coping with competition (1990, p.23), such as in Europe in the nineteenth century. He also argues that “the social structures of markets and the internal organizations of
firms are best viewed as attempts to mitigate the effect of competition with other firms” (Fligstein, 1996, p.657).

In this dissertation, I make the case that despite the difficulties in fully overcoming collective action problems, the momentum towards coordination remains quite strong in global commodity markets (Gilpin, 1977; Ostrom, 1997; Nolan, 2012). It has taken many shapes and forms throughout the twentieth century, even as the golden era of formal cartel arrangements faded away. In order to fully engage in these debates, we need to be able to compare and measure different global political economic market structures – and their evolution across time – along variables such as their levels of concentration or coordination.

2.3 Typology of Global Markets

This exercise builds on Rodrik (1982) and Krasner (1974), who developed multifaceted indicators to evaluate global extractive commodity markets. Rodrik defined global commodity markets along four variables: degree of concentration, vertical integration, state ownership and trade and price-formation mode. Krasner identifies the conditions that make durable cartel behaviour more likely: price inelastic demand, high barriers to entry, high market concentration, shared experience among producers, lack of consumer resistance, ability to work with an extended time horizon and shared values. His conceptualization of the variables likely to make cartel behaviour more likely is still useful today, although he did not proceed to develop measures for each indicator.

A first attempt at developing a useful list of key global market characteristics can be found below (see Table 3). The first category of descriptors is grouped under the label of the “shape” of the global markets. I define levels of concentration (Krasner, 1974; Rodrik, 1982) and geographical dispersion as key variables in that category.

In the second category, I am interested in defining the nature of major market actors (state-owned or private companies, industry associations, states, etc.) (Rodrik, 1982).

The third category is the coordination capacity of market actors, state or private. It includes the capacity to overcome collective action problems, or to coordinate behaviour, but also the alignment of expectations about how a market should work among market stakeholders. This notion is building on Fligstein’s “conceptions of control” or the understandings that structure perceptions of how a market works (2001). It is also germane to Ostrom’s concept of symmetry of interests, resources and time horizon (1997), and to
Krasner’s notion of shared experiences/values among producers (1974). This last characteristic is fundamental inasmuch as it determines whether market actors, concentrated or not, function with the same assumptions. This variable is especially crucial in the context of a power transition that brings actors functioning under different national systems of political economy together in a global market. It is closely linked with the capacity for coordination of market actors.

**Table 3 - Key Characteristics of Global Markets**

<table>
<thead>
<tr>
<th>Global market characteristics</th>
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<tbody>
<tr>
<td>1. Shape of producer’s market</td>
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<tr>
<td>1.1 Geographical distribution</td>
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<tr>
<td>1.2 Concentration of production</td>
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<tr>
<td>1.3 Tightness of supply</td>
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<tr>
<td>2. Nature of actors</td>
</tr>
<tr>
<td>2.1 Role of the state</td>
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<tr>
<td>2.2 Role of large firms</td>
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<tr>
<td>2.3 Role of small firms</td>
</tr>
<tr>
<td>2.4 International market organizations</td>
</tr>
<tr>
<td>3. Coordination capacity</td>
</tr>
<tr>
<td>3.1 Alignment of expectations (about how a market should work)</td>
</tr>
<tr>
<td>3.2 Capacity to overcome collective action problems</td>
</tr>
<tr>
<td>4. Governance structures</td>
</tr>
<tr>
<td>4.1 Pricing regimes</td>
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<tr>
<td>4.2 Transportation systems</td>
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<tr>
<td>4.3 Relevant regulatory context</td>
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</table>

The fourth category of market characteristics is a market’s governance structures. These structures include, but are not limited to, pricing regimes (price-setting mechanisms, or rules of exchange) (Fligstein, 2001); transportation systems; and relevant regulatory contexts.
(rules that define relations of competition and cooperation among firms, including property rights)⁸ (Fligstein, 2001; Hall et al., 2001; Gourevitch et al., 2005).

Based on this initial list of key market characteristics, multiple typologies are possible. Typologies are tools that allow us to question existing, often implicit conceptual categories, and offer opportunities for novel theoretical research endeavours. They are not meant to be exclusive or definitive, but to contribute to the advancement of knowledge by provoking our thinking and providing a clear statement that we can question further, and refute, if necessary.

I create an initial typology of global markets by combining the first and last of the market characteristics: the level of concentration/fragmentation, and the capacity for coordination (see Figure 4).

**Figure 4 - Typology of Global Markets**

I thank Wang Yong for raising this point with me.

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⁸ I thank Wang Yong for raising this point with me.
This typology is a more fine-grained tool that allows us to think about markets in new ways and with counter-intuitive implications. For instance, it allows us to refine our perception of the fragmented market as one with two possible outcomes: a segmented, dysfunctional type (the Chinese domestic iron ore market is a good example) and a competitive type. Indeed, a competitive market is one that requires the alignment of expectations in how the market functions (agreement on property rights, the rule of law, access to resources and arbitration, fairness of the game, pricing regimes, etc.), or in other words, a certain degree of coordination of behaviour. It also allows us to refine our understanding of coordination. There are two types of coordinated markets: oligopolistic and competitive markets. Similarly, at the concentrated end of the spectrum, we find two types of markets: oligopolistic/cartelized markets (iron ore and potash) and segmented, regional blocks (uranium). The typology obfuscates certain assumptions about competitive markets, and introduces the possibility that a market can be concentrated and not coordinated, or fragmented but not competitive.

2.4 The Impact of a Dominant Emerging Consumer

For the purpose of this dissertation, the universe of cases I am referring to is “within-market power transition from one dominant consumer to another.” In other words, I consider “emerging dominant consumer” – “commodity market” dyads as one case, and argue that we can use the concepts of “major power transition” and “systemic change” within a given market system (as opposed to within the global economy at large). Japan taking over from Germany and the US and having a systemic impact on the global iron ore market in the 1960s is a relevant example (see Chapter 4).

I argue that evaluating the impact of a single country’s emergence on global markets is justified when two conditions are met: 1) its impact on commodity markets is large enough to be systemic; and 2) its levels of import dependence are large enough for the country not to be able to be self-sufficient for extended periods of time. For instance, by 2012, China accounted for 62% of global iron ore imports (see Figure 5).

9 For the purpose of this dissertation, I define an impact as systemic when a country becomes the largest consumer in the world, or when it starts importing more than 20% of global exports, whichever occurs first.

10 For the purpose of this dissertation, I define a significant level of import dependence as above 20% of consumption.
Figure 5 - China as Share of Global Iron Ore Imports

Source: UNCTAD, 2013

2.5 Dependent Variable: Global Pricing Regimes

The core of this analysis centres around the impact of China’s rise on one of the market characteristics (governance structures) derived from the typology of global markets developed above: global commodity market pricing regimes.

Pricing regimes matter for reasons of efficiency, as well as for questions of distribution and fairness at the global level. Chinese actors’ preferences for market or strategic pricing regimes will be a determining feature of long-term trends in how these markets evolve.

I operationalize the dependent variable along a “market – strategic” continuum. This conceptualization is drawn from the VOC literature. Hall and Soskice, and Hall and Gingerich, define national systems of political economy along a “market – strategic” continuum\(^\text{11}\) (2001, 2004). A movement towards more market is labeled “marketization,” and in the opposite direction, “demarketization.”\(^\text{12}\) I define “marketization” as composed of two categories: “liberalization”\(^\text{13}\) and “financialization” (see discussion below, as well as

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\(^\text{11}\) Hall and Gingerich define the two modes of coordination as follows: “In one, firms coordinate with other actors primarily through competitive markets, characterized by arms-length relations and formal contracting. Here, equilibrium outcomes are dictated primarily by relative prices, market signals, and familiar marginalist considerations. In the other modality, firms coordinate with other actors through processes of strategic interaction of the kind typically modeled by game theory. Here, equilibrium outcomes depend on the institutional support available for the formation of credible commitments, including support for effective information-sharing, monitoring, sanctioning, and deliberation.” (Hall and Gingerich, 2004, p. 7-8)

\(^\text{12}\) I thank the participants of the Global Political Economy workshop at the Balsillie School of International Affairs in 2013 for their discussion of my Dependent Variable. In particular, I thank Herman Schwartz, Eric Helleiner and Kathryn Hochstetler who helped me broaden my definition from only “liberalization” to “marketization.” I also thank Lou Pauly for his comments on the matter.

\(^\text{13}\) See Hughes (2014, p.37), for an interesting typology of liberalization in a national context in the oil market.
Table 6 and 7). Values are compiled prior to and following China’s emergence as the dominant consumer. A qualitative description of outcomes is represented in Table 4, and illustrated in Figure 6 below.\(^{14}\)

**Table 4 – DV: Global Pricing Regime Change as a Result of China's and Japan's Emergence**

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<tbody>
<tr>
<td><strong>Pricing regimes</strong> (Benchmark vs. spot, short-term vs. long-term (L-T) contracts, volatility)</td>
<td>Fall of benchmark, opening of new spot trading platforms, large increase in volatility and frequency of trades, fewer L-T contracts</td>
<td>Suppliers’ build ships to compensate for price differentials, government decree blocking docking of ships, impasse resolved through L-T international sharing agreements</td>
<td>Doubling in frequency of negotiations, fall of one cartel, caving in of global producers towards lower prices, benchmarking system survives</td>
<td>Increased role of state, coordination of purchasing by Japanese firms, benchmarking pricing regime, regime stability, L-T contracts</td>
<td>Increased role of state, joint ventures with state partners, long-term contracts, low volatility, increased participation in global market IOs</td>
</tr>
<tr>
<td><strong>Marketization (Market 0 - Strategic 10)</strong></td>
<td>Significant marketization 8/10 to 3/10</td>
<td>Moderate demarketization 5/10 to 7/10</td>
<td>Moderate marketization 9/10 to 7/10</td>
<td>Significant demarketization 6/10 to 9/10</td>
<td>Moderate demarketization N/A</td>
</tr>
</tbody>
</table>

\(^{14}\) Colours are added to highlight the relationship between elements of Table 4 and Figure 6.
Using mixed-methods data analysis software to code my interview transcripts, I conducted a “co-occurrence” search for particular concepts in my case studies (see Appendix 2 for a more complete table). Pulling the results from searches for the co-occurrence of concepts relating to global pricing regimes for each commodity market has yielded the results presented in Table 5 below.\footnote{The total number of interviews which directly mentioned one of the four markets is 114, 38 of which mentioned the iron ore market, eight the shipping market, 36 the potash market and 32 the uranium market. I colour-coded the results for easier analysis (pale blue: 0-4 mentions; beige: 5-9 mentions; pale orange: 10-14 mentions; orange: 15-19 mentions; dark orange: 20 mentions and above).}

**Table 5: Code Co-Occurrence**

<table>
<thead>
<tr>
<th>Concept</th>
<th>Iron Ore</th>
<th>Shipping</th>
<th>Potash</th>
<th>Uranium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marketization</td>
<td>27</td>
<td>1</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>State intervention</td>
<td>4</td>
<td>3</td>
<td>13</td>
<td>19</td>
</tr>
<tr>
<td>Financialization</td>
<td>17</td>
<td></td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Increase in frequency of trades</td>
<td>7</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Spot market</td>
<td>30</td>
<td></td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Demarketization</td>
<td></td>
<td></td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>

The use of co-occurrence searches in my interview transcripts is a first attempt to use a large volume of interview data more systematically. The preliminary results serve to confirm more impressionistic recollections of aggregate interviewees’ responses. For
instance, I can say with much certainty that interviewees speaking about the iron ore market mentioned the marketization of global pricing regimes more often than did interviewees speaking about the potash or uranium markets, although it is difficult to specify how much more without the use of more precise measuring techniques.

A “concept frequency” analysis and the identification of co-occurrences allowed me to say that the concept was mentioned more than four times more often in the context of the iron ore market than in the uranium market. Similarly, I recall that interviewees very seldom mentioned state intervention (the opposite of liberalization) in the context of the iron ore market, and mentioned it more often in the context of the potash and uranium markets. But how seldom? And was the concept mentioned equally in the context of the potash and uranium markets? A manual analysis of the interview transcripts, given the volume of these transcripts, provided only limited insights. The results of the preliminary code co-occurrences mentioned above is not meant as a test, but rather as a validation of broader claims I make in the dissertation about the aggregate views of interviewees for each particular market. Another analysis of code co-occurrence can be found in Table 21.

What emerges from this analysis is that interviewees who mentioned concepts related to the marketization and the financialization of global pricing regimes were much more likely to do so when speaking about the iron ore market than when they were speaking about the potash or uranium markets. The opposite is true of state interference (opposite of liberalization), which was mentioned more often in conversations about the uranium and potash markets. This merely serves to validate my assertion that interviewees identified marketization (liberalization and financialization) forces far more readily in the case of the iron market, followed by the potash market, and then the uranium market.

2.6 Marketization

The changes I observe in global commodity markets happen within the larger forces of economic globalization, defined as “the integration of international markets in goods, services and capital” (Streifel, 2006). I define marketization as being composed of two related but distinct notions: liberalization and financialization (see Table 6 and 7 below). As such, marketization is broader than the retreat of the state (which is the liberalization part) and can be conceived as a movement away from strategic interaction between market actors.
Table 6 - Pricing Regimes (DV Indicators)

<table>
<thead>
<tr>
<th>Marketization (Liberalization + Financialization)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Liberalization</strong></td>
</tr>
<tr>
<td><strong>Market</strong></td>
</tr>
<tr>
<td>Small role of the state</td>
</tr>
<tr>
<td>Low level of state ownership</td>
</tr>
<tr>
<td><strong>Strategic</strong></td>
</tr>
<tr>
<td>Large role of the state</td>
</tr>
<tr>
<td>High level of state ownership</td>
</tr>
<tr>
<td><strong>Financialization</strong></td>
</tr>
<tr>
<td><strong>Market</strong></td>
</tr>
<tr>
<td>High frequency of pricing</td>
</tr>
<tr>
<td>New spot trading platforms</td>
</tr>
<tr>
<td>Multiple prices</td>
</tr>
<tr>
<td>Short-term</td>
</tr>
<tr>
<td>Included in major commodity indices(^{16})</td>
</tr>
<tr>
<td><strong>Strategic</strong></td>
</tr>
<tr>
<td>Low frequency of pricing</td>
</tr>
<tr>
<td>No new spot trading platform</td>
</tr>
<tr>
<td>Benchmark</td>
</tr>
<tr>
<td>Long-term</td>
</tr>
<tr>
<td>Not included in major commodity indices</td>
</tr>
</tbody>
</table>

A movement towards the *marketization* of a pricing regime is a movement towards more liberalization (less state) and/or more financialization (more interaction with financial markets). In practice, the marketization of pricing regimes entails a movement towards spot pricing, short-term contracts, high frequency of trades, volatility and less state involvement.

A movement towards the *demarketization* (strategic end of the spectrum) of a pricing regime is a movement towards more state and/or more hierarchy and power-based dynamics. Here, demarketization of pricing regimes entails a movement towards benchmarking, long-term contracts, low frequency of trades, low volatility and more state involvement.

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\(^{16}\) These include the Bloomberg Commodity Index (BCOM) (formerly the Dow Jones-UBS Commodity Index), the Goldman Sachs Commodity Index, the Thomson Reuters/Jefferies Index and the Deutsche Bank Liquid Commodity Index. Among other commodities, the Bloomberg Commodity Index includes natural gas, Brent crude oil, corn, soybeans, wheat, sugar, cotton, copper, aluminum, zinc, nickel, gold, and silver.
Table 7: Pricing Regimes (DV Indicators), operationalization

<table>
<thead>
<tr>
<th>Marketization (Liberalization + Financialization)</th>
<th>Iron ore</th>
<th>Shipping</th>
<th>Japan</th>
<th>Potash</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liberalization (0-4, where 0 is liberalized)</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Market (0)</td>
<td>Strategic (4)</td>
<td>Operationalization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small role of the state</td>
<td>Large role of the state</td>
<td>Presence of unilateral actions, regulations, state influence, Yes (2)/No (0)</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Low level of state ownership</td>
<td>High level of state ownership</td>
<td>% State ownership, Low (0)/High (2)</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Financialization (0-10, where 0 is financialized)</td>
<td>10</td>
<td>3</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Market (0)</td>
<td>Strategic (10)</td>
<td>Operationalization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High frequency of pricing</td>
<td>Low frequency of pricing</td>
<td>High volatility (0)/Low volatility (2)</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>New spot trading platforms</td>
<td>No new spot trading platform</td>
<td>Yes (0)/No (2)</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Multiple prices</td>
<td>Benchmark</td>
<td>Multiple prices (0)/Benchmark (2)</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Short-term</td>
<td>Long-term</td>
<td>% Total trades conducted on spot market, High (0)/Low (2)</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Included in major commodity indices</td>
<td>Not included in major commodity indices</td>
<td>Yes (0)/No (2)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Marketization (Liberalization + Financialization), compound variable: (0-10)</td>
<td>8</td>
<td>3</td>
<td>5</td>
<td>7</td>
</tr>
</tbody>
</table>

I define liberalization as “an outcome in which the market progressively replaces government as the mechanism through which resources are allocated” (Garrett, 2000, 941). I measure liberalization as the level of state ownership, and the presence or absence of state influence.

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17 Prior and post China’s (or Japan’s) emergence as number one consumer.
influence on pricing regimes, whether through government influence, regulation or unilateral actions. I define financialization as the “strengthening interaction of commodities markets with the financial system over the last decade (…)”, i.e. returns from commodities are increasingly pooled with returns from pure financial assets (‘pooling effect’)” (Hughes, 2014). I measure financialization of pricing regimes as the frequency of trades; the presence of spot trading platforms; the presence of a benchmarking system that sets the price for long periods of time; the percentage of trades conducted on the spot market; and whether a commodity is included in major commodity indices.

Should we be surprised by the fact that the emergence of a state-led authoritarian economy such as China leads, in some cases, to the marketization of global market pricing regimes? Some may suggest that China should be expected to cause marketization, although little, if any, evidence of this can be found in writing. An exception is the 2014 book, By All Means Necessary: How China’s Resource Quest is Changing the World, by Elizabeth Economy and Michael Levi (pp. 36-40), which tells the story of the marketization of the global iron ore market (which I describe in more detail in Chapter 4), although the authors agree that this turn of events was rather unexpected.

China’s impacts on global markets are still poorly understood empirically because, among other reasons, the impacts are so recent, and because China itself is changing very quickly. But why, at least deductively, would some scholars expect marketization impacts?

One could point out that the last two hegemonic powers, the US and the UK, have had a liberalizing impact on a variety of global markets following their emergence as dominant powers (Valiante, 2013). Would marketization be a natural preference of major emerging dominant powers? Friederich List’s 1841 “National Systems of Political Economy” (Fallows, 1994; Chang, 2002; Rodrik, 2011) suggests a simple explanation for this behaviour: after reaching a certain level of development and after achieving a position of dominance in certain global markets, the dominant power’s interest becomes forcing subordinate economic powers to open their economies to global market forces. But the US and the UK had a global marketization impact at a markedly different stage in their domestic levels of development – they were home to quite different economic structures at the time, compared to China’s, and they faced different international environments.
Some may also argue that the marketization trends I observe are just part of a broader and natural process of global convergence. But my tracing of the process through which it actually happens unveils a more complicated story. Although many commodity markets are experiencing some levels of liberalization, the trends I observe are unequal and their patterns are substantively different. In fact, marketization trends are far from overwhelming (oligopolies are hard to displace). There are always winners and losers and tugs of war between various interest groups who fight for a particular outcome. There are also unintended consequences. It may also be that at certain times in history, outcomes, at least for a period of time, tend to resonate across markets and towards a certain distant horizon (globalization, financialization). But if we do not carefully trace the process of marketization (and its reversals), not only will the causal mechanisms behind institutional change remain obscured, but within-case reversals (such as the marketization - demarketization - marketization pathway in the iron ore market, following Japan’s and then China’s emergence), would also remain hidden from view.

“The ‘financialization’ wave that has swept global markets over the past 30 years has only recently included extractive commodities, and many of these commodities remain outside exchanges or are excluded from major commodity indices. Iron ore, tin, uranium, potash or rare earths, for instance, are not included in major commodity indices such as the Dow Jones-UBC Commodity Index, the Goldman Sachs Commodity Index, the Thomson Reuters/Jefferies Index or the Deutsche Bank Liquid Commodity Index. They are just beyond the financialization frontier” (Massot, 2013).

In other words, I argue here that just as markets are not “natural,” neither is marketization a “natural” process. If there is currently a general marketization tendency across markets, it is not apolitical. Market changes are a political economic process; they consist of an unsettling of existing power relations in global markets. What some see as a natural trend is in fact the displacement or reorganizing of existing power hierarchies, which are replaced by different power distributions, not a tendency towards more apolitical markets. Marketization occurs to the benefit of some actors and at the expense of others. Change in a particular direction is the result of a victory by certain interest groups, and as such, needs to be explained, much like the fall of the Bretton Woods regime in the 1970s needed to be explained (Helleiner, 1994; Abdelal, 2009; Best, 2004).

Global market movements, both over time and across markets, are not unilateral. There has been a push and pull of marketization/liberalization forces throughout the
twentieth and early twenty-first centuries, not a constant movement towards one type of market arrangement. Polanyi’s pendulum movement metaphor is apt here. Garrett’s study of different aspects of globalization (2000) also provides a good example of how different international economic regimes (trade or finance, for instance) have not globalized to the same extent or following the same causal logic.

In addition, China is a different domestic economic power than were the US or the UK at the time of their emergence. For this reason, many China scholars expect that China will have a statist impact on global markets, rather than the opposite impact.

In fact, many industry insiders persist in saying that certain commodity markets are not fungible enough to become fully commodified and financialized (some include iron ore in this category, and most include potash). In other words, we cannot assume financialization. To the extent that we witnessed a movement towards increasing marketization, liberalization and financialization from the 1980s until the Global Financial Crisis (GFC) of 2008, this coincides with a period of stability and lack of financialization in both of my cases. Only after the GFC, and after some retreat in liberalization and financialization globally, have the two markets experienced some movement towards increased marketization. How do we explain this timing?

China does not in fact have a uniform marketization impact on global markets (thus the argument that any emerging power would have a marketizing impact on global market structures is insufficient; see also the Japan case). Therefore, the burden of explanation remains relevant and necessary, from the moment we recognize that financialization is not unavoidable, or even equal, across cases.

Furthermore, countries’ foreign economic policy making is not necessarily an expression of their domestic economic policy making (for example, the US was home to liberalized domestic markets for a long time before it started promoting liberalization overseas) (Helleiner, 1994; Abdelal et al., 2010).

So the difficulty is predicting when and why China or any systemically relevant power would have a marketization impact on global market structures. For instance, Japan’s emergence had an opposite impact on the global iron ore market. Indeed, I argue that the state of the market prior to a given systemically relevant country’s emergence, as well as that country’s domestic market structures, are both crucial to explaining marketization outcomes.
Why else is China’s marketization impulse surprising? First, for marketization to even occur, one needs to admit that it is possible. This means admitting that global markets are not competitive to start with, which we have now seen is often the case in global extractive commodity markets and beyond (Nolan, 2012).

Second, if China is having a marketization impact on global markets, it is not simply because “Chinese actors are powerful, and they get what they want,” which would be one of the claims deriving from Hegemonic Stability Theory (that is, dominant states prefer global liberal economic regimes, and will coerce other powers in fulfilling their aims). In fact, my cases show that at critical moments, dominant Chinese stakeholders do not get their preferred outcomes internationally. In this particular light, whether China is actually in a powerful position at all is not something we should take for granted. In this case, what impact should we expect of a domestically weak China on powerful global oligopolies? The best bet would be “no change at the systemic level,” as there is no capacity for impact. Many liberal scholars are actually expecting this result (see Ruggie's power and purpose argument, 1982).

China’s marketizing impact is also surprising because the most powerful Chinese actors do not always want marketization. In the iron ore market, for instance, the fall of the benchmarking regime was not in the interest of the most powerful Chinese stakeholders, the large steel SOEs and holders of import licenses in 2010. It was also not a policy or goal of the relevant organs of power in this market in China, such as the NDRC, the State Council, or the lead negotiator, the China Iron and Steel Association (CISA). Changes in relations of power, including financialization, are always in the interest of some actors at the expense of others. In this case, however, marketization was going against the interests of the most powerful Chinese stakeholders, and was thus in many ways unintended.

Lastly, for those who argue that China’s domestic markets are already very “market-oriented” and that this is why we observe symmetrical marketization impacts globally, suffice it to say here that the fragmented Chinese domestic markets I study are not working efficiently under clear rule-of-law conditions (in other words, they do not meet the definition of marketization I develop here). The Chinese domestic markets that I am studying are not only fragmented and “illiberal,” but they are also messy, and in many ways out of the reach of Chinese top-level regulators. The iron ore market, for instance, is working under conditions that are not efficient and competitive, which makes the symmetry argument
difficult to sustain. The Chinese government has reacted to this problem by trying to encourage consolidation of the iron ore industry and the licensing process, only to then reverse course and liberalize the licensing process altogether in 2013. In other words, and as the rare earths industry illustrates, a higher number of producers is not always an indication of higher levels of efficiency, competitiveness or competition. Market characteristics are multidimensional.

On the other side of the debate, but following the same logic, are observers who expect China to have a statist effect on the global economy. This is because many expect certain illiberal market characteristics, or state-market relations present in China, to be “exported” by Chinese stakeholders through their behaviour at the global level. But this intuition is also overly simplistic. Statism does not get expressed to the same degree in all my cases, and while the impulse is present, it is certainly not translating into clear symmetric impacts on global market structures. In fact, the opposite outcome is arguably more evident empirically. Therefore, I propose that a given country’s foreign economic policy and global impact are not a reflection of the nature of its domestic economic system (a liberal market economy can certainly conduct illiberal foreign economic policies or have a demarketization impact on a certain global market, and vice-versa). Whether Chinese actors have a de/marketization impact globally, or even whether they decide to advocate for a larger/smaller role of the state in markets, need not be a reflection of the situation within their borders. Understanding the interaction between market structures at both domestic and international levels, and the resulting power asymmetries, is crucial for explaining outcomes.

2.7 When Do Market Actors Prefer Marketization?

When do large consumer or producer firms prefer marketization? This question has not been answered conclusively in the economics literature (Levenstein and Suslow, 2006). There are many reasons for firms to coordinate behaviour, as well as to cheat against one another, and we have seen the establishment of coordinated pricing regimes in a variety of situations with contrasting fundamentals.

There are two major types of predictions with regards to marketization in the IPE literature, which will be discussed further in Chapter 3: the ideal-typical Liberal position, which posits that states gain by operating in open, free-market environments; and the Hegemonic Stability Theory (HST) position, which posits that dominants states will also
prefer open markets, and will especially seek to coerce international market players into more open and free-market practices. HST’s argument only holds if global markets are not already liberal, and if the domestic conditions of the dominant player in that particular market would benefit from such open and liberal markets. It adopts the perspective of a dominant state, even though global markets are now populated with larger and smaller firms that may have divergent preferences for more or less competitive markets.

2.7.1 *Open economy politics*

The Open Economy Politics (OEP) literature has identified conditions under which firms within a national economy will prefer trade liberalization. This approach is based on an assessment of market actors’ interests, which in turn is based on their relative positioning in their national vs. the global economy (Lake, 2009). Within this literature, some scholars have focused on the impacts of globalization (or exogenous easing of international exchange (Frieden and Rogowski, 1996)) on domestic political economic outcomes. Here, authors have focused on factors of production, industry cleavages, or a combination of both, as main explanatory variables (Frieden and Rogowski, 1996; Rogowski, 1989; Hiscox, 2001). These outside-in approaches to the problem of exposure to international trade point to possible answers to the question of interest here: When and why do firms prefer open markets? However, an important distinction needs to be made as per contrasts in the objects of study. OEP research, as well as its scholarly ancestors (for instance, Katzenstein, 1978), is ultimately interested in explaining *national economic policy*. This dissertation is interested in explaining changes in market structures at the *global level*. As such, my dependent variable is located outside of the national policy-making arena of the state.

Despite the fact that OEP has been mostly interested in national-level economic policy making, and despite the fact that this dissertation poses an inside-out question, as opposed to an outside-in question, the literature offers potential responses. Taking inspiration from Frieden and Rogowski’s work, one could surmise that Chinese firms relying on abundant factors of production would tend to prefer open markets. Whether we consider the Chinese economy to be abundant in labour or capital, it becomes apparent that factor endowments do not differ enough between the markets under study in this dissertation to explain divergent international preferences and behaviours. Indeed, land is scarce for all three case studies (that
is, China is heavily dependent on imports for all three), whereas relative abundance of labour and/or capital, a priori, does not vary enough to explain divergences.

Pushing the reasoning a little further is interesting. One could argue that the potash market’s main constituents, for instance, are farmers, whereas one of the iron ore market’s key constituents is real estate owners in large cities, or owners of capital. Could this give us traction? It may, but following the logic of cleavages in factors of production, one would need to conclude that since China is land-scarce, it would favour liberalization in the iron ore market. In fact, as we will see, the story is quite a bit more complicated than this. In fact, key players in the iron ore market did not want the marketization of global pricing structures, and second, among other things, central Chinese state organs have been working for the past decade to liberalize the interface between the domestic and the global potash industry. As we can see, cleavages along factors of production offer blunt tools in the cases under study here. The study of within-market variation in the iron ore case also indicates that industry cleavages are insufficient to explain outcomes. There are both within-industry variation in preferences and variation across markets endowed with similar factors of production that are not best captured by the tools described above.

2.7.2 German historical school

Coming from a different angle, the German Historical School argues that dominant economies only start preferring open markets when it benefits their domestic industry. Emerging economies choose to protect their own domestic industries until their firms are competitive with firms in developed economies (List, 1909). The German Historical School introduced an aspect of power, interests and sequencing in firms’ likelihood to prefer free and open markets, which are important, and much needed components.

But the same limitation remains with this literature. Following this school of thought, an emerging economy should prefer protectionist strategies, which is to say protectionist state policies. Later on in their development process, when their national firms are dominant, emerging economies’ preferences will then evolve until they align with those of developed economies, in favour of the liberalization of the *national interface* (import restrictions, quotas, etc.) with the global economy. Again, the reality of Chinese preferences, behaviour and impact is more complex, not least because some impacts are unintended.
However, the built-in argument of the German Historical School, which other scholars have followed up on (Chang, 2003), is useful. It is cognizant of a country’s stages of economic development, and says that only when national economies have developed strong domestic firms will they support free and open markets abroad. This is an argument that resonates with Hegemonic Stability Theory and will be addressed again at various points throughout this dissertation.

2.7.3 Relationship with price trends

Describing and explaining the impact of China’s emergence on global market institutions, and their variation, is difficult without a thicker definition of markets. Price series analyses do not actually provide rich enough empirical evidence to allow us to understand the multidimensional changes that have occurred in market structures in the past 15 years.18

Figure 7 - Commodity Prices (1980-2012)

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Price Index</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper</td>
<td>Price Index grade A cathode, LME spot price, CIF European ports</td>
<td></td>
</tr>
<tr>
<td>Aluminum</td>
<td>Price Index 99.5% minimum purity, LME spot price, CIF UK ports</td>
<td></td>
</tr>
<tr>
<td>Iron Ore</td>
<td>Price Index China import Iron Ore Fines 62% FE spot (CFR Tianjin port)</td>
<td></td>
</tr>
<tr>
<td>Tin</td>
<td>Price Index standard grade, LME spot price</td>
<td></td>
</tr>
<tr>
<td>Nickel</td>
<td>Price Index melting grade, LME spot price, CIF European ports</td>
<td></td>
</tr>
<tr>
<td>Zinc</td>
<td>Price Index high grade 98% pure</td>
<td></td>
</tr>
<tr>
<td>Lead</td>
<td>99.97% pure, Price index LME spot price, CIF European Ports</td>
<td></td>
</tr>
<tr>
<td>Uranium</td>
<td>Price index u3o8 restricted price, Nuenco exchange spot</td>
<td></td>
</tr>
</tbody>
</table>

Source: IMF Data, 2012

Often, however, existing tools that seek to evaluate global commodity markets limit themselves to price trends. One of the few recent articles that offers a sophisticated political

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18 I thank Eric Helleiner for raising the question of market stakeholders’ preferences in relation to price trends.
economic analysis of *global* commodity regimes (concentrating on the oil market) was written by Colgan, Keohane and Van de Graaf, and identifies “dissatisfaction with existing energy regimes” as a variable in explaining timing of innovation. But the measure of dissatisfaction is solely based on price levels. Apart from the fact that producers are not always dissatisfied when prices drop (the current high production/low price scenario in the iron ore market is producer-led), price trends can also be similar across markets, for instance in the run-up to the Global Financial Crisis in 2008 (see Figure 7 above). Yet, these trends obscure very different dynamics across distinct commodity markets. Price trends do not provide a satisfactory explanation as to why the iron ore market pricing regime fell apart in 2010, or why the 2012 potash benchmark regime did not.

Relying on deductive economic reasoning would suggest that large producers have an interest in marketization of pricing regimes when prices are rising (they are price makers, have the upper hand, and would rather play one consumer off against the other), and an interest in demarketization when prices are dropping (they are in a weaker position, are price takers, and would rather function under a more predictable and stable pricing regime). On the other hand, large consumers should have an interest in demarketization when prices are rising (they are price takers, and would rather rely on more stable prices), and in marketization when prices are dropping (they have the upper hand and would rather play one supplier off against the other, renege on contracts, and so forth) (see Table 8 below).

**Table 8 - Deductive Pricing Regime Preferences (Producers and Consumers), by Price Trend**

<table>
<thead>
<tr>
<th></th>
<th>Price trend up</th>
<th>Price trend down</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Producers</strong></td>
<td>Marketization</td>
<td>Demarketization</td>
</tr>
<tr>
<td><strong>Consumer</strong></td>
<td>Demarketization</td>
<td>Marketization</td>
</tr>
</tbody>
</table>

Prices absolutely affect market stakeholders’ incentives, and play an important role in determining market actors’ preferences for global market pricing regimes. We will see that in some cases, price trends do in fact provide a powerful indication of market actors’
preferences, but this logic alone does not explain outcomes in many other cases being examined here.

It is worth noting that in a world of volatile commodity prices, it is difficult to establish when actors consider mid-term, cyclical trends, or short-term price cycles, or whether their calculations are even accurate. It is difficult to define what “price-based” preferences are *a priori*. For instance, Chinese small and medium enterprises (SMEs) chose to break rank and procure iron ore on the emerging spot market in 2010, despite the fact that this move would lead to higher and more volatile prices in the short term. To complicate things, just five years later, declining price trends have priced many of them out of the market altogether because they have higher operating costs.

But even presuming that actors look at short-term price trends (say, a few months’ horizon), the logic described above does not hold in many of my sub-cases. For one thing, large Chinese and Japanese iron ore importers have routinely behaved differently and expressed different preferences *concurrently*, and this is despite *the same global price trends*.

In another example, the global potash suppliers did not push for the marketization of the global potash market during the commodities boom leading to the Global Financial Crisis (or at the very least, were not successful in doing so), an outcome diverging from the iron ore case (which, arguably, was subject to similar expected price trends). Similarly, the Russia-Belarus potash exporting cartel fell apart during a downward price trend. Furthermore, Belaruskali and Uralkali continue to undercut each other, not the other way around, as the price trend logic would suggest. In addition, some Chinese policies that target global market structures have persisted throughout upward and downward price trends. At other times, the behaviour of the key Chinese importers has also run contrary to expected behaviour given the price trends. For instance, the large Chinese iron ore consumers had clear preferences *against* the marketization of the global iron ore pricing regime in 2009, despite strong downward trends in prices.

Also, it is worth remembering that a sharp decrease in global commodity price does not necessarily affect the large consuming firms in intuitive ways. In the iron ore case, the recent drop in prices is forcing the closure of many small Chinese iron ore producers, in effect benefitting the larger, more cost-effective mining firms. Finally, this kind of reasoning does not leave much room for the role of actors outside of the main consuming/producing
firms. For instance, in the Chinese iron ore benchmark case, the leading importers did not want the end of the pricing regime (marketization), but in the end, the behaviour of small firms led to that outcome.

In fact, this logic would suggest that producers would have the upper hand in times of rising prices, and consumers would have the upper hand in times of declining prices. In both of these cases, the preferred outcome would be marketization. What, then, explains instances of demarketization?

In other words, price trends are an important component of the equation, but taken alone they cannot fully explain behaviour in global markets, as they suffer from at least two core shortcomings:

First, they do not help us identify which market stakeholders’ preferences will prevail internationally, as we have seen that consumer and supplier firms should have opposite preferences in reaction to a given price trend. This is also true domestically, as large and small firms operating in the same domestic industry exhibit different preferences towards global pricing regimes. My theoretical model seeks to address this shortcoming.

Second, they also cannot explain why consumers (producers) sometimes have preferences that do not align with expected preferences given the price trend. My argument also seeks to address this shortcoming (see Chapter 3).

Price trend-based rationales tend to predict the same behaviour given certain price trends or certain market positions. For instance, it might predict that the emergence of a large consumer in an oligopolistic market leads to a particular outcome. However, my empirical cases not only reveal that different emerging consumers have different preferences towards global pricing regimes, but that the same consumer, for example, China, can have different preferences towards global pricing regimes as well, depending on the market.

In addition, we are witnessing an era of deep structural changes, and this is why a multifaceted political economic analysis brings to light more complex dynamics at play.

“Prices alone may not help us to identify the onset of new periods in world commodities regimes history, and inferring causal relationships on the basis of price alone, and especially in times of structural break, is not sufficient. Qualitatively, new periods may be characterized by higher prices, but they may also be characterized by higher volatility, transfer of production locations, prices being supported by different dynamics or mechanisms, or even by characteristics that are not immediately expressed by prices. Therefore
projections based on past price trends alone may not be helpful.” (Cashin, Liang, and McDermott, 2000)

In conclusion, preferences for marketization or demarketization of global pricing regimes are determined to some extent, but not exclusively, by price trends. This dissertation seeks to further specify the conditions under which the dominant players on either side favour the marketization of existing pricing structures, and how to explain which side gains the upper hand.
CHAPTER 3 – TWO-LEVEL POLITICAL ECONOMY OF GLOBAL MARKET CHANGE

The goal of this chapter is to develop my two-level argument after situating it within the broader literature. I start by outlining two major alternative approaches, including their limits, to the questions I ask in this dissertation: the Liberal approach, and Hegemonic Stability Theory approach. I then provide a review of the literature on existing two-level frameworks in the IPE of resources literature. Finally, I present my two-level model on the impacts of China’s emergence as a dominant consumer of commodities. I make the case that market power asymmetries between suppliers and consumers influence both the likelihood and direction of change at the global level.

First, I argue that the likelihood of market change is greatest in cases when power transitions transform relations of market power. Market change is also more likely in situations of great asymmetry between domestic and international market players. This is because asymmetries lead to higher levels of instability in market exchanges between large domestic market stakeholders and global market stakeholders. Second, I argue that the direction of market change is also determined by relative positions of market power. Asymmetric positions of power provide strategic advantages, since the dominant side’s preferences for market institutions at the global level are more easily expressed. But market players’ preferences for pricing regimes are influenced by the relative position of market power they occupy in their own market as well as relative to international market players.

3.1 Alternative Explanations

The literature that looks at the impact of rising powers on the global economy has a long history. With respect to the current context, debates have focused on the potential impacts of China’s rise on the global economy. This debate has mostly been separated into two camps. In one camp, status quo scenarios predict that China will not disrupt existing international institutions (Ikenberry, 2008; Johnston, 2013; Buzan and Cox, 2013; Steinfeld, 2010; Bergsten et al., 2008). In the other, conflict scenarios foresee China’s rise, its thirst for resources and its state-centered economic development as leading to destabilizing, protectionist or mercantilist behaviour on the global stage, and thus to economic conflict (Vivoda, 2009; Economy, 2010; Calder, 1996; Kane and Serewicz, 2001; Andrews-speed et al., 2004; Bremmer, 2010).
I argue that the two sides in this debate have three key shortcomings. First, both view global markets as uniform. In contrast, I make the case that global markets vary significantly in their institutional structures. Second, both sides characterize global markets as liberal, whereas I will show that this is not always the best way to characterize these markets. Third, both arguments view China’s impact on the functioning of the global economy as uniform across markets, that is, its impact is either statist in nature, or it is neutral. In contrast, I will show that Chinese impacts vary significantly across markets.

3.1.1 Liberal approaches

Within Liberal approaches, there is an embedded claim that China will integrate into existing international economic institutions without effecting change. For example, the “China as a status quo power” side of the debate argues that China’s economic interdependence with the global economy will lead to a smooth integration into international market institutions and into the global economic order more generally (Steinfeld, 2010; Johnston, 2003; Ikenberry, 2008; Bergsten et al., 2008; Keohane and Nye, 1977). My argument, while remaining in close dialogue with dominant Liberal theories, departs from some of its conclusions (International Relations), which predict China’s integration into global liberal economic regimes (Ikenberry, 2008; Johnston, 2013; Buzan and Cox, 2013; Steinfeld, 2010; Bergsten et al., 2008).

Liberal theories assume that the existing economic order is liberal and market-based. I argue that this assumption ignores the political economy of global markets. In fact, many global commodity markets are oligopolistic or cartelized, and leave more room for strategic coordination than is usually acknowledged (Nolan, 2012; Fligstein, 1996; Foster and McChesney, 2012). As Strange highlighted, citing Adam Smith, we cannot ignore the “endemic tendency of business people to combine together against the consumer” (Strange, 1996, p.149). If all markets are not liberal, it follows that China’s emergence can actually lead to liberalization, or marketization of market regimes, a possibility that is overlooked by an approach that assumes that markets are liberal. A liberal approach is not well attuned to the possibility that China’s impact would weaken the positions of powerful resource companies, positions that have been established and strengthened over the latter half of the twentieth century, or in other words, that China’s impact would lead to marketization.
Some Liberals predict that China will integrate into global liberal market institutions based on the fact that it has much to gain from doing so (i.e., it is not weak, and it wants to integrate). This version of the argument puts the agency more firmly in the hands of Chinese state and business leaders as making a conscious rational policy choice to integrate into existing global institutions because it is in their interest to do so (Steinfeld, 2010; Bergsten et al., 2008). But this is not necessarily how things are seen from China’s perspective; China faces very oligopolistic global markets, which casts doubt on the assumption that China will integrate into global liberal market institutions because it feels it has much to gain from doing so, or that it will respond positively to related calls for it to liberalize its own domestic markets. Unsurprisingly, Chinese politics scholars have also debated the issue (Johnston, 2003; Johnston, 2013). This Liberal argument may hold true on some level, but not in the cases under investigation here, because it under-specifies global market dynamics. Asking China to integrate into oligopolistic global markets results in asymmetric relations of power when Chinese consumers are fragmented (which is the case in the iron ore market), and the Chinese players are very aware of this disadvantageous position.

Other Liberal scholars predict that China will integrate into global liberal market institutions because it has a weak capacity for shaping global institutions or effecting global change (that is, existing economic institutions are too entrenched to be impacted in any meaningful way by emerging Chinese actors (Ruggie, 1982; Ikenberry, 2008)). This Liberal or Neoliberal approach derives its findings from the argument that the joint presence of post-hegemonic yet dominant US economic power, combined with the existing/path-dependent liberal world order, remains too powerful for any challenger to disrupt (Ruggie, 1982). The multipolar world theory also seeks to paint a picture of China supporting a transition toward a non-hegemonic world (Buzan, 2010). But this perspective usually leads its authors to agree in essence with the Liberal conclusion that a peaceful, mostly non-disruptive integration into existing institutions is most likely (Buzan and Cox, 2013).

Others argue that China will not in fact be able to impact global economic institutions because it lacks the capacity to do so, as “we are already inside them, they are not inside us” (Nolan, 2012). Aside from the fact that China’s weakness in shaping global institutions is unequal across markets, the major issue I have with this line of reasoning is that it equates weak capacity with an absence of impact. Weak capacity is definitely present in China, such
as when China was unable to carry out a coherent procurement policy because of its fragmented iron ore market. But where I diverge from these particular Liberal predictions is on the point that it was the very weakness of the Chinese domestic iron ore market structures that led to the fall of the benchmarking regime, which is a significant impact.

To summarize, my biggest point of disagreement with Liberal theories is not that some key Chinese actors do not want to integrate into global markets (and will do so when it is to their advantage), or even that in many ways China has little capacity to effect change. Rather, it is because 1) China is in fact having systemic impacts on global market structures; 2) those impacts are not uniform, but varied; and 3) this is sometimes happening despite the will of powerful Chinese interests, and in other cases, despite its weak capacity for steering the direction of change. In fact, the most dramatic change in global market structures – a change in the direction of marketization – resulted from a domestic position of weakness, rather than a position of strength. Interestingly, this turns Ikenberry’s 2008 liberal argument on its head. Ikenberry predicts a co-optation of emerging economies into existing global economic institutions (Ikenberry, 2008), since economic interdependence leads to integration within existing market structures (Keohane and Nye, 1977). I see a transformation of existing not-so-liberal global economic institutions as a result of China’s emergence.

In order to fully understand how this is possible, I argue that we need to take into account market dynamics at both the domestic and international levels. Arguments about the likelihood or direction of systemic change cannot be made assuming uniform global liberal market institutions, even if based on detailed knowledge of Chinese domestic markets.

3.1.2 Hegemonic Stability Theory

Another main body of literature referenced in this dissertation is Hegemonic Stability Theory (HST) (Kindleberger, 1973; Krasner, 1976; Gilpin, 1987). HST, like Liberal theory, is composed of varied, and not always compatible, lines of reasoning. I would like to reflect on two particular arguments within HST.

First, HST predicts instability in the absence of an economic hegemon. Here, one contemporary application is that China’s rise, its thirst for resources and its state-centred economic development will lead to destabilizing, protectionist or mercantilist behaviour on the global stage, and thus to economic conflict in a context of declining US power (Vivoda,
This aspect of HST resonates with Realist scenarios, which are more pessimistic with regards to the likely global outcomes of China’s emergence. One claim embedded within this line of reasoning is that China has the capacity not only to fulfill procurement strategies and objectives, but also to influence global market structures to its advantage. The second embedded claim is that Chinese stakeholders actually want to effect change on global market structures in the direction of mercantilism. These arguments derive their conclusions from a positive assessment of China’s strengths, and assume that China has coherent ambitions that are rooted in a strong state. As defined (and then refuted) by Kennedy and Cheng, “a more powerful China, the thinking goes, is likely to promote a statist and more hierarchical brand of international governance that is inconsistent with the open, multilateral governance architecture that has emerged and developed since the end of World War II under American and European guidance” (Kennedy and Cheng, 2012, 9).

This reading of HST is not the most accurate or useful when analyzing China’s current emergence as a key actor in global commodity markets. First, it assumes, as do Liberal arguments, that the existing economic order is liberal and market-based (the opposite of, say, state-led or oligopolistic economic orders). Second, it does not allow for the possibility that China’s impact on global resource markets lies somewhere in between two extremes – that is, either peace or conflict – and it displays an unequal pattern of integration in the global economy in different issue areas (or even within the same issue area). Here, I am channelling Garrett (2000) and his work showing unequal causal pathways and outcomes in distinct sub-components of globalization.

In addition, most revisionist power arguments do not allow for the possibility that China’s bold behaviour internationally could be the direct result of domestic fragmentation or weakness, rather than stemming from a position of strength. Indeed, “it is China’s internal fragility, not its growing strength that presents the greatest danger” (Shirk, 2007). However, whereas Shirk argues that Chinese leaders’ weakness can lead them to act brazenly in order to appear strong in front of a domestic audience, I argue that the situation can be even more complicated than that; in fact, bold actions by Chinese stakeholders sometimes result from miscalculations, or from different kinds of domestic weaknesses, such as collective action
problems (rather than arising from crises of legitimacy, for instance). Even in cases in which one might expect an authoritarian state to “take over” procurement policies – such as the iron ore case in which state organs (CISA, SOEs) tried to “take over” lead negotiations and keep the benchmark price – this tells us little about the likely outcome of these behaviours or about the likely direction of global market change. For this, we need to take into consideration domestic levels of fragmentation and international market characteristics.

This is where a second line of reasoning within HST is fruitful. Hegemonic Stability Theory scholars have also “posited that large dominant states possess strong preferences for free and open international exchange, and, in turn, coerce, induce or persuade other states into opening their markets to foreign trade and investment” (Krasner, 1976; Gilpin, 1987, in; Lake, 2009, 224, emphasis added). This side of the story, in line with Friedrich List’s 1841 National System of Political Economy (List, 1909), certainly seems to explain the UK’s and the US’s emergence to economic hegemony, and has to do with an emerging hegemon finding it in its interest to force open global markets over which it is dominant. Following this line of reasoning would lead one to argue that as China grows, its actors will want to coerce other global market actors towards free and open international exchange.

This reading of HST actually allows us to consider the possibility that global markets can be marketized, which is a very valuable insight. However, it also supports the argument that dominant emerging economies will have a default preference for open and free exchanges. This does not fit the China case either. First, despite China’s large – and systemically relevant – size in most global commodity markets, it has often remained in a position of weakness. Much of the Chinese domestic commodity industry is uncompetitive, very fragmented, often inefficient and wasteful, and unable to compete with the large commodity enterprises internationally. It would be a mistake to call the Chinese iron ore industry dominant globally simply because of its size.

There are two additional issues with this reading of HST. One is that China’s behaviour in different commodity markets is not uniform, even across similar cases, as we will see below. This shows either that China is not equally successful in all cases, or that it does not seek the same outcome in all cases. The important questions then become a) what explains its preferences for certain global economic regimes, and b) why and when it is successful. A second issue is that this aspect of HST theory does not delve into the
divergences between domestic interest groups. To say that the Chinese SOEs’ and CISA’s policy goals in the iron ore market were to “coerce, induce or persuade other states into opening their markets to foreign trade and investment” (Lake, 2009, 224) in 2010 would be false. After all, they were benefitting from their privileged access to the suppliers’ resources despite their oligopolistic situation, prior to the fall of the benchmarking regime. In other words, and despite HST’s useful insights, it is still a unitary state theory that does not allow for a divergence of interests within the Chinese state. It also does not allow for the weakest actors’ behaviour to have unwittingly caused marketization. Again, this only fully makes sense when we take into account the variation in international market structures.

3.2 Foundational Scholarship

3.2.1 Domestic vs two-level explanations

A review of major commodity markets in which China became systemically relevant suggests that dynamics are not easily explained by either exclusively inside-out or systemic explanations. There is good research on both domestic explanations and systemic explanations, but less on their interrelation (Buthe, 2014). This project seeks to go beyond the domestic/international dichotomy, and to theorize about the mutual influence of domestic-level and system-level market institutions.

The characterization of IR studies as an “inside-out” (second image) and “outside-in” (second image reversed) dichotomy really refers to the selection of different explanatory variables in response to very different kinds of research questions. “Outside-in” research delves into the role of global forces in explaining domestic outcomes, whereas “inside-out” research more often than not focuses on the role of domestic variables in explaining the foreign (economic) policies of states on the global stage (as opposed to global regimes in and of themselves). Katzenstein’s and Krasner’s work are relevant here (see Putnam, 1988, for a review). However, I am explaining more than “the determinants of the foreign economic policies of states” (Katzenstein et al., 1998), as my dependent variable, global market institutional change, is located outside of China’s national boundaries.

I propose that for those of us interested in explaining global outcomes, rather than working with Gourevitch’s dichotomy, we synthesize Waltz’s second and third images (Lake, 1997, 757, 762, in Cohen, 2008, 126). Indeed, my project seeks to leverage both the
second and third images at the same time, and study the interrelation between domestic and international market structures, and their impact on global outcomes.

To date, efforts that claim to go beyond the inside-out and outside-in divide in studying China’s impact on the global economy – such as work that appears in edited volumes like David Zweig & Chen Zhimin’s 2007 “China's Reforms and International Political Economy,” and Gregory Chin’s chapter in that volume, “Between Outside-in and Inside-out: The Internationalization of the Chinese State” – do not actually provide theoretical architectures, but rather empirical case studies, or narratives, but not measurable relationships and generalizable patterns.

Gourevitch’s seminal 1977 work on international trade and domestic coalitions (Gourevitch, 1977) and his 2005 book with James Shinn (Gourevitch and Shinn, 2005) also inform this research. However, whereas Gourevitch and Shinn seek to explain the variation of coordination or institutional variation, I do not so much seek to explain original institutional set-ups, but rather institutional change.

Because this type of work is trying to go beyond simple inside-out/outside-in approaches, it is broadly inspired by the legacy of Putnam’s two-level games (Putnam, 1988; Mo, 1994). In my cases however, unlike in Putnam’s cases, we are working beyond unitary state explanations because we are not dealing with two states, but rather one complex, fragmented authoritarian state and multiple global market stakeholders operating with varying degrees of coordination. The questions I ask, and the context my cases are situated in, thus warrant a different kind of theoretical framework.

In more ways than one, my project is inspired by the same motivations as Bates’ “Open-economy Politics: The Political Economy of the World Coffee Trade.” As he explains:

“Writing in 1976, Peter Katzenstein called for an end to the division between the study of international politics and domestic politics. A decade later, Stephan Haggard and Beth Simmons renewed the call. ‘We suggest,’ they wrote, ‘a research program that views international [politics] not only as the outcome of relations among states, but of the interaction between domestic and international games and coalitions that span national boundaries.’ On the one hand, the interval between these pieces underscores a lack of progress in the program set out by Katzenstein; on the other, it highlights its continued significance. In recent years, Frieden, Rogowski, Putnam, Simmons and others have contributed to this research agenda, which might be called the search for a framework for research into the politics of open economies. I, too, seek to
contribute to this framework and do so by focusing on the domestic politics of
the international market for coffee.” (Bates, 1997, 3)

Bates argues that the policies of nations towards the international market are not
defined by nations’ locations in the international environment (capabilities), but rather are
defined domestically in processes structured by institutions. In (rightly) positioning himself
against exclusively systemic/structural theories (such as the Hegemonic Stability Theory,
more on this below), however, Bates may be straying too far into the “other camp,” that is,
the exclusively “inside-out” camp. There may be a methodological reason for this. Bates
studied the ebbs and flows of one international commodity market institution (the
International Coffee Organization) and this allowed him to study its relationship with the
varying domestic politics of producer countries. This set-up did not allow him to evaluate,
however, whether there is something about this particular global market institution that has
causal power as well. In this dissertation, by selecting two global markets that share some
characteristics but not others, the causal power of international markets becomes apparent. In
his 2009 critique of Open Economy Politics, David Lake paraphrases Keohane (Keohane,
2009) when he argues about OEP that “in its focus on micro-level and individual incentives,
it fails to pay sufficient attention or, worse, is blinded to big, macro-level changes in the
international economy and lacks a synthetic interpretation of change” (Lake, 2009, 231). He
continues by saying that

“The issue of structural power and, often, big, macro-level change revolve around the rise and decline of major industrial and trading states. The supposed decline of the United States in the 1970s and 1980s, the rise of Japan in the same period, or the rise of China in the 21st century all unsettle international economic relations and should, by implication, be subjects of study in IPE. OEP has, to date, been largely silent on these changes, but this need not be the case.” (Lake, 2009, 233)

The aim of this dissertation is to contribute to this program of research in several ways. First, in Lake’s words, it contributes by “relaxing the small country assumption” of OEP. Second, it identifies both structural and interactive variables at play in China’s relationship with the global economy. Third, paraphrasing Lake, it seeks to answer questions about bigger, more macro-level changes in the international economy by studying the impact of one of the most disruptive events in the international political economy in the last decades: the rise of China.
3.2.2 International political economy of resources

In sum, there are roughly three possible levels of analysis that can help answer the question of how a dominant emerging economy impacts global markets. My argument is inspired by three specific contributions to the IPE of resources literature, which has provided theories on the resilience of global cooperative market structures. In this literature (see Table 9), some scholars adopt a systemic-level explanation for the changes in global extractive markets (Krasner, 1974), whereas others seek to explain foreign economic behaviours of states through domestic variables (Rodrik, 1982). Truly interactive inside-out endeavours are generally relatively rare (Putnam, 1988). In the literature on the IPE of resources, Bates argues that the formation of a global coffee market producers’ association is due to patterns in domestic democratic political institutions, specifically party competition. Domestic party competition variables are not adapted to the Chinese case, yet I still observe variation in patterns of engagement with global markets. I build on Putnam and Bates’ two-level approaches, and find explanatory leverage in the political economy of markets themselves at the domestic and international levels.

Table 9 - Level of Analysis in the IPE of Resources

<table>
<thead>
<tr>
<th>Reference</th>
<th>Level</th>
<th>Relevant thesis statement</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Krasner, 1974</td>
<td>International</td>
<td>Tacit assistance from multinational corporations, surfeit revenues, and highly salient shared values</td>
<td>Oil, coffee, cocoa, copper</td>
</tr>
<tr>
<td>Rodrik, 1982</td>
<td>Domestic</td>
<td>Levels of coordination between government firms and banks in Japan explain Japan’s success</td>
<td>Copper, iron ore, bauxite</td>
</tr>
<tr>
<td>Bates, 1997</td>
<td>Two-level</td>
<td>Strategic opportunities created by political institutions explain the formation of producers’ association</td>
<td>Coffee</td>
</tr>
</tbody>
</table>

3.2.3 Comparative political economy – convergence/divergence debate

My approach to characterizing global commodity markets is germane to the literature on the persisting divergence between national systems of political economy, despite powerful globalization forces (Keohane et al., 1996; Dore et al., 1996).
“Our account of incentives makes us skeptical about arguments that predict convergence towards a single model. Much talk about the world economy assumes a single, optimal pattern, a single equilibrium, a unique and perfect way of combining all the ingredients of the economy, so that market competition will force all countries to converge. We are doubtful. The economy is too complex, there are too many ways of putting the pieces together. (…) Since countries vary in their internal political dynamics - institutions, preferences, parties, and interest groups – their policy outcomes vary. And thus their corporate governance systems will differ. Change may occur, but not necessarily toward convergence on a single model of governance.” (Gourevitch et al. 2005, p.12)

Indeed, my inquiry into the variation of outcomes I observe across markets is in line with scholarship that identifies unequal patterns of integration in the global economy across issue areas (Garrett, 2000; Tiberghien, 2007). The behaviour of stakeholders from different countries in the same global commodity market varies. For instance, Japanese and Chinese actors responded differently to the fall of the benchmarking regime in the iron ore market in 2010. “Industrial countries are not converging toward a single form (Fligstein and Freeland 1995). Instead a plurality of social relations has been observed that structure markets within and across societies. These observations have challenged the neoclassical economists’ view that markets select efficient forms which, over time, converge to a single form” (Fligstein, 1996, 657).

3.2.4 IPE literature on the domestic determinants of global economic trends

The IPE literature on the domestic determinants of international economic patterns has mostly concentrated, with good reason, on the US economy’s linkages with the global economy. Jonathan Seabrooke, for instance, argues that how states treat low-income citizens and allow them to access credit and build wealth has an impact on a states’ size and the stability of its domestic pool of capital, as well as on its ability to attract capital. In turn, this affects a state’s capacity “to have a regulatory and normative influence on the character of the international financial order” (Seabrooke, 2007, p.1). Working to “reveal the domestic bases of different kinds of international financial orders,” Seabrooke is concentrating on the “everyday sources of financial power.” Such an analysis would yield interesting results with regards to the Chinese financial system and its capacity to influence the global financial system. However, this chapter concentrates on the extractive industries, and therefore is interested in the behaviour of larger relevant market stakeholders in this industry. My
approach is very relevant to Seabrooke’s approach, however, as I recognize that the domestic nature of market systems in a rising power such as China has a determining impact on the future of global markets.

Andrew Walter (Walter, 1993) has also sought to make the link between particular international patterns of systemic change and domestic political economic variables. Walter points to the particularly fragmented nature of the American financial system in the early twentieth century (large number of small banks, decentralized Federal Reserve System, decentralization of power in the private banking system), which he contrasts to the oligopolistic structure of the European system, as a factor that led to the Great Depression in 1929 (and in turn, to the emergence of the interventionist state, or, as Ruggie has outlined, the rise of “embedded liberalism” at a global level after WWII) (Walter, 1993, p.144). This article is in line with Walter’s analysis since I seek to illuminate relevant domestic dynamics at play in explaining outcomes at the global level.

Few authors have tried to identify specific domestic patterns of Chinese political economy as potential explanatory variables for change at the international level. Part of the reason is that few have identified specific institutional change at the global level that has resulted from China’s rise. McNally (McNally, 2012) provides one of the most interesting and nuanced explorations (and goes beyond dichotomous debates) of the ways China’s domestic hybrid capitalist system (and its reliance on informal networks and a strong role for the state) can impact the international economy. However, his efforts stop short of identifying specific causal mechanisms that would link specific domestic characteristics to specific systemic outcomes at the global level. McNally reserves judgment as to what kinds of impacts China will have on the global economy, beyond pointing to the fact that the domestic characteristics he identifies as unique to the Chinese domestic economy will most certainly be reflected eventually in global market institutions, and will challenge the Anglo-American system of capitalism.

3.3 The Key Players

3.3.1 Beyond the unitary actor

My approach stands in contrast with endeavours that conceptualize the state as a unitary actor. Ikenberry argues that “the state – or the state elite – is the crucial actor within the adjustment process. The state may therefore be conceived of as a strategist in the context
of domestic and international structures and constraints” (Ikenberry, 1986, 54). “Studies purporting to develop an understanding of the global economy have generally analyzed just one, or perhaps two, types of agents, such as firms or industrial sectors. Other agents (such as states, labour organizations, and global regulatory bodies) and non-human intermediaries (for example port facilities, telecommunication infrastructure, policy documents and manuals) have been neglected or even dismissed as irrelevant and anachronistic” (Dicken et al., 2001, 91). Indeed, “(...) development is no longer paradigmatically determined by the presence/absence of national/international regulation, but by the collective strategic behavior of large (‘related’) actors along the value chains of today’s global industries” (Petkova, 2006, 315). The unitary state approach is useful given certain research questions, but it is at odds with empirical evidence of Chinese behaviour, at least in the cases being studied here.

My approach is very much in line with Katzenstein’s analysis. His work draws “attention to the domestic political and institutional influences on a state’s policy behavior in the world economy. (...) Katzenstein’s aim was to open up the unitary state – to complement the systemic (‘outside-in’) level of analysis of realism with the domestic (‘inside-out’) level of analysis more characteristic of comparative politics” (Cohen, 2007, 204).

3.3.2 The Chinese state

My research is in line with the fragmented authoritarianism literature in Chinese politics (Lieberthal and Lampton, 1992; Lieberthal and Oksengerg, 1986; Oksenberg and Lieberthal, 1988; Shambaugh, 2011; Paltiel, 2010; Foot and Walter, 2010; Mertha, 2009). There is a fragmentation of economic policy making within the Chinese state, the contours of which vary depending on the policy area (Shambaugh, 2011; Foot and Walter, 2010). It follows (and this is verified in my cases) that there is no coherent procurement behaviour across all global commodity markets; in other words, China is not behaving “as one.” Institutional structures vary across markets domestically, and the specific relations of power among key domestic market stakeholders give distinctive hues to overall Chinese procurement behaviour in specific markets (Gourevitch, 1977; Gourevitch, 1986; Gourevitch and Shinn, 2005; Simmons, 1994).

China’s behaviour in given markets is not exclusively dependent on the state’s position in the international system, or the distribution of capabilities (Waltz, 1979), nor is it homogenous across markets. Tiberghien (2012), Kennedy and Cheng (2012) and Wang and
Zheng (2008) are interesting recent attempts at taking a more multidimensional approach to China’s interactions with the global economy.

Beyond international and domestic market structures, this research will consider the behaviour of small firms, large firms, and state organs (whether industry associations or relevant ministries) as relevant actors. As we will see below, state organs play a decisive role in China’s interaction with global commodity markets. As agents that are often intent on coordinating the behaviour of other Chinese actors, their capacity for successfully enhancing or hampering coordination has direct impacts on the overall Chinese patterns of procurement internationally.

Chinese stakeholders’ behaviour varies in multiple ways, and this includes key actors’ domestic balance of power – whether between industry associations and small private enterprises, or between SOEs and regulatory agencies – varying across industries. As a consequence, patterns of interaction between domestic and international market stakeholders also vary.

With regards to resource procurement, Chinese planners have been working within the “Two Markets, Two Resources” framework (两个市场两种资源) (Xiao and Gao, 2009; Gu and Wang, 2005). Coined in the 1990s, conceptually prior to, and broader than the Going-Out strategy, the framework emphasizes the need to leverage both domestic supply sources (this includes increased investment in prospection and mining) and international supply sources (through the whole array of options, including foreign acquisition, investment, and long-term and short-term purchasing contracts).

At no point in this dissertation do I conceive of a state as a unitary actor. However, two caveats need to be made regarding this. First, I do not exclude the possibility that despite a non-unitary state approach, one may come to the conclusion that certain patterns of behaviour exhibit clustering characteristics that allow us to identify certain patterns of behaviour as typical of “Chinese” or “Japanese” firms in a particular market at a particular point in time. Second, for the sake of readability, I will sometimes use the expression “Chinese actors” or “Chinese behaviour,” although by that I mean the sum of all actors’ behaviour, or rather, the discernible patterns that emerge from their aggregate behaviour.
3.4 Methodology

I combine a two-level political economy approach with the power of small-n, comparative case studies, and use process-tracing to unveil the causal pathways that lead to systemic market changes at the global level. I trace the origins of change that I observe at the global level back to the domestic political economic roots of Chinese market structures. As Aoki argues,

“institutional arrangements can be diverse across economies even if they are exposed to the same technological knowledge and are linked through the same markets. Thus we need to rely on comparative and historical information to understand why particular institutional arrangements have evolved in one economy but not in others. By this we imply that an institutional analysis must be also comparative and historical, and thus we have hope to provide the groundwork form comparative institutional analysis (CIA).” (Aoki, 2001, p. 3)

My approach goes beyond endeavours methodologically designed to compare national (unitary state) impacts on the global economy (Krasner, 1976; Gowa and Mansfield, 1993; Ikenberry, 1986; Gilpin, 1987). Indeed, my inquiry into the variation of outcomes I observe across markets is in line with scholarship that identifies unequal patterns of integration in the global economy across issue areas (Garrett, 2000; Tiberghien, 2007, 2012; Wang and Zheng, 2008; Foot and Walter, 2010), as well as with scholarship that assumes a fragmentation of policy making within China (Lieberthal and Lampton, 1992; Lieberthal and Oksenberg, 1986; Oksenberg and Lieberthal, 1988; Shambaugh, 2011; Paltiel, 2010; Foot and Walter, 2010).

3.4.1 Case selection

The universe of cases I am referring to is: a systemically relevant emerging economy’s impact on a specific global commodity market structure. The rise of the US after World War II and its impact on the global oil market would be an example.19 In other words, I consider “systemically relevant emerging economy” - “commodity market pricing regime” dyads, and argue that one can use the concepts of “major power transition” and “systemic change” within a given market system (as opposed to only within the global

19 Too few authors have made the comparison between the US’s and China’s emergences as dominant global powers. For an exception, see Foot and Walder, 2010.
economy at large). Japan taking over from Germany and having a systemic impact on the global iron ore market starting from the late 1960s is another example.

**Table 10 - Cases**

<table>
<thead>
<tr>
<th>Cases (across markets)</th>
<th>Case (across time)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Iron Ore</strong></td>
<td></td>
</tr>
<tr>
<td>1. China’s impact on the global iron ore market (pricing) – 2000s</td>
<td>4. Japan’s impact on the global iron ore market (pricing and shipping regimes) – 1960s</td>
</tr>
<tr>
<td>2. China’s impact on the global iron ore market (shipping) – 2000s</td>
<td></td>
</tr>
<tr>
<td><strong>Potash</strong></td>
<td></td>
</tr>
<tr>
<td>3. China’s impact on the global potash market (pricing regime) – 2000s</td>
<td></td>
</tr>
<tr>
<td><strong>Uranium</strong></td>
<td></td>
</tr>
<tr>
<td>5. China’s impact on the global uranium market (market shape) – 2000s</td>
<td></td>
</tr>
</tbody>
</table>

My comparative case selection strategy is based on Mill’s method of difference, as I compare divergent institutional outcomes within global markets otherwise structured similarly (see Table 10). My two principal cases are the markets of iron ore and potash. In order to gain comparative leverage, I study China’s impact on two “within-iron-ore-market” case studies: the global iron ore pricing system, and the global iron ore shipping pricing system. This within-market case selection allows me to control for multiple variables inside the iron ore case, and further leverage the process-tracing of the two stories. Then, still working within the same market, I conduct a plausibility probe into the generalizability of my findings over time and space, but as it applies to another systemically significant rising economy decades earlier: Japan’s emergence and impact on the global iron ore market as it became the world’s largest consumer of the commodity in the 1960s. To conclude, I evaluate the generalizability of my findings to other commodity markets by also evaluating the applicability of my theoretical model to the global uranium market.
Table 11 - Summary of Similarities across the Global Potash and Iron Ore Markets Prior to China's Emergence

<table>
<thead>
<tr>
<th>Market shape</th>
<th>Iron Ore</th>
<th>Potash</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature of the commodity</td>
<td>Extractive, essential to economic development, low substitution potential, high barriers to entry</td>
<td>Extractive, essential to economic development, low substitution potential, high barriers to entry</td>
</tr>
<tr>
<td>Geographical concentration</td>
<td>High. 65% of global exports from Brazil and Australia (2000) (one developed Asia-Pacific country and one BRIC country)</td>
<td>High. 93% of global production in Russia, Belarus and Canada for potash (2000), among which are one developed Asia-Pacific country and one BRIC country</td>
</tr>
</tbody>
</table>

Market Governance

Pricing regime

| Pricing regime | Long-term contracts and annual benchmarking pricing system | Long-term contracts and annual benchmarking pricing system |

Chinese dependence on trade

Import dependence

| Import dependence | High level of import dependence (58% in 2011) Essential to China’s economic development | High level of import dependence (50% in 2011) Essential to China’s food security |

The global iron ore and potash markets share many characteristics. First, both markets are bulk commodities, extractive markets with capital-intensive requirements, and have long-lead time horizons and high barriers to entry (Komesaroff, 2013). Iron ore and potash are both essential to economic and agricultural activity, respectively, as they have very low potential, if any at all, for substitution. In addition, both the global iron ore and potash markets have a very high concentration of reserves in just two or three countries. This was true at the time of China’s emergence as the dominant consumer. In 2000, 65% of iron ore exports came from Brazil and Australia20, and 93% of potash exports came from Canada, Belarus and Russia.21 Both markets’ suppliers include one dominant Asia-Pacific developed economy (Australia for iron ore, and Canada for potash) and one dominant BRICs economy (Brazil for iron ore, and Russia for potash). Before China’s emergence, at the beginning of

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20 UN COMTRADE.
the 2000s, both markets were controlled by a few large companies (Vale, BHP Billiton and Rio Tinto for iron ore; Potash Corp., Mosaic, Ukalkali and Belarukali for potash). Furthermore, both markets’ pricing regimes were comparable before China’s rise, as both had a long history of closed-door annual benchmarking pricing negotiations, long-term contracts, low prices and low volatility (see Table 11).

**Figure 8 - Chinese Import Dependence in the Markets of Iron Ore, Potash and Uranium**

![Dependence on Foreign Trade](image)

Source: Ministry of Land and Resources, 2012; World Nuclear Association; China Customs Department. Author’s calculations. 22

Finally, China’s positioning towards both international markets is comparable inasmuch as its level of import dependence is very high in all cases (see Figure 8). When we look at China’s import dependency ratios in the three global commodity markets studied here, we see that the three ratios were above 50% during the years for which data is available (apart from a short dip under 50% for potash in 2009).

Despite the striking similarities between the global iron ore and potash markets, China’s impacts on these markets have diverged significantly. As we will see below, part of the reason is that the Chinese domestic political economic conditions in both markets exhibit fundamental divergences, especially at the interface with the global economy.

Beyond the key iron ore and potash cases, I investigate China’s impact on two additional cases: the iron ore bulk shipping case, and the uranium case. Therefore, this research design makes full use of the comparative approach by increasing variation across

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22 Potash and iron ore, as calculated by the Ministry of Land and Resources; uranium, calculated as share of consumption minus production for uranium, from World Nuclear Association; China Customs Department data
independent and dependent variables (see Table 12). Indeed, I investigate the impact of the emergence of Japan, another dominant economy, on the global iron ore market decades prior to China’s emergence. The results constitute an early and encouraging test of the generalizability of my argument beyond the iron ore and potash cases, as well as beyond China.

Table 12 - Asymmetries and Cases

<table>
<thead>
<tr>
<th>International market (Producers) ➔ Domestic market (Consumers) ➔</th>
<th>Fragmentation</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fragmentation</td>
<td>1  Symmetry</td>
<td>2  Asymmetry in favour of producers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Case: China/iron ore pricing</td>
</tr>
<tr>
<td>Concentration</td>
<td>3  Asymmetry in favour of consumers</td>
<td>4  Symmetry</td>
</tr>
<tr>
<td></td>
<td>Case: China/uranium market, Japan/iron ore pricing and shipping</td>
<td>Cases: China/iron ore shipping, China/potash pricing</td>
</tr>
</tbody>
</table>

This dissertation makes use of mixed methodologies, including an emphasis on interviews (119 interviews, 98 interviewees, 74 work units, see Figures 9-12),

23 narrative and coding-based analysis, document analysis and comparative/descriptive statistical analysis. In addition to establishing correlational inferences across cases, thick case studies and process-tracing allowed me to establish the mechanisms and the sequencing at play. As I go through each case, I pay particular attention to the relationship between an emerging economy’s preferences and global actors’ preferences, capacity to coordinate behaviour, as well as the amplitude and direction of change at the global level.

23 Although I have conducted 127 interviews in the course of this research, only 119 of them yielded material worth considering as “relevant content.” I have not coded the remaining eight interviews, hence the working total of 119. My interviewees were selected using a mixture of diversity and snowball sampling approaches (I conducted a variety of interviews with individuals from different work units, while leveraging growing networks to deepen my knowledge of a particular sub-group’s perspectives). My interviews were semi-structured. See Appendix 1 for more details.
Figure 9 - Nationality of interviewees

![Bar chart showing the nationality of interviewees with 52 others and 43 Chinese.]

Figure 10 - Work Units, by Interviewee

![Bar chart showing the work units of interviewees with the following counts: Think Tank/Research Institute 13, SOE 7, Private firm 24, Ministry 17, Media 7, International Organization 1, Industry association 7, Diplomacy 10, Consulting Firm 14, Central government agency 6, Academia 13.]

73
3.4.2 Explanatory variables at both levels are necessary to explain outcomes

It is the contention of this dissertation that to fully understand and explain systemic change at the global level, power relations in markets at both levels need to be understood. This dissertation’s case selection allows us to investigate procurement behaviours and pricing regime changes in two sub-sets of cases.
First, there are cases in which the international markets exhibited very high levels of concentration, but where the domestic levels of concentration varied. Here, we compare the pricing regime changes in the iron ore and potash markets. When comparing cases in which the concentration levels were high at the global level prior to China’s emergence, China’s domestic-level market concentration becomes crucial. We thus delve into the Chinese domestic situation in more detail, while holding the global market side of the equation constant. I then investigate, in a comparative fashion, exactly how domestic market characteristics have shaped Chinese procurement behaviour. The two key cases that form the basis of this dissertation are ones in which the Chinese market stakeholders faced highly concentrated international suppliers, but also in which domestic markets exhibited low (iron ore pricing regime) or high levels of concentration (potash pricing regime, iron ore shipping regime).

This case selection strategy allows us to show that international-level variables are insufficient to explain outcomes. In such cases, distinct dynamics across the Chinese domestic commodity markets of iron ore and potash result in distinct Chinese procurement behaviours and distinct two-level power asymmetries, ultimately resulting in distinct impacts on global pricing regimes. In sum, I argue here that different domestic dynamics in the Chinese iron ore and potash markets resulted in different aggregate Chinese procurement behaviours, and, given the international context, ultimately resulted in different impacts on global pricing regimes. The fragmentation of Chinese domestic market structures has led to regime change and marketization in the iron ore case, whereas a higher level of coordination in the Chinese domestic potash market has led to higher resilience in the international potash market pricing institutions.

Second, there are cases in which the domestic levels of concentration are high, but the international market concentration levels vary. Here, we concentrate on two types of comparisons. The first is a comparison between two within-market cases: China’s impact on the iron ore bulk shipping pricing regime; and Japan’s impact on the iron ore pricing and bulk shipping pricing regime decades prior to China’s emergence. This within-market, across time and country comparison allows us to compare cases in which the domestic level exhibited high levels of concentration and coordination, but concentration and coordination levels internationally varied. The questions of interest here then become-: How exactly are
Chinese domestic commodity markets structured differently? The fact that the patterns of change differ between the two cases is an indication that domestic-level variables are insufficient to explain outcomes at the global level. The other type of comparison is between China’s impact on the global potash market and its impact on the global uranium market. Here again, similar levels of domestic concentration but different dynamics of change at the international level point to the importance of international-level variables in explaining outcomes. It becomes clear that it is necessary to pay particular attention to Chinese domestic market structures and coordination levels in order to understand the global market outcomes that result from China’s emergence. Chinese domestic market dynamics have become a determining feature of the global economy. In other words, this dissertation’s case selection allows us to investigate, at once and in turn, the importance of variation in market characteristics at both levels.

The goal here is to combine the efforts of Putnam’s two-level game with a political economy approach (essentially reversing Rogowski’s 1987 (class cleavages) and Frieden’s 1991 (industry cleavages) outside-in approaches to the problem of exposure to international trade). I am proposing an inside-out, interactive model, which theorizes about two-level strategic action within each market.

It is worth restating the two research questions at the origin of this paper. The first question is about the likelihood of change: Why have some international markets for important raw materials undergone fundamental change in the way they operate as a result of China’s emergence, while other such markets have been more resilient to change? The second question is about direction of change: Why have some global markets seen change in the direction of marketization as a result of the emergence of a large consumer, whereas others have seen change in the opposite direction? Under what conditions will dominant market players push for change in one direction rather than another at the international level?

3.5 Argument

Domestic-level and international market variables combine to create the conditions for institutional change at the global level. I trace key variances in China’s effect on global markets to the interaction of China’s domestic industrial structures and the pre-existing structures of global commodity markets. The structure of key industries within China varies: some are concentrated, some are fragmented, some are very sensitive to price signals, and
others less so. Likewise, the significant structural variance found among global markets for various commodities pre-dates China’s emergence as a dominant global consumer in the twenty-first century.

I argue that asymmetries between global and domestic market structures profoundly affect incentives and domestic and global market players’ capacity to act, and create the conditions for systemic change (see Table 13 below).

More specifically, in response to the first question about the likelihood of change, I argue that power transitions that entail a profound change in consumer-producer power relations are more likely to be disruptive and lead to institutional change at the global level than are power transitions that entail a continuation of two-level power relations. In addition, transitions towards asymmetric positions of power (Quadrants 2 and 3) tend to be more unstable than transitions towards symmetric positions of power. Transformations in market power relations between consumers and suppliers increase the likelihood of institutional change in global markets.

Table 13 - Two-Level Asymmetries in Domestic and International Markets, and Ensuing Outcomes

<table>
<thead>
<tr>
<th>International market (Producers) ➔ Domestic market (Consumers) ⇓</th>
<th>Fragmentation</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Symmetry</td>
<td>Asymmetry</td>
</tr>
<tr>
<td></td>
<td>Low likelihood of change</td>
<td>High likelihood of change</td>
</tr>
<tr>
<td></td>
<td>Outcome: competition/consolidation incremental change</td>
<td>Dominant preferences: Producers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Outcome: Dominant actions on behalf of producers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Iron ore pricing in 2000s (China)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fragmentation</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asymmetry</td>
<td>Symmetry</td>
</tr>
<tr>
<td>High likelihood of change</td>
<td>Medium likelihood of change</td>
</tr>
<tr>
<td>Dominant preferences: Consumers</td>
<td>Outcome: Clash, bargaining incremental change</td>
</tr>
<tr>
<td>Outcome: Dominant actions on behalf of consumers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Iron ore shipping in 2000s (China)</td>
</tr>
<tr>
<td></td>
<td>Potash 2000s (China)</td>
</tr>
</tbody>
</table>

In response to the second question about the direction of change, I argue that market power asymmetries give dominant players the upper hand in influencing global market institutions, such as pricing regimes. Market players’ preferences for pricing regimes are
influenced by the relative position of market power they occupy in their own market as well as their position relative to international market players. Price trends influence market stakeholders’ preferences for global pricing regimes, but they cannot fully explain the direction of change.

The causal mechanism through which change is effected is the differential coordination capacity of actors at each level, or the differential ability of actors to solve their collective action problems. It includes the coordination capacity between public and private actors. It is through coordination, or lack thereof, that market actors can exercise market power and get what they want. Maintaining pricing regimes, and especially changing pricing regimes, requires coordination (see Hall and Gingerich, 2004; Hall and Soskice, 2001; Elinor Ostrom, 1997).

3.5.1 Argument: Likelihood of change

The argument about the likelihood of market institutional change – that is, change resulting from the power transition from one dominant consumer to another – rests on the notion that asymmetries engender instability. There are at least two situations in which power transitions increase the likelihood of change in global market institutions:

1) In power transitions that entail a profound change in consumer-producer power relations are more unstable, i.e. when the emerging power causes a movement from one two-level power position to another (from one quadrant to another). These power transitions are more likely to be disruptive than power transitions that entail a continuation of two-level power relations.

2) In power transitions that entail a change towards asymmetric positions of power tend to be more unstable than those that lead to symmetric positions of power, i.e. transitions toward Quadrants 2 and 3. There is an exception to this: power transitions that entail a continuation of previous two-level relations of market power (remain within the same quadrant), whether they are situated in an asymmetric quadrant or not, tend to be more stable.

In other words, a power transition that is accompanied by a movement from one quadrant to another (say a movement from the lower left to the upper right quadrant) is more unstable than those who do not involve a movement from one quadrant to another. The greater the change in relative two-level positions of power, the greater the resulting
instability of global market institutions. As a rule, asymmetric quadrants also tend to be more unstable. The exception is that the continuation of two-level market power dynamics (power transition that remains within one quadrant) can lead to the stability of global market institutions, at least in the short term, regardless of the quadrant.

The China - iron ore benchmark pricing case is one in which a fragmented and weakly coordinated new consumer emerged to face a global market with very high levels of concentration and coordination (Quadrant 2). Prior to China’s emergence, the dominant consumer, Japan, had shown high levels of concentration and coordination. In fact, the iron ore benchmark pricing regime was established at a time when the global iron ore market players were much more fragmented than they are today. This power transition from Japan to China as the world’s number one consumer constitutes a movement from Quadrant 3 to Quadrant 2, from one asymmetric position of power to another. Whereas Japanese consumers’ preferences of held more sway during Japan’s tenure, the preferences of the global iron ore suppliers became dominant as China’s fragmented domestic consumers emerged as the largest in the world. We can thus understand why that transition had the potential to be disruptive. It created instability and opened the way for systemic change at the global level. The collective action failure and fragmented procurement behaviour on behalf of the Chinese consumers gave the global iron ore suppliers the opportunity to take decisive action and usher in a more volatile pricing regime.

In cases of a transition towards a symmetric position between domestic and international market power structures (Quadrant 4), change is still possible. However, it is less likely to be sudden (more likely to be incremental), because the consumers and producers are both concentrated. The outcome is more likely to be the result of an alignment of preferences, conflict or strategic bargaining. Yet, as this combination involves equally powerful positions of power in both market realms, it is also the least predictable because there is the possibility of deadlock or conflict between dominant players. Indeed, in the case of China’s impact on the global iron ore shipping regime, bold moves from the global iron ore shipping firms were met by a concentrated and coordinated Chinese domestic industry. This allowed the Chinese actors to better coordinate behaviour across multiple platforms and to counter the global firms’ strategy. In that case, the deadlock was resolved through bargaining. The coordination of Chinese market actors’ behaviour allowed them more power
over the outcome of the clash with international stakeholders. The result in that case was incremental change in favour of the Chinese consumers.

In the case of a transition towards Quadrant 3, where the international market is fragmented and the emerging economy’s domestic market actors are highly concentrated and coordinated, change is again likely, but this time around, there is the greater allowance for the consumers’ agency and expression of their preferences which is greatest. Lastly, changes towards Quadrant 1 are relatively rare, and I could not immediately find a suitable case, given the high levels of concentration in many global and Chinese commodity markets. The copper market is a potential candidate for future enquiry.

In summary, power transitions that cause a movement between one quadrant and another are more likely to be unstable, but this is especially true of transitions towards asymmetric quadrants. Indeed, transitions towards both extremes of the graph (in blue), where the asymmetry is greatest between domestic and international market structures, tend to bring with them a higher likelihood of global market institutional change. This may be because profound asymmetries tend to be more unstable, especially between systemically relevant domestic and global market stakeholders.

3.5.2 Argument: Direction of change

The second part of my argument seeks to explain variation in the direction of change in market institutions as a result of China’s emergence. At the core of the argument lies the notion that asymmetric positions of power provide strategic advantages, and that the dominant side’s preferences for market institutions at the global level are more easily expressed. This insight may seem self-evident, but it only fully makes sense when grounded in a relational, multilevel, definition of “dominance” or “market power.”

Market power is defined here as relational, at both the domestic and international levels. I adopt Susan Strange’s definition of power: “Power is simply the ability of a person or group of persons so to affect outcomes that their preferences take precedence over the preferences of others” (Strange, 1996, p. 17). Pricing regimes have distributional consequences: there are losers and winners during pricing regime changes. This leads to firm preferences for asymmetric, influential positions of power. I argue that positions of asymmetry provide the dominant side with more leeway to effect change in its preferred direction. To achieve this position of power, market actors try to consolidate and coordinate
behaviour, and a struggle for dominance within specific global markets ensues. Here I build on Nolan (2012), Fligstein (1996) and Gilpin (1977). In this situation, there are major concentrations of economic power, and many global commodity markets are oligopolistic or cartelized and they leave more room for strategic coordination than is usually acknowledged in the literature. Dominance can only be established through an understanding of market players’ domestic and international market power, which includes their share of consumption/production and their capacity to coordinate behaviour.

Dominance is precious because it enables the expression of one’s favoured market institutions at the global level. But what explains preferences for one type of pricing regime over another (see discussion in Chapter 2)? Market players’ preferences for pricing regimes are influenced by their relative positions of market power. The relative positions of market power that actors occupy in their own market, as well as relative to international market players, have an impact on their particular preferences for pricing regimes at the global level.

The importance of these dynamics explains the divergence from strictly “price-determined” preferences for global pricing regimes (see Chapter 2). Trying to model behaviour based strictly on the logic of price levels does not fully capture the complexity of preferences on the ground. The “price determined” logic would predict that large consumers (producers) have an interest in marketization (demarketization) of pricing regimes when prices are dropping, and an interest in demarketization (marketization) when prices are rising. In some cases, price trends do provide the strongest explanation for pricing regime preferences. For instance, global suppliers’ preferences for marketization of the iron ore market are in line with expectations of preferences, given the expectations of rising iron ore prices. But in the majority of the cases studied here, they do not. I will mention only a few of the limitations of this rationale. The first is that consumers in the same market and facing the same price trends do not always have the same preferences. The second is that within a domestic market, different types of consumers do not always have the same preferences. The final limitation is that consumers or producers sometimes simply do not follow this logic.

Empirical analysis shows that price is not the only variable influencing preferences and behaviour for particular types of global pricing regimes. I argue that a more complete answer lies in the joint consideration of price levels and relative positions of market power. This provides us with critical clues as to the preferences and behaviour of key actors.
Preferences for pricing regimes are complex, but the one key variable that interferes with straight “price-determined preferences” for global pricing regimes is the position of market power of given firms in their own market. A domestic position of power occupied by key resource importers with rent-extracting privileges provides importers with huge disincentives to push for the marketization of pricing regimes, regardless of price levels. Domestic market stakeholders’ preference for the marketization of pricing regimes, on the other hand, is more likely to occur when they are occupying a weak position of market power relative to suppliers, as well as relative to their own peers. At the international level, the opposite is true. International market stakeholders’ preference for the marketization of pricing regimes is most likely to occur when they are occupying a dominant position of market power relative to the consumers, as well as relative to their own peers.

For instance, in the case of Japan’s impact on global iron ore pricing regimes in the second half of the twentieth century (Quadrant 3), we saw a successful coordination of the domestic players and interface with global market stakeholders. We also saw a more fragmented global market. This situation of dominance afforded the large Japanese firms (consumers) more leeway to express their preferences for global pricing regimes. The Japanese tenure as the dominant consumer saw the reinforcement and strengthening of a strategic/negotiated pricing regime. This systemic movement towards the demarketization of the iron ore pricing regime was in Japan’s favour. Japan’s emergence as a systemically relevant resource consumer in the 1960s illustrates the decisive impact a dominant, coordinated consumer can have on global markets.

In the case of China’s impact on global iron ore pricing regimes in the 2000s (Quadrant 2), the global producers had the upper hand, and in the end, we did see a marketization of pricing regimes. However, the preferences of domestic Chinese consumers were unexpected. The hope for the continuation of powerful rent-extracting privileges in the Chinese domestic iron ore market prior to the fall of the benchmarking regime explains large Chinese iron ore importers’ preferences for the iron ore benchmarking regime despite falling prices in 2009.

In the potash case (Quadrant 4, a situation of symmetry), dynamics are subtler. Because of the licensing system, the top Chinese potash importers extract rents by reselling internationally-acquired potash to domestic distributors. In that case, the capacity for
domestic purchasers and farmers to pay for potash (including consideration of state subsidies here) becomes as important as the relative international price levels in determining importers’ preferences. Indeed, falling potash prices should have been the window of opportunity for Chinese potash importers to push for a marketization of the global potash pricing regime, but we have not seen this in any conclusive sense. In turn, the fall of the Russia-Belarus potash cartel occurred in the middle of declining price trends, and this obviously put the suppliers in a disadvantageous position towards the Chinese importers. Prices have indeed continued to fall ever since. The general implications of this theoretical model can be found in Table 14 below.

**Table 14 - Implications of Theoretical Model**

<table>
<thead>
<tr>
<th>Implications of my theoretical model</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Systemic change in market institutions is most likely to happen as a result of transformations in</td>
</tr>
<tr>
<td>two-level power relations between consumers and producers in times of power transition.</td>
</tr>
<tr>
<td>2. Changes towards Quadrants 2 and 3 (asymmetric market power relations) are most disruptive.</td>
</tr>
<tr>
<td>3. Leading consumer (producer) firms behave differently depending on the global (domestic)</td>
</tr>
<tr>
<td>market structures.</td>
</tr>
<tr>
<td>4. The dominant side’s preferences for market institutions at the global level are more easily</td>
</tr>
<tr>
<td>expressed in situations of asymmetry (Quadrants 2 or 3).</td>
</tr>
<tr>
<td>5. The potential for rent extraction blunts the responsiveness of market actors to price signals.</td>
</tr>
<tr>
<td>6. International (domestic) market stakeholders’ preference for the <em>marketization</em> of pricing</td>
</tr>
<tr>
<td>regimes is most likely to occur when they are occupying a dominant (weak) position of market</td>
</tr>
<tr>
<td>power relative to the consumers (producers), as well as relative to their own peers, and vice versa.</td>
</tr>
</tbody>
</table>

**3.6 Independent Variables: Global and Domestic Concentration Levels**

My independent variables are the market structures as determinants of coordination capacity at the domestic and international levels. The measure I select to compare market structures at the domestic and international levels is the level of *concentration (or fragmentation)* (most importantly, at the export/import interface) (Rodrik, 1982; Krasner,
Concentration levels matter since they play a large role in determining market players’ coordination capacity, and thus market power and capacity to effect change in the preferred direction.

Rodrik defined global commodity markets along four variables, including “degree of concentration” and “trade and price formation mode.” His argument is directly relevant to my own: he argues that the levels of coordination between the government, firms and banks in Japan explain Japan’s capacity to procure iron ore at more favourable terms than the US on the global market.
Table 15 - Global Commodity Market Concentration Before and After China's Emergence as Dominant Consumer

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Oil25</th>
<th>Copper</th>
<th>Coal</th>
<th>Uranium</th>
<th>Iron ore</th>
<th>Soy</th>
<th>Potash</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shape of market</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geographical dispersion</td>
<td>37.6%35</td>
<td>38.5%36</td>
<td>64.2%*</td>
<td>59%*</td>
<td>58.6%*</td>
<td>73%*</td>
<td>75%*</td>
</tr>
<tr>
<td>Firm concentration</td>
<td>27%41</td>
<td>39.4%42</td>
<td>40%43</td>
<td>36%44</td>
<td>55%45</td>
<td>45%46</td>
<td>62%47</td>
</tr>
</tbody>
</table>

25 China has not reached dominance in the global oil market as per this dissertation’s measure. Yet, some would argue that 10% of global exports is a sign of systemic significance in the oil market.
26 US Department of Energy
27 Barclays Capital, (Areddy, 2009)
28 UN COMTRADE (*)
29 (Ericsson, 2004)
30 2012, UN COMTRADE
32 Soy imports as share of world trade (Oliveira and Schneider, 2014)
33 China Chemical Yearbooks, CISIA statistics (in 1997, China consumed 18% of global potash exports, in 1993, 10%)
34 China Chemical Yearbooks, CISIA statistics. Here, UNCTAD gives a much lower share of global imports by China in 2012, at 17%, one percent lower than in 2000, at 18%.
35 US Department of Energy
36 US Department of Energy, 2010
37 USGS (Iron ore, 2003)
38 http://www.issb.co.uk/global.html#IronOre
39 US Department of Agriculture
40 US Department of Agriculture
45 Top five suppliers account for 55% of the seaborne trade in metallurgical coal (BHP Billiton Mitsubishi Alliance, Fording, Rio Tinto, Anglo American and MIM) (Kirkby, 2001)
46 Top four firms (BHP Billiton, Xstrata, Anglo American, and Adarao), share of global trade in 2010 (Schernikau, 2010)
47 Of global production (2006) (List, 1909) The top four companies produced 63% of exports in 2009 (UNCTADE)
48 The top four exporting companies are: KazAtomProm, Cameco, Areva, ARMZ – Uranium One. World Nuclear Association, 2013
49 Almost 70% for the world’s top three companies, Vale, Rio and BHPB, (Ericsson, 2004).
50 2007, Seaborne iron ore production, Baffinland Iron Mines Corporation
51 It very difficult to find export share by company in the soy market. Here this figure represents the share of the top five soybean crushers in 1997 in the US market: ADM, Cargill, Bunge, Ag Processing and Central Soya. At the time, the US controlled around 70% of world exports of soy (Freeman, 1995).
52 This number represents the share of the global grains trade controlled by the top four grains companies: ADM, Bunge, Cargill and Louis Dreyfus (ABCD: 4 international grain traders, 2009).
53 2006, UBS Investment Research (Canpotex counted as one firm)
54 2009, UBS Investment Research (Canpotex counted as one firm)
Discussion

Because global markets are not customarily seen as distinct political economic structures, especially within the same industry, it is difficult to find comparative data across markets, other than price (and even prices are not always compiled in ways that make it easy to compare across markets). In Table 15 (above) I provide an overview of concentration levels for seven global commodity markets before and after China’s emergence as the dominant consumer. One of the systematic trends across the seven commodities is the rapidity with which China’s imports as a share of global exports grew. China’s uranium imports as share of global exports went from 1.2% in 2001 to 24% in 2012. In the iron ore market, China’s share of global exports went from 26% to 65%, and in the soy market, from a little less than 20% to 66% during that same time period. China’s rise in consumption has been extremely rapid. This confirms the contention that the impact that China had on global commodity markets in the first decade of the 2000s was large enough to be systemic and to have impacts at the global level. It was also sudden enough to act as a shock concentrated in time and space, or analogous to a quasi-experiment.

Looking at the comparative table, another point that is immediately evident is the high level of geographic and industry concentration of global commodity markets, before and after China’s emergence as a systemically dominant consumer in the early twenty-first century. Some would point out that that is the case with the global trade of many other industries as well (Nolan, 2012). Four countries, or even just four companies, frequently control more than 50% of global trade in commodities. Table 14 above is ordered from the least concentrated to the most concentrated market. Apart from the oil market, in all other markets, the four top countries control more than 55% of exports. Looking at firm concentration, numbers are still high, but with a little more of a gradual progression between the least to the most concentrated. Indeed, the four top companies in the copper, coal and uranium markets controlled less than 60% of export shares in 2012, whereas they controlled more than 80% in the markets of iron ore, soy and potash.

55 Amassing comparable statistics in different commodity markets has proven an unexpectedly arduous task. Markets were selected for their economic importance, and because of China’s relevance to them. Colour coding as follows: (pale blue: 0-50%; beige: 50-70%; orange: 70-80%; red: 80% and above).
It is worth noting that most markets have gone through a period of consolidation, mergers and acquisitions, and have seen their levels of concentration rise over the latter part of the twentieth century. As a case in point, the four largest iron ore exporters in 1965 controlled 50% of global exports (Brantley, 1965), compared to over 78% at the beginning of the twenty-first century. The consolidation trends are most visible when considering the rise in concentration by company. Raw Materials Group, a leading mining consultancy, estimates that the share of global iron ore production for the top three iron ore firms globally rose from 15% in 1985 to 35% in 2009, while the top three firms controlled 60% of global iron ore seaborne exports (Storm, 2011).

Another trend worth noting is that following China’s emergence as a systemically relevant consumer, concentration levels (by company) in the markets of copper, coal, uranium and potash actually dropped a few percentage points. In the other markets, trends have been towards further consolidation.

Table 16 - Independent Variable, International Markets / Concentration Levels

<table>
<thead>
<tr>
<th>International Market</th>
<th>Levels of concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IV: Concentration levels % of world exports by top 3 or 4 top companies^56</td>
</tr>
<tr>
<td>Iron ore</td>
<td>70% (2003^57)</td>
</tr>
<tr>
<td>Potash</td>
<td>83% (1998^58)</td>
</tr>
<tr>
<td>Uranium</td>
<td>62% (2006^59)</td>
</tr>
</tbody>
</table>

In accordance with these results, I consider the potash and iron ore markets to be highly concentrated. Given the fact that as a general rule, global commodity markets are highly concentrated, industry concentration in the uranium market is considered more moderate, at 62%. Since my model is based on a binary evaluation of international and

---

^56 Inspired by Krasner, 1974 (he uses the market share of the four largest producers – by country, and concentrated on developing economies exclusively) and Rodrik, 1982 (he uses output shares of the four and eight largest producers in total non-socialist world capacity (output)).

^57 Almost 70% for the world’s top three companies, Vale, Rio and BHPB, (Ericsson, 2004).

^58 2009, UBS Investment Research (Canpotex counted as one firm)

domestic market concentration, for the purpose of this dissertation, I will consider the global potash and iron ore markets as concentrated, and the uranium market as fragmented (Tables 12 and 16).

At the domestic level, the China Mining Yearbook provides us with data on the relative proportion of large and medium enterprises relative to the total number of enterprises operating in a given commodity market in China. It immediately appears that the major extractive industries in China – iron ore, coal and copper – are quite fragmented. A few industries have higher levels of concentration, potash among them (see Figure 13).

Figure 13 - Chinese Domestic Commodity markets, Comparative Concentration Levels

![Proportion of medium and large mining enterprises in China, on total number of enterprises (2007)](image)

Source: China Mining Yearbook 2008. Author's calculations.

Table 17 - Independent Variable: Domestic Markets / Concentration Levels

<table>
<thead>
<tr>
<th>Domestic market</th>
<th>Level of market concentration</th>
<th>0 – 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>China Iron ore</td>
<td>Very fragmented</td>
<td>3</td>
</tr>
<tr>
<td>China bulk shipping</td>
<td>Concentrated</td>
<td>7</td>
</tr>
<tr>
<td>China Potash</td>
<td>Few companies, especially at the interface</td>
<td>8</td>
</tr>
<tr>
<td>China Uranium</td>
<td>Very concentrated</td>
<td>9</td>
</tr>
</tbody>
</table>

In the binary framework used for the purpose of this dissertation, the markets for uranium, potash and bulk shipping are considered concentrated, and the market for iron ore is
considered fragmented (for a discussion and more empirical detail, see the empirical Chapters 4-6) (see Table 17).

3.7 Causal Mechanism: Coordination Capacity

The Varieties of Capitalism’s “coordination index,” defined by Hall and Gingerich (Coordination Index, 2001; 2004) and used in Hall and Soskice (2001) and Gourevitch and Shin (2005), is a key building block here. Indeed, *market coordination*, or the level of strategic coordination used to solve collective-action problems/social dilemmas (see Elinor Ostrom, 1997), is a critical characteristic of commodity market structures (see Chapter 2) (see Tables 18 and 19). Elinor Ostrom also argues that patterns of behaviour in global markets have much to do with collective action problems.

At the global level, concentration is used as a preliminary, proxy measure of coordination capacity, but in the qualitative case studies, we pay particular attention to coordination as a quality that often, but not always, overlaps with concentration (Levenstein and Suslow, 2006). As a case in point, the market for uranium exhibits relatively high levels of market concentration (the four largest firms controlled a 62% share of global production in 2006, see Chapter 2). However, qualitative analysis reveals that the uranium market players, in contrast to the potash players, for instance, have not developed institutionalized cooperative relations. What is more, the emergence of large, yet new, players in the market in the 2000s is obscured by “top four firms’ share of global production” data.

<table>
<thead>
<tr>
<th>International Market</th>
<th>Capacity for coordination</th>
<th>0-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron ore</td>
<td>Strong oligopoly</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Annual benchmarking negotiations</td>
<td></td>
</tr>
<tr>
<td>Potash</td>
<td>Two formal cartel-like organizations, annual benchmarking negotiations</td>
<td>9</td>
</tr>
<tr>
<td>Uranium</td>
<td>Few producers, but low coordination, no global price negotiations</td>
<td>4</td>
</tr>
</tbody>
</table>

Transformations in global markets do not necessarily alter global market shares by the top four firms, but they do alter the likelihood of market players successfully coordinating behaviour. Hence, in the uranium market, we see the characteristics of a relatively concentrated, yet segmented, global market (see typology of global markets, Chapter 2). Historical legacies, such as the failed producers’ cartels (as in the case of the uranium market
in the early 1970s), also influence market players’ behaviour and openness towards coordination. As one uranium market industry insider explained: “They haven’t seen any coordination among uranium players, I can tell you that! That is absolutely the case. (…) Nobody will touch it with a ten foot pole. You mention the cartel in the 1970s, those were different days” (Interview 129, 2013).

Table 19 - Domestic Markets – Coordination Levels

<table>
<thead>
<tr>
<th>Domestic market</th>
<th>Levels of coordination of procurement behaviour (Interface)</th>
<th>0 – 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>China Iron ore (pricing)</td>
<td>Fragmented behaviour, little coordination</td>
<td>3</td>
</tr>
<tr>
<td>China iron ore (bulk shipping)</td>
<td>Successful coordination between various platforms</td>
<td>8</td>
</tr>
<tr>
<td>China Potash</td>
<td>Coordination between actors with access to key interface access points</td>
<td>8</td>
</tr>
<tr>
<td>China Uranium</td>
<td>Very few actors, state involvement, some competition</td>
<td>7</td>
</tr>
</tbody>
</table>

At the domestic level, coordination has to do with the cohesion of procurement behaviour among diverse stakeholders. The fundamental conditions at the domestic level – the fragmented or coordinated structure of domestic markets – are in part the result of path-dependent industrial set-ups. But it is the resulting behaviours at both levels that fully allow us to explain outcomes. At the domestic level, the strategic behaviour by key domestic stakeholders (in the Chinese case, SOEs, SMEs and state organs, including industry associations and ministries) determines whether attempts to coordinate Chinese stakeholders’ procurement succeed or not (surmounting problems of collective action).

Market fragmentation/concentration provides us with a strong initial proxy, but it is indicators that provide us with the complete picture of domestic coordination in each market. This includes the number of import licenses; the number of companies actually importing the resource, despite the absence of a license; the share of imports by the top domestic companies; the state’s capacity for control and appointment of official negotiators; the role of industry associations and leadership small groups; and the level of preferences alignment (see Table 20).

Levels of concentration and coordination do not always match perfectly. This is why qualitative case studies are important. Particular care is devoted to assessing the capacity and quality of coordination at the interface with the global markets (this is inspired by Putnam’s
concept of “area of entanglement”) (Putnam, 1988). For instance, the Chinese domestic potash market is relatively concentrated, but not as concentrated as the uranium market. However, at the interface with the international market, it is strongly coordinated – indeed a “small group” is tasked with coordinating behaviour. Therefore, in this case, Chinese potash importers have arguably exhibited slightly higher coordination capacity than have uranium importers, despite the lower levels of domestic industry concentration.

Table 20 - Domestic Markets - Concentration and Coordination Levels

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of domestic extractive enterprises</td>
<td>- Many thousands</td>
<td>- Few dozen</td>
<td>- Very few</td>
</tr>
<tr>
<td>Number of import licenses</td>
<td>- 105 until 2013 (but many more companies use them)</td>
<td>-10, but really 3 companies lead negotiations</td>
<td>- 2 (recently 3)</td>
</tr>
<tr>
<td>Interface</td>
<td>- Collective action problem due to incapacity for industry association to control private Chinese companies</td>
<td>- Importing relationships are strictly controlled - Presence of coordinating “small groups”</td>
<td>- Only 2 companies allowed to import until very recently (now 3) - Some competition internationally</td>
</tr>
<tr>
<td>Industry Association role</td>
<td>- Important role in the market, lead international negotiations, but at the same time, ineffective and suffering from lack of coordination capacity</td>
<td>- No direct role in annual negotiations internationally, but important coordinating role prior to annual negotiations</td>
<td>- Not important</td>
</tr>
</tbody>
</table>

The fundamental structural conditions at the domestic level – the fragmented or concentrated structure of Chinese domestic markets – are the result of path-dependent historical set-ups. But these structural characteristics merely set the conditions for action. I argue that it is the ensuing strategic behaviour of key actors at both levels that allows us to fully explain outcomes. It is the strategic behaviour of key Chinese stakeholders (SOEs, SMEs and state coordinating agents, industry associations, the NDRC, MOFCOM, etc.) and their capacity for coordination of behaviour that determine whether Chinese stakeholders are able (or not able) to obtain their preferred direction of change at the global level. In cases of collective action failure, such as in the iron ore case, we see the highjacking of larger Chinese stakeholders.

60 However, my focus is different from Putnam’s, as I include a wider range of relevant actors at the junction of the domestic and the international, and not exclusively state presence at the international level.
actors’ interests by a set of smaller domestic actors (non-licensed SMEs), opening the door for decisive behaviour by large international producers. In the case of potash, we see a more successful coordination of the interface with global market stakeholders.

An analysis of code co-occurrence in interview transcripts confirms these trends (see Table 21). Indeed, interviewees mentioned the fragmentation of the iron ore market and its interface much more often than they did for the other cases. Conversely, 16 interviewees mentioned the concentration of the domestic market in the case of uranium. Strikingly, a perception of global market weakness was much more likely to be mentioned in the case of iron ore, despite the fact that oligopolistic structures were more often mentioned in the case of potash. This means that despite higher levels of concentration and coordination in the global potash market, more interviewees felt frustrated in the iron ore case, which hints at the asymmetric position of weakness experienced in that market. This confirms the fact that the analysis of one level of market dynamics (in this case, the international level), is insufficient to explain procurement dynamics and preferences. The joint study of domestic and international market dynamics is key to explaining preferences, behaviour and outcomes.

These broad dynamics were also confirmed by a senior Chinese business journalist, who explained that “the domestic markets for potash and uranium are very concentrated. We were successful in those markets. The market for iron ore is another story” (Interview 8, 2012).

See Appendix 2 for more details. From a total of 38 interviews for iron ore, 36 for potash and 32 for uranium, in other words, the opportunities to express the listed concepts were relatively similar across markets. The vastly different results show that interviewees who spoke about the uranium market, for instance, spoke about concepts other than the ones listed here. It is important to note that a few excerpts had to do with Japan, as well as, in contrast to, China, which influences the results (16 excerpts mentioned Japan, against 78 mentioning China). In certain cases, the diagnosis was the same and it does not skew the results (for instance, an interviewee may have been saying that the Chinese and Japanese consumers both faced a concentrated global iron ore market in the 2000s). At times, however, an interviewee may have been contrasting both cases, for instance, saying that whereas the Chinese iron ore market is very fragmented, the Japanese iron ore market is very concentrated. This would yield two entries, one for “iron ore” and “domestic market fragmented” and one for “iron ore” and “domestic market concentrated,” which I suspect in the case in the two instances of the co-occurrence of “iron ore” and “domestic market concentrated” below. Overall, a qualitative analysis of the content of the interviews confirms the broad tendencies observed in this table. I colour-coded the results for easier analysis (pale blue: 0-4 mentions; beige: 5-9 mentions; pale orange: 10-14 mentions; orange: 15-19 mentions; dark orange: 20 mentions and above).
Again, I argue that studying structural relations between domestic and international stakeholders, as well as the domestic power asymmetries between different domestic stakeholders, is necessary to help explain the global outcomes I observe as a result of China’s emergence. The likelihood of change in market institutions at the global level is the result of the coming together of market characteristics at both the domestic and international levels.

The fact remains that ironically, under certain circumstances, Chinese stakeholders’ procurement behaviour has positioned the country to be a catalyst for an increased marketization of global commodity market pricing regimes. This is a counter-intuitive finding for a state-led hybrid economy. China’s sheer size and its arrival in global market structures that offer little room for manoeuvre put it in a position in which disorganized procurement behaviours have had the unintended effect of giving global producers a strong hand in pursuing their pricing regime preferences.

### 3.8 Process Tracing: The Politics of Fragmentation and Coordination

Establishing the structural context in which Chinese market actors evolve allows us to get a general idea of the context in which procurement is affected in China. However, it is
important to delve into the details of Chinese market actors’ procurement behaviour to understand the following: How have levels of fragmentation at the interface of Chinese and international markets come to differ so much across markets? What was the role of key Chinese state organs in either facilitating or curbing these levels of fragmentation? What role did the relative fragmentation of the interface between Chinese market actors and the global marketplace play in influencing Chinese behaviour, and, in turn, systemic impacts at the global level?

I do this through a detailed study of the history of the import licensing process in China in the iron ore and potash markets. What emerges from this analysis is that the Chinese government tried to curtail import licenses in the iron ore industry from 2004 until 2013, but these attempts were ineffective and ultimately unsuccessful, and hundreds of Chinese iron ore importers continued to import the resource from overseas suppliers without official licensing documents. In the potash case, in contrast, the Chinese government has in fact been trying to increase the number of Chinese companies that can import potash. But these efforts have also remained ineffective; despite increasing numbers of potash import licenses in China, to date only two or three companies continue to import the bulk of the resource.

3.9 Summary of Cases

3.9.1 Iron ore case summary

In the iron ore case, the level of domestic fragmentation in the Chinese iron ore industry (fragmentation) and the lack of state organs’ capacity to enforce national strategies (lack of coordination) had an impact on China’s capacity to implement consistent and coherent procurement behaviour and opened the door for decisive actions on behalf of global market stakeholders. The domestic market for iron ore is highly fragmented, despite multifaceted attempts to remedy this by several organs of the central Chinese government over the last decades (NDRC, State Council, MOFCOM, CISA, etc.).

What was even more critical was that its interface with the global market is also highly fragmented, and this resulted in a clear asymmetrical relationship between domestic and global market stakeholders, a relationship that favoured the global stakeholders. This has led to bold, accusatory rhetoric and fragmented behaviour, which made it difficult for China to implement its international iron ore procurement policy. At key moments in the transition period from Japanese to Chinese dominance in the global iron ore market in the mid-2000s,
the Chinese lead negotiators were unable to coordinate procurement behaviour by Chinese firms on the international market (collective action failure in the Chinese domestic iron ore industry). CISA underestimated three things: the global market players’ eagerness to sell; the international suppliers’ commitment to the benchmark system; and its own capacity to control access to the import interface. The ensuing fragmented procurement behaviour (or lack of coordination) by hundreds of Chinese iron ore importers, coupled with the sheer volumes of Chinese imports, had a profound destabilizing impact on global market institutions.

By 2010, only six years after China became the world’s number one importer of iron ore, the behaviour of Chinese stakeholders destabilized a decades-long benchmarking regime, and the system fell apart. The market then moved towards a quarterly, and eventually, a spot pricing system. In sum, a collective action failure in the Chinese domestic industry yielded behaviours that profoundly affected incentive structures of global market players, and after only a few repeated interactions, had the deepest kinds of repercussions for what had been until then a stable market regime.

3.9.2 Potash case summary

In the case of potash, the Chinese domestic market and its interface with the global market are significantly more concentrated and coordinated than in the case of iron ore. I argue that this is because the potash market was more successfully consolidated during the reform era, and thus presented a significantly more concentrated and coordinated interface with the global market when Chinese stakeholders became a key player in the global market. This allowed Chinese stakeholders more control over the aggregate behaviour of its market stakeholders. This two-level symmetry (concentrated domestic and international market players) translated into more stable bargaining patterns, as well as moderate and incremental market change, much of which favoured the Chinese market players. In that case, we see effective translation of policy priorities into market outcomes, at least up to a point.

In the global potash market, Chinese negotiators also adopted a very bold – and this time successful – negotiation strategy. In August 2012, the Chinese negotiator (Sinochem) refused to sign the benchmarking contract with the Canadian negotiators (Canpotex), and asked for a markdown. The Chinese potash consumers held firm during the negotiation period, and did not contravene directives not to buy. In December 2012, global potash
suppliers agreed to a 15% markdown in price, a significant concession. In contrast to the iron ore case, the annual negotiations and the pricing regime, as well as the prevalence of long-term pricing contracts, survived China’s bold behaviour and its emergence as the number one consumer. The frequency of the annual negotiations has also increased to twice a year, a change that has been supported by Chinese and global market players. Finally, whereas the North American global marketing cartel survives until today, the Russian-Belarusian cartel (BPC) fell apart in the fall of 2013. This dissertation explains the divergent outcomes in the iron ore and potash markets, two global markets exhibiting striking levels of similarities prior to China’s emergence, and it does so through the analysis of market power asymmetries. In the potash market, Chinese consumers are both more concentrated and better coordinated, and this has allowed Chinese stakeholders a more effective translation of policy priorities into market outcomes.
CHAPTER 4 – CHINA’S IMPACT ON THE GLOBAL IRON ORE MARKET

It is worth restating the two research questions posed at the beginning of this dissertation. The first is about likelihood of change: Why have some global markets experienced systemic change following the emergence of a large consumer, whereas other markets have been more stable? The second question is about direction of change: Why have some global markets undergone marketization as a result of the emergence of a large consumer, whereas others, under similar circumstances, have changed in the opposite direction?

I argue that structural power asymmetries between domestic (Chinese or Japanese) and global market players determine global market institutional stability, and that they create the conditions for institutional market change at the global level. More specifically, I argue that extreme asymmetry between global and domestic positions tend to be unstable, and that rapid changes in market power relations during periods of power transition are particularly disruptive. Furthermore, positions of market power at the domestic level influence preferences for pricing regimes at the global level. Asymmetric positions of power provide strategic advantages, since the dominant side’s preferences for market institutions at the global level are more easily expressed. This has led to unexpected outcomes, including the marketization of certain pricing regimes, as a consequence of China’s emergence. The key causal mechanism at play is the relative capacity of commodity market stakeholders for market coordination, which I measure as their respective levels of market concentration.

When looking at domestic market structures, my approach is similar to that developed in Chapter 2 to define global markets, although with a few adjustments. The goal here is not to provide a comprehensive analysis of China’s domestic political economy, but rather to point to a number of characteristics that emerge to play a crucial role in shaping Chinese actors’ interaction with their global market counterparts.

In this chapter, I combine within-market comparative case analysis with careful process-tracing to critically assess the role of domestic and international variables in leading to a change in the global iron ore market pricing regime. I focus on China and Japan’s iron ore consumption because it is one of the most critical components of infrastructure development. Moreover, the global iron ore market has experienced dramatic levels of
change following the emergence of Japan, and then China, as the world’s number one iron ore importer in the 1960s and 2000s, respectively, but in different directions. I investigate two related cases involving China’s emergence: China’s impact on the global iron ore market, and the iron ore bulk shipping pricing regimes. The Japan case will serve as an across-time comparison, but its within-market nature (both cases occur within the iron ore market) allows us to keep many variables constant.

The dynamics through which pricing regime changes occur can be unexpected. For instance, at key moments in the transition from Japanese to Chinese dominance of the global iron ore pricing regime, China’s lead negotiators were unable to coordinate procurement behaviour on the international market. This lack of coordination capacity created opportunities for large global iron ore suppliers to push for their market preferences. Merely six years after China’s emergence as the world’s number one iron ore importer, the decades-old benchmarking pricing regime had fallen apart and spot pricing had emerged. In contrast, relative symmetry in market coordination capacities at the domestic and international levels in the case of China’s impact on the global iron ore bulk shipping pricing regime translated into deadlock, a bargaining dynamic, and moderate and incremental market change away from marketization (that is, an ownership sharing agreement). Japan’s emergence as the number one consumer of iron ore in the 1960s was a case in which highly coordinated iron ore consumers faced a more fragmented global market. This provided Japan with the room to manoeuvre to coordinate behaviour and achieve preferred results at the global level: a demarketization of global pricing regimes.

In the first section, I introduce my argument as it plays out specifically in the iron ore market. I then characterize the change in the iron ore benchmark pricing regime that I try to explain. Third, I present key characteristics of China’s domestic iron ore industry. Then, I illustrate my causal narratives by tackling two within-market case studies involving China: the fall of the iron ore benchmarking regime, and the Valemax shipping saga. Finally, I investigate the causal story in the emergence of Japan, another dominant player in the iron ore industry, 50 years prior to China’s emergence as the number one consumer.
4.1 Argument – The Iron Ore Case

I argue that structural asymmetries between domestic and global markets profoundly affect incentives and global market players’ capacity to act and create the conditions for systemic change (see Table 22 below).

In response to the question about the likelihood of change at the global level, I argue that power transitions that entail a profound change in consumer-producer power relations are more likely to be disruptive and lead to institutional change at the global level, than are power transitions that entail a continuation of two-level power relations. In addition, a change towards asymmetric positions of power (Quadrants 2 and 3) tends to be more unstable than a change towards symmetric positions of power.

Table 22 - Two-Level Market Power Asymmetries in the Iron Ore Market

<table>
<thead>
<tr>
<th>International market (Producers)</th>
<th>Domestic market (Consumers)</th>
<th>Fragmentation</th>
<th>Coordination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fragmentation</td>
<td></td>
<td></td>
<td>Symmetry</td>
</tr>
<tr>
<td></td>
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<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Asymmetry in favour of producers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Case: China – iron ore benchmark</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Outcome: marketization</td>
</tr>
<tr>
<td>Coordination</td>
<td></td>
<td></td>
<td>Asymmetry in favour of consumers</td>
</tr>
<tr>
<td>Case: Japan – iron ore benchmark and shipping</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outcome: demarketization</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Symmetry</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Case: China – shipping</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Clash, bargaining</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Outcome: indeterminate</td>
</tr>
</tbody>
</table>

The first Chinese case examined in this chapter, the China – iron ore/benchmark case, illustrates the conditions necessary for an extensive change to occur at the global level. Not only does the global iron ore market exhibit high levels of concentration, but the Chinese domestic iron ore industry exhibits very low levels of concentration, and in turn, low levels of coordination. This has placed the market players in positions of market power asymmetry with one another, with the global iron ore market players having the upper hand. Furthermore, the pricing regime that Chinese stakeholders disrupted in the 2000s had been
established decades earlier during Japan’s tenure as the dominant consumer. During that time, the market power asymmetry positions had been reversed. Therefore, China’s rise not only occurred in an unstable quadrant, but the Chinese stakeholders exhibited a profile that was markedly different from that of their Japanese counterparts, and this was also destabilizing. These patterns led to rapid and substantial change in the global iron ore market as a result of China’s emergence.

In this chapter’s China cases, the international markets exhibited very high levels of coordination prior to China’s rise. Because we are looking at two-level variation between cases, variation in China’s domestic market structures becomes determinant. I investigate how domestic market characteristics constrained China’s options, shaped its procurement behaviour, and, as a result of interaction with global market stakeholders, durably transformed global iron ore market pricing institutions.

In response to the question about the direction of change, I argue that market players’ preferences for pricing regimes are influenced by the relative position of market power they occupy in their own market as well as relative to international market players. Asymmetric positions of power provide strategic advantages, since the dominant side’s preferences for market institutions at the global level are more easily expressed. The specific pattern of China’s emergence and behaviour, coupled with that of the international producers in the iron ore market, led to the fall of the benchmark pricing regime, or to a marketization of global market institutions. In the case in which consumers had the upper hand, such as at the time of Japan’s emergence as the number one consumer, we saw a demarketization of global market institutions.

Case summary

China has already promoted systemic change in global iron ore market institutions. The first case in this chapter focuses on the fall of the decades-old international benchmarking regime in the global market, which was enabled by the behaviour of Chinese stakeholders. Indeed, in 2009, the China Iron and Steel Association (CISA), an association which exists to represent interests of both its member companies and to coordinate with central government organs, adopted a tough negotiating strategy with the three biggest global iron ore producers (Rio Tinto, BHPB and Vale). It also asked all domestic steel companies to refrain from buying on the international market while the negotiations were ongoing (CISA
was asking for significant price markdowns). But CISA’s strategy backfired. A multitude of small Chinese steel firms ignored the industry association's request and purchased iron ore on the international market through individual "spot" contracts. The three big suppliers, led by BHP, were keen on ushering in an era of shorter-term contracts and spot pricing. This combination of behaviours eventually led to the fall of the decades-old international benchmarking regime.

One counter-intuitive finding in this instance is that China’s impact on the global iron ore benchmarking pricing regime was the result of a domestic position of weakness rather than a position of strength.

The second case examined here is that of China’s impact on global shipping pricing regimes. China’s emergence led to a shift of shipping pricing conventions, and to a strategy by Vale that entailed building very large ore carriers (VLOCs) to ship the ore to China. The response of Chinese stakeholders was bold and firm: a government edict blocked the docking of Vale’s super cargoes in Chinese ports between 2011 and 2013. Evidence shows that this is best understood not as a top-down central government policy, a CISA policy, or even a result of large SOEs’ coordination; rather, the strongest opposition, lobbying, and coordination capacity came from Chinese ship owners-operators, chiefly COSCO, which resented the fact that it was losing shipping business. In other words, the blocking of the VLOCs was the result of the consolidated power of the relevant Chinese stakeholder, COSCO, and the coordination of the interface with the global industry by a player that was actually acting against broader national priorities.

4.2 Domestic-Level Market Structures

At the domestic level, fragmentation is key, as it impedes coordination of behaviour. But there are two key distinctions to make in the domestic context. First, the appropriate focal point when evaluating domestic-level fragmentation is the interface with the global industry. Since we are looking at commodity imports, the points of contact between domestic and international stakeholders are more pertinent than fragmentation writ large in China’s domestic markets. Levels of fragmentation are ultimately meaningful as they enable or impede Chinese stakeholders’ capacity for coordination. In evaluating this coordination capacity more fully, I take into account the role of key state institutions (relevant to specific commodity markets), key large importers and small and medium enterprises, when relevant.
I have identified the critical characteristic of commodity market structures as their levels of *market concentration*. At the domestic level, I conceptualize this at the *interface* with global players. This is best defined as the number of stakeholders with procurement access to global resource markets. The number of import licenses is a good proxy for this, even if in the iron ore-benchmark case there were many more companies importing the ore than there were official licenses.

The levels of market fragmentation are relevant because they allow us to estimate the control and coherence of behaviour at the interface with the global industry. The causal mechanism through which behaviour and change happens at the global level is the differential coordination capacity of actors at each level, or the differential ability of actors to solve their collective action problems. It is through coordination (or strategic coordination, used to solve collective action problems/social dilemmas), or lack thereof, that market actors get what they want. Maintaining pricing regimes, and especially changing pricing regimes, requires coordination (see Hall and Gingerich, 2004; Hall and Soskice, 2001; Elinor Ostrom, 1997). In my qualitative case studies, as I carefully evaluate Chinese actors’ capacity for coordination, I take into account, where relevant, the role of state organs and industry associations (which are different in each market), large SOEs, small private firms and the overlap of preferences between actors (there can be few actors with little overlap of preferences, or many actors with preference overlap that could make it easier to collaborate).

In the China – iron ore / benchmark case, as China’s need to import iron ore soared, there was an effort at coordinating procurement behaviour at the interface of the domestic and international iron ore markets. This was evident, first, through the selection of a SOE representative (Baosteel) to lead the international negotiations, then through CISA’s behaviour during the 2009 and 2010 rounds of negotiations. However, as we will see, coordination attempts were largely ineffective. My case study shows, however, that the level of domestic fragmentation in the Chinese iron ore industry and the resulting lack of coordinated procurement strategy impaired China’s position and led to international suppliers gaining the upper hand. In this case, I show that Chinese stakeholders’ procurement dynamics ironically positioned the country as a catalyst for the marketization (liberalization and financialization) of the iron ore market pricing regime. This is a counter-intuitive twist of fate for a state-led hybrid economy.
4.2.1 Iron ore: Relevance to China

China’s level of iron ore import dependence is high and increasing (see Figure 14 below).

Figure 14 - China's Iron Ore Import Dependence


4.3 Case 1: The fall of the Global Iron Ore Benchmark Pricing Regime

The benchmark pricing regime prior to China’s emergence

In 2003, China’s steel imports surpassed those of Japan for the first time, and the country became the number one iron ore importer (Wan, 2010). The global iron ore market at the time of China’s emergence as the dominant consumer operated under a negotiated benchmark pricing regime. For 50 years until 2009-2010, the iron ore market had been operating under a mixture of long-term (10 to 20 years) and shorter-term (one-year) contracts. In both cases, prices were determined as a result of annual benchmarking negotiations between the three main iron ore producers, BHP Billiton and Rio Tinto and Vale, and the main international importers, which by then had long been the Japanese importers (Zhang, 2009a). In 2003, however, the first benchmark price agreement was signed between Vale and Arcelor, with Nippon Steel following closely behind (the next day) at more than 15% over the previous year (Ericsson, 2004).

A small emerging spot market for iron ore came into existence as China started to import iron ore from India (neither of which was participating in the benchmark negotiations at the time).
4.4 Independent Variable: The Global Iron Ore Market

China faces particularly high levels of concentration in the global iron ore market. The “iron-ore industry has […] been consolidating more or less continuously since the 1970s” (Ericsson, 2004). The market is heavily concentrated among two producing countries (Australia and Brazil), and three producing companies (Rio Tinto, BHP Billiton and Vale). Together, Australia and Brazil control more than 70% of the world’s iron ore exports.62 (Figure 15).

“To measure corporate control at the production stage underestimates the concentration of the iron ore sector because large amounts of production do not enter the market, but are produced in captive mines or mines which have a protected or restricted market. An alternative way to measure the control is to monitor the share of global seaborne trade of the leading companies. Measured this way, the shares of the major companies are considerably higher. Vale alone controls 26% of the total world market for seaborne iron ore. With the market shares of Rio Tinto and BHP Billiton dropping in 2010, the overall share controlled by the Big 3 fell from 60% in 2009 to 58% in 2010.” (Ericsson et al., 2011)

What is more, the concentration in the global iron ore business had been increasing over the previous 20 years, until 2007 (Figure 17).

Figure 15 - Iron Ore Exporters World Market Share

[Diagram showing iron ore exporters' market shares, 2012]

Source: UNCTAD, 2013

Chinese imports mirror global average export shares (see Figure 16 below).

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62 International Steel Statistics Bureau.
Figure 16 - Chinese Iron Ore Imports by Country (2001-2010)

Source: Chinese Steel Statistical Yearbook. Author’s calculations.

Figure 17 - Top Five Seaborne Iron Ore Producers (1997 - 2007)

Source: Baffinland; Tex Report; AME; Roskill; UNCTAD; BMO Capital Markets.
4.5 Global Iron Ore Market Players: Coordination Capacity

Two comments can be made in analyzing levels of coordination. Market concentration is high in the global iron ore market, but coordination between the three major firms, although taken as fact by many interviewees, is slightly harder to establish.

First, says Ericsson,

“while the international steel industry is not cohesive and producers do not act in unison, the three large iron ore producers don't have to collude in order to exercise considerable control over the market and ensure that they are pursuing mutually consistent strategies. Their objective is obvious—to maximize profits— and their method of achieving the objective equally so: keeping prices high enough to pay for new investment but low enough so that new entrants do not become realistic alternative sources of product.” (Ericsson et al., 2011)

Supranational regulatory gaps have also given established multinational corporations more leeway to influence the outcome of the game; for a recent example, see the current scandal over Goldman Sachs’ aluminum market shuffle, hoarding and double-play (Kaminska, 2013). One Chinese academic commented: “The problem with global markets is that there is no regulatory oversight on market actors’ behaviour (...), at the WTO for instance, there is nothing regulating the oligopolistic behaviour of the three big iron ore companies. This is a problem, we have not found the regulatory solutions to this issue” (Interview 7, Chinese academic, 2012).

Second, to the extent that perceptions and trust matter in influencing market stakeholders’ behaviour, it is worth noting the fact that the Chinese iron ore and steel market stakeholders, at the central level, have exhibited extremely high levels of mistrust towards global iron ore producers. China, as a newcomer, is particularly sensitive to perceptions of unfairness in global markets. The fact that global commodity markets operate under high levels of concentration, and that China is, as it were, entering the game after half-time, is adding to that perception (Nolan, 2012).

Although international suppliers themselves point to the presence of strong rivalry between the three big mining firms (interviews with industry insiders, 2012), suffice it to say at this point that Chinese stakeholders perceive the firms’ behaviour as collusive. In March 2013, China’s National and Development Reform Commission (NDRC) released a report that accused the big iron ore mining companies of “artificially inflating the price of iron ore,
by delaying and controlling shipments, delaying sales, and causing a temporary illusion of shortage in the market” (Zhong, 2013). BHP was also accused in January 2013 of buying 100,000 tonnes of iron ore to support prices.\textsuperscript{63} CISA has also accused the global miners of collusion (Paul and Serapio Jr, 2013).

China is skeptical of multinational corporations' commitment not to coordinate production to maximize profits. A senior Chinese journalist commenting on “the behaviour of international cartels or informal cartels in commodity markets, such as oligopolies,” said that: “Speaking of the dynamics among the major producers, even if iron ore is not controlled by a government-to-government cartel, we think it is just a different type, with private companies involved” (Interview 8, 2012). Some of my interviewees go even further. A Chinese official and industry insider exclaimed that: “Price making is in Western hands!!! By monopolies!! But the demand is in emerging countries!!! And [we have] no price making power! Very frustrating!” (Interview 65, 2012, emphasis noted by author). Even Platts, the price index company, does not escape this perception: “From a China point of view, the Platts index is really opaque; they can’t explain how they come up with the price, and its links with the three big iron ore companies and with companies such as Goldman Sachs and Merill Lynch are evident!” (Interview 59, Chinese government insider, 2012, emphasis noted by author). Another Chinese industry insider concurred: “People here do not think that Platts is transparent, or objective” (Interview 111, 2012).

As a case in point, in March 2013, China’s National and Development Reform Commission (NDRC) released a report that outlined four factors that caused the US$90-150 price rally in the second half of 2012 and said that the most recent surge in iron ore prices was partly the result of “unreasonable pricing methods” by the biggest iron ore producers. The NDRC accused the big iron ore mining companies of “artificially inflating the price of iron ore, by delaying and controlling shipments, delaying sales, and causing a temporary illusion of shortage in the market.” These behaviours by the three major mining companies were developed in order to foster an illusion of shortages and to send fake market signals. BHP was accused in January 2013 of buying 100,000 tonnes of iron ore to support prices. The economic agency went as far as to say that as a consequence, the Platts iron ore index

\textsuperscript{63} BHP and Platts immediately issued a rebuttal (Riseborough, 2013).
could not be fully trusted because it uses opaque and unrepresentative pricing systems, which pushes prices higher, and because these inflated prices were the basis for its calculation (Zhong, 2013). BHP and Platts immediately issued a rebuttal (Riseborough, 2013). “Chinese steel mills (...) continue to claim that the health of the sector is being harmed by the "monopoly practices" of the big three global iron ore suppliers” (2011a). “The China Iron & Steel Association, an industry body representing large Chinese steelmakers, [has also recently] lobbied the government to investigate possible price manipulation by miners and traders, a senior official said” (Paul and Serapio Jr, 2013). See Table 23 below for a snapshot of price levels and quantities imported in 2008.

The relationship between transparency and commodity price volatility is complicated. The above-mentioned accusations of cheating by the NDRC destabilized the relationship between China and global market stakeholders at a time when markets were undergoing a massive transition. “Deng Qilin, the president of Wuhan Iron & Steel Group [and] the chairman of the China Iron & Steel Association (CISA), said: ‘Although the prices of steel products have picked up this year, they still cannot digest the pressure from rising iron ore prices. (...) Chinese steel mills are suffering from slender profits while iron ore miners only have to dig about a meter underground. What costs them $10, they sell for $100. Is it fair?’” (Zhang, 2010).

Table 23 – China’s Iron Ore Imports by Country, with Price Paid (2008)

<table>
<thead>
<tr>
<th>Country</th>
<th>Quantity (ton)</th>
<th>Share of total (%)</th>
<th>Total dollar amount (thousand of USD)</th>
<th>Share of total amount (%)</th>
<th>Price per ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>183400058</td>
<td>41.4</td>
<td>22447295</td>
<td>37.1</td>
<td>122.4</td>
</tr>
<tr>
<td>Brazil</td>
<td>100619615</td>
<td>22.7</td>
<td>14940815</td>
<td>24.7</td>
<td>148.5</td>
</tr>
<tr>
<td>India</td>
<td>90963204</td>
<td>20.5</td>
<td>13391744</td>
<td>22.1</td>
<td>147.2</td>
</tr>
<tr>
<td>South Africa</td>
<td>14523975</td>
<td>3.3</td>
<td>1908485</td>
<td>3.2</td>
<td>131.4</td>
</tr>
<tr>
<td>Indonesia</td>
<td>6756925</td>
<td>1.5</td>
<td>609035</td>
<td>1</td>
<td>90.1</td>
</tr>
<tr>
<td>Russian Federation</td>
<td>5790016</td>
<td>1.3</td>
<td>967505</td>
<td>1.6</td>
<td>167.1</td>
</tr>
<tr>
<td>Peru</td>
<td>5341970</td>
<td>1.2</td>
<td>668864</td>
<td>1.1</td>
<td>125.2</td>
</tr>
<tr>
<td>Iran</td>
<td>5144032</td>
<td>1.2</td>
<td>852912</td>
<td>1.4</td>
<td>165.8</td>
</tr>
<tr>
<td>Ukraine</td>
<td>4596880</td>
<td>1</td>
<td>813948</td>
<td>1.3</td>
<td>177.1</td>
</tr>
<tr>
<td>Canada</td>
<td>3710411</td>
<td>0.8</td>
<td>762438</td>
<td>1.3</td>
<td>205.5</td>
</tr>
<tr>
<td>Chile</td>
<td>3579471</td>
<td>0.8</td>
<td>550408</td>
<td>0.9</td>
<td>153.8</td>
</tr>
<tr>
<td>Afghanistan</td>
<td>3189947</td>
<td>0.7</td>
<td>443361</td>
<td>0.7</td>
<td>139.0</td>
</tr>
<tr>
<td>Venezuela</td>
<td>3185870</td>
<td>0.7</td>
<td>589064</td>
<td>1</td>
<td>184.9</td>
</tr>
<tr>
<td>Country</td>
<td>Quantity (ton)</td>
<td>Share of total (%)</td>
<td>Total dollar amount (thousand of USD)</td>
<td>Share of total amount (%)</td>
<td>Price per ton</td>
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<tr>
<td>-------------</td>
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<td>---------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Mauritania</td>
<td>2492590</td>
<td>0.6</td>
<td>328296</td>
<td>0.5</td>
<td>131.7</td>
</tr>
<tr>
<td>North Korea</td>
<td>1881901</td>
<td>0.4</td>
<td>172494</td>
<td>0.3</td>
<td>91.7</td>
</tr>
<tr>
<td>Other</td>
<td>8328217</td>
<td>1.9</td>
<td>1106744</td>
<td>1.8</td>
<td>132.9</td>
</tr>
<tr>
<td>Total</td>
<td>443505080</td>
<td>100</td>
<td>60553407</td>
<td>100</td>
<td>Average = 144.6</td>
</tr>
</tbody>
</table>

Source: China Mining Yearbook 2010

In sum, coordination levels in the iron ore market are not formalized like they are in the case of the oil market or the potash market, both of which have created formal producers’ organizations. Implicit coordination is, however, mentioned repeatedly in interviews, and is certainly perceived to be an issue from the point of view of the Chinese market stakeholders.

### 4.6 China’s Domestic Iron Ore Market

*Chinese production and consumption levels*

The total value of iron ore imports in China in 2011 was USD $112.43 billion. Most of the steel is used in the construction sector (see Figure 18). While Chinese iron ore production has been growing, it has not been growing fast enough to close the gap between consumption and production, which has been filled with ever increasing imports (see Figure 19). The growth in iron ore imports has been slowing down, but absolute import amounts keep growing, albeit at a slower pace.

**Figure 18 - Main Steel Consuming Sectors in China (2011)**

![Main steel consuming sectors, 2011](image)

Source: China International Iron and Steel Raw Materials Conference 2012
4.7 Independent Variable: Domestic Levels of Concentration

The domestic iron ore industry in China is so fragmented that it is hard to get a clear picture of the companies that are operating at any one time. The China Metallurgical Press cites a total number of 7,373 steel-producing enterprises in 2007, up from 6,999 enterprises in 2006, and 2,997 enterprises in 2000 (Yang, 2010). In 2008, 92.2% of those enterprises were small and medium enterprises (see Table 24). The iron ore industry is equally fragmented, with 40 large iron ore enterprises (5 MT and above, 35.3% of national output), 187 medium size enterprises (1-5 MT, 28.8% of national output) and 1,171 small private mines (up to 1MT, 36% of national output) (Mayfield, 2013). The China Steel Statistical Yearbook counted a total of 12,143 steel and iron ore producing enterprises in the country in 2010 (China Steel Yearbook (钢铁工业年鉴), 2011).

The iron ore industry itself is also extremely fragmented in China, with Yang Jiasheng, the chairman of the Metallurgical Mines Association of China (MMAC), confirming that large-scale mines make up only around 3% of the country’s 4,037 mines (Stanway, 2015). Interviewees often used the term “messy, chaotic” (乱), to describe the Chinese domestic iron ore industry (Interview 111, Chinese government official, 2012).
Table 24 - Comparative Fragmentation Levels in the Chinese Iron Ore and Potash Industries

<table>
<thead>
<tr>
<th></th>
<th>Chinese industry</th>
<th>potash industry</th>
<th>Chinese iron ore industry</th>
<th>Chinese mineral industry average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of large-scale and medium-scale enterprises</td>
<td>73.3%</td>
<td>6.4%</td>
<td>7.8%</td>
<td></td>
</tr>
<tr>
<td>Proportion of small-scale and small enterprises</td>
<td>2.67%</td>
<td>93.6%</td>
<td>92.2%</td>
<td></td>
</tr>
</tbody>
</table>


Significantly, in China, the three largest companies only occupy 14% of total domestic production, compared to 70% by Japan’s three biggest steel makers, and 60% by the top three steel makers in the US (Bergsten et al., 2008). In 2010, although “key enterprises” (or large and medium size enterprises combined (重点大中型企业)) produced 87% of crude steel in the country, they produced 65% of total finished steel products, and 5% of ferroalloys (China Steel Yearbook (钢铁工业年鉴), 2011).

Figure 20 - Domestic Fragmentation Levels - Top Four Chinese Crude Steel Producers (2000 - 2010)

Source: Chinese Steel Statistical Yearbook. Author’s calculations.

The top four Chinese crude steel producers produced 25.87% of total Chinese steel in 2010 (see Figure 20). Consolidation efforts in the iron ore industry have been laborious and largely unsuccessful (Zhou, 2008). One Chinese industry insider commented: “One of the
great failings of the last five years is that China could not reach its objectives of consolidation in the iron ore market. The objective was to reach 50% of the market for the 10 biggest steel companies by 2010, and 70% in 2020. In 2010, they were only at 42%. One of the biggest critics of this situation was the *Youth Daily*; it was very vocal” (Interview 98, 2012).

### 4.8 Domestic Market: Coordination Levels

#### 4.8.1 High fragmentation at the interface between Chinese and global iron ore markets

Consolidation efforts in the Chinese iron ore industry have been laborious and unsuccessful (Zhou, 2008). The key variable of relevance here, however, is the number of Chinese companies that import iron ore and are situated at the interface of the Chinese and global iron ore market. The Chinese state has tried, though largely unsuccessfully, to reduce this number over the years. One resource-industry SOE official remarked: “The steel industry is not concentrated in China and the market structure influences negotiating power” (Interview 3, with Chinese SOE official, 2011).

#### 4.8.2 Process tracing: Iron ore importing licenses – a short history

In 2004, the People's Republic of China enacted the *Foreign Trade Law* (People's Republic of China Foreign Trade Law, 2004). Article 15 stipulates that the Foreign Trade Department of the State Council can implement automatic import licenses in order to be able to monitor the country’s import situation. The law also stipulates that the Customs Department should not allow another entity to import a product without an import license (should the product be listed as an automatic import license good). The same department manages special import licenses (or quota licenses).


At the time, there were issues regarding the iron ore import process, including the fact that large steel enterprises often hoarded the ore and resold it at a higher value to small and
medium enterprises. The “automatic import licensing system” for iron ore was announced by the MOFCOM and the General Administration of Customs’ Announcement Number 9, on March 1, 2005 (铁矿砂自动进口许可证申领暂行办法) (Provisional Procedures, 2005). Pertaining to the new licensing system, companies that conform to the various criteria outlined by MOFCOM could obtain an import license.

In 2005, the fifth criteria stipulated that to obtain a license, companies needed to conform to the qualification standards established by CCCMC and CISA (“符合五矿化工商会，钢铁工业协会制订的从事铁矿石经营资质标准”), issued on February 28, 2005 (standards and reporting procedures for qualifying iron ore importers “铁矿石进口企业资质标准和申报程序” ) (Provisional Procedures, 2005). Such standards included the need for companies to:
- Meet the steel industry access standards (符合钢铁行业准入标准), as well as a notice sent by the General Office of the State Council to the NDRC and other departments on December 23, 2002 on: “Ideas on how to put a stop to blind investments in the steel, aluminum and cement industries”64;
- For steel companies, last year’s crude steel production should be at least one million tons; for distribution companies, they should have registered capital of at least 10 million RMB, imported at least 300,000 tons of iron ore the previous year, or more than 100,000 tons in the first two months of 2005;
- Products to meet national quality standards, as well as ISO standards;
- Imported iron ore should not go to enterprises that are not supported by state development policy or have backward facilities;
- Steel enterprises meeting the above criteria should apply to the China Steel Industry Association for a license, and others (钢铁生产以外) should apply to the CCCMC.

In 2004, prior to the establishment of the license system, there were 523 companies importing iron ore in China (Zhuang, 2006). In 2005, MOFCOM’s notice established the number of iron ore importing licenses at 118, more than a four-fold decrease.

64 This notice includes a directive to strictly enforce market access (consolidate the industry) to avoid excessive competition and wasting of resources. Minimum conditions for investments include the size of the facilities, furnaces, energy efficiency standards, environmental standards, etc.
In 2007, CISA and CCCMC issued an announcement following a joint working meeting. The number of firms allowed a license to import iron ore was to be reduced again from 118 to 112 (the number then remained stable until 2010) (Liang, 2007). “CISA started reducing iron ore import licenses in 2005. The number of steel mills and trading companies possessing licenses in China has been reduced from 500 to 112 [in 2009], of which trading companies' licenses are down from 250 to 40” (Zhang, 2009b).

Speaking about the automatic licensing process in general in 2013, MOFCOM spokesperson Shen Danyang also specified that the licensing system was separate from other issues. MOFCOM remained silent on other considerations by relevant industry associations and organizations regarding the rules, conventions and standards with regards to iron ore import governance, which get resolved via means of consensus, and even on official industry governance measures (Chinese Ministry of Commerce, 2013). This confirms that the substance of qualifying standards for iron ore imports is not established by MOFCOM, but by CISA and CCCMC.

In April 2010, CISA and CCCMC established a “Joint office of iron ore imports” (“进口铁矿石联合办公室”) specifically to “control the flow of iron ore imports and curb speculative behavior” (Li, 2010). Indeed, the illicit use of official licenses by more than one company was widespread at the time (interviews, 2012). The result was that a number of companies well in excess of the number of official licenses, were purchasing iron ore on the global market, and this was creating a problem that was labeled “炒矿行为”, or the “stir-fry ore” behaviour (speculating behaviour in the mining industry). On February 18, 2008, in order to remediate the soaring iron ore prices and consolidate and reorganize (“整顿”) domestic iron ore importers, CISA issued a notice that would see stringent controls on iron ore importers (the “Convention on the order and discipline of the steel industry’s iron ore import market” 钢铁行业进口铁矿石贸易秩序自律公约) (Li, 2011a).

In April 2010, CISA and CCCMC also issued three key notices: “2010 Iron Ore Import Enterprises qualifying standards and application process” (2010 年铁矿石进口企业资质标准及申报程序); “Regarding Iron Ore Imports Representatives Regulations” (关于进口铁矿石代理制实施细则); and “Iron Ore Importing Contracts and Reporting Flow
Registration Guidelines” (进口铁矿石合同信息上报登记及其流向登记备案规定) (Li, 2010).

Among the newly tightened “Iron Ore Import Qualifying Guidelines,” the minimum quantity of imports of iron ore by the enterprise the previous year increases from 700,000 tons to 1,000,000 tons, the amount of registered capital increases to 50 million Yuan, and the minimum credit rating is established at 2A. The number of firms allowed a license to import iron ore thus dropped further from 112 to 105, of which there were 65 steel producers and 40 traders at the time (Zhao, 2013).

The overall pattern of these guidelines from 2005 to 2010 was to gradually decrease the number of enterprises with access to an import license (Where are the Chinese iron ore negotiations heading? 2010). The goal of these efforts was framed as reducing China’s dependence on the foreign iron ore export “monopoly” (“垄断”) (Zhao, 2013) by strengthening the hand of Chinese importers.

**Figure 21 - Share of Total Iron Ore Imports by Top 2 Chinese Firms (2001 - 2011)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Number 1 importer (Baosteel)</th>
<th>Number 2 importer (WISCO, Sinosteel, Hebei Iron &amp; Steel)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>19</td>
<td>5</td>
</tr>
<tr>
<td>2006</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>2011</td>
<td>6</td>
<td>4</td>
</tr>
</tbody>
</table>


Despite these efforts, the share of imports by specific Chinese domestic steel companies continued to decrease over the same period. Data from the China Customs Department allows us to observe the increasing level of fragmentation at the interface with the global iron ore market, even with the companies officially licensed to import the ore. In 2001, the two largest importers of iron ore in China (Baosteel and WISCO) imported 24% of
total imports. By 2011, the proportion of imports by the two largest importers (Baosteel and Hebei Iron & Steel) had dropped to only 10% (see Figure 21).

As we can see, at the time of China’s emergence as the number one iron ore importer, the country was firmly situated in Quadrant 2: fragmented domestic consumers facing highly concentrated global producers.

4.8.3 The fall of the iron ore benchmarking regime

The spot market did not really exist before 2000, and got its start mainly for iron ore from India to China, as established producers (Brazil, Canada, Australia) kept the annual pricing system (Interview 126, Jan van Veelen, iron ore industry insider and former Sales Director at several key iron ore mining companies, 2013).

In 2003, China’s iron ore imports surpassed those of Japan. Until then, Japan had been the lead benchmark price negotiator. The “Japanese steel mills [were] leading the discussions, (…) in close cooperation with the Germans and other major buyers. I often read that these discussions were secretive, [but] only for the outsiders; the sellers and buyers [producers and consumers] knew exactly what was going on!” (Interview 126, Jan van Veelen, iron ore industry insider, 2013).

The Chinese were uneasy sitting on the sidelines and accepting the benchmark price every year, as they now were the world’s largest importer of iron ore.

“The involvement of Chinese buyers in the negotiation process carried the effect of weakening the bargaining power of Japanese firms on the buyers’ side, delivering the Big 3 miners a whip hand to push for rapid price increases in the context of booming Chinese demand. As a result, prices for internationally traded iron ore and coking coal started to boom, with iron ore alone increasing five-fold from USD 36 to 144 per tonne in four years between 2005 and 2008.” (Wilson, 2010)

The leading Chinese importer, Baosteel, initially took the lead in representing the Chinese purchasers in the annual benchmarking negotiations. After failing to reach an agreement for three years in a row, in December 2006, for the first time, Baosteel (which was acting as the representative of 260 Chinese buyers at the time) agreed to a benchmark with the Brazilian company, now known as Vale, ahead of the Japanese buyers (Craze and Blount, 2006).
Baosteel negotiated an increase of 19% from the previous year, well below expectations at the time (Wilson, 2012). Baosteel’s lead continued in 2007 (10% increase) (Craze and Blount, 2006). In 2008, Baosteel led the negotiation again, and was forced to agree to a 65% rise over the previous year’s benchmark price (Baosteel, 2008). This time around, the price rise was significant. Baosteel’s share of the domestic Chinese market was small – it accounted for 6% of Chinese imports at the time – and this weakened the position of the steel mill (The lore of ore, 2012). In 2009, the Chinese government then “attempted to use its massive demand for iron ore as a lever against iron-ore producers by uniting all of China's steel companies under a single negotiator: state-run CISA. CISA wrestled control from Baosteel to lead negotiations in 2009. Collective action problems were to plague the industry over the next two years.

In 2009, in the midst of the Global Financial Crisis, CISA took a tough negotiating strategy with the three biggest global iron ore producers (Rio Tinto, BHPB and Vale), and boldly asked for a 40%-50% markdown (China: Lessons, 2009). Despite the fact that Japanese and Korean mills signed contracts in early 2010, with an appreciation of between 90 and 100% over the year before, CISA gave strong assurances that it would continue negotiations, refuse the “sky high” prices and look to secure long-term contracts (Where are the Chinese iron ore negotiations heading?, 2010).

The three major iron ore suppliers respond to China’s strategy by proposing that pricing follow an emerging “index pricing formula” (Wilson, 2012). CISA refused, and asked all domestic steel companies to refrain from buying on the international market while the negotiations were ongoing. But CISA's strategy backfired and negotiations stalled. CISA “asked its steel companies to refrain from importing iron ore from three major mining companies in an effort to pressure them during price negotiations” (China: An Iron Ore Ultimatum?, 2010). Despite the central government urging its national steel makers not to negotiate directly with the iron ore producers, “the major Chinese steel companies had broken ranks with the CISA and signed contracts of their own with foreign suppliers. (…) This forced the remaining steel companies to fend for themselves on the spot market. (…) Spot prices rocketed up to well over $100 per metric ton in the months following the failed negotiations” (China: Lessons, 2009).

<table>
<thead>
<tr>
<th>Country</th>
<th>Quantity (tonnes)</th>
<th>Share of total (%)</th>
<th>Price per ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>183,400,058</td>
<td>41.4</td>
<td>122.4</td>
</tr>
<tr>
<td>Brazil</td>
<td>100,619,615</td>
<td>22.7</td>
<td>148.5</td>
</tr>
<tr>
<td>Other</td>
<td>159,485,407</td>
<td>35.9</td>
<td>Average = 137.4</td>
</tr>
<tr>
<td>Total</td>
<td>443,505,080</td>
<td>100</td>
<td>Average = 144.6</td>
</tr>
</tbody>
</table>

Source: China Mining Yearbook 2010

A multitude of small Chinese steel firms thus ignored CISA’s request and purchased iron ore on the international market in individual "spot" contracts (2009 was the only year contract prices were above spot prices, with the spot below $60, see Table 25 and Figure 22). One Chinese iron ore industry insider from the private sector confirmed this to me when he said that: “There are many actors on the Chinese side, and they do not act together. For instance, the big steel mills act through CISA, whereas the private sector is more nimble” (Interview 69, international iron ore industry high-level executive, 2012).

The lack of capacity on behalf of the lead negotiator for coordinating domestic iron ore importers was compounded by infighting between two key stakeholders. On April 5, 2010, CISA and CCCMC held a closed-door meeting in Henan Building to discuss the “establishment of the iron ore market’s orderly alliance” (规范铁矿石市场秩序联合会议). The result was the adoption of the three industry self-regulation documents (mentioned above), which were established to put an end to the reselling of iron ore by license-holding companies to smaller domestic companies. The Stern Hu affair, in which a dual citizen from Australia and China and a Rio Tinto employee convicted for bribery in China in 2010, was directly linked to the domestic difficulties surrounding the iron ore import license system. At the time, Chinese companies, including Sinochem and China National Building Materials Group, along with 20 others, were exposed in the Rio Tinto bribery scandal. As discussed in the Chinese media, mostly private Chinese companies were suspected of conspiring with Rio Tinto employees and licensed Chinese companies to import iron ore (in exchange for a bribe) to then resell on the Chinese market for a large profit (Xie, 2011).

In the middle of an international benchmarking negotiations deadlock, the failed investment in Rio Tinto, and the Stern Hu scandal, CISA and CCCMC attempted to wrestle control over the domestic iron ore importing situation and to make peace (media reports
hinted at previous infighting and efforts at “making peace” (安内) (Where are the Chinese iron ore negotiations heading?, 2010). This is referred to in another news article even more directly as “Making internal peace is necessary before resisting foreign aggression!” (攘外必先安内!) (Li, 2010).

Newspaper reports mention a “joint petition” to the upper levels of government by the leaders of Chinese steel SOEs, asking that the iron ore (negotiation) difficulties be raised to a “national level issue” (事实上，此前有消息称，数家中国钢企老总联名“上书”，要求将铁矿石问题上升到国家层面) (Where are the Chinese iron ore negotiations heading?, 2010). CISA and CCCMC eventually established a joint office (进口铁矿石联合办公室) to control the imports of iron ore resources, collect all import contract information and monitor iron ore flows in an attempt to curb speculative iron ore behaviour (打击炒矿行为) (Li, 2010).

CISA Secretary General Shang Shanhua was reported saying that: “Rectifying/consolidating the iron ore import market is necessary for two reasons: first, to prevent lesser quality ore from entering the country; and second, to prevent iron ore reselling/speculative practices”65 (Li, 2010).

Despite the legal efforts to curb the number of domestic companies importing ore, many companies, including those without licenses, continued to bypass the domestic Chinese regulatory system. Articles refer to the fact that since 2007, despite the fact that there have been 112 official import licenses, at least 200 companies were in fact importing iron ore (Where are the Chinese iron ore negotiations heading?, 2010). A journalist interviewed a Beijing-based iron ore company that at the time had been selling between 500,000 and 2,000,000 tons of iron ore a year on the Chinese markets for three years, not with an official license, but with a “purchased license.” The process was very simple: a company without a license would arrange the contact, price and delivery with a foreign seller, then ask a domestic license holder to apply their own official seal on the contract in exchange for a fee. As per the journalist’s interview, fees ranged from 0.1 to 0.7% on a 50,000-ton cargo, which would be worth upwards of 20,000,000 RMB. In some cases the fee could reach 140,000 RMB (Zhao, 2013).

65 “整顿进口铁矿石市场，首先就是要杜绝这些不合格的矿产品流向国内；同时，也将遏制在贸易领域的炒矿行为”. Author’s translation.
Another senior journalist confirmed that if only a few steel companies had the required permit to import the ore, other politically connected companies were still managing to import the ore and resell it domestically. As such, he explained, “many companies in China have an interest in iron ore prices going up. This is a problem” (Interview, 8, 2012). Indeed, the large SOEs benefitted from the benchmarking system (Li, 2010). “Some steel mills make more profit by selling ore to small ones than selling steel” (Zhang, 2009b). A Chinese academic summarized the situation as follows: “The fragmentation of the iron ore market explains a lot. It is so difficult for China to have an iron ore strategy, since all the iron ore companies don’t listen! The competition among Chinese companies leads to higher prices” (Interview 60, 2012).

During the 2009-2010 benchmark negotiations, CISA did not have enough sway over Chinese importers. It proposed taking away the licenses from the renegade Chinese steel mills and traders, a move which MOFCOM opposed for fear of endangering China’s resource security (Zhang, 2009b). It also tried to block the import of ore by individual Chinese purchasers who were paying well above the previous year’s price (Bunker and Ciccantell, 2007), with no success. In addition, CISA had overestimated the three big suppliers’ need to sell (Gu, 2009), compared to the Chinese mills’ need to buy iron ore.

CISA faced “harsh criticism (...) for mishandling the 2008-2009 negotiations as an out-of-touch government entity with no experience in the world of trade” (China: Lessons, 2009). Following the failure of its negotiations led by CISA in 2009,

“Executive Deputy Chairman Luo Bingsheng, General Secretary Shan Shanghua, and Chen Xianwen, the director of CISA’s market investigation department who was lead negotiator during the failed 2009 price negotiations, all submitted their resignations at the organization’s annual meeting Feb. 20. The three are blamed for CISA’s failed strategy of leveraging its role as megaconsumer in the global market to extract deep discounts in which CISA refused to make concessions. (...) From China’s point of view, the reason CISA failed in previous negotiations was its inability to prevent small steel miners from breaking ranks and striking their own deals with iron ore producers. The government is attempting to hasten the long-running consolidation of the steel sector to enable CISA to present a united front in future.” (Chinese Dependence on Foreign Iron Ore: A Special Report, 2011).

A Chinese industry insider explained: “During the 2008 negotiations, CISA had a cultural problem. The perception was that the foreign companies were there to trick us (骗我们). There was a big feeling of a struggle against a foreign discrimination. They hadn’t
thought through the consequences” (Interview 46, 2012). Another Chinese government official confirmed: “CISA supported the benchmarking system; they were conservative, and it was Australia who wasn’t willing” (Interview 59, 2012). One high-level international industry insider commented that “the broad direction towards spot pricing globally had a lot to do with the arrival of China.” He continued:

“There is a saying in Chinese: “You lift the rock and it falls on your foot.” This was the situation with iron ore. (...) The fall of the benchmarking system is particularly bad for the purchasers. The Chinese had no intention of making the benchmarking system fall! What happened is that the spot market started to be higher than the benchmark, after the arrival of China on the scene, whereas the benchmark had been very stable for decades. Every year, the benchmark would go up, but the spot price would be even higher. The only year when the spot was a little below the benchmark, the Chinese said: “We are going for the spot price!” It was a mistake!! BHP and others were only too happy! It was more in their favour. So the benchmark system fell down, and this was a big blow to the Chinese steel companies. So short-sighted.” (Interview 86, 2012)

The fact that the Chinese negotiators did not intend to cause the fall of the benchmark pricing system was confirmed yet again by a senior Chinese government official (Interview 95, 2012). But the strongest confirmation came from a Chinese government official with intimate knowledge of the events. I asked whether in 2009/2010, CISA wanted to end the benchmarking system when it led the negotiations. The interviewee responded, very firmly: “No. CISA did not want to end the benchmarking system at that point. They just thought that the price was too high. It wasn’t in their intention to see the end of the benchmark, nor was it Baogang’s” (Interview 111, 2012).

All in all, speaking with dozens of interviewees, I never once met someone who said that the fall of the benchmarking system was a well thought-out plan by the lead Chinese negotiators, or even powerful Chinese interests (government organs or large firms). In the end, as an indication of the perception of a failed mission, “the top CISA guys left after the fall of the benchmarking system” (Interview 112, 2012).

4.8.4 The three international producers’ response

Interviews with iron ore suppliers confirm that the three firms were initially divided, as the Global Financial Crisis unfolded, on whether to maintain the annual benchmarking system that had been in place for decades. A Chinese industry insider explained: “For a
moment, the spot price was above the benchmark and that was when the three big companies made the jump” (Interview 98, 2012). Other interviewees pointed to a longer-term strategy.

Of the three, BHP Billiton was most clearly in favour of a transition towards a quarterly, and eventually a spot market, system, whereas Rio Tinto’s management took a more traditional approach, in part because its main Asian clients (Japanese and South Korean steel mills) valued the stability brought by the benchmarking pricing system. When I asked a high-level executive in the iron ore industry whether BHP was the most vocal about its interest in having the benchmarking system fall apart, he replied: “Yes, they were very vocal about it” (Interview 69, 2012). At the time, the CEO of BHP (Marius Kloppers), is said to have been “pretty keen on seeing the fall of the benchmark” (Interview with international long-time iron ore industry insider, 2013), because he estimated the spot price would rise above contract prices. He was right. “Vale, at the beginning, didn’t want to know anything about the spot prices and indexes. But remember, they changed management completely66. (…) The president and commercial directors and other top managements left and a new team was brought in, who was a more open to the spot cargoes and the volatile prices, etc. (…) so they changed the bidding culture” (Interview, international mining industry insider, 2013). Rio Tinto followed BHP’s and Vale’s lead, the last to make the move in 2010, and the quarterly contract was introduced. One iron ore industry insider close to Rio Tinto said: “During the fall of the benchmark, was Rio more reticent? Yes, BHP was the early mover. But now we wonder if we shouldn’t have made the move earlier! Why? We figured out that it was indeed a profitable move. BHP saw it before us, and we now have come to the realization that it was indeed beneficial and we could have moved earlier” (Interview 134, Iron ore industry insider, 2014).

A small emerging spot market for iron ore had come into existence a few years earlier as China started to import iron ore from India, both of whom were outside of the benchmark pricing regime negotiations at the time. As Chinese firms reneged on their lead negotiator’s demands, and the three large iron ore suppliers were only too happy to follow suit, spot pricing gained pre-eminence, and thus the decades-old benchmarking era had come to an end.

66 Vale was privatized in 1997 (Ericsson, 2004).
While it is clear that the three big suppliers, led at first by BHP and Vale, actively pushed for spot pricing to gain pre-eminence, this would not have been possible without China. The Chinese firms created the opportunity for the global mining firms to financialize the market by rapidly emerging as number one consumers, disrupting the global market balance of power and changing the terms of trade. But their role went beyond this. The Chinese stakeholders’ uncoordinated procurement behaviour was the result of a failure of collective action, or in other words, a failure of the lead negotiators to enforce a procurement strategy. One high-level executive from one of the three big iron ore suppliers confirmed this in an interview with me: “It is the growth of the Chinese industry that caused the spot market to emerge” (Interview 69, 2012). But even beyond that, one Chinese industry insider added: “The first step was the market evolving from a benchmark to a quarterly contract system. But the Chinese walked from contracts and the pricing system evolved increasingly close to a spot system” (Interview 112, 2012). In other words, Chinese stakeholders’ behaviour may have been unintended, at least in the aggregate, but it was not passive.

 Needless to say, the iron ore suppliers saw their profits skyrocket in subsequent years. By the time the negotiations fell apart and all Chinese consumers were forced to fend for themselves on the quarterly or spot markets, prices were already above US$100/ton. The shift in the iron ore pricing regime “gives major producers more leverage. (...) The control exercised by the Big 3 will, to some extent, counteract the tendency to greater price instability that will result from the new pricing methods” (Ericsson et al., 2011).
On July 1, 2013, MOFCOM stated that in order to facilitate trade, automatic import licenses for iron ore could be applied for online (Chinese Ministry of Commerce, 2013). A month earlier, in June 2013, MOFCOM released a statement assuring observers that this new automatic online importing system for iron ore would not constitute a new kind of restriction on iron ore trade. In fact, a MOFCOM employee was quoted as saying that: “After July 1, provided [one] is allowed to operate as an import and export business, one can apply for an iron ore automatic import license, there are no other restrictions or audit standards, the qualification assessment is canceled” (Zhao, 2013). One analysis explains that “providing the company has the right to conduct import-export business, it can automatically apply for an iron ore import license” (Zhao, 2013). 67 Further monitoring is necessary to ascertain the impact of the relaxation of Chinese iron ore importing rules.

Some industry analysts argue that the licensing system had slowly brought chaos to the industry since 2005. Chinese industry specialists such as Liu Wenlu, Deputy General Manager of Steel Home (a Chinese steel industry consultancy), said that recent trends would

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67 “只要具备进出口经营权就可以申领铁矿石自动进口许可证” (Author’s translation)
go a long way toward breaking down the Chinese iron ore import monopoly, and would be in the interest of Chinese steel mills which can now procure the resource from more channels (Zhao, 2013). He continued by saying that the restricted import licensing system did not actually have a decreasing effect on prices or even an impact on supply diversification. A CISA senior official was quoted as saying that the removal of the import license qualifying restrictions was a positive step for the Chinese steel industry (Zhao, 2013). He then went on to say that the licensing system not only failed to fulfill its original goals of restricting iron ore importing agents (“推行铁矿石代理制的目标”), but also resulted in the “reselling issue” (“倒卖资质”) (Zhao, 2013).

On May 8, 2012, CBMX, China’s own iron ore spot trading platform, was launched in Beijing. CISA backed the platform publicly. This public backing came years after CISA blocked an earlier attempt to create an indigenous iron ore trading platform in 2009, one year prior to the fall of the benchmarking regime. This shows that at the time, CISA was still invested in the benchmark system. GlobalOre, a rival platform backed by BHP, was launched in Singapore on May 30, 2012, only three weeks after the launch of CBMX. CBMX officials voiced confidence that the Chinese iron ore market dynamic is mature enough not to be overly affected by the cancellation of the iron ore license process. In fact, the new regulation merely ends up endorsing what had become a fait accompli.

Discussion

The fall of the decades-old international benchmarking regime – which ushered in the era of quarterly, and then spot, pricing, as well as the emergence of spot trading platforms – was a consequence of the asymmetric encounter between fragmented Chinese iron ore consumers and concentrated global iron ore producers.

The uncoordinated, fragmented procurement behaviour of Chinese consumers between 2008-2010 disrupted established patterns of exchange between traditional benchmark negotiators. Whereas Japan’s consumers were well organized and coordinated, Chinese consumers presented fragmented, uncoordinated behaviour to the big three miners. This led to a shift in incentive structures and the emergence of opportunities for global iron ore producers to usher in their preferred pricing regime. The asymmetric position of the three big producers’ market power explains their room for manoeuvre in supporting the regime change. This led to the overall marketization of the iron ore pricing regime.
The Chinese side of the story is one of failure of collective action. Critically, the lead Chinese negotiators, Baosteel and CISA, were not able to coordinate the behaviour of the other Chinese iron ore consumers. Stakeholders in the domestic steel industry in China held different positions regarding the benefit of a benchmark system because of the licensing system put in place, which gave privileged access to the global iron ore market to some domestic Chinese consumers over others. This system existed for domestic reasons: “When MOFCOM issues more licenses for import, they have the domestic situation in mind, not the potential impacts on global market institutions... some issues they consider...competition among domestic providers … but they are unlikely to have thought through the likely international impacts” (Interview 128, Chinese government official at a central government agency, 2012).

It is important to underline that CISA and the large state-owned steel companies in China – by far the most powerful players overall – did not want the benchmark pricing system to fall. Indeed, they benefitted from the existing import system and were able to extract rents from other Chinese firms that had no access to the import interface by reselling the ore domestically at a profit.

On the other hand, the smaller mills had an interest in fending for themselves on the global market. In addition, there were power struggles between Baosteel and CISA between 2008-2010, all of which led to a fragmented interface with the global iron ore industry and the unraveling of a decades-long pricing regime.

Overall, the result is ironic as seen from China. It is by far the largest purchaser of iron ore globally, but unlike in the case of Japan (Japanese steel mills had superior pricing power over the Australian and Brazilian producers for decades, see below), it has very little control over the global iron ore pricing regime (Wu and Wu, 2009). This is the case even if the “Japanese quarterly price adjustment scheme reflects Chinese import prices” (Interview 136, international iron ore industry insider, 2014). One Chinese academic commented: “China is the largest iron ore importer, and it thought that this would provide it with a strong hand to influence the market, but it found itself in a position of weakness, and it doesn’t know what to do about it” (Interview 7, China, 2012). This has led to scores of bold comments by CISA, the NDRC and other Chinese agencies about the unfairness of the global iron ore market.
It is important to note that China’s and the three big producers’ behaviour has affected other iron ore consumers beyond themselves. “The traditional consumers of iron ore (European and Japanese steel mills) detest the development, as it appears not to be in their interest and has severed the relationship between producer-consumer” (Interview 126, Jan van Veelen, iron ore industry insider, 2013). In other words, China’s emergence as the number one iron ore consumer led to a *systemic* change in the iron ore pricing regime.

### 4.9 Case 2: China’s Impact on the Global Iron Ore Shipping Pricing Regime

#### 4.9.1 Dependent variable: The iron ore shipping industry pricing regime

Another part of the international iron ore market that experienced changes as a result of China’s emergence was the shipping market. China’s emergence as the largest iron ore consumer transformed incentive structures in the global shipping market through dramatic increases in freight rates. Indeed, by the late 2000s, “consistent with the story of soaring iron ore demand, the dry bulk shipping market [had] registered the highest real freight rate for nearly 50 years” (Lu et al., 2009, p.359).

The commodities boom of the first decade of the 2000s had a dramatic impact on shipping costs. “The volume of seaborne trade has increased by a steeper trend in all major commodity categories since 2002. Among them, five major dry bulk sectors displayed the most conspicuous growth, averaging 9.5% annually. Iron ore, as the largest single item of dry cargo in seaborne trade, increased its share in world seaborne trade from 11% in 2002 to 15% in 2007 (UNCTAD 2008), a record never reached ever since iron ore became a major ocean shipping item” (Lu et al., 2009, p.357).

Prior to China’s emergence as the world’s top iron ore importer, Japan had established a very favourable and stable system by which iron ore was priced FOB, and the Japanese steel mills chartered the bulk cargo ships themselves. This changed with the emergence of China, the meteoric rise in iron ore demand, and a parallel increase in shipping rates. The dramatic increases in freight rates shifted the global iron ore producers’ comparative

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68 “Free on Board (FOB) suggests that the seller pays for the transportation of the goods only to the port of shipment, which includes the cost of loading the goods on the cargo ship, inland haulage costs, customs clearance, origin documentation charges, demurrage, if any, and port handling charges. Beyond this point all costs are borne by the buyer of the goods. Cost and Freight (CFR) or Cost, Insurance Freight (CIF). Under this system the seller also pays for the freight between the port of delivery and the destination port. However, the risk is transferred to the buyer once the goods are loaded on the vessel. In CIF the seller also pays for insurance.” (Iron ore: A history of iron ore pricing, 2012)
advantage further in favor of the Australians. During the commodities boom between 2002 and 2008, the freight differential between Brazil-China and Australia-China rates increased to between $55 to $60 USD per tonne (Mojarov, 2013; Iron Ore: A History, 2012). Compared with Australia, Brazil was now at a costly disadvantage in shipping iron ore to China.

Unlike with Japan’s emergence as the number one seaborne iron ore consumer, Chinese firms were not able to take control of the shipping market. As an iron ore industry insider put it to me: “The Australians were underpricing... FOB was based on low freight rates, and then they thought, ‘Why should you save $20 by buying my stuff!!!’ Spot CFR was a freight equalizer” (Interview 112, 2012).

“In 2008 there were two key developments. For the first time the Australian miners negotiated a different settlement than Vale to account for the significant freight differential that had started to develop over the previous 24 months. (...) Some entrants in the space, including Fortescue Metals Group Ltd, pushed for freight to be incorporated in pricing contracts” (Iron Ore: A History, 2012).

Thus, the end of the era of Japanese influence on the iron ore pricing regime also heralded the end of the decades-long Japanese-led FOB pricing system for shipping. The emergence of China, and the rapid rise of shipping rates, coupled with path breaking behaviour and opportunism on behalf of the Australian iron ore exporters, caused the pendulum to swing back in the other direction. Indeed, iron ore prices had been settled “CFR,” or “delivered” as well under the European tenure prior to Japan’s emergence. I asked one high-level iron ore industry executive if there had been a transition in shipping rules, from FOB to CIF, after China’s emergence as the top consumer. He agreed: “Before, shipping was the problem of the buyer, now it is the problem of the seller!” (Interview 69, 2012).

By 2007, 62% iron ore content “CFR China” had become the pricing standard. In stark contrast with the gradual evolution of the shipping pricing regime under Japan’s tenure as the dominant market player (which will be discussed below), China’s impact on the shipping market was much more concentrated in time, and there was an absence of careful planning and coordination between the Chinese steelmakers and ship owners-operators. This allowed the international iron ore suppliers to push for their preferred outcome.
4.9.2 Independent variables: Concentrated international and domestic markets

The global iron ore shipping industry is relatively concentrated, with most tonnage controlled by either exporters or importers of the resource (Hoffman, 2013). The Chinese shipping industry has undergone more successful consolidation than its steel counterpart. Indeed, in 1999 COSCO and China Shipping controlled 60% of total Chinese tonnage (Flynn, 1999).

In December 2011, COSCO, already the second-largest bulk shipping company in the world, launched COSCO Bulk Carrier Co. Ltd. (CBC). This new subsidiary owned 420 vessels, and further consolidated three of its other subsidiaries in Tianjin, Qingdao, Shenzhen and Hong Kong (Wu, 2011). COSCO had attempted such a consolidation before, in 2008, but had failed. The consolidation allowed COSCO to match the market size of its competitors and to increase its coordination capacity. One shipping industry insider commented: “China wants to control four things [as in it wants to transport using its own ships]: containers, and the bulk transport of coal, iron ore and cereal” (Interview 132, 2013).

Most of the dry bulk carrier fleet responsible for the iron ore trade to China are Very Large Ore Carriers (VLOCs, ships that have a carrying capacity of more than 200,000 dwt) (see Figure 23).

**Figure 23 - Dry Bulk Vessel Categories, Iron Ore Trade with China**

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Dry bulk vessels - Iron ore trade with China, 2011

- VLOC (South America) 73%
- Capesize (Australia, West Africa) 14%
- Postpanamax (India, nearby countries) 13%

Source: China International Steel and Raw Materials Conference 2012 (Jia, 2012)
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4.9.3 The Valemax shipping impasse

The shift from FOB (freight on board, or before-shipping costs) to CFR pricing (cost and freight) was a consequence of China’s emergence as the number one importer of iron ore over the past decade, and of rising shipping prices. This shift in the pricing regime had benefitted Australian producers to the detriment of the Brazilians, and Vale’s response would be swift. Shipping costs from Australia to China stood at around US$10/tonne in 2013, whereas it currently costs around US$22/tonne to ship iron ore from Brazil to China (Massot, 2014). Direct Valemax trips from Brazil to China would bring shipping costs down to about US$15/tonne (Shandong Valemax secrets slipping out, 2014). In 2008, as Vale struggled to compete with BHP and Rio to compensate for the difference in shipping from Brazil to China, as compared to the distance from Australia to China, it commissioned a new line of extra-large bulk cargo ships, dubbed the “Valemax.” The Valemax carrier is the largest bulk carrier ever built: twice as big as Cape-size carriers (402,000 deadweight tons [dwt] of ore).

Vale had 24 out of 35 of these huge carriers built in China, and the rest in South Korea (an investment of $2 billion USD) (Murphy, 2012). The direct beneficiaries of this change in Vale’s shipping strategy were Chinese shipbuilders, including China Rongsheng Heavy Industries Group and Bohai Shipbuilding Heavy Industry. China’s Export-Import Bank and the Bank of China financed the project to the scale of $1.3 billion USD (Murphy 2012). The Chinese government and the large SOEs had been aware of this development for years (confirmed by interviews in China, 2012). Vale was confident that this step was in the interest of iron ore purchasers in China because it brought down the price of Brazilian ore, and these cargoes would thus be welcomed. Indeed, until 2011, there was every indication that they would be (interview with mining industry executive, 2012).

However, the arrival of Vale-owned and -controlled iron ore bulk carriers was unsettling for one group of Chinese stakeholders: ship-owners, especially COSCO, which stood to lose a share of the global iron ore bulk shipping business. COSCO’s international shipping business has been struggling in recent years. “It lost 6.5 billion yuan in the first three quarters of 2012 after a 10.4 billion yuan loss the previous year” (Liu and Wu, 2012), and it was weighed down by expansions and contracts agreed to during the boom years (i.e., prior to the global financial crisis). This placed COSCO in a vulnerable position following the capture by Vale of what COSCO saw as valuable business share.
The first Valemax ship, the Vale Brazil, was delivered to Vale in November 2011. A ship almost as large as the Valemax, the Berge Everest, a 388,000 ton ship which was commissioned by a Singaporean company, Berge Bulk, was delivered a month earlier and chartered by Vale. It had docked in Dalian in December 2011 without issues, and “the head of China's steel industry association said the ships would help lower costs” (Murphy, 2012). So it was naturally expected that the Vale Brazil would immediately start the voyage to deliver its first load of iron ore back to China in late 2011. At the time, however, this was how the move by Vale was framed: “Vale SA, the world’s largest iron ore producer by volume, took a significant step toward its goal of controlling all its shipping to China” (Wright et al., 2012). As a shipping industry insider explained: “If one owns the ships, one has better control on prices…” (Interview 132, 2013). This would be exactly how COSCO would perceive it.

Stunning the shipping world and beyond, on January 29, 2012, the Chinese Ministry of Transport issued a notice specifying that cargo ships with a capacity greater than 350,000 dwt could not dock in Chinese ports, citing safety concerns. Interviews confirm that Vale had still expected the ships would be allowed to dock in China, alongside many Chinese iron ore industry insiders. A senior executive and iron ore industry insider confirmed: “Was Vale surprised? Of course! It was even a surprise for the Chinese!!” (Interview 69, 2012). A Brazilian diplomat confirmed this with me when he said: “On the Valemax story, Vale feels cheated. Some of the Valemax cargoes were built here! China knew about it! And then turns around and blocks them” (Interview 38, 2012).

Yet some Chinese stakeholders did benefit from the arrival of the ships on the market. As in the case of the fall of the benchmark, smaller importers’ interests were at odds with the larger mills. “Large-sized steel mills are more concerned over Vale's fleet as they have long-term contracts, while smaller steel mills would be less affected as they often resort to the spot market,” said the iron ore official in northern China” (Fabi and Lian, 2011). Some Chinese mills were reputedly welcoming the ships as well: “Yes, about Valemax, the SOEs were happy. It was the shipping companies that weren’t” (Interview 128, Chinese government official, Central Government Agency, 2013).

Interpreting the government-issued notice as a coherent top-down Chinese response would obscure the domestic dynamics at play. There was no consensus among all interested
parties, just like in the iron ore case, and the impetus for the blocking came from one powerful state-owned firm in response to specific developments abroad. The key difference between the iron ore benchmark case and the shipping case is that China’s interface with the global shipping market in that particular industry was much more concentrated, and thus the capacity for coordination of behaviour was much greater.

The strongest opposition and lobbying came mainly from Chinese ship owners-operators, led by COSCO, who feared they were going to lose shipping business, and held enough sway over the China Shipowner’s Association, the port authorities (“COSCO owns shares in Chinese ports,” Interview 132, 2013) and the Transport Ministry to make a ban happen. A senior international iron ore executive confirmed: “The whole Valemax saga.... actually the main perpetrator is COSCO!” (Interview 69, 2012).

Around the time of the announcement the Valemax ships would be blocked from docking at Chinese ports, Mr. Shouguo Zhang, Vice Executive Chairman of China Shipowner’s Association, was quoted as saying that:

“Vale is an iron ore producing corporation that obviously lacks experience in ship safety management, ship pollution prevention and ship operation and management. It is difficult for them to run ships as good as professional shipping companies and thus tend to arouse safety and environment risks. (…) Vale holds the cargo to itself and now intends to control shipping tonnage. It is a matter of monopoly and unfair competition which not only harms the shipping interest of mainland China but also that of South Korea, Japan and Taiwan area.” (sic) (China Shipowner's, 2011).

It is worth noting that the President of the China Shipowner’s Association at the time was Wei Jiafu, who happened to be (and was until 2013) the President of COSCO. “Wei Jiafu (…) used his influence as head of the China Shipowner’s Association to start a vocal campaign against Vale's vessels. Wei lobbied China's powerful economic planning and price-setting agency, the National Development and Reform Commission (NDRC), as well as the Ministry of Transportation” (Fabi and Lian, 2011). “The moment a company like Vale decides to build their own ships they are entering the 'business turf' of companies like Cosco and they take those companies' business away," Ralph Leszczynski, head of research at shipping-services firm Banchero Costa, said by email. "It is obvious and natural that a company like Cosco will be upset that a former client now becomes a competitor" (Murphy, 2012).
The blocking of the Valemax cargoes is best understood in the context of China’s large iron ore importers’ perception of vulnerability to one of the largest iron ore suppliers in the world, combined with a domestic position of strength. “Valemaxes could give the miner complete monopolization of the iron ore supply to China,’ said an iron ore official in northern China, echoing the complaints of several steelmakers” (Fabi and Lian, 2011). As one interviewee put it: “Vale sold the Valemax idea to China when the pricing system was FOB. In the FOB system, they could say there were then sharing costs... but by the time the ships got built, the market had shifted to CFR. Savings all belong to seller! Vale makes more profits! Not fair” (Interview 112, 2012).

“The ban is specifically targeting very large ore carriers (VLOCs) owned by Brazilian mining company Vale. By barring VLOCs from its ports, Beijing is attempting to protect its iron ore supply chain, which in turn will help it consolidate its domestic shipbuilding and steel industries. The China Shipowner's Association is concerned that the VLOCs will take a large part of its market share in an already crowded freight industry” (China Blocks, 2012).

The rupture of one of the Valemaxes’ hulls (the Vale Beijing) in early December 2011 may have provided the impetus for the ban, but The Wall Street Journal quoted shipping engineers saying that safety concerns cited by the Chinese Transport Ministry were “insufficient to cast serious doubt on the safety of Valemax ships. Valemax vessels have docked at ports in such places as Japan, Italy, the Netherlands and the Philippines” (Murphy, 2012). Jia Dashan from the China Waterborne Transport Research Institute confirmed in the 2012 China International Steel and Raw Materials Conference Proceedings that “in 2011, there were 45 wharfs capable of receiving VLOC and Capesize ships” in China (Jia, 2012). An interview with a senior international executive in the iron ore industry confirmed that “at least three ports are equipped [to deal with the berthing of VLOCs]: Dalian, Qingdao and Majishan. The first two are public, the third one is private, Baosteel owns it, and it is near Shanghai” (Interview 69, 2012).

The ban has been extremely costly for Vale, as the company has had to shift carriers in the Philippines at an additional cost of between $2 and $7 per tonne (Vale mega ship, 2013; Brazil's Vale, 2014). One iron ore industry insider puts it at $3-$4 per tonne (Interview 112, 2012). A shipping industry insider commenting on the fact that Vale has since been forced to unload its Valemax cargoes at docking stations in the Philippines and in
South Korea, said: “Vale created stock zones in South East Asia… it allowed it to stock them up, and then play the game with ore closer to China, and compete with Australia…” I asked him whether this was Plan A or Plan B, as a result of the blocking of Valemax cargoes in China. He replied: “Plan B, yes, it probably was a reaction to that” (Interview 132, 2013).

Industry analysts have ventured that the only way out for Vale would be for it to agree to charter some of the ships back to Chinese shipping companies, and thus “share” some of the shipping business. Indeed, as early as 2011, “Vale [had] offered to sell or lease the fleet as it looks to appease foreign shipowners” (Fabi and Lian, 2011).

In 2013, a few reports emerged of a quiet docking by the Vale Malaysia, which arrived in Liangyugang in Jiangsu on April 14 of that year, and Caixin reported that: “The China Ship-owners Association (CSA), the powerful industry organization which has long opposed the entrance of Vale's ships in Chinese ports, said it reported the issue to the National Development and Reform Commission, Ministry of Transport and the Lianyugang Port Authority” (Jun, 2013). Then, in December 2013, there was news of one such ‘sharing agreement’ by Vale’s Jose Carlos Martins.

“More details of a controversial charter arrangement have come to light as Brazilian miner Vale continues to struggle with access to Chinese ports (…) Qingdao-based Shandong Shipping Alliance took the four ships on five-year bareboat charters at the end of October but has not so far said which ones. (…) ‘We have just concluded this operation this year with Shandong Shipping. And we believe that in the future we will also complete other agreements with other shipping companies, preferably from China,’ Martins told investors and journalists. (…) Despite the hush-hush, two of the ships have quietly begun to trade under their new charter names. They are the 402,000-dwt Shandong Da De (ex-Rio de Janeiro, built 2011) and Shandong Da Zhi (ex-Vale Minas Gerais, built 2012).” (Shandong Valemax secrets slipping out, 2014).

On 10 February 2014, the Chinese Ministry of Transport issued a notice reframing coastal berthing regulations (Zhang, 2014). Since July 1, 2014, oversized cargo ships with a capacity not exceeding 250,000 dwt have been allowed to dock in Chinese ports, as long as they match their load with the port’s capacity. Some analysts say this new regulation slowly opens the door to Valemax cargoes docking in China, while the China Shipowner’s Association reiterated its opposition to 400,000 dwt cargoes ever docking in Chinese ports (Rust, 2014).

Then, on September 12, 2014, in a ground-breaking announcement of a resolution of an almost three-year impasse, Vale revealed that it had reached a “framework agreement for
strategic cooperation in iron ore shipping” with COSCO (Cooperation Agreement, 2014). Following the terms of the agreement, Vale will transfer four VLOCs to COSCO and charter them back from the shipping giant for the next 25 years. It also agreed to similar terms regarding 10 more VLOCs to be built by COSCO to transport iron ore from Brazil. The new agreement between COSCO and Vale should lead to the Chinese Ministry of Transport fully lifting the ban on the Valemax cargoes in the near future.

Discussion

The broader context that made this strategic behaviour possible was the transformation of incentive structures in the iron ore shipping pricing regimes that had followed China’s emergence as the number one importer of iron ore in 2004. The blocking of the Valemax, an unexpected and surprising series of events, stemmed in equal parts from domestic and international market characteristics. At the Chinese domestic level, this included the alignment of interests (and coordination) among key stakeholders (COSCO, the China Shipowner’s Association, the Ministry of Transport), and their capacity for coordination at the interface of the Chinese shipping industry and the global iron ore shipping market. The strong opposition to the Valemax, and lobbying, came from Chinese ship owners-operators, led by COSCO, which feared that it was losing shipping business. COSCO was able to coordinate behaviour within the Chinese shipping industry because restructuring in the Chinese shipping industry in the 1990s was more successful than in the case of the steel industry. This position of strength enabled COSCO to strategically match the global iron ore giant Vale, and resulted in a deadlock of almost three years. In contrast to the dynamics observed in the systemic changes to the iron ore benchmark pricing regime, there was coordination of behaviour among the key Chinese stakeholders in the domestic shipping market (COSCO, the China Shipowner’s Association, the Ministry of Transport).

At the level of the international market, the root causes of COSCO’s behaviour were two-fold: first, the push by Australian iron ore exporters in the mid-2000s to shift to a CFR pricing regime in response to rising shipping costs in order to undercut the Brazilian exporters; and second, the response from Vale, which chose to build Valemax cargoes. Faced with a strong set of actions by the global iron ore players, the coordination and bold behaviour of Chinese domestic industry led bargaining and incremental change. As we can
see, this case conforms to dynamics expected in Quadrant 4, where a relatively consolidated domestic market faced concentrated global producers.

As demonstrated in the case of the Valemax cargo saga, evidence shows that this series of events is not best understood by looking at it through a unitary state lens. The decisive destabilizing move came from Chinese ship owners-operators, chiefly COSCO, which resented the fact that it was losing shipping business, and held enough sway over the port authorities to make this happen. This weakened Vale’s attempt to take control of the shipping component of its operations. Ironically, Vale’ ships were built in China, and thus were in the interest of the ship-building companies that got the contracts, and in the interest of the Exim Bank, which financed the deal. Yet, these significant stakeholders did not control the interface between the Chinese shipping industry and the global shipping market.

The Valemax story highlights the role of non-state actors as powerful actors in Chinese international procurement behaviour, and as powerful determinants of Chinese regulatory actions. It also highlights the fact that despite China’s share of global demand, Chinese stakeholders feel powerless in global commodity markets whose rules were established long before Chinese re-emergence. The sheer reach of COSCO’s behaviour demonstrates how important it is to understand Chinese domestic market dynamics, and also points to broader patterns that we can expect to see as China tries to carve out a position for itself that is commensurate with its global purchasing power. China’s domestic dynamics have now become a determining feature of the global economy.

4.10 Case 3: Japan's Impact on the Global Iron Ore Market in the Second Half of the Twentieth Century

If analysts were to describe an emerging dominant power that had a coordinated domestic economy, displayed coordinated engagement behaviour with global markets, sought resource price stability, chose to invest in mining operations abroad and sought to control the transport industry associated with its resource dependence, nowadays they would think of China. In fact, this description more closely represents Japan’s behaviour in the global iron ore market when it became the world’s top consumer of iron ore in the late 1960s.

Japan was considered a latecomer to the iron ore market when it emerged as one of the largest players in the 1960s, similar to China in 2004, when it surpassed Japan to become the largest iron ore importer in the world. However, Japan was able to carve out an
advantageous position for itself in the global iron ore market in the 1960s. Unquestionably, the very high levels of coordination of Japanese iron ore importers was key to the story, but Japan was also able to gain economic power because the global iron ore market in the 1960s was fragmented, uncoordinated and segmented. Here, we have a clear case of the lower left quadrant, in which the bargaining leverage clearly lay with the Japanese. Japan actually worked actively to create and maintain a multi-decade era of low stable prices and annual benchmarking negotiations, and it also managed to control its related shipping industry. Japan’s emergence as a systemically relevant player in the global iron ore market in the 1960s illustrates the decisive impact a coordinated, concentrated and coherent player can have on global market structures.

This stands in contrast to the ‘China – iron ore benchmark’ case, in 2010. Chinese negotiators faced very different global market structures by the time China emerged as the number one iron ore consumer in 2003, as they faced higher levels of concentration and coordination among global market stakeholders. In addition, due to a fragmentation and lack of coordination at the domestic level, they had dramatically less control over the behaviour of their domestic consumers. This led to the fall of a multi-decade long benchmarking regime.

I argue that Japan’s success in shaping the global iron ore market to its advantage in the 1960s was made possible because of the asymmetric position of market power in favour of the Japanese consumers. The result was the country’s deployment of a strong, coherent and coordinated national procurement policy and the achievement of preferred objectives at the level of global market regimes.

The goal of this section is to evaluate the generalizability of the model to cases beyond China. The universe of cases I am referring to is: systemically relevant emerging economies – commodity market pricing regimes dyads. I argue that within a particular market, one can use the framework of "major power transitions" to evaluate "systemic change." The case of Japan taking over from Germany and the US in the iron ore market in the 1960s is a good example.
4.11 Independent Variables: Concentration at the Global Level

*International iron ore market prior to Japan’s emergence as number one consumer (1960s – 1980s*)

International producers were much more fragmented during Japan’s emergence as the leading iron consumer than they were in the 2000s during China’s emergence.

“Post World War II, iron ore pricing was dominated by Europe via the Rotterdam pricing mechanism and prices were settled from the start of January to coincide with the European financial year. ThyssenKrupp, and latterly the predecessors of ArcelorMittal, settled annual deals with miners in Canada, Sierra Leone, Liberia and Brazil for ore on a CIF Rotterdam basis. The ore was then delivered to Germany and other European centres.” (Iron ore: A history of iron ore pricing, 2012)

The most representative price for the global iron ore market in 1970, before Japan had had its full impact on the pricing regime, was CIF Rotterdam (Banks, 1979).

The US was a major consumer of iron ore at the time as well, but “about 96% of the supply of ore going to the USA came from captive mines - mostly in North America” (Banks, 1979, 97). Between 1955 and 1979, Japanese import dependence rose from 85% to 100% (Rodrik, 1982). Japan was considered a latecomer to the iron ore market when it emerged as one of the largest players in the 1960s, similar to China when it emerged as the largest iron ore importer in the world and surpassed Japan in 2004.

At the very beginning Japan did not face favourable circumstances. In the early stages, Australian iron ore deposits were not fully discovered, and Australia had not yet lifted its iron ore export ban. (It lifted the ban in 1960.) Therefore, “Japanese steel mills were at the time paying around 50% more for their iron ore than European mills were” (Rodrik, 1982, 549). But despite these unfavorable circumstances, the global iron ore suppliers were geographically dispersed and not coordinated. In addition, when Australia gradually emerged as a leading producer in the 1960s, not only was the Australian iron ore industry underdeveloped, but high levels of inter-provincial infighting weakened the hand of Australian iron ore exporters (Rodrik, 1982).

In sum, the level of concentration during the beginning of the second half of the twentieth century was much lower than the levels observed today, with two countries and three companies responsible for roughly 80% of global seaborne exports. Japan was emerging as the leading iron ore importer facing a more decentralized global iron ore market.
In the end, “the three largest exporters or iron ore to Japan - Australia, Brazil and India - have always been more dependent on the Japanese market than Japan has been dependent on them. This monopsony power [was] accentuated in the case of Australia by the fragmented political system of that country” (Rodrik, 1982, 550).

The Japanese steel industry, as we will see below, exhibited high levels of domestic coordination and concentration. This allowed the Japanese players to overcome collective action problems and to make the most out of a relatively decentralized global market and depressed prices following the 1973 oil crisis.

4.12 Independent Variables: Concentration at the Domestic Level

Between 1955 and 1979, Japanese import dependence rose from 85% to 100% (Rodrik, 1982). Compared to China, where in 2008, the three largest companies produced 14% of total domestic steel, Japan’s three largest steel makers produced 70% of total domestic steel (Bergsten et al. 2008). “The biggest Chinese steelmaker, Baosteel, had only a 6% share of its home market (Nippon Steel, by contrast, controlled a third of the Japanese market)” (The lore of ore, 2012).

The VoC literature has characterized Japan’s political economic system in various ways, including as corporatist, or statist (Katzenstein, 1985), but the core tenants of the Japanese model at the dawn of its reemergence revolve around the critical role played by the Japanese state in successfully steering the country’s development path (Johnson, 1982; Katzenstein, 1985). Confronted with global economic challenges, says Katzenstein, the Japanese government

“assist[ed] firms in a variety of ways to exploit long-term market developments, both at home and abroad. (…) Japan’s policy [was] geared to anticipating structural changes in markets; it aim[ed] to assist firms to become competitive in particular industry segments or product lines. Comparative advantage [was] conceived of not only as a result of market forces but also of political action that affect[ed] competitiveness.” (Katzenstein, 1985, p. 26)

Katzenstein continues:

“The emergence of Japan’s steel industry as the most efficient producer in the world depended on a variety of innovative policies, including administrative guidance, recession and rationalization cartels, and the socialization of risk through assorted financial arrangements. (…) In these and several other cases Japan’s innovative industrial policy focused on long-term market developments, relied on protection while establishing international
competitiveness, and relinquished that protection, often under intense foreign pressure, when international competitiveness has been achieved.” (Katzenstein, 1985, p. 26)

This was confirmed by a long-time international iron ore industry insider: “Japan got its act together much more than China. When it could see its demand was going to go up, it encouraged producers to build new mines, and faced a very stable market over time, regardless of increase in demand” (Interview 112, 2012).

It is safe to say that the Japanese steel industry showed dramatically higher levels of coordination and overlap of preferences among large relevant players than is the case in China today. This explains in large part the stability and durability of the annual benchmarking system, as well as the stability of iron ore prices during Japan’s tenure as the dominant player. As Rodrik describes, following Australia’s emergence as a major iron ore exporter in the 1960s,

“there was a rush of American and European capital to mine the vast deposits of the country. Finance for these ventures was obtained in large part with the assurance provided by the long-term contracts signed between the Australian mines and Japanese steel producers. In these initial long-term contracts Japan exhibited a strategy which has paid off quite well to this day. Japan’s largest steel companies formed a buying cartel in 1964 when the vast extent of Australian deposits became evident. Called the Committee of Ten, the cartel allowed the Japanese to negotiate as a single unit while the Australian mining companies and the different states competed with each other on the terms of contracts.” (Rodrik, 1982, p. 549)

Rodrik continues: “Despite frequent renegotiations of these [long-term] contracts (…), the superior bargaining position of the Japanese deriving from their monopsony power over their suppliers, ensured that the contracts would work to the advantage of the Japanese” (Rodrik, 1982, 550).

The Japanese steel industry showed dramatically higher levels of concentration and overlap of preferences among large relevant players than was the case in China’s steel industry. This explains in large part the higher capacity for coordinating behaviour, and the emergence of a stable and durable annual benchmarking system over Japan’s tenure as the largest producer. One iron ore industry insider who has decades of experience in the industry, including at the negotiation table, said that: “Japanese iron ore companies in the 80s and 90s used to have joint ventures with Australian companies and then sit on the negotiation table on
the side of the Japanese... the Australians were naive” (Interview 87, 2012). As we can see, at the time of Japan’s emergence as the number one iron ore importer, the country was firmly situated in Quadrant 3: highly concentrated domestic consumers facing fragmented global producers.

4.13 Causal Story: Japan’s Impact on the International Iron Ore Pricing Regime

Japan’s iron ore consumption rose rapidly after the end of World War II, as the country embarked on a path of reconstruction and intensive industrial development. After Japan’s emergence as the most dynamic global iron ore consumer in the 1960s, pricing conventions began to shift.

Prior to Japan’s emergence, iron ore pricing negotiations were mainly led by the German steel mills' buying agent (Rohstoffhandel) and the Brazilian supplier (now Vale/CVRD), with some exceptions (Interview 126, Jan van Veelen, iron ore industry insider, 2013). As the Japanese steel mills started importing the bulk of all global iron ore imports, they gradually had a bigger say in the benchmarking negotiations.

By the late 1970s, “contract terms started to run in line with the Japanese financial year (April to March) and be denominated in US dollars. The contracts were based on typical 10-year supply deals with annual price negotiations.” In 1970, the “Japanese purchased almost 96% of their ore from producers with whom they had a contractual agreement, generally on a long-term basis” (Banks, 1979).

“From 1980 to 1988, the two mechanisms ran in parallel, with the European system tending to set the tone for the later Japanese contract, but in the late-1980s the Asian benchmark gradually took over and talks with the key Australian producers began to become more important. Talks generally started in November between the largest Japanese steelmakers and the big-three producers – BHP Billiton, Rio Tinto and Vale SA – with agreements coming early the following year. The rest of the industry then generally fell into line with these contract prices.” (Iron Ore: A History, 2012)

By the 1980s, the iron ore benchmarking system was centred on Japanese purchasers, who held annual talks with the three big miners – BHP, Rio and Vale – and determined prices for the rest of the global industry, including European purchasers (Iron Ore: A History, 2012). A long-time international iron ore industry insider recalls the Japanese steel mills getting to lead the discussion only in the 1990s (Interview 126, Jan van Veelen, iron ore industry insider, 2013).
“Japan’s post-war reconstruction, which was based on developing heavy industry, saw a country with no raw materials import high-grade ores from the nearest source—Australia. The Japanese signed long-term contracts of a decade or more to ensure Australians could secure mining investment. Contract periods shortened with the arrival of competition from Brazilian ore, resulting in a one-year benchmark-price system that lasted for 40 years” (The lore of ore, 2012).

Japan’s emergence thus led to an era of stable prices starting in the 1980s, as iron ore prices rarely fluctuated by more than a few dollars annually and maintained their below-$20-per-ton level until China emerged. So the dire circumstances that Japan faced at the onset of its resource demand hike (a market dominated by US MNCs) were overcome.

Rodrik notes that “in all these renegotiations, the bargaining leverage clearly lay with the Japanese: in their dependence on Japanese purchases, the Australian producers frequently had no choice but to acquiesce in the demands put forth” (Rodrik, 1982, 551).

“Japan has renegotiated a number of contracts, particularly with Australian suppliers. The prices on these contracts were adjusted upwards to take into consideration increases in mining costs and the effects of changes in exchange rates, and it appears that these adjustments came to between 50% and 60% on average; however, it has been said that the sellers of iron ore are still dissatisfied. Given the long-term downward drift in the money price of iron ore that has been experienced by almost all ore producers, real prices in 1977 were still below those of 1972.” (Banks, 1979, 98)

The Japanese firms’ strategy also included preventing, as much as possible, the consolidation of the global iron ore miners. It is interesting to note here that this rationale is exactly the one appropriated by leading Chinese iron and steel stakeholders in articulating why China should have more say in the global pricing system. China has not managed to establish an authoritative position over global market stakeholders in this regard, so it is clear that the large Chinese share of global imports is not sufficient to create dominance over suppliers.

Japanese firms displayed coordination in another way: they sustained a long-term view of their iron ore and coal demand over the coming decades and carried out “preemptive investments” in both industries in Australia (Banks, 1979). Indeed

“the Japanese enterprises have tried to assure adequate supplies of iron ore worldwide by increasingly offering financial assistance for the development of new mines or the expansion of existing ones. So widespread was the form of assistance that by the end of the 1960s almost all (96%) of Japanese imports of
iron ore came from sources which had received long-term Japanese loans or other types of financial commitment (including direct foreign investment). This has on occasion elicited complaints that Japan was deliberately attempting to maintain excess supply in the iron ore market by financing more new capacity than was warranted by the incremental growth in demand. These complaints appear not to have much validity. The total volume of Japanese finance was quite limited, and, besides, until the early 1970s Japanese steel mills generally kept to the upper ceilings of contract volumes from mines they had helped finance” (Rodrik, 1982, 551).

Even today, Japanese steel mills continue to prefer longer-term contracts, and they were supporters of the preservation of the benchmarking regime in 2010 (Interview 98, 2012). This is an example of the consequences of the normative expectations of how market institutions should work as an explanation for procurement behaviour. “‘It is against our creed that we break contracts and shift to spot buying when the market is not good,’ Eiji Hayashida, chairman of the Japan Iron and Steel Federation, said at a news conference in Tokyo. ‘We believe that raw materials costs should remain stable,’ he added” (Blas, 2011).

4.14 Causal Story: Japan’s Impact on the International Shipping Regime

Some exogenous factors also impact global shipping patterns. For example, the oil crisis of 1973 had an indirect effect on the iron ore industry through its impact on economic growth in the developed world, and the resulting decrease in steel production. Indeed, “in examining various price series it is evident that factors such as a decline in transport costs have had an important influence on ore prices – reduced transport costs have resulted in increased shipments from countries such as Australia and Brazil” (Banks, 1979, 98). These reductions in transport prices were fundamental to the emergence of Australia and Brazil as leading iron ore producers.

However, Japan also played a proactive role in the establishment of a new shipping modus operandi. Japan’s emergence led to a shift to FOB pricing for iron ore bulk shipping. When Japan emerged as one of the largest iron ore importers in the world in the 1960s, the accepted shipping convention was CFR (delivered to) Rotterdam. The Japanese eventually insisted on paying the Rotterdam CFR price as well. Despite the fact that from the perspective of the Atlantic suppliers, the freight cost to Japan was higher, Japanese consumers were able to reach an arrangement with the Atlantic suppliers (the Brazilians and the Canadians) that allowed Japan to pay a recalculated price. The system was called freight
sharing, but it was essentially a theoretical calculation that led to Japan paying a lower FOB price that reflected the fact that the suppliers were paying the difference in shipping costs (Interview 127, Jan van Veelen, iron ore industry insider, 2013). Said differently by Rodrik: “The monopsony condition of Japanese steelmakers also led to specific rule making power in the related shipping industry.” Rodrik also notes, “The prices it [Japan] obtained from the Australian producers, in terms of landed costs in Japan, were on average close to 20% lower than those paid for imports from other sources in Asia, Africa and America” (Rodrik, 1982, 550).

The whole shipping pricing regime would eventually shift to an FOB regime as the Japanese steel companies invested in bulk ships. Japan would also insist on paying FOB prices in Australia against the will of the Australian suppliers, who preferred delivering the iron. In the end, “in the late-1970s Japan’s emergence as a major consumer of iron ore pushed its steelmakers, led by Nippon Steel, to seek security of supply. Many Japanese steelmakers owned their own ships, so the new benchmark was FOB (free on board)” (Iron ore: A history of iron ore pricing, 2012). In Rodrik’s words: “despite the insistence of the Australians for cif prices, the contract prices were stipulated in fob terms, which allowed the Japanese to reap the benefits of future declines in freight costs” (Rodrik, 1982, 550). In other words, the Japanese steelmakers, knowing that they would have more control over costs and the industry in general if they shipped the iron ore themselves, slowly inflicted price reductions on iron ore suppliers, and eventually, through a coordinated industrial policy, controlled the shipping part of the industry as well. To do so, the “Japanese strategy was to promote improvements in shipping technology so as to reduce the transport components of iron ore costs. The Japanese pioneered the construction of large bulk vessels and highly efficient unloading and port facilities. As a result, freight charges as a share of the landed cost of Japanese iron ore fell by more than 50% between 1956 and 1976, although the average shipping distance increase (sic) by almost 1000 miles in the same period” (Rodrik, 1982, 550).

Discussion

A review of the Japanese case allows us to establish the following. First, it becomes clear that the emergence of a large consumer does not always lead to marketization. Leading consumer firms do indeed behave differently depending on the global market structures in
which they operate. The Japanese steelmakers, having established a monopsony position in the iron ore trade, which had been enabled by fragmented global behaviour, reinforced the existing benchmarking pricing regime after it took over from the Europeans as lead importers in the 1960s. Japanese consumers continued to expand existing strategic market relations beyond the iron ore pricing regime, and did so through a coordinated industrial policy by achieving dominance over the shipping component of the trade. The asymmetric position of power afforded the Japanese the leeway to effect changes in pricing the regime in their preferred direction. They reinforced a stable long-term benchmark pricing regime, the very regime the Chinese consumers would later disrupt in 2010.

The Japanese comparison is enlightening for three reasons. First, it shows the importance of both levels of market structures in determining an outcome. It is essential to the story that Japan was facing a relatively fragmented global iron ore market, with more room for manoeuvre. It is also essential to the story that Japan’s own domestic steel industry and related iron ore import procurement policies were coordinated and consistent over time. Second, the Japanese story refutes the contention that every emerging dominant economic power will prefer marketization and liberalization of global market institutions. Japan was dominant and its domestic steel industry was powerful enough to influence pricing systems, yet the Japanese stakeholders agreed to coordinate procurement behaviour in order to sustain a long-term, stable benchmarking pricing regime. These preferences continued across the decades, despite the growing concentration of global iron ore suppliers, and persist today. In sum, we cannot predict the likely impacts of a systemically relevant emerging economy on global markets before making a careful examination of the relevant domestic market coordination levels and procurement interface, as well as a careful examination of the global market structure in place prior to that country’s emergence.

4.15 Conclusion

The cases in this chapter show that different levels of coordination capacity between relevant domestic and international market stakeholders are critical to explaining outcomes. More specifically, the first part of my argument is that relations of asymmetry tend to be more unstable, and that this is especially true if a dominant emerging economy upsets the previous balance of power. In other words, a movement from one two-level position (quadrant) to another greatly increases the probability of systemic change. The emergence of
China as the lead iron ore consumer, taking over from Japan, illustrates this well. The emergence of uncoordinated Chinese actors facing a concentrated global market (Quadrant 2) disrupted a pricing regime that had been put in place by coordinated Japanese actors facing a fragmented global market (Quadrant 3). This was a very destabilizing power transition in the context of the global iron ore market.

The second component of my argument is that both foreign and domestic stakeholders with the highest coordination capacity tend to express their pricing regime preferences. As such, my model provides a rationale for firms’ behaviour and their motivation to coordinate. Because asymmetric market relations afford dominant market actors the space and capacity to steer market practices in their preferred direction, there is a struggle for dominance within specific markets. This is exemplified by the many (failed) attempts at procurement coordination by Chinese actors in the iron ore benchmarking case. The resulting position of weakness led to an inability to push for their preferred outcome, which in 2010 was the continuation of the benchmarking regime. This led to the counterintuitive outcome in which the emergence of an authoritarian country with a state-dominated economy (China) led to the marketization of global pricing regimes. The opposite scenario prevailed for Japan in the 1960s–1970s.

It is important to note that the marketization patterns I observed in the iron ore case do not result from streamlined and coherent policy making by the Chinese state. In the case of the fall of the benchmarking regime, it was an unintended outcome of Chinese procurement behaviour, which was compounded by domestic fragmentation, and expressed via a fragmented interface with global market stakeholders. One pattern is emerging: the boldest moves on behalf of Chinese stakeholders are often the result of a domestic position of weakness, rather than a position of strength.
CHAPTER 5 – CHINA’S IMPACT ON THE GLOBAL POTASH MARKET

In order to understand the consequences of China's re-emergence in global markets, especially as it tries to carve out a place for itself that is commensurate with its purchasing power in the global economy, and as it starts effecting systemic change, I make the case that we need to understand the two-level relationship between global and domestic market structures. Only then does Chinese market stakeholder behaviour, and in turn, China’s impacts on global pricing regimes, make full sense.

Asymmetries in market structures create the conditions for institutional change by allowing specific patterns of two-level encounters between the emerging country’s stakeholders and the global markets’ stakeholders. The relative position of market power that market actors occupy in their own market, as well as relative to international market players, also plays a role. Asymmetric positions of power provide strategic advantages, since the dominant side’s preferences for market institutions at the global level are more easily expressed. A domestic position of power occupied by key resource importers with rent-extracting privileges provides these importers with huge disincentives to push for the marketization of pricing regimes, regardless of price levels.

A case in point is the relationship between the Chinese domestic and international fertilizer (potash) markets. How can we explain variation in patterns of systemic market changes resulting from China’s emergence as a critical player in the global potash market? Why has China exhibited different procurement behaviour across the iron ore and potash markets, when they were both similarly structured commodity markets at the beginning of the 2000s?

China has already started to effect change on the global potash market structure, albeit in a pattern and at a depth and pace that exhibit marked differences from the iron ore case. First, the frequency of benchmark negotiations doubled from annual to biannual negotiations in 2010. Interviews suggest that China played a role in this change (and that India followed suit). Second, in the round of negotiations that took place in the second half of 2012, there was a power shift towards Chinese stakeholders, with China successfully coordinating purchasing and demanding significant price markdowns from the lead producers. The Chinese importers’ bold negotiation strategy in 2012 led to significant price
concessions in favour of the Chinese, an outcome completely opposite to what was seen in the iron ore market scenario prior to the fall of the benchmark in 2010. Third, the Russia-Belarus producers’ cartel fell apart in July 2013. These changes notwithstanding, the foundations of the global benchmarking regime remain intact, and the pricing regime survives until today.

In the first section of this chapter, I introduce my argument as it plays out specifically in the potash case. After that, I move on to characterize the global potash market pricing regime and concentration levels. I then provide a characterization of the domestic Chinese potash industry, including a review of the regulatory environment underpinning higher levels of concentration at the interface with the global industry. Finally, I illustrate my argument by tackling three events in the potash market that highlight the role Chinese procurement behaviour played in causing systemic change at the global level.

5.1 Argument in the Potash Case

The direction of change in the pricing regimes in the global potash market has been towards moderate marketization. Yet, the intensity has been restrained compared to the dramatic changes seen in the iron ore market, and the long-term benchmark pricing regime survives today. The overall pattern of incremental change and tug of war between the two sides (international and domestic) is characteristic of what is predicted by symmetry of market power relations in my theoretical model (Chapter 3).

The research design on which this dissertation is based allows us to investigate the consequences of a variation in concentration levels at the Chinese domestic level, while keeping the international market structure constant. Indeed both the global iron ore and potash markets exhibited very high levels of concentration prior to China’s emergence as the number one consumer.

The global potash market was not only highly concentrated, but also home to two powerful producers’ marketing cartels: the Canadian Canpotex and the Eurasian Belarussian Potash Corporation. The coordination capacity of global market stakeholders was high, and highly institutionalized. Alignment of preferences, especially at the interface with global market stakeholders, was also high. However, whereas the international-level variable was comparably concentrated, the domestic-level variable was not. Indeed, the iron ore – benchmark case was situated in Quadrant 2, in a situation of deep two-level asymmetry,
whereas the potash – benchmark case is situated in Quadrant 4, in a situation of symmetry between domestic and international market stakeholders (see Table 26 below). This resulted in more incremental and moderate change in the global potash market; the result of bargaining and tug-of-war between market stakeholders at both levels.

The fact that both the iron ore and potash cases exhibited similar international-level characteristics prior to China’s rise, yet experienced different outcomes, allows us to highlight the role played by Chinese domestic market structures in explaining diverging procurement behaviours and institutional outcomes (pricing regimes) at the global level.

This chapter will investigate exactly how domestic market characteristics constrain China’s options, shape its procurement behaviour, and, as a result of interaction with global market stakeholders, shape global potash market outcomes more broadly.

**Table 26 - Two-Level Market Power Asymmetries in the Potash Case**

<table>
<thead>
<tr>
<th>International market (Producers)</th>
<th>Domestic market (Consumers)</th>
<th>Fragmentation</th>
<th>Coordination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fragmentation</td>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Symmetry</td>
<td>Asymmetry in favour of producers</td>
</tr>
<tr>
<td>Coordination</td>
<td></td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Asymmetry in favour of consumers</td>
<td>Symmetry</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Potash case</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Clash, bargaining</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Outcome: indeterminate</td>
</tr>
</tbody>
</table>

My independent variables are the concentration levels in markets at the domestic and international levels, as a determinant of market stakeholders’ coordination capacity (or strategic coordination used to solve collective action problems/social dilemmas) (see Hall and Gingerich, 2001, Hall and Soskice, 2001 and Elinor Ostrom, 1997). In the domestic context, I further specify this dimension at the interface with global markets (particularly with regards to the politics of import licenses).

Indeed, the domestic potash market was more successfully consolidated than the iron ore market, and presented a significantly more concentrated and coordinated interface with
the global market. This allowed Chinese stakeholders more control over the aggregate behaviour of their market stakeholders, and more leeway to effectively implement a coherent procurement strategy.

Overall, I argue that the fragmentation of Chinese domestic market structures that led to an asymmetry in two-level market power relations, and a sudden pricing regime change and marketization in the iron ore case, was not present in the potash case. The concentration and coordination capacity of Chinese domestic potash importers led to more coherent behaviour. The two-level symmetry (coordinated domestic and international market players) of the potash case translated into bargaining patterns, as well as moderate and incremental market change in the direction of marketization, much of it in favour of the Chinese market players. The symmetry of market power has also played a role in the higher resilience of the international potash market pricing regime.

5.2 Potassium: A Vital Plant Nutrient

“The name [potash] comes from the ancient practice of obtaining potassium by leaching wood-ash in large iron pots” (Simmons, 2011). Potassium (K) is one of three essential plant nutrients, alongside phosphate and nitrate. “There are no substitutes for potassium as an essential plant nutrient and an essential nutritional requirement for animals and humans. Manure and glauconite (greensand) are low-potassium-content sources that can be profitably transported only short distances to the crop fields” (Kostick, 2007). Potash is essential for the growth of agricultural products. It has an impact on plant yields and their overall health. As such, the main driver of potash consumption around the world is demand for food, especially higher protein diets (biofuel crops, such as palm trees, for instance, are also a potassium-intensive crop) (Stone, 2008). More than 95% of potash is mined for agricultural needs (Grant et al., 2010).

Potassium (K) is found in nature combined with other elements. The term potash is used to describe a variety of mineral compositions containing K, which are used as fertilizers. Examples include potassium chloride (KCL), or muriate of potash (MOP), and potassium sulfate (K₂SO₄). Because of the variety of forms it can take, potash fertilizer is usually measured in terms of “its oxide, or K₂O equivalent content” (Better Crops, 1998), although K₂O is never found in this particular state in nature. Potash is mined or harvested as salts, which contain potassium in water-soluble form and cannot be manufactured synthetically.
Potash deposits are salt deposits resulting from the evaporation of salt water, a process sometimes millions of years old. There are three forms of potash deposits. The first and most common one is found in “underground bedded deposits” (Better Crops, 1998). In this case, potash is mined from deposits found most often hundreds of meters below ground (this is the case in North America, including in the famous Williston Basin, an ancient bed of mineral salts). The second method is solution mining, in which potash is still extracted from underground deposits, but instead of building mine shafts and sending machinery underground, heated water solutions are injected deep into the deposits, and potassium is then extracted from the solution, which is brought to the surface, mostly through the use of evaporation ponds. Solution mining is also used in North America. Underground potash mining accounts for 90% of global KCL capacity (Ericsson, 2011). The third method of harvesting potash is through the surface harvesting of marine evaporates, in salt lakes such as the Dead Sea. Chinese potash mining mainly takes this form, with the main deposit located in Qinghai Province’s Qarhan Salt Lake.

Depending on fertilizer prices, farmers can decide to reduce the amount of fertilizer they use in a given year. It is still possible to grow crops without an optimal level of potash application (yield, strength and quality will be affected, but it is sometimes difficult for farmers to tell to what extent the results are due to a lack of potash). In that sense, the dynamic is different with that of other commodities, as demand is more elastic. In the uranium or iron ore markets, consumers cannot reduce the amount of raw commodity needed to produce a given output of steel or megawatt of electricity. China is self-sufficient in potassium and nitrate fertilizers, and import-dependent only on potash. (This has led to chronic underuse of potash throughout the years, and to other idiosyncratic structural elements in the domestic potash market, such as farmers’ lower familiarity with potash compared with nitrate and phosphate fertilizers).

5.3 China’s Potash Imports: A Systemic Weight on the Global Potash Market

China is either the world's largest or second-largest potash consumer, depending on which source is consulted, with an annual consumption of 12.52 million tons of potash in 2012 (China Fertilizer Industry Association Annual Conference, 2012). Potash Corp. of Saskatchewan asserts that China accounts for 30% of world consumption (Markets & Industries), whereas the International Fertilizer Industry Association provides numbers that
show Chinese consumption at 24% of global consumption in 2012 (see Figure 24). (The International Fertilizer Industry Association data shows China as the number one consumer in the world until 2010, when it was narrowly surpassed by Brazil).

**Figure 24 - Share of Global Potash Consumption by Country (2011)**

![Share of Global Potash Consumption, by Country](image)

Source: International Fertilizer Industry Association (2012)

**Figure 25 - Chinese Share of Global Imports as % of World Exports (1992-2013)**

![Chinese potash imports as % of world exports](image)

Source: Chinese Chemical Statistical Yearbooks; official CISIA statistics; Zhang et al., 2007; Fertilizer Technology and Development in China; Chemical Industry Press. Author’s calculations.
However, some sources put China as the largest potash importer in the world, with over 30% of global potash imports in 2013 (see Figure 25 above), despite its sizable domestic production (China produced six million tonnes of potash in 2012) (China Fertilizer Industry Association Annual Conference, 2012). From 2003 to 2006, potash consumption grew at an average of 6% annually in China.

China’s share of global potash imports has been growing over the past years, with import growth quickening starting in the late 1990s to the early 2000s (see Figure 26). The rally in potash prices prior to the 2008 global financial crisis and since then is mainly attributed to the growth in Chinese demand. A key Chinese government official said that from their perspective, “China started to import [potash] in meaningful quantities only starting in 1998” (Interview 95, 2012).

In 2008, the global potash trade volume was estimated at 41 Mt of KCl (Stone, 2008). Natural Resources Canada estimates that “China could potentially use 25 Mt of potash if it follows agronomists’ recommended nutrient levels” (Stone, 2009).

According to 2011 data released by the Ministry of Land Reserves Division, China has proven reserves of about 1.07 billion tons of potash, accounting for 7% of the world's total reserves (Chen, 2013).

Figure 26 - Chinese Potash Imports as Share of Global Exports 1980 - 2013
China imported 50% of its needs in 2012 (see Figure 27). One interviewee and potash industry insider has suggested that China’s reserves are only going to last for another 30 to 50 years at the current rate of use. In 2011, “Feng Mingwei, the deputy general manager of Sinofert Holdings Limited, the largest fertilizer importer in China, said ‘our dependence on imported potash fertilizer is at a rate of above 50 percent averagely [sic]. It is a threat to our national food security’” (Cai, 2011).

**Figure 27 - China's Potash Import Dependence (2000 - 2011)**

![Chinese potash import dependence chart]


### 5.4 Dependent Variable: The International Potash Benchmark Pricing System

Until the 2000s, potash prices had been stable for decades, hovering between USD $125 and $200 per tonne in the 1980s and 1990s (Grant et al., 2010) (see Table 27 and Figure 28 below). Prior to China’s emergence as the world’s number one consumer of potash, price benchmarking negotiations were held between Canada’s Canpotex and Japan’s Zen-Noh. Zen-Noh is Japan’s National Federation of Agricultural Co-operative Associations, a body that represents well over one thousand Japanese agricultural cooperatives. Incidentally, Zen-Noh was created in 1972, the same year Canada’s Canpotex became operational. As stated in the US Geological Survey’s Potash 1994 Yearbook, “In early October, the major fertilizer importer of Japan, Zen-Noh, agreed to a $4 to $5 per ton product, muriate of potash, increase with Canpotex Ltd., the major potash exporter of Canada. The agreements between these two firms are usually trend setters for the world market” (Searls, 1994).

Annual negotiations have been occurring every year for decades between Chinese importers of potash and international exporters, Russia and Belarus (from 2005 to 2013,
BPC, the Belarusian Potash Company, was the sole marketing agent of Russian and Belarusian potash) and North America’s Canpotex. Starting in the 2000s, China became the benchmark price setter. The agreed contract price between BPC and Sino-Agri (Zhongnong, 中农) became the benchmark price for the following year. Sino-Agri Group is one of the two major official Chinese purchasers of potash on the international market. Sinofert (a subsidiary of Sinochem, 中化), the other major importer, then agreed on a price, usually slightly higher to allow for higher transportation costs, with Canpotex, the North American potash marketing arm which sells potash in China exclusively to Sinochem (see Table 27).

**Table 27 - Chinese Potash Imports and Price Paid (2001)**

<table>
<thead>
<tr>
<th>Country</th>
<th>Quantity (ton)</th>
<th>Share of total (%)</th>
<th>Total dollar amount (USD)</th>
<th>Share of total amount (%)</th>
<th>Price per ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russian Federation</td>
<td>3,104,296</td>
<td>57.22</td>
<td>355,142,900</td>
<td>54.92</td>
<td>114.40</td>
</tr>
<tr>
<td>Canada</td>
<td>1,328,477</td>
<td>24.49</td>
<td>162,267,110</td>
<td>25.09</td>
<td>122.15</td>
</tr>
<tr>
<td>Jordan</td>
<td>407,098</td>
<td>7.5</td>
<td>48,140,697</td>
<td>7.44</td>
<td>118.25</td>
</tr>
<tr>
<td>Israel</td>
<td>287,369</td>
<td>5.3</td>
<td>34,207,074</td>
<td>5.29</td>
<td>119.04</td>
</tr>
<tr>
<td>Top four countries</td>
<td>5,127,239</td>
<td>94.51</td>
<td>599,757,781</td>
<td>92.94</td>
<td>116.97</td>
</tr>
<tr>
<td>Total countries</td>
<td>5,425,547</td>
<td>100</td>
<td>646,700,708</td>
<td>100</td>
<td>119.20</td>
</tr>
</tbody>
</table>

Source: China Mining Yearbook (2002). Author’s calculations.

In the latter half of the 2000s, the Canpotex-Sinochem negotiations slowly started to become more dominant. This lasted until April 2008, when Sinochem signed what would become the 2008 benchmark deal with Canada’s Canpotex before Sino-Agri had reached an agreement with BPC (Stone, 2008). The rise of potash consumption, especially in China, has led to steep price rises. In 2009, potash prices reached $825 per tonne in Saskatchewan (Grant et al., 2010).

The Chinese market is dominant enough to allow China first say, and in the end, lower purchasing prices, than is the case, for instance, with India, which paid $490 a ton in the same period (Kayakiran, 2012).

Despite an increase in the frequency of trades and the breakdown of the Russia-Belarus cartel in 2013, the long-term benchmark pricing regime has survived China’s
emergence as the number one consumer. We have seen moderate marketization of the global potash pricing regime since the 2000s.

Figure 28 - Potash Prices (1960 - 2014)

![Potash Prices 1960-2014](source)


5.5 Independent Variable: Global Potash Market Concentration Levels

Potash reserves are distributed unevenly across the world, and Canada harbours more than 50% of global potash reserves (Grant et al., 2010). According to the World Mineral Resources Annual Review (2011 to 2012), the world's proven reserves stand at about 15.1 billion tons of potash (potassium chloride), which would procure hundreds of years of potash consumption at current levels. In other words, in theory, there is no expectation of a potash shortage in the future, or an expectation that shortages would be human made. Potash production capacity is concentrated in 13 countries, with an annual output of 4,300 million tons.

The global production of potash is concentrated among three big companies, Potash Corp., Mosaic Co and Uralkali-Silvinit, and in three countries, Canada, Russia and Belarus. While OPEC’s 12 members hold 70% of proven crude oil reserves, in the potash market,
Canada, Russia and Belarus control 80% of the world’s potash reserves. Whereas the three countries controlled around 61% of global production in 2011 (Mineral Commodity Summaries, 2011), they controlled 76% of global exports in 2012 (Canada controlled 37% of global exports, Russia 23%, and Belarus 16%, see Figure 29 below).

Due to the fact that potash production is concentrated in so few countries, a very high percentage of global potash production is exported. For instance, Canada exports more than 95% of its potash production, 45% of which gets sent to the US (Grant et al., 2010).

**Figure 29 - World Shares of Potash Exports (2012)**

![World Exports of Potash 2012](image)

Source: UN COMTRADE

As in the iron ore market, concentration among companies is higher today than it was 20 years ago, with the exception that in the potash case, concentration has decreased moderately since the early 2000s. In 1990, the top five top potash-producing companies produced 40% of global potash, whereas in 2010, they produced 80% (Ericsson, 2011). Competing movements of consolidation and diversification are at play. In the past five years, we have seen industry consolidation with the merger between Russia’s Uralkali and Silvinit (this created the world’s second-biggest potash producer), as well as the merger between K+S (world’s sixth-biggest producer) and Potash One, in 2011. Potash Corp., the world’s second-biggest producer, also attempted to acquire Israel Chemical Corporation (the world’s fifth-biggest producer) in 2012, but withdrew its proposal amidst popular and political
opposition in Israel. This was an interesting twist of fate, since the Canadian government had blocked BHP Billiton from acquiring Potash Corp. only two years earlier\(^69\), a move that also faced public and political scrutiny at the time. PotashCorp, Uralkali, Belaruskali, Mosaic, ICL, and K+S, the six biggest producers in the world, control more than 80% of global supplies today.

### 5.6 Global Potash Market Players: Coordination Capacity

**Canpotex**

An international marketing and distribution company (which many call a quasi-cartel), Canpotex\(^70\), controls the sale of potash for the North American producers, Potash Corp.\(^71\), Agrium and Mosaic, outside of the Canadian and American markets. Canpotex was created in 1970, under the stewardship of Ross Thatcher, the Saskatchewan Premier at the time, and became operational in 1972.

The Potash Conservation Board (which would later become Canpotex) was established to limit production and establish minimum prices at a time when the North American potash market was suffering from price decreases. It was a “classic cartel based on the 1938 Oil and Gas Conservation Board of Alberta. The floor price of potash was raised from $12 per ton to $33 per ton. Saskatchewan mines were to produce at 40 percent capacity while the New Mexico mines were permitted to operate at 80 percent capacity” (Warnock, 2011).

Potash Corporation of Saskatchewan (PCS) was created as a crown corporation in the wake of the nationalization of a portion of the potash industry in Saskatchewan in 1975. In the 1980s, Potash Corp. was required by the Devine government to continue to sell potash “out of North America” through the Canpotex marketing cartel, where its “share of production allowed it to operate at only 67 percent capacity” (Warnock, 2011). It was

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\(^69\) One of the only Canadian interest groups to support the takeover were Canadian farm organizations (Warnock, 2011), who argued it would bring the price of fertilizer down, since BHP had publicly stated it would seek to increase production.

\(^70\) As described by Canpotex: “Canpotex is the exclusive offshore marketing company owned by the three Saskatchewan potash producing companies: Agrium Inc. (TSX and NYSE: AGU), Mosaic Canada Crop Nutrition, LP, a subsidiary of The Mosaic Company (NYSE: MOS), and Potash Corporation of Saskatchewan Inc. (TSX and NYSE: POT).” (Canpotex and Sinofert Reach New Agreement, 2012)

\(^71\) Potash Corp. is a mining company headquartered in Saskatchewan and the largest producer of Potash worldwide (it holds around 25-30% of global reserves of Potash).
subsequently listed on the Toronto Stock Exchange in 1989 and fully privatized by 1994 (History, 2015). It continues to conduct “out of North America” potash sales exclusively through Canpotex. In 2009, Potash Corp.’s gross profit margin reached around 60% (Warnock, 2011). In 2007, “PotashCorp, under a pro rata agreement based on capacity, [was] entitled to provide Canpotex with 55.8 percent of its potash” (PotashCorp Announces, 2007). “PotashCorp [also] owns 22 percent of Sinofert and appoints two of the company’s eight board seats. (...) Sinofert is the largest fertilizer importer and distributor in China, and one of the largest fertilizer manufacturers” (Facilities & Investments).

Canpotex not only manages potash sales and marketing outside of North America, it also manages the potash-specific transport infrastructure that is built around the potash trade. Potash is water-soluble and thus handling it requires special care. Canpotex owns and operates a specialized rail car fleet, warehouses, and port terminals in Vancouver and Portland, Oregon. Canpotex even had an exclusive shipping contract with Canadian Pacific from 2002 to 2012. Canadian National now hauls around 20% of Canpotex’s potash (Silcoff and Jang, 2012).

In addition, Canpotex sells its potash “delivered to the destination country,” or CFR (Cost and Freight), and thus manages the bulk cargo shipping component of its operations as well (Logistics, Canpotex). Reacting to the possibility that new North American potash producers could bypass Canpotex to sell their production abroad, a high-level potash industry insider responded: “Sure, you could replicate all the infrastructure that Canpotex has, but it wouldn’t be efficient or productive, and it would end up costing you more. Infrastructure costs are just too high. Why would you duplicate wagons, port facilities, etc.? You wouldn’t be able to sell at the same price! [Companies] don’t need to go through Canpotex, but if they don’t, they wouldn’t be competitive! Canpotex will survive. Those who think it won’t do not know the business” (Interview 85, 2012).

This coordination does not stray toward the side of collusion, according to one high-level industry insider. “When they meet (Potash Corp, Agrium, Mosaic), they bring their lawyers, and they are not otherwise seen together. The result is the meeting of supply and demand. There is no communication on production. Each company announces how much they want to produce, and then tell[s] Canpotex their numbers” (Interview 86, 2012). A group

“The class's price-fixing claim [was] based on a theory of conscious parallelism. Conscious parallelism is the process ‘not in itself unlawful, by which firms in a concentrated market might in effect share monopoly power, setting their prices at a profit-maximizing, supracompetitive level by recognizing their shared economic interests.’ (…) The class points out that the producers' prices were roughly equivalent during the alleged conspiracy, despite differing production costs. It further points out that price changes by one producer were quickly met by the others. This establishes only that the producers consciously paralleled each other's prices. [However,] evidence that a business consciously met the pricing of its competitors does not prove a violation of the antitrust laws. (…) [The court must find that] that the plaintiff's evidence tends to exclude the possibility of independent action.” (203 F.3d 1028 (8th Cir. 2000), 2000)

This condition was not met and the suit was dismissed by the United States Court Of Appeals for the Eighth Circuit. However, “Both parties agree that the North American potash industry is an oligopoly. Prices in an oligopolistic market tend to be higher than those in purely competitive markets, and will fluctuate independently of supply and demand” (203 F.3d 1028 (8th Cir. 2000), 2000). There was another class-action suit against global potash producers filed in Chicago in 2008, dismissed and revived again in July 2012. The plaintiffs pointed to the 600% jump in prices between 2003 and 2008, which could not be justified by demand. This time around, Uralkali agreed to settle for $12.75 million in September 2012 (Koven, 2012), and PotashCorp and Mosaic settled for $43.75 million each in 2013 (Potash Corp. settles, 2013).

Junior potash mining firms continue to view the behaviour of major global potash suppliers, including Canpotex, as cartelize.D. When I asked an interviewee, a senior (non-Canpotex member) potash firm executive, what he thought of Canpotex, he replied: “Canpotex is a cartel” (Interview 115, 2013).

When I asked an industry watcher how Canpotex works, he replied: “The ratios are known, and the companies are aware of the situation. They wouldn’t actually need to speak much; they know the global situation and whether they need to [cut production]. Canpotex first goes out and signs contracts, and then the quantities are divided according to the size of production” (Interview 120, 2013).
Belarus Potash Co. (BPC)

Another producer-owned structure, or quasi-cartel, Belarusian Potash Co. (BPC), was the sole marketing agency of the potash fertilizers manufactured by Belaruskali (Belarussian supply) and Uralkali-Silvinit (Russian supply, merged in 2010) from 2005 until the end of the summer of 2013.

Coordination between the two groups

The two major potash producing regions are large enough to be price makers. “If the Canadian and Russian producers are aggressive in matching supply and demand, it shouldn’t matter very much what other producers do” (Kayakiran, 2012). Coordination between the two regions has stopped short of being formal, but indications are that the two groups have seen fit to limit their rivalry and informally coordinate production. “Potash has almost always been in oversupply and many producers have adjusted their production levels and operated below capacity” (Ericsson, 2011).

In 2012, “Uralkali (URKA), Russia’s biggest fertilizer maker, [was] ready to cut production to prevent potash prices from falling after Potash Corp. of Saskatchewan Inc. announced reductions this year. ‘Our strategy is that price is much more important than volumes,’ Chief Financial Officer Victor Belyakov said in an interview (...) ‘It’s a strategy for most of the big players in the market. We usually cut some production to come up with a fair price.’ (...) Uralkali pared its 2012 production target by about 8 percent to between 10.5 million metric tons and 10.8 million tons to bolster prices, Belyakov said. (...) Potash Corp., which announced temporary cuts at two mines in Canada last month, has since unveiled a four-week halt at its Allan mine and an extension of the shutdown at its Rocanville operation” (Kayakiran, 2012).

Global producers were in oversupply for the 1990s and early 2000s, operating below capacity. The US Geological Survey described a period of oversupply in 2003 as follows:

“The world’s leading potash producers operated up to 40% below capacity for another year to prevent oversupply to the market or excessively large producer stocks, which could result in downward price pressures from the potential buyers. At the end of 2003, North American producer stocks were more than 12% of annual production (1.3 million tons, K2O equivalent, of 10.4 million tons) resulting in a slow increase in potash prices that started in the fall of 2003” (Searls, 2005)

This situation is often commented on by Chinese actors:

“According to Li Qiang, a spokesperson for Sinochem Group, the international price rise of potash fertilizer is partly caused by the international price rise of
raw materials and resources. However, ‘the most important and fundamental reason is the intensified monopoly of the international suppliers in this field,’ a newspaper cited Li as saying. (...) In a bid to cope with the price rises and potash fertilizer shortages, China needed to establish a strategic fertilizer reserve system for the off-season as well as strengthen the ‘negotiation mechanism of potash fertilizer import.’” (Cai, 2011)

A Chinese government official and industry insider corroborated this: “The question of the potash market is not about restricted supply: supply is abundant. It is a market structure and political problem” (Interview 37, 2012).

An article published in China Chemical Journal (中国化工报) quotes Chinese experts as saying that in order for China to break the global potash monopoly and price-setting power, it needs not only to pay attention to production levels, but also, importantly, to resource characteristics and reserves, as national potash reserves are the enabler for greater global influence (author’s translation) (Chen, 2013).

The global potash importers have not been coordinating their negotiations, however. Indeed, in 2011, when the Chinese reached “a deal to pay the Belarusian Potash Company $470 for each ton of potash shipped between July and December – $70 dollars more than the price agreed for first-half shipments [,] International Fertilizer Industry Association President Wu Sihai told [a] newspaper that the two Chinese negotiators also eschewed the chance to co-ordinate negotiations with potash importers in other countries” (Truscott, 2011).

5.7 China’s Domestic Potash Market

Chinese production and consumption levels

Feng Mingwei, Sinochem’s Deputy General Manager, said that in 2011, “China’s agricultural department recommended a ratio of nitrogen, phosphorus and potassium fertilizer of 1: 0.4: 0.3. By this calculation, the actual annual demand for potash should be more than 20 million tons. Due to the rising international potash prices however, China’s domestic demand is suppressed, and it stands at around 10 million tons.” (Li, 2011b)

Because of China’s relative scarcity of potash, its domestic potash market is very controlled. Few exports are allowed at all (the situation is slightly different for the two other essential fertilizers – nitrate (N) and potassium (P) – for which some exports are allowed at certain times of the year). China has always suffered from a lack of potash, whereas it is self-sufficient in the two other key fertilizer groups, Nitrate and Phosphate. This has led to
historically low use of potash, although fertilizer use across provinces is uneven (some overuse it and some have insufficient supply). (See Figure 30 and 31 for a summary of Chinese potash production consumption, imports and supply sources.)

**Figure 30 - Chinese Potash Production, Consumption and Imports**

![China potash production, consumption and imports (1990-2011)](image)

Source: Annual Meeting of the Inorganic Salts Industry Association, China, 2012

**Figure 31 - Chinese Potash Supply Sources**

![Chinese potash supply sources (potassium chloride), 2012](image)

Source: Annual Meeting of the Inorganic Salts Industry Association, China, 2012

The Chinese domestic potash market suffers from idiosyncratic structural weaknesses, specifically relating to the domestic fertilizer industry (Bao et al., 2010). First, there are
sizeable transport issues (which would not be unique to the potash market, apart from the fact that potash is water soluble) that require very specific transportation infrastructure, a fact that complicates the logistics. Indeed, the Chinese potash industry suffers from being located in isolated mining sites and faces transportation bottlenecks. This means that for certain provinces, getting the potash from sea ports is actually more efficient than getting domestic potash. Handling and distribution infrastructures are underdeveloped domestically.

Second, farmers have relatively little information. This is compounded by the lack of trust between farmers and suppliers due to insufficient quality control. Fertilizer tends to be sold pre-mixed, in packages of nitrate, phosphate and potash. Since potash is scarce in China, there is rampant use of fake fertilizer by middlemen, which leads to a lack of control over precise fertilizer content by the farmers. This has made farmers reluctant to pay more for better quality potash. The combination of these particular domestic weaknesses have led, some argue, to chronically lower domestic potash prices (see Figure 32). More than one Chinese potash industry insider indicated that they would prefer potash prices to be higher domestically, and that many reforms need to be implemented at the rural level to resolve basic problems, such as the lack of knowledge with regards to fertilizers.

These types of domestic weaknesses reduce China’s options internationally (Wang, 2005), as they constrain Chinese negotiators in international negotiations. But some argue that these domestic characteristics have actually provided the Chinese negotiators with the ammunition to negotiate lower prices. Putnam has shown that smaller “winsets,” or constrained negotiating positions, can provide negotiators with a strong negotiating hand in international settings (Putnam, 1988; Mo, 1994).
5.8 Independent Variable: Domestic Concentration Levels

Having established the relatively concentrated nature of the global potash market, I now turn to the details of China’s domestic potash industry. The consolidation of the Chinese domestic potash market in the 1980s was relatively successful. There are 53 companies that produce potash in China\textsuperscript{72}, almost exclusively in the provinces of Qinghai and Xinjiang (which in 2008, accounted for 99.7% of the country’s production). In terms of numbers of companies, the industry is thus relatively concentrated domestically, compared to the iron ore/steel industry. “Potash and uranium companies control the upstream businesses. They are concentrated there, and they have control there” (Interview 64, Chinese SOE official, 2012). Another interviewee commented: “The domestic markets for potash and uranium are very concentrated. We were successful in those markets. The market for iron ore is another story” (Interview 8, Chinese media executive, 2012). As an indication of this, we can see the difference in the proportion of large-scale and medium-scale potash enterprises compared to the iron ore industry and the situation in the overall mining industry in China (see Table 28).

\textsuperscript{72} KCL, K2SOL and KMgSOP.
Table 28 - Comparative Fragmentation of the Iron Ore and Potash Industries in China (2007)

<table>
<thead>
<tr>
<th></th>
<th>Chinese potash industry</th>
<th>Chinese iron ore industry</th>
<th>Chinese minerals industry average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of large-scale and medium-scale enterprises</td>
<td>73.3%</td>
<td>6.4%</td>
<td>7.8%</td>
</tr>
<tr>
<td>Proportion of small-scale and small enterprises</td>
<td>2.67%</td>
<td>93.6%</td>
<td>92.2%</td>
</tr>
</tbody>
</table>


There are two key potash firms in China, Sinofert (a subsidiary of Sinochem), and Sino-Agri (Zhongnong). Feng Mingwei, Sinochem’s Deputy General Manager, described the company’s fertilizer subsidiary (Sinofert) in an interview with a state-owned Chinese media group, as

“the largest fertilizer distribution company in China, the main importer of potash, spread all over the country, except in the Tibet Autonomous Region, with 17 branches in agricultural provinces, 2106 sales outlets connected to marketing networks, 583 inland warehouses, and 12 major ports with long-term potash logistics agreements. Sinochem’s warehousing and logistics capabilities ensure it can cover all major agricultural production in the country, and deal with timely logistics planning.” (Li, 2011b)

Sinofert also “owns about 24 percent of Qinghai Salt Lake Industry Co., China’s largest potash producer” (Facilities & Investments). Sino-Agri Group (China National Agricultural Means of Production Group Corporation, 中国农业生产资料集团公司), is a wholly owned enterprise of China CO-OP Group (中国供销集团有限公司), with annual sales revenue of 76 billion Chinese yuan (Company Profile).

5.9 Chinese Domestic Coordination Levels in the Potash Market

5.9.1 Concentration at the interface of Chinese and global potash markets

One of the key variables of relevance here is the small number of stakeholders who have access to the interface of the Chinese and global potash markets, among which are a number of key Chinese companies that have a license to import potash.

The key difference between the domestic iron ore and potash markets is that the domestic fragmentation dynamics at the interface with the global iron ore industry are not
replicated in the potash case. This is confirmed by interviews (Interview 60, Chinese academic, 2012).

5.9.2 Process tracing: Potash importing licenses – a short history

Starting in 1993, Sinochem was granted the sole license to import potash in China, as well as the right to be the sole negotiator with Canada’s Canpotex.73 Up until 1998, only Sinofert (Sinochem) had been allowed to import potash in any meaningful quantities, effectively as the sole importer.

Sino-Arab Chemical Fertilizer Co. (中阿化肥有限公司) was granted import rights from 1993 onwards, immediately after Sinochem. Sino-Arab was created in 1985, in the spirit of South-South cooperation under Deng Xiaoping, and was one of China’s biggest such projects at the time. Sino-Arab was not allowed to sell the potash it imported (Li, 2008). Then, in 1998, the State Council issued a notice granting Sino-Agri Group the right to import potash (State Council issues notice 39, 1998). At the time, it was agreed that Sino-Agri Group would be responsible for 60% of imports from Eurasia (Russia and Belarus) and Sinochem would be responsible for the other 40%, on top of its exclusive access to the Canadian market (Li, 2008).

Following China’s entry into the WTO on December 11, 2001, the then Chinese Ministry of Foreign Trade and Economic Cooperation released its 28th notice, which included the catalog of goods subject to “import tariff quota management.” This included the three families of fertilizers: nitrate, phosphate and potash (Ministry of Foreign Trade and Economic Cooperation, 2001).74 The 28th announcement also included a catalog of state-controlled companies with authorization to import those products. The companies listed under the fertilizer category were Sinochem (中国化工进出口总公司) and Sino-Agri (中国农业生产资料集团公司) (List of State Trading Import Enterprises, 2001).75

73 China had imported potash from Canada before then, as the US Potash Annual Mineral Yearbook from 1980 confirms. “In 1980, China released official potash production figures for the first time in 20 years. Actual production is nearly an order of magnitude smaller than past estimated figures. (…) Capotex Ltd. of Canada signed an agreement to export to China at least 650,000 tons per year for 3 years” (Searls, 1980).
74 Among the 27 categories of fertilizers, two were potash types: potassium chloride (31042000) and potassium sulphate (31043000).
75 Those two companies were both relevant to the import of potash in particular.
“The annual contracts were always negotiated with [Russia and/or Belarus] first, and then the others would follow the price, from the very beginning” (Interview 109, Chinese industry journalist, 2012).

The NDRC also released a report in 2001, which said:

“In order to raise the level of resource utilization and production technology in the potash industry, efforts should be made to improve the proportion of domestic potash fertilizer, focus on building the Qinghai potash fertilizer base; explore the potential for greater development and utilization of potash resources in Xinjiang and other provinces; and actively seek foreign resources to alleviate China's potash fertilizer supply pressure. Within the ’Tenth Five-Year Plan’ period, look to fight for the control of the mining of 1 - 2 million tons/year of potash resources overseas.”76

On November 25, 2002, the then Chinese Ministry of Foreign Trade and Economic Cooperation released its 50th notice. The announcement conferred to two non-state-controlled entities the authority to import potash (in addition to the two state-controlled companies mentioned above). The first was the China National Chemical Construction Corporation (CNCCC), which at the time was one of the central enterprises under SASAC, and prior to 1982 was part of the Chinese Ministry of Foreign Affairs and Chemical Industry Equipment Import and Export Company. The second was Huaken International Trading Co., which prior to 1992 was part of the Ministry of Agriculture China Agribusiness Group) (People's Republic of China Ministry of Foreign Trade and Economic Cooperation, 2003). The two companies were permitted to sell potash on the Chinese domestic market; however, their access to global suppliers was limited mainly to Jordan and Germany. By 2007, CNNC was only importing 270,000 tonnes of potash, more than Huaken International (Li, 2008).

Quantities of potash imports were pre-determined and allocated between state-controlled and non-state-controlled enterprises. State trading quota holders can only entrust state trading enterprises to import, and non-state trading quota holders can only entrust non-state trading enterprises to import (Foreign Trade and Economic Cooperation, 2002).

76 “钾肥工业在提高资源利用率和生产技术水平的前提下，努力提高国产钾肥的比例，重点建设好青海钾肥基地；探讨新疆及其他地区钾资源的开发和利用；积极寻求利用国外资源，缓解我国钾肥供应压力。‘十五’期间，争取在国外控制开采 100-200万吨/年的钾肥资源” (author’s translation).
In 2004, following the enactment of the *Foreign Trade Law* (People's Republic of China Foreign Trade Law, 2004), the Ministry of Commerce issued its 52nd notice, through which it announced that five additional Chinese compound fertilizer manufacturers would get a self-managed (自营) license to import potash. Shandong Luxi Chemical Ltd. (山东鲁西化工股份有限公司), Western Liaoning Xiyang Special Fertilizer Ltd (辽宁西洋特肥股份有限公司), Shandong Lubei Group (山东省鲁北企业集团总公司), Hubei Yangfeng Ltd. (湖北洋丰股份有限公司), and Petrochina International (中国石油国际事业有限公司) were added for a total of 10 companies allowed to import potash (Liu, 2010). However, these companies could only use the imports to fulfill their own manufacturing needs, and were not allowed to re-sell the potash directly to other domestic purchasers (Ministry of Commerce announces Notice 52, 2004) (confirmed in Interview 99, with Chinese industry insider, 2012). Only four enterprises are allowed to sell imported potash in China: Sinofert, Sino-Agri, CNCCC and Huaken International (Li, 2008). This was confirmed by an interview with an international potash industry executive, who said that: “One thing that has changed in China’s approach to the global potash market was to allow more participants in its global negotiation team. It used to be just the two, but now eight are part of the team. They [the newly included] don’t have as much say, and mostly are just part of it, give input, etc. But still, it is a sort of [a] compromise on the part of the Chinese government” (Interview 85, 2012).

This compromise was negotiated at a meeting in 2006 among the 10 license holders and the Ministry of Commerce, and formalized by Vice Premier Wu Yigao shortly thereafter. It was agreed that Sinochem and Sinofert would send one representative each to international negotiations with Russia and Belarus (for 80% of import share), and the other eight companies would also send one representative (for 20% of import share) (Li, 2008). As for negotiations with Canpotex, Sinochem would maintain its exclusive access until 2007, after which the other eight enterprises may be allowed to attend the negotiations. However, the Ministry of Commerce also decreed that contract-signing authority would remain with Sinochem and Sino-Agri only. The other companies would actually have to sign their own

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77 Article 15 stipulates that the Foreign Trade Department of the State Council can implement automatic import licenses in order to be able to monitor the country’s import situation.
import contracts with the international subsidiaries of Sinochem and Sino-Agri. Companies complained at the time that this granted the two main firms a monopoly on imports again. By June 2007, representatives of license holders petitioned the Standing Committee of the National People’s Congress for fairer regulation regarding the potash import situation. Until then, they asserted, none of the companies had been able to sign one potash import contract directly. Many more such complaints were made (Li, 2008). The champion of those efforts was Wu Sihai, CPPCC representative and former chairman of the International Fertilizer Association. At the annual meeting of the CPPCC in 2008, at the height of the potash price increases, Wu Sihai made a speech entitled: “Breaking the potash monopoly, protecting farmer’s interests” (突破钾资源垄断，保护农民利益). In it, he said: “On the one hand, you have an international resource monopoly, on the other hand, you have a domestic sales monopoly system as well, including in terms of price, it controls the resource, so it controls the price levels. This has led to the accumulation of vast monopoly profits, for the interest groups in question.” As per the interview, Wu Sihai is indeed referring to Sinochem and Sino-Agri Group (Gu, 2008).

Apart from these licenses, there are 25 Chinese companies that have been granted licenses by the Ministry of Commerce to import potash across land borders (which in practice has meant – at least up to now – Russia), including Suifenhe Longsheng Trading Co. Ltd. (绥芬河市龙生经贸有限责任公司) and Suifenhe Guangcheng Economic and Trade Co. Ltd. (绥芬河市广成经贸有限责任公司).

The Chinese government also allowed up to six companies to attend global negotiations, although they do not participate formally, apart from the China National Offshore Oil Corporation (CNOOC), which has taken part in negotiations, especially with Israel (Interview 95, 2012). CNCCC was acquired by CNOOC in October 2006, which acquired the company to deepen its competitiveness in the chemical industry, especially in fertilizers, and it acquired CNCCC’s import license at the same time.

78 “一个是对国外资源的垄断，同时对国内销售整体上的垄断，包括价格，他拿着资源了，他能左右价位，造成了巨额的垄断利润，给这些利益集团。” (Author’s translation)
79 A group of companies formerly under Heilongjiang Agricultural Production Company, which according to a Baidu search, imports over 40,000 tons of ‘fertilizer’ from Russia monthly, is the third-largest importer of potash in the country, and the first ranked importer of potash by land.
In 2009, the NDRC issued a notice – approved by the State Council – that cancelled their “fertilizer price control policies,” but issued the 368th “Notice on how to improve potash price management policy” (关于完善钾肥价格管理政策的通知). This Notice was aiming to “give the potash import price and process adequate supervision” (National Development and Reform Commission, 2009). The notice was addressed to the provinces, autonomous regions, and directly governed municipalities’ NDRC price bureaus, as well as to Sino-Agri, Sinochem, CNOOC, and Huaken International Trading Ltd. The February 10, 2009 notice was issued to address changes in domestic and international potash markets, and to guarantee potash supply.

The NDRC stipulates that port import benchmark prices for potash that domestic enterprises formulate have to be based on national “provisions” (国家规定), and that importing enterprises cannot increase the benchmark price by more than 3% to cover operating costs (effective as of July 1, 2009). Subsidiaries of the above licensed companies importing potash outside of ports and incurring costs such as warehousing, etc. can add to the benchmark price no more than 1% of the difference in sales resulting from their total operation (National Development and Reform Commission, 2009).

Domestic and land border trade pricing continues to be subject to “market price.” The notice also seeks to implement improved monitoring. It asks that companies report the following to the NDRC’s price bureau every month: import quantities, production costs, the import benchmark price, their sales price, signed contracts, import receipts, etc. It asks that every year companies report the following to the NDRC’s price bureau and NDRC’s price control and inspection bureau (价格司、价格监督检查司): the import quantities, main customers, sales volume, and sales price, among other things. Finally, the notice also demands that potash price controls and inspection be increased. It asks in strong language that at each level of price control, the department must continue to increase inspection of potash port import price policy and seriously investigate and handle (严肃查处) the potash import companies that do not respect national pricing policy or port import prices; do not report as directed; or collude to increase prices or artificially inflate prices (National Development and Reform Commission, 2009). However, the State Council announced in 2008 that despite measures to increase the role of the market in fertilizer allocation, the
country needed to continue implementing supervision of high prices in the relatively concentrated potash import market (State Council's 6 measures, 2008).

On November 8, 2007, the Ministry of Commerce issued a notice granting the 10 holders of potash import licenses the right to equal importing (that is, no limits on the quantity imported, although only four companies would be allowed to sell the potash domestically; the other would have to use it for their own consumption) and negotiating rights. In practice however, at least one year later, it was said that old habits die hard, and negotiations with Eurasian producers were still handled by Sino-Agri (Li, 2008).

Liu Fangbin quoted the Chinese Fertilizer Industry Association Potash Branch Vice-Secretary Qi Zhaoying in a 2010 interview: “China has implemented the automatic licensing program for potash, there is no annual import quantity limits (and this goes for the 6 domestic manufacturers of potash importing potash for their own needs, as well as others), and state-run and non-state run firms enjoy the same privileges” (Liu, 2010). In 2013, the State Council Quota Authorization Bureau issued a “Notice on the Implementation of Automatic Licensing for Fertilizer” (关于化肥自动进口许可证实行网上申领的通知) (Ministry of Commerce, 2013).

The overall aim of successive government regulations over the past decade has been to gradually increase the number of enterprises with access to the interface with the global potash industry, a pattern that is completely opposite to that of the iron ore market. A government official from a relevant ministry explained: “The rationale for opening up the licenses was to increase competition [or marketization (市场化)], but not in terms of competition against each other overseas, that no. (…) The aim was to relax the presence of the two big companies [domestically]” (Interview 101, 2012). A government official and potash industry insider said that “the extra licenses were given out (…) when the prices of potash went up and everybody wanted a piece of it” (Interview 95, 2012). This confirms the privileged position that license holders find themselves in compared with the domestic market consumers who do not have access to the global potash market interface.

Despite these attempts, there are still only 10 official potash import licenses in China. As of 2012, there were just six active licenses (four of the companies do not use their import licenses and just wait for the others to import the potash and then they buy it from them). Of the six, there are only three that actually sit on the negotiating board. Sinochem (Sinofert)
and Zhongnong (Sino Agri Food) have been fulfilling this role for many years, whereas the third is CNOOC (Blue Chemical). An industry insider explained that this third seat should be a rotating position. The other seven still sit by during the negotiations (Interview 86, High-level commodities industry insider, 2012). One Chinese potash industry insider from the private sector went further and said that in practice, “there are 10 licenses, but really only four or five use it. The others don’t, and buy from big firms [who are licensed]” (Interview 107, 2012).

A Chinese government official explained: “China’s entry in the WTO had a big impact on the way China is seen to manage imports and exports. So the various licenses were probably given in this frame of mind, to fulfill China’s WTO obligations, but in actual fact, it may be that the companies that were given the licenses do not have the warehouses, the distribution networks, the logistical power, etc. so it is too early for them, and they are not ready to use them” (Interview 102, 2012).

On January 4, 2013, Sino-Agri Group issued a press release confirming that a benchmark contract price had been reached between the negotiators for the first half of the year. On the Chinese side, the members of the joint potash negotiation small group were the Sino-Agri Group, Sinochem, and CNOOC, whereas the international negotiators were composed of Canpotex, Belarusian Potash Company (BPC), and Israel Chemicals Group (ICL) (China concludes potash price negotiations, 2013).

Looking at raw Chinese Customs data for potash imports per company over the years, the percentage of imports by Sinochem and SinoAgri in 2001, 2006 and 2011, without taking subsidiaries into consideration, is as follows: Sinochem: 31%, 28%, and 33%; Sino-Agri: 31%, 19% and 20% (see Appendix 3). It would seem that the two top importers reduced their imports in 2006, only to see them rise again in 2011. But many of the companies listed as independent importers provided by the Customs Department are actually subsidiaries of the two top importers: Sinofert (Sinochem) and Sino-Agri (Zhongnong). The numbers are as follows: Sinochem: 32%, 34% and 34%; and Sino-Agri: 31%, 24% and 24% (see Figure 33). By taking this into account, we do see less of a reduction in the share of imports by the top two Chinese potash importers between 2001 and 2006 and 2006 and 2011, as the numbers remain stable between 2006 and 2011 (see Figure 33). In 2011, Sinofert (a subsidiary of Sinochem) and Sino-Agri still imported more than 50% of all of potash imports (this number
is much higher if we consider sea-borne imports exclusively). This figure shows that the Chinese government’s efforts to increase the number of companies with access to the import interface had not borne fruit, at least not as of 2011.

Some analysts think that despite these numbers, with the increasing domestic production of potash, and the increasing reliance on land imports from Russia, the stronghold of Sino-Agrí and Sinochem has been eroded somewhat. An article published in CCBM360 (中国资讯网) mentioned that from this perspective, the Chinese potash import system and the People’s Republic of China’s Anti-Monopoly Law are not contradictory (Who can import potash?, 2009).

**Figure 33 – Share of Potash Imports by Top Two Chinese Companies (2001 - 2011)**

Looking at the share of imports by the country’s top 10 importing firms also gives us a good indication of the level of concentration of the industry at the interface with the global potash market, especially in comparison with similar data for the iron ore market (Figure 34).
Unlike India, the other large Asian fertilizer consumer, China does not directly subsidize fertilizer imports. There are agricultural subsidies for farmers in China, but they are not necessarily always adjusted to fluctuating global fertilizer prices. Many other variables are taken into account when subsidy levels are established. A Chinese government official and fertilizer industry insider explained that “the Chinese situation is not like India. India pays a much higher price globally, since they have government subsidies domestically. The Chinese situation is different, as China doesn’t have direct subsidies for fertilizers.” When I asked how the farmers were able to cope, the interviewee responded: “The Ministry of Agriculture has a program for farmers. Every year they give so much, and they take into consideration all sorts of things to determine the amount, not only fertilizer. So in a way, in an indirect [and incomplete] way, fertilizer price is dealt with by the government to help farmers cope with price increase” (Interview 95, 2012). The same interviewee continued: “There are no subsidies of fertilizer per se, but there is some state aid to farmers in general. In one year, it can go to many thousand “Yi” [亿, or 100 million]! But what does that mean per head? A few hundred kuai [块 or 元 (Yuan), the Chinese currency]! No use! (没用)” (Interview 96, 2012). Another interviewee from the private sector, agreed. When I asked,
“Was there any form of meaningful subventions for the farmers in situations like in 2008 [when potash prices shot up]?” he said, “basically not (基本上没有)” (Interview 106, 2012).

In 2008, “analysts reported that the approval of the State Council and the central government [that] year will add 20.6 billion yuan to fund comprehensive agricultural subsidies, in order to mitigate the effects of changes in agricultural prices for farmers to grow grain” (Gu, 2008). Some years, “potash alone eats sixty five percent of the subsidies” (Gu, 2008).

5.9.3 Causal mechanism: Levels of coordination

The level of coordination of domestic potash players in their interactions with the global market, or the level of coordination at the interface, is significantly higher and exhibits more coherence than in the iron ore case. We have seen that there are 10 importing licenses for the sea-borne imports of potash, but really only two or three companies that import the bulk of potash every year (Figure 6) and carry out major negotiations. This was confirmed in an interview with a senior Chinese official with intimate knowledge of the matter: “Only three companies really import potash, Sinochem, Sino-Agri and CNOOC” (Interview 95, 2012). As a Chinese government official confirmed, the two top companies are really the ones setting the price for the domestic market: “CNOOC has no negotiation power in the sense that they accept either the BPC or Canpotex price. They never get to set the price” (Interview 96, 2012). In 2008, Sinochem and Sino-Agri opposed the demands for independent negotiations by the eight other license holders by saying that: “concentrated bargaining helps increase the cohesion among importers, whereas if we were fragmented, we would be crushed one by one, and this would lead to higher import prices” (Li, 2008). This shows that the lead Chinese potash importers were keenly aware of the two-level dynamics at play, and that coordinated procurement behaviour afforded them more power in the negotiations.

In terms of the ground trade, “There are 26 licenses to import potash by rail, but not all companies use them” (Interview 99, 2012). The licensed rail import enterprises coordinate their procurement strategy as well. In fact, a new association was created in 2012 to help with

80 “中化，中农（…）认为集中谈判有助于增加凝聚力，一旦分散可能被各个击破，进口价格将会更高” (Author’s translation).
the coordination of procurement. It was called “Cross-Border Potash Imports Coordination Commission” (边贸钾肥进口协调委员会) (Interview 109, Chinese industry journalist, 2012). The rail trade does not set domestic prices. They are usually price takers and are priced in relation with the sea import contract price, although the Russian exporters have been known to dump excess potash via rail trade as well. Rail imports are less important in numbers than are sea imports. “The annual numbers [of imports by rail] in the past few years have been between one and two million tonnes on average” (Interview 86, 2012).

A few different industry associations with somewhat distinct but overlapping duties manage the Chinese domestic potash industry. One interviewee confirmed that the “China Inorganic Salts Industry Association is most powerful. Under them, there is a Potash Branch (钾盐与钾肥)” (Interview 86, 2012).

The Chinese potash sea importers are also part of a leading group on international negotiations, where the companies come together and coordinate their strategies before going out and negotiating with international suppliers. Among other things, they coordinate who will negotiate with which international supplier. A Chinese government official with intimate knowledge of the matter explained:

“There is a negotiating small group81 (谈判小组), and they all discuss together before negotiations. It is very heated. Whoever gets a deal first, the other ones follow. It used to be that Sino-Agri (Zhongnong) would settle first with BPC. But very recently, the first deal has been signed with Canpotex. (…) CNOOC didn’t use to import but they bought a potash firm. They participate in the Israeli negotiations. They get the Israeli part, Zhongnong gets the Russia-Belarus part, and Sinochem gets the Canadian part. They negotiate this among themselves. It is [officially] the Ministry of Commerce that deals with that, the negotiations and allocation of who deals with which foreign markets, but to be honest, the companies decide that among themselves. The other seven companies [who have a license], they really do not import (基本上不进口), they have to buy from the three big ones, or some of them will buy from Russian rail imports.” (Interview 95, 2012)

Feng Mingwei, Sinochem’s Deputy General Manager at the time, said that “in order to safeguard the fundamental interests of farmers, China established in 2005 a potash imports joint negotiation mechanism, ‘under the

81 Small groups are cross-cutting committees of relevant political, bureaucratic and SOE staff, in this case, which serve as a connecting organ between the Party and key stakeholders. They are absent of official organizational charts, and often deal with sensitive issues. On the topic of “leadership small groups,” the most senior version of such committees, see Miller, 2008.
government’s guidance, coordinated by industry associations, by enterprises jointly facing foreign [markets].’ Sinochem, Sino-Agri (Zhongnong), CNOOC and other potash import enterprises formed a joint negotiation small group to negotiate with foreign market suppliers. This has resulted, since 2006, in a global context of sharply raising potash prices, in a situation in which China has benefited from a ‘depressed price’ status.” (Li, 2011b) (Author’s translation)

For instance, “when BHP tried to buy Potash Corp. in 2010, there was a special meeting in Beijing, a small group (小组), an ad-hoc meeting group created for the occasion” (Interview 102, with Chinese Ministry official, 2012). A key high-level international industry insider with intimate knowledge of the matter also confirmed that “Canpotex only negotiates with Sinofert” (Interview 86, 2012).

I asked one interviewee, a senior Chinese government official, whether there is competition among Chinese potash importing enterprises. The official responded: “The point of the small group (小组) is to split things, so that there is no international competition in terms of who imports from whom!” (Interview 96, 2012). This was also confirmed by an interview with a Chinese industry insider from the private sector: “Indeed, the companies do not compete against each other” (Interview 99, 2012). However, one industry insider said that although it is true that “Sinofert is the single negotiator with Canpotex,” both “Sino-Fert and Sino-Agri can import from BPC” (Interview 99, 2012).

As a senior China-based journalist explained: “The pressure is not about when the SOEs go into negotiations, but prior to that. There are price controls in China, by the Price Control Department of the NDRC, and the companies must know what the situation is domestically prior to when they go out and negotiate” (Interview 104, 2012). Phrased a little differently by a Chinese SOE official: “Of course the negotiators have to think of both government plans and farmers’ well-being. They are a state company, but they do not get direct directives. Of course, they could ‘mess up’ and then that would be bad for their careers. But they more have to think about getting their product out in the domestic market and making money” (Interview 109, 2012). All in all, once the Chinese state-owned firms go and negotiate with their foreign counterparts, they have quite a bit of leeway in negotiations (Interview 102, with Chinese Ministry official, 2012), but this leeway remains framed within
the broader context described above, including by prior “small group” agreements, and high-level government policy frames.

5.10 Three Events in the Global Potash Market

5.10.1 Increase in the frequency of benchmark pricing

The dynamics created by two-level market power symmetries are on display in the case of the doubling of the frequency of negotiations that was institutionalized in 2010. Up to then, price benchmarking negotiations used to be settled once a year, with the first large contract between either of the lead producers and the leading consumer (recently, China) setting the price for the year.

For instance, in 2003, “Canpotex Limited… signed a three-year Memorandum of Understanding (MOU) with Sinochem, China's largest potash importer. The MOU states that over the next three calendar years Canpotex will ship a minimum of 1.5 million tonnes annually (plus a 10-percent option) at a price to be negotiated each year based on market circumstances. (...) Canpotex will supply the Chinese market through Sinochem exclusively during the period” (PotashCorp Announces, 2003). The announcement of such a benchmark price would usually be made in press releases such as this one, in April 2008: “Potash Corporation of Saskatchewan Inc. (PotashCorp) announced today that Canpotex Limited (Canpotex), the offshore marketing company for Saskatchewan potash producers, and Sinofert Holdings Limited (Sinofert), a leading fertilizer enterprise in the People's Republic of China (PRC), have reached agreement on 2008 potash pricing at US $400 per tonne higher than in 2007” (PotashCorp Announces, 2008).

Starting with a three-year Memorandum of Understanding signed between Canpotex and Sinofert in October 2010, the benchmark system transitioned from an annual to a biannual pricing system. The MOU stipulates that “pricing [is] to be negotiated every six months (January to June and July to December)” (Canpotex and Sinofert Sign New MOU, 2010).

Interviews with industry insiders suggest that both international and Chinese negotiators supported the increase in benchmarking frequency, to the point where both sides claim to have pushed for the change. On the Chinese side, interviewees argued that consumers needed more flexibility to deal with the biannual crop planting seasons and
domestic pricing difficulties. An interview with a high-level Chinese government official suggests that this change was at the very least supported (if not initiated) by the Chinese side, which wanted more flexibility in purchasing fertilizer, tailored to their cropping patterns (Interview 96, 2012). An industry journalist confirmed this by saying: “The impetus behind the move from annual to bi-annual contract negotiations came from China. It wasn’t comfortable with one year, as it was too long and prices domestically are difficult to predict, so it was easier to deal with bi-annual pricing” (Interview 109, 2012).

On the international side, interviews on the shift to a bi-annual pricing system also argued that: “Canpotex actually wanted this,” and that it “takes some pressure off” of the negotiations, “not all the pressure, but some of the pressure” (Interview 85, 2012).

Both Canpotex and BPC have agreed to double the frequency of these benchmarking talks. The latest agreement between Canpotex and Sinofert confirms that this bi-annual pricing system is still in place:

“Canpotex Limited (Canpotex) has entered into a new three-year Memorandum of Understanding (MOU) with Sinochem Fertilizer Macao Commercial Offshore Ltd. (Sinofert) to supply a minimum of 1.9 million metric tons of red standard-grade potash during the term of the MOU. (…) Pricing will be negotiated every six months (January to June and July to December), based on market conditions.” (Canpotex Reaches Agreement with Sinofert, 2015)

Despite the doubling in the frequency of pricing negotiations, as well as other changes that will be discussed below, the pattern of regular, annual negotiations and long-term contracts continues until today.

5.10.2 China’s refusal to sign a procurement contract with the global potash producers

The growth of China, Brazil and India as agricultural giants, coupled with the growth in potash-intensive food crops, led to a sharp increase in potash prices in the latter half of the 2000s. During this period, the Chinese purchasers established themselves as the benchmark-setting lead negotiator, much as they had done in the iron ore market from 2006 onwards. Since then, Sino-Agri (Zhongnong) has negotiated with its Russian and Belarusian counterparts, and Sinofert (Sinochem) has negotiated with Canpotex (although in recent years, Sinochem has also purchased potash from the Russian and Belarus producers, which will be discussed below). The first to come to a pricing agreement sets the global benchmark price for the period at hand, which is now six months. The Indian consumers usually wait for
the first Chinese contract, which acts as a global benchmark, and sign at a slightly more elevated price (to take into account longer shipping journeys, and smaller, more frequent deliveries).

In 2006, following two years of steady price increases, the negotiations deadlocked. An agreement was only reached in July of that year.

“Contract negotiations between major potash importers in Brazil, China, and India, and major potash suppliers in Belarus, Canada, and Israel, were deadlocked for the first half of 2006 causing concerns about growing potash inventories. To alleviate the potential oversupply situation, some producers curtailed production. This included the mines in Allan, Cory, Lanigan, and Rocanville, Canada, and four mines in Belarus. (...) The stalemate between major world potash consumers and producers was broken in late July 2006 with the new base price rising by an average $25 per ton over the 2005 contract price.” (Kostick, 2007)

In 2007, the benchmark-setting contract of the year was finalized in February between Sino-Agri and BPC. “The Canpotex agreement was preceded by a similar price agreement reached February 4, 2007 between Belarusian Potash Company (the marketing agent for potash producers PA Belaruskali of Belarus and JSC Uralkali of Russia) and Chinese importers, establishing the base line for all sea-borne potash prices into China in 2007” (PotashCorp Announces, 2007).

In 2011, the Chinese-led negotiations concluded with the Chinese-established benchmark increasing by $70/ton over the year prior, a 17.5% increase. The Potash Branch of the Chinese Fertilizer Industry Association published a document referring to that year’s negotiations as “a great victory” (Li, 2011b). Feng Mingwei, Sinochem’s Deputy General Manager at the time, attributed “this ‘victory’ (...) to the Chinese potash imports joint negotiation small group” (Li, 2011b). “The Chinese-negotiated contract price for potash imports was $470 a tonne, whereas Brazil and other Asian countries were paying more than $550 a tonne CIF. China was thus paying around $80 per tonne less, and since the estimated total imports contracted were around two million tonnes, this led to total savings of at least $160 million USD” (Li, 2011b) (Author’s translation).

At the beginning of 2012, Sinofert agreed to a benchmark price of $470 a tonne with Canpotex, the same price as the benchmark agreed to the year prior, which was also a success. India followed suit shortly after, signing at $490 a tonne.
Then, in 2010, Canpotex Limited (Canpotex) and Sinofert Holdings Limited (Sinofert) signed a three-year MOU, which guaranteed: “a minimum of 3.15 million tonnes of potash (…) The MOU covers the period January 1, 2011 to December 31, 2013, allows for growth in Chinese consumption and guarantees that Canpotex will maintain a market share over the three-year period that is equal to the greater of the agreed tonnage or one-third of the seaborne potash imports to China in each year” (Canpotex and Sinofert Sign New MOU, 2010).

In accordance with the new normal and the terms of the MOU, the second pricing agreement of the year was scheduled to be signed during the summer of 2012. For what an interviewee characterized as the first time in the history of the benchmark system, the Chinese refused to sign a contract.

Chinese negotiators asked for huge price markdowns from the global stakeholders, and held firm. There are striking similarities between the potash situation and the iron ore case prior to the fall of the benchmarking regime. One example is the fact that the large SOEs were benefitting from privileged access to the global resource. One Chinese government official said to me: “As long as Sinochem is able to sell its fertilizer onward, it has no issues with the price” (Interview 68, 2012).

The key difference here is that when the Chinese negotiators (Sinofert and Sino-Agri) said, “We are not buying,” to the international potash producers and asked for a price reduction, the other Chinese companies with import licenses held the line, including CNOOC and the smaller subsidiaries or parent companies of the two large SOEs. (I am excluding the railway trade here, as it is considered separate from the sea-borne trade, often used for dumping potash by Russia, and not for price setting.) Other companies were more easily controlled, and did not have the ability to go abroad to purchase additional supplies, as they did not have access to importing licenses. Interestingly, India also waited to see the result of the standoff before going ahead with its own purchases. The standoff lasted almost six months. Eventually, the benchmark contract was signed in December 2012, at $400, down from $470 six months before, a reduction of 15% and a huge win for the Chinese consumers (Munson, 2013).

A specialized analysis in China Chemical News mentions the 2012 negotiation process as one that saw a boycott by large potash customers, China among them, leading to a
huge drop in price (Chen, 2013). (The specific mention of China was likely a reference to the fact that India was waiting for the outcome, rather than collaborating per se.)

Interviews in China with insiders from the fertilizer industry indicate that China’s bold behaviour during the potash benchmarking negotiations in 2012 used the rationale of domestic constraints during the negotiations.

The success of the Chinese negotiators in obtaining a sizeable markdown from the global potash suppliers was the result of interaction between domestic and international variables. Chiefly, China’s concentrated interface with the global export industry (control over smaller Chinese players by larger players) allowed it to coordinate procurement behaviour. At the time, there is no indication that Chinese negotiators were interested in destabilizing the benchmarking system per se. On the contrary, they obtained huge advantages from their gatekeeping position, and their ability to re-sell potash domestically.

Key to the differences in outcomes between the iron ore and potash markets, despite striking similarities in negotiation tactics, lay in the successful coordination of Chinese importers’ behaviour at the interface with the global industry, as well as in the coordinated behaviour of global potash suppliers.

5.10.3 Take-over failures and breakdown of Russia-Belarus cartel (BPC)

There is one last development in the global potash market worth mentioning here. In the past, China has been wary of further consolidation of the global potash industry, which saw an increase in consolidation during the 1990s and early 2000s.

An example of this industry consolidation was the merger of Uralkali and Silvinit, the two largest Russian potash exporters. The almost $24 billion merger caused much concern on the Chinese side.

“China’s concern is about Russia’s current position as the second-largest producer of potash in the world and its recent consolidation of Russia’s major potash producers, Uralkali and Silvinit, under a single company. (...) China raised these concerns to Russia in an attempt to prevent this Uralkali-Silvinit deal, which ultimately went forward and resulted in the creation of the second largest potash producer in the world. (...) Of course Russia already has disproportionate influence over Bela, and the Russia/Canada combo is already a concentration of power over the commodity that China is concerned about.” (Interview 138, Matthew Gertken, senior East Asia analyst, Stratfor, 2011).
But between 2002 and 2012, the share of exports by the world’s top four exporting countries was slightly reduced (although remained high), from 95.5% to 87%. During the same period, the share of potash exports by the world’s four largest firms went from 83% to 79% (see Table in Chapter 2). Indeed, in recent years, there were three much publicized failed attempts at consolidation of the global potash industry.

Failed hostile take-over bid of Potash Corp. by BHP Billiton

BHP Billiton, the largest mining company in the world by stock market capitalization, mounted a $38.6 billion hostile takeover bid for Potash Corp. in August 2010. The bid by BHP Billiton was blocked by the Minister of Industry, Tony Clement, on November 3, 2010, under the “net benefit to Canada” provision of the Canada Investment Act, in a move that shocked the global investment community. It was only the second time an investment was blocked in the history of the Act.

The Chinese reaction was one of deep concern. The fertilizer giant Sinochem envisioned making a counter-offer, and held talks with various potential partners (Grant et al., 2010).

“In the months preceding the blocking of the BHP bid, it was circulated in international and Canadian newspapers that Chinese state-owned Sinochem was preparing a counter-offer, while possibly looking to partner with another entity to do so. On September 13, Caijing magazine reported that Sinochem was investigating the possibility of allying itself with Temasek (a sovereign wealth fund from Singapore) to mount a bid for Potash Corp. The Alberta Investment Management Corp., a Canadian pension fund, was also approached by Sinochem to consider a joint counterbid that could also have involved the Industrial and Commercial Bank of China. The BHP bid concerned China, not only because of the dominant position it would give BHP in the potash market, but also because of the already dominant position of the mining giant in the iron ore, copper, coal and uranium markets, among other essential Chinese imports.” (Massot, 2011).

Interviews indicate that the Chinese State Council was not ready to give the state-owned giant the go-ahead, and that therefore Sinochem could not get the necessary approvals from the authorities in order to go ahead and prepare a counter-offer.

The likelihood of BHP Billiton increasing its negotiating position vis-à-vis China was definitely seen with much weariness within China, as confirmed in interviews. “BHP is already too powerful,” said one high-level Chinese government official in the fertilizer industry.
“We didn’t see it as a good thing at all. When BHP made the offer in 2010, we were really concerned. There even was an emergency meeting in Beijing in September 2010 with many interested parties to discuss the possible strategies. They wanted to put together a purchase bid, but Sinochem was too small, the price tag was so huge. They wanted to look and did look for partners, including in Canada, but the time pressure was huge, and they couldn’t put something together in such a short time.” (Interview 95, 2012)

When the deal was eventually blocked by the Canadian government, the relief of the Chinese potash importers was immediate: “The Canadian government did a good thing, actually!” (Interview 95, 2012).

**Failed potential take-over bid of ICL by Potash Corp.**

Potash Corp. indicated it was interested in buying Israel’s Potash Company, ICL (the world’s fifth-biggest producer), in 2012. The proposal bore some striking similarities with the failed hostile take-over bid of PotashCorp by BHP only two years earlier. There were elections looming in Israel, and the potential deal became an electoral issue.

PotashCorp justified its move by saying it wanted more say in the management of ICL (it already owned a 14% stake, but held no board positions), as well as better access to ICL consumers, including from China and India. Indeed, China had increased potash purchases from Israel in recent years in an effort to diversify its sources of supply. Chinese industry insiders confirmed that this deal would not be in China’s interest (Interview 95, 2012). News about PotashCorp’s intended take-over started surfacing in October 2012 (Jordan, 2012), right as the Chinese buyers were stalling on their benchmarking negotiations with Canpotex. The company dropped the bid in April 2015 (Terazono, 2013), amidst popular opposition, and increased the likelihood that the deal would get blocked in Israel.

**The Fall of BPC**

In July 2013, Uralkali stunned the potash world by saying that it wanted out of the quasi-cartel marketing union with Belaruskali, its Belarusian partner. On July 30, 2013, Uralkali issued a press release, which effectively ended cartel arrangements between Uralkali and Belaruskali:

“Unfortunately, we should state that our cooperation with our Belarussian partners within BPC framework has come to a deadlock. It has always been Uralkali’s position that export activities of both producers should go through
the unified sales network. This fundamental principle of partnership was violated by the Decree No. 566 issued by the Belarussian President on 22 December 2012, which cancelled the exclusive right of BPC to export Belarussian potash. Following the issue of the Decree, Belaruskali has made a number of deliveries outside BPC.

- We have repeatedly informed our Belarusian partners that such actions were unacceptable and they have ultimately destroyed the fundamentals of our prolonged fruitful cooperation. In this situation we have to re-direct our export deliveries through our own trader.

- Still, we thank our Belarussian partners for cooperation within the BPC framework and do not exclude the possibility of cooperation on a mutually beneficial basis in future.” (Baumgertner, 2013)

Among the reasons listed for the departure was the fact that Belaruskali had recently sold potash to China outside of the marketing cartel. “Baumgertner (Uralkali CEO) and four other Uralkali executives for whom Belarus has issued arrest warrants are accused of conspiring to cut Belaruskali out of decision-making at Belarus Potash and causing $100 million of damages” (Kudrytski and Kravchenko, 2013). One potash industry insider explained: “Both sides have accused the other of by-passing BPC, but we haven’t had any evidence of this on a large scale. All the seaborne shipments to China should have been within the BPC contract, though both sides may have been negotiating future deals independently. Uralkali fell out with Sinochem after they bought more tonnes from Canpotex than BPC” (Interview 130, 2013).

Uralkali claimed it is confident that it can increase profits by working with lower potash prices and ramping up production instead of remaining within BPC and working within higher price conditions and controlled production. Various media outlets have mentioned that Vladislav Baumgertner, Uralkali’s chief executive, said that global potash prices were likely to drop to a range of $300 a tonne as early as late 2013. The contracts that were signed in early 2014 confirmed the impact that the breakup of the cartel had on prices. Indeed: “Russian (…) Uralkali OAO agreed on Jan. 20 to a six-month deal to sell Chinese buyers 700,000 tonnes of potash at $305 per tonne” (UPDATE 1-Canpotex signs potash contract with China's Sinofert, 2014).
Such a drop in prices of course advantages lower-cost producers (such as Uralkali and ICL), although a $300 a tonne is still much higher than Saskatchewan’s production costs of around $100 a tonne.

However, one of the most, if not the most, direct beneficiaries of this event is China, although this has been underreported in the media. Interestingly, the Chinese Investment Corporation had acquired Uralkali’s options six months prior to this about-face.

“Billionaire Suleiman Kerimov and his partners in OAO Uralkali (URKA), the largest potash producer, sold bonds to China’s sovereign wealth fund and VTB Capital that can be exchanged for shares valued at about $3.2 billion. Chengdong Investment Corp., a unit of CIC International Co., and Moscow-based VTB Capital bought bonds from the shareholders that mature in 2014 and are exchangeable into a 14.5 percent stake in Uralkali, the fertilizer producer said today in a statement.” (Fedorinova and Corcoran, 2013)

One potash industry insider commented: “I don’t know how much CIC knew about this – the news has devalued their stake in Uralkali, but of course they hope that China will benefit from lower prices. I can’t imagine CIC had the leverage to influence Uralkali’s decision” (Interview 130, 2013). However, another analyst explained:

“Were the Chinese willing to part with their money in November at a billion dollars more than their stake is now worth, because they were assured that potash would become significantly cheaper for China to buy when the bond conversion into shares falls due in a year's time? The likelihood is that the Chinese government was an insider in this deal too. (...)The thinking in Minsk is that Lukashenko made his own deal with the Middle Kingdom when he visited Beijing on July 16. (...) I can only speculate that Belarus President Lukashenko’s visit to China resulted in a contract signed outside of BPC, and this was the last stroke that broke Uralkali’s patience. The Belarus theory isn't taking into account CIC's stake in Uralkali. So unless the Chinese miscalculated that their deal with Lukashenko and Belaruskali would not have the costs Uralkali has now inflicted, the Chinese are now calculating that they will gain if they play both sides against the middle. The Chinese win with this strategy in the short term because potash will cost them $200 less per tonne. (...) In the long term, the Chinese might find themselves financing the enlarged potash monopoly.” (Helmer, 2013)

Uralkali remains confident of its global comparative advantage, being a lower-cost producer and having direct rail links with China, among other things. Of course, in the short term, China Investment Corporation lost out on the value of its investment in Uralkali, as shares went down following news of a decrease in contract prices. But Chinese importers
gain if prices go down. Since CIC takes a long-term view, it may be ready to persevere through this period and remain confident that their investment will pay off in the future.

Kona Haque, an analyst with Macquarie Capital (Europe), commented on the cartel breakdown: “What is more, the spot market will also begin to drive prices, instead of potash contracts, which has traditionally been the case. That will also drive countries such as China, India and Brazil to buy more.” Buyers from China and India “will try to move away from these negotiated contracts and they’ll obviously be more engaged in the spot markets,” she added (Bouw, 2013).

Some analysts, though, think that lower potash prices in the short term will stimulate demand, especially in developing countries such as China, India and Brazil, and may well end up eventually bringing prices back up to a $400 level in the not so distant future.

We also have to be cautious about foreclosing the possibility of future cooperation between Uralkali and Belaruskali. After a tense episode in which Baumgertner was detained in Belarus, new shareholders were brought in, and this may change Uralkali’s strategy. “Potash Corp of Saskatchewan chief executive officer Bill Doyle said (…) it was ‘logical’ to expect potash rivals Uralkali OAO of Russia and Belaruskali to reunite at some point in a move that could bolster the struggling potash industry. ‘It would appear to be in their own self-interest,’ he said, ‘so I think it's logical to presume that they will at some point in time get back together” (Nickel, 2014).

Uralkali officials have since suggested that potential future cooperation through another third party is still possible. It is plausible that the two companies would try to re-form a cooperative venture in the near future, and it will be interesting to see the reactions on the Chinese side. Uralkali has already issued a response: “Consolidation,” said chief executive Baumgertner in Moscow (…), “is the logical step when the price falls to the level of marginal producers” (Helmer, 2013).

Another interesting component of this situation is that the changes have not provoked much reaction on the side of the North American potash producers. The three mining firms (Potash Corp., Agrium and Mosaic) have maintained a common understanding of the best way forward for them, and have remained committed to continuing to coordinate their potash marketing and sales strategy through Canpotex.
In Canada, the CEOs of Potash Corp and Agrium have made comments that they remain optimistic, and that the change on the Russian/Belarus side of things will not have a large impact on North American producers and will not affect their marketing strategy (although this has proven to be somewhat of an understatement).

Meanwhile, Belaruskali and Uralkali continue to undercut each other, and the benchmark system shows signs of difficulty. The 2015 contract was late in coming. Although it is usually signed early in the year, the first contract was not signed until March 2015. An analyst at Bloomberg Intelligence said that “the delay is ‘one more step toward dissolving the traditional patterns’ in the potash market” (Hill et al., 2015). Belaruskali announced that for the first time, it was the first to come to an agreement with Chinese importers. At $315 a tonne, the agreed price, which will become the benchmark for the first half of the year, the price is significantly lower than Uralkali expected ($10 above the 2014 price). “‘Suppliers could have gotten a more profitable price if BPC,’ as the international trader for Belaruskali is known, ‘had waited for another two to three weeks,’ Oleg Petrov, Uralkali’s head of sales and marketing, said by e-mail. (…) ‘Canpotex’s pricing influence is fading – it’s almost like they’re price takers now rather than price makers,’ Daniel Greenspan, a Toronto-based analyst with Macquarie Capital Markets, said” (Kudrytski and Fedorinova, 2015).

“The shifts in potash echo transitions seen in other commodity markets, notably iron ore, Kovalsk and fellow Macquarie analyst Colin Hamilton said in a March 9 report. Like potash, iron ore was once dominated by a handful of producers and sold primarily through fixed-price contracts. Today, iron ore prices are tracked daily, and that information is typically used to negotiate long-term sales agreements” (Hill et al., 2015).

5.11 Looking Ahead – Lessons from the Iron Ore Case

Chinese resource procurement policies and the behaviour of the many different stakeholders are complex. But the potash and iron ore cases also exhibit patterns that are strikingly parallel. With the knowledge of these parallels, we can draw lessons from the diverging elements and look ahead at possible futures. The fall of the iron ore benchmarking system was driven by at least two causal factors: fragmented behaviour on behalf of the Chinese iron ore stakeholders, and strong preferences and capacity to act on behalf of the global iron ore suppliers. These two components were absent in the potash case until now. But what are the trends?
First, some Chinese government stakeholders have been trying in recent years to introduce more competition into the potash import process (interestingly, in complete opposite fashion to the iron ore case). The attempts to increase the fragmentation of the Chinese interface with the global potash industry have been ineffective until now. But what emerges from the iron ore case is that in a situation of power asymmetry towards global market stakeholders, a more fragmented interface may weaken China’s hand and provide opportunities for global suppliers to accumulate more market power and effect change in their preferred direction. This could destabilize the annual potash benchmarking regime, regardless of the preferences of the leading Chinese potash importers, Sinochem and Sino-Agri, and could provide international stakeholders with the opportunity to usher in a more volatile pricing system. In this scenario, which would entail a movement from Quadrant 4 to Quadrant 2, Chinese potash buyers would become more numerous and this would make coordination harder to achieve. Indeed, one international potash industry executive has expressed that this may happen: “They are trying to control [the situation], but ultimately, they won’t be able to” (Interview 85, international potash industry executive, 2012). This scenario would see the emergence of dynamics not unlike those seen in the iron ore case, and we may see the marketization of the global potash pricing regime. Speaking of the turn of events in the iron ore market, a high-level potash industry insider said:

“We are seeing the same situation in the potash market now. The Chinese are holding off, trying to sell off their domestic potash stocks and production, and trying to get prices to go down, but it is not good! If they wait too long they will be in bad position and will need the potash, prices will be higher. At worst, the biannual negotiations system will be relaxed, and there will be more instability in the market, just as it happened in the iron ore market, and the Chinese will lose. They are too short sighted. They think of short-term gains too much.” (Interview 86, 2012)

We have to keep in mind that the fall of the potash benchmark pricing regime may occur while not being an articulated policy or even a preference of the largest Chinese stakeholders. Liberalization trends, once again, could be, at least in part, unintended by the largest Chinese importers.

At the same time however, we have seen that the position of strength of the global potash suppliers, at least in the Eurasian market, has also been eroding. The fall of the Russia-Belarus export cartel has led to a fall in their market pricing power and coordination capacity, which in turn has led to competitive behaviour between Eurasian producers, and a
decline in prices. Following the price trend logic, declining prices should push the Eurasian producers to seek a renewal of their marketing agreement. Hard politics between the Russian and Belarusian producers are making this difficult for the time being. On the other hand, declining prices should provide an incentive for Chinese consumers to keep the pressure up on global potash market suppliers and push for marketization.

In the end, I argue that part of the answer will lie in a domestic struggle by powerful Chinese fertilizer giants Sinochem and Sino-Agri and their efforts to preserve a privileged position of market power in their own domestic arena, and that they will continue to extract rents from other Chinese fertilizer consumers. If these two giants are successful, there may be more stability in the global potash market than there was in the iron ore market. If they fail, the potash market may be the next commodity market to push the frontier of marketization.

5.12 Conclusion

To understand why China is having the particular kinds of impacts it is having (or not having) on the global potash market, in contrast to the iron ore market, we need to understand the vastly different market power asymmetries that Chinese stakeholders faced in the 2000s. China was home to vastly lower levels of fragmentation at the domestic level and at the interface with the global market. It thus had much higher coordination capacity and was able to make some gains in global procurement.

Developments in the global potash market allow us to draw a few conclusions. It is important to understand the role of Chinese domestic market structural characteristics in order to properly understand and explain China’s behaviour in global markets. However, domestic, inside-out perspectives per se are not sufficient to explain international market outcomes. Indeed, outcomes are explained through the interaction of domestic and international positions of market power. China’s emergence is, at the very least, due to its sheer size, shifting perceptions of interests and constraints felt by global market stakeholders. This has consequences for their behaviour, and it can lead to systemic change.
CHAPTER 6 – CHINA’S IMPACT ON THE GLOBAL URANIUM MARKET

This chapter investigates the political economy of China’s impact on an under-investigated global resource market: uranium. Whereas China has already started to have significant impacts on other commodity markets, within the uranium market we are at the very beginning of a period of change. China’s procurement behaviour varies depending on the domestic and international context in which the resource procurement takes place. We have seen that China is facing a difficult situation of market power asymmetry in the iron ore market, and that this has led to fragmented behaviour on behalf of the Chinese importers, and ultimately to the fall of the benchmark pricing regime. We have also seen that in the potash case, the Chinese importers are more concentrated and have more coordination capacity, while they are also facing a market that has exhibited high degrees of concentration and coordination.

What happens then in a situation in which Chinese consumers are very concentrated, but face a global market that is slightly less concentrated, and much less coordinated? This chapter will serve as a preliminary attempt to investigate this question.

6.1 Argument in the Uranium Case

Whereas China feels cornered in trying to fulfil its procurement needs in other global commodity markets (Zhong, 2013), its patterns of behaviour differ in the uranium case. Indeed, contrary to common revisionist power expectations (Vivoda, 2009; Calder, 1996; Kane et al., 2001; Andrews-speed et al., 2004; Bremmer, 2009; Mearsheimer, 2010), a domestically confident China facing fewer hurdles in its international procurement strategy has been able to operate comfortably in the global uranium market. But there is a twist: the resulting behaviour has been more measured and in line with global liberal expectations of responsible market behaviour (Ikenberry, 2008). This contradicts some of the existing

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literature on Chinese SOE behaviour that points to SOE power as an indicator of policy independence (see literature on China’s National Oil Companies, (Downs, 2004)).

China’s procurement behaviour in the global uranium market has included support for the continuation of existing long-term pricing mechanisms (there are no international benchmarking negotiations per se in the uranium market). In addition, China has not used accusatory rhetoric against global uranium suppliers at the same level it has in other cases, even while it has tripled its uranium imports, up to more than three times its annual needs. And China has shown a willingness and has made a high-level commitment to being a meaningful participant in various international nuclear safety and security initiatives, including the International Atomic Energy Agency. This full participation in international organizations, which is directly institutionally related to the functioning of the global uranium market, stands in contrast to behaviour in other commodity markets. China is not part of the International Energy Agency, for instance. Furthermore, China has even shown openness to international safety reviews following the 2011 Fukushima disaster in Japan, and has allowed teams of international safety inspectors into the core of its civilian nuclear program.

These findings are counter-intuitive and show the need for careful process-tracing of Chinese resource procurement, including preferences, behaviour and outcomes, as simple assumptions made in the literature do not always offer accurate representations of the variety of processes and outcomes on the ground.

I argue that China’s procurement behaviour and its impact on the global uranium market can be explained in part by its asymmetric position of market power towards global market stakeholders. This position is slightly in its favour, and thus creates a feeling of better domestic control and stronger market power abroad.

More precisely, I will show that at the domestic level, the Chinese uranium and civilian nuclear market is highly concentrated, with the presence of some coordination between SOE and government behaviour. At the international level, the uranium market has more moderate levels of industry concentration than in the iron ore and potash markets (the top four companies controlled 59% of global exports in 2012, as compared to 83% for iron ore in 2007) (see Table 29). The uranium market also lacks a producers’ marketing cartel.
(such as in the potash market) or other such institutionalized cooperative arrangement (such as benchmarking negotiations in the case of the iron ore market).

Table 29 - Two-Level Market Power Asymmetries in the Uranium Case

<table>
<thead>
<tr>
<th>International market ➔ (Producers)</th>
<th>Domestic market ➖ (Consumers)</th>
<th>Fragmentation</th>
<th>Coordination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fragmentation</td>
<td></td>
<td>1 1</td>
<td>2 Asymmetry in favour of producers</td>
</tr>
<tr>
<td>Coordination</td>
<td></td>
<td>3 Asymmetry in favour of consumers Uranium case</td>
<td>4 Symmetry</td>
</tr>
</tbody>
</table>

More generally, China has faced a relatively low level of constraint on its national procurement security at the global level, which has been compounded by several external events in the uranium market: a lack of interest and lack of investment in the industry in recent decades, at least until the 2000s; the emergence of Kazakhstan as the world’s leading uranium producer in the space of 10 years; and the Fukushima accident in 2011. This has created more room for manoeuvre in the international uranium market and the ability for China to carry out a more coherent national policy of engagement with the international market.

All in all, it may be the case that taking into consideration both the international and domestic levels (a domestic market that is less fragmented, an international market offering a less constrained environment), when China has more room for manoeuvre in a particular commodity market, its perceived vulnerability decreases. This, in turn, may play a role in China displaying more willingness to act as a responsible stakeholder, integrating into existing international regimes in line with the “China as a status quo player” literature (Johnston, 2003; Johnston, 2013; Ikenberry, 2008).

More broadly, this case study allows us to evaluate the generalizability of patterns uncovered in the iron ore and potash markets, and makes an important contribution to the
literature on Chinese resource consumption, especially as the uranium market has not been sufficiently studied. This chapter provides an important contribution to the ongoing research on the necessary conditions for China’s peaceful integration into existing global energy market institutions. It also contributes to ongoing debates about the systemic resilience of global market institutions, and on the domestic determinants of global economic power.

6.2 Chinese Demand for Uranium

Uranium is an interesting example of rapid growth in Chinese procurement. China has quickly become one of the world’s most important importers of uranium in the past 10 years, and is on course to become the world’s top importer by 2020 (Hall et al., 2011) (see Table 30). Furthermore, whereas Chinese demand for some commodities may plateau in the near future, the situation is clearly different in the case of uranium. In order to fulfill its current official civilian nuclear development plan, China will need to build over 60 nuclear reactors in the coming years, which may lead it to consume, by some estimates, up to 17% of global uranium consumption by 2020, up from 2% in 2012 (Gitzel, 2011). So China’s impact on the global uranium market is decisive and significant, although still in its early years.

<table>
<thead>
<tr>
<th>Country</th>
<th>Reactors operable</th>
<th>Reactors under construction</th>
<th>Reactors planned</th>
<th>Reactors proposed</th>
<th>Uranium requirements 2012 (Tonnes U)</th>
<th>Uranium requirements 2015 (Tonnes U)</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>21</td>
<td>23</td>
<td>45</td>
<td>142</td>
<td>6 550</td>
<td>8 161</td>
</tr>
<tr>
<td>France</td>
<td>58</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>9 254</td>
<td>9 230</td>
</tr>
<tr>
<td>Japan</td>
<td>48</td>
<td>2</td>
<td>9</td>
<td>3</td>
<td>4 636</td>
<td>2 549</td>
</tr>
<tr>
<td>Russia</td>
<td>34</td>
<td>9</td>
<td>31</td>
<td>18</td>
<td>5 488</td>
<td>4 206</td>
</tr>
<tr>
<td>South Korea</td>
<td>24</td>
<td>4</td>
<td>8</td>
<td>0</td>
<td>3 967</td>
<td>5 022</td>
</tr>
<tr>
<td>Ukraine</td>
<td>15</td>
<td>2</td>
<td>2</td>
<td>11</td>
<td>2 348</td>
<td>2 366</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>16</td>
<td>0</td>
<td>4</td>
<td>7</td>
<td>2 096</td>
<td>1 738</td>
</tr>
<tr>
<td>United States</td>
<td>99</td>
<td>1</td>
<td>5</td>
<td>17</td>
<td>19 724</td>
<td>18 692</td>
</tr>
<tr>
<td>World</td>
<td>443</td>
<td>66</td>
<td>165</td>
<td>331</td>
<td>67 990</td>
<td>66 883</td>
</tr>
</tbody>
</table>

Source: IAEA (Reactors operable and under construction), April 2015; World Nuclear Association, April 2015 (Reactors planned and proposed; uranium requirements in 2012 and 2015)
In 1991, China connected its first nuclear reactor to the electricity grid (Zhou, 2010). In 2002, only two nuclear reactors had been built in China, but the country was already firmly looking ahead towards a future in which nuclear energy would produce between 40 and 80 GW (President Hu Jintao delivers a speech, 2012). “During the 10th 5 Year Plan (2001 – 2005) period, the key part of China’s energy policy [was] to ‘guarantee energy security, optimize energy mix, improve energy efficiency, protect ecological environment, continue to open up wider, and speed up the development of the west regions’ [sic]” (Wang and Lu, 2002).

Five days after the Fukushima earthquake and tsunami, China’s State Council suspended approval of new nuclear projects and started conducting comprehensive safety inspections of all nuclear projects. However, if there were any doubts as to whether China would press ahead with its ambitious civilian nuclear program following the Fukushima disaster and the year-long safety review, these doubts were dispelled early this year. In his speech for the Nuclear Security Summit in Seoul in March 2012, President Hu Jintao underlined the “irreplaceable role of nuclear energy in ensuring energy security and climate change” (President Hu Jintao delivers a speech, 2012). This was a signal that echoed Wen Jiabao’s comments made a couple of months earlier in Abu Dhabi, where he said that “Nuclear power is a safe, reliable, mature technology providing clean energy. The safe and efficient development of nuclear power is the solution to future energy supply strategy” (Wen, 2012).

Then, “the former head of the NEA [National Energy Administration] said that full-scale construction of nuclear plants would resume in March 2012” (Nuclear Power in China, 2012). This confirmed that China would be going ahead with its extensive program of expanding its civilian nuclear power plants, albeit potentially at a slower rate. The target set by the National Development and Reform Commission (NDRC) in 2007 to have 40GWe (Gigawatt-electric) online by 2020 (Wang, 2009) was upgraded to 70-80GWe in 2010, and revised to 60-70GWe in the aftermath of the Fukushima accident (Nuclear Power in China, 2012). Currently, at least 23 reactors are under construction (see Table 30) and 50 more are planned, according to the China Nuclear Energy Association (Ding and Liu, 2012) (or 45 according to the World Nuclear Association).
A key dimension of China’s energy security aims (Winzer, 2011) has been to rely as much as possible on domestic production (Zha, 2006). However, China’s emphasis on rapid expansion of electricity production, diversification of its energy mix, and its efforts to reduce carbon emissions have contributed to its rapid emergence as a civilian nuclear power (Boey, 2012) well beyond its capacity for self-sufficiency in uranium.

Such an ambitious civilian nuclear program, coupled with very limited Chinese uranium reserves, will only exacerbate China’s import dependency ratio, which is already high, despite its increased domestic production (Figure 35). As emphasized by Xiao Xinjian in *China Energy*, China has no choice but to develop a strong foreign procurement strategy in light of the country’s poor uranium resources (Xiao, 2012).

**Figure 35 - Uranium Production in China (1998 - 2011)**

![Uranium production in China (tonnes)](image)

Source: Hou et al. 2010; World Nuclear Association; Euratom. Author’s calculations.

China's known uranium resources are insufficient: China possesses at most 1% of the world’s known recoverable uranium resources, or about 68,000 tonnes (Weitz, 2011, 2011). The country’s uranium output in 2011 was only 1,500 tonnes (about 3% of global production, see Figure 35), while its annual consumption had been at around 4,500 tonnes in 2012 (or about 2% of global consumption) (Liu, 2011). See Table 31 below for a list of Chinese uranium mines in operation in 2010.
Table 31 - Uranium Mines in Operation in Mainland China (2010)

<table>
<thead>
<tr>
<th>Mine</th>
<th>Province</th>
<th>Type</th>
<th>Production tonnes/year</th>
<th>First year of operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuzhou (抚州)</td>
<td>Jiangxi</td>
<td>Underground and open-pit</td>
<td>300</td>
<td>1966</td>
</tr>
<tr>
<td>Chongyi (崇义)</td>
<td>Jiangxi</td>
<td>Underground and open-pit</td>
<td>120 (expanding to 270)</td>
<td>1979</td>
</tr>
<tr>
<td>Yining (伊宁)</td>
<td>Xinjiang</td>
<td>Solution mining</td>
<td>300</td>
<td>1993</td>
</tr>
<tr>
<td>Lantian (蓝田)</td>
<td>Shaanxi</td>
<td>Underground mining</td>
<td>100</td>
<td>1993</td>
</tr>
<tr>
<td>Benxi (本溪)</td>
<td>Liaoning</td>
<td>Underground mining</td>
<td>120</td>
<td>1996</td>
</tr>
<tr>
<td>Qinglong (青龙)</td>
<td>Liaoning</td>
<td>Underground mining</td>
<td>100</td>
<td>2007</td>
</tr>
<tr>
<td>Shaoguan (韶关)</td>
<td>Guangdong</td>
<td>Underground mining</td>
<td>160</td>
<td>2008</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>1200</td>
</tr>
</tbody>
</table>

Source: Hou et al., 2010. Author’s translation.

Whereas China’s share of global uranium consumption is still lower than that of the US and France, its planned construction of nuclear power plants is ambitious. China is already importing well above its immediate needs, and China may be the top-ranked importer of uranium globally by 2020. Qian Zhimin (China National Energy Administration) argued that by 2020, nuclear power could be contributing 7%-8% of China's energy needs, a higher rate than the official government target of 5% (Hall et al., 2011). The US Energy Information Administration also estimates that by 2040, the nuclear sector is going to provide 7% of installed energy capacity in China (Annual Energy Outlook 2013 with projections to 2040, 2013).

China’s uranium output is expected to eventually rise to 2,500 tonnes a year according to Ux Consulting (Ding and Liu, 2012). It stood at 1,500 tonnes in 2011 (see Table 32). Ma and Wang have estimated that in the best-case scenario, providing increased investment in exploration and financing, and given the fact that uranium has been labeled a “strategic resource,” China would be able to produce 3870 tonnes of uranium a year in 2020 (Ma and Wang, 2010), around half of China’s current uranium needs and around 17% of China’s current imports. In addition to being poor in uranium resources, the quality of
China’s uranium resources is also low, and thus expensive to mine (Guang and Wenjie, 2010). Therefore, steeply increasing dependence on imports is clearly something that is unavoidable for China. By some accounts, its imports may rise to about 17% of global consumption, or about 40,000 tonnes every year by 2020 (Gitzel, 2011).

Table 32 - Global Natural Uranium Production (2009 - 2011)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kazakhstan</td>
<td>19 451</td>
<td>17 803</td>
<td>14 020</td>
<td>36%</td>
<td>33%</td>
<td>28%</td>
<td>39%</td>
</tr>
<tr>
<td>Canada</td>
<td>9 145</td>
<td>9 783</td>
<td>10 173</td>
<td>17%</td>
<td>18%</td>
<td>20%</td>
<td>-10%</td>
</tr>
<tr>
<td>Australia</td>
<td>5 983</td>
<td>5 900</td>
<td>7 982</td>
<td>15%</td>
<td>11%</td>
<td>16%</td>
<td>-25%</td>
</tr>
<tr>
<td>Niger</td>
<td>4 351</td>
<td>4 198</td>
<td>3 243</td>
<td>8%</td>
<td>8%</td>
<td>6%</td>
<td>34%</td>
</tr>
<tr>
<td>Namibia</td>
<td>3 258</td>
<td>4 496</td>
<td>4 626</td>
<td>6%</td>
<td>8%</td>
<td>9%</td>
<td>-3%</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>3 000</td>
<td>2 400</td>
<td>2 429</td>
<td>6%</td>
<td>4%</td>
<td>5%</td>
<td>24%</td>
</tr>
<tr>
<td>Russia</td>
<td>2 993</td>
<td>3 562</td>
<td>3 564</td>
<td>6%</td>
<td>7%</td>
<td>7%</td>
<td>-16%</td>
</tr>
<tr>
<td>USA</td>
<td>1 537</td>
<td>1 660</td>
<td>1 453</td>
<td>3%</td>
<td>3%</td>
<td>3%</td>
<td>6%</td>
</tr>
<tr>
<td>China</td>
<td>1 500</td>
<td>827</td>
<td>750</td>
<td>3%</td>
<td>3%</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>Ukraine</td>
<td>890</td>
<td>850</td>
<td>840</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>6%</td>
</tr>
<tr>
<td>Malawi</td>
<td>846</td>
<td>670</td>
<td>104</td>
<td>2%</td>
<td>1%</td>
<td>0%</td>
<td>713%</td>
</tr>
<tr>
<td>South Africa</td>
<td>582</td>
<td>583</td>
<td>563</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>3%</td>
</tr>
<tr>
<td>Others</td>
<td>1 074</td>
<td>931</td>
<td>1 025</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>5%</td>
</tr>
<tr>
<td>Total</td>
<td>54 610</td>
<td>53 663</td>
<td>50 772</td>
<td></td>
<td></td>
<td></td>
<td>8%</td>
</tr>
</tbody>
</table>

Source: Euratom Supply Agency; World Nuclear Association

In anticipation of a rapid increase in its uranium demand, China is already importing more uranium than it needs in a given year. Chinese imports went from 5,109 tonnes in 2009, to 22,368 tonnes in 2013 (UN COMTRADE), a more than four-fold increase (Figure 36).
6.3 Independent Variable: Global Uranium Market Concentration Levels

In 2011, four countries contributed 72% of global uranium production (see Figure 37). The top four firms, however, controlled 59% of global uranium production in 2012, significantly less than in the iron ore and potash markets.

A few characteristics of the global uranium market deserve further attention. First, the uranium market does not have a liquid spot market. “One thing (…) that I think is very crucial to understanding the uranium price is how little material actually changes hands in the spot market” (Interview 125, senior global uranium industry insider, 2013). Due to its special history, uranium is not widely traded on an organized commodity exchange, such as the London Metal Exchange. Spot prices are responsible for no more than 15% of global trades.

“Nuclear fuel trade is dominated by the long-term market. (…) There are two prevalent pricing mechanisms for deliveries under long-term Uranium contracts: [1] Specified pricing may comprise of either a fixed price, a series of fixed prices or a base price plus adjustment for inflation to the date of delivery. (…) The long-term prices have traded at a premium to the spot price. [2] Market-related pricing is based on the Uranium market price at or near the time of delivery, and/or some other published market index, such as the average US import price. Market-related price mechanisms nearly always include a floor price (…) [and] a ceiling price above which the contract price may not rise. [There are also negotiated price contracts [, where] prices are agreed to periodically (usually annually by the buyer and seller). (…) the seller is expected to incur the transportation cost.” (Sinha et al., 2011)
Second, uranium does not have a producer’s organization. The only producers’ cartel in the uranium market was created in the 1970s and has since been disbanded (Stewart, 1981). In the 1960s, the American Energy Agency banned the use of foreign uranium in its domestic reactors, and aggressively cut prices of its own uranium exports. This was a period of oversupply in the rest of the world. The Canadian government decided to support its domestic uranium industry while stockpiling its inevitable surplus of uranium production. It was then that Canada and the world’s other major uranium producers (Australia, France, South Africa, and Rio Tinto Zinc Ltd.), in the absence of the US, sought to mitigate the impacts of the American policy and resorted to the covert manipulation of the world market (Stewart, 1981). In June 1972, the secret international uranium cartel was formally established (arrangements included price fixing, bid rigging and market sharing). The cartel was referred to as the Société d'Études de Recherches d’Uranium (SERU). Westinghouse filed an antitrust action against the cartel members, including a Canadian company, in 1976, and the cartel was subsequently dismantled. No other producers’ cooperation initiatives have emerged since then.

Third, the uranium market is relatively fragmented geographically (see Figure 37). Despite the dominance of certain Western companies internationally (Cameco, Areva), Chinese importers have been able to avoid direct dependence. In fact, complaints about the dominance of large Western firms were more often made by other smaller Western firms.
than by Chinese industry insiders. “[ Cameco ] effectively acts as a price maker, everyone follows their price” (Interview 116, 2013). However, when I speak to African uranium industry insiders, they insist that from their perspective, the global uranium market was really controlled by Areva, and Cameco is not even mentioned (Interview 121, 2013). When I ask a junior uranium company owner whether the global uranium market is more fragmented than other markets, he answers: “Yes, ok, no producer association...,” but he is not really convinced (Interview 118, 2013).

This may be because of geographic fragmentation of the uranium market in distinct regional markets (see Typology of Markets, Chapter 2). One international uranium industry insider explained:

“Of course, if you think about Francophone-speaking Africa, it really means Niger, and for them, yes, Areva is the main company, apart now from a small Chinese mine in Niger that is just starting to produce. (…) They have also done work in DRC and in Mali, etc. When I think of Cameco I think of Canada, I think of the US, I think of Kazakhstan, and I think more of Australia these days. It is the same with the others. Traditionally, you had Rio Tinto producing out of Africa and Australia, and you had BHP producing out of Australia, not really a traditional producer but just happened to have bought it. (…) and then there are the Kazaks and then the Russians and the Uzbek and the Ukrainians (…) So this is really their backyard. (…) So when I think about the global uranium market, it is a very diverse market. The uranium and nuclear industry is a very small little industry and very diversified globally. (…) If you look at certain companies they have their regional biases.” (Interview 129, 2013)

The Chinese analysts usually conceive of the global uranium market as consisting of three large regions: the developed world, Africa and Central Asia (Xiao et al., 2009). There has been a reorganization of the global uranium market, with increased investment in Kazakhstan’s uranium mining industry contributing to the country’s rise to the world’s number one uranium producer, whereas it was all but absent from global uranium trade in 2003 (Metal Prospects: Uranium Market Outlook - Second Quarter 2011, 2011). One industry consultant explained that “the global uranium market has seen major changes in the past few years. Kazakhstan has seen major changes, and an important reason is Chinese investment” (Interview 30, 2012). Kazakhstan is in China’s backyard. The fact that China has ongoing long-term relationships with its close Central Asian neighbours, such as with Kazakhstan and Uzbekistan, has played a part in its ability to invest and sign long-term procurement agreements with them. So on the one hand, the global uranium market is a
thinly institutionalized market, but on the other hand, there is in fact a lack of coordination among market participants. Both of these facts have afforded China much room to manoeuvre internationally.

6.3.1 Lack of interest and investment in the industry in recent decades

During the 1980s and 1990s, there was a lull in the construction of new power plants for several reasons. This includes the end of the Cold War, and thus the increased availability of secondary sources of uranium; a lull in the construction of new nuclear power plants worldwide because of the consequences of the Three Mile Island and Chernobyl disasters; and a reduction in expected growth of electricity demand and the fall of the 1970s uranium producers’ cartel. The result was a fall of the uranium spot price, and thus of mining production. Indeed, from the early 1980s until 2001, uranium prices trended downward and remained between USD$7 and USD $10 a pound. The uranium market reflected a persistent buyers’ market over the 15-year period of 1980 to 1994, and again between 1998 and 2003 (see Figure 38). This led to the uranium industry falling under the radar, contrary to what was happening with other energy industries, such as the oil industry.

Beginning in 2001, the price of uranium began to rebound from historic lows and continued to rise through 2007. The real bubble occurred during the year 2007, triggered by shrinking weapons stockpiles (and thus the decreased availability of secondary sources); a flood at the Cigar Lake Mine in Canada; and an expected undersupply due to a slew of reactors coming online, which was compounded by the relatively recent news of an extensive nuclear program expansion in China, as well as speculative pressures. As the uranium price shot to historical heights of USD $136 a pound (see Figure 38), the extent of the 20 previous years of underinvestment in uranium production became all the more obvious.
Two events strongly affected the price of uranium in the past six years: the global financial crisis of 2008 and the Fukushima triple disaster in 2011. The global financial crisis brought the uranium prices down to $42 a pound, and a rally in prices to $73 a pound in 2010 was short-lived as the Fukushima disaster hit in early 2011 (Figure 38). Following the decommissioning of plants in Germany, Japan, Belgium, Italy and Switzerland, and the global attention on the nuclear meltdown between February 2011 and August 2011, the spot indicator fell by around 30% from a high of USD $72.63 a pound to US$49.13 a pound. It has hovered at around $35 a pound since then.

Although many analysts argue that the impact of the Fukushima accident on uranium prices will be short-lived, since the projected drop in demand will most likely be more than compensated for by growth in emerging countries, in the meantime, this still leaves the global market relatively open to Chinese consumption. It is expected that Asia will account for most of the growth in new nuclear reactors, of which 40% will come from China (Liu, 2012).
6.4 Independent Variable: Domestic Concentration Levels

“Potash and uranium companies control the upstream businesses. They are concentrated there, and they have control there” (Interview 64, Chinese SOE official, 2012). The Chinese domestic uranium market has also afforded the Chinese government a stronger hand in fulfilling its policy goals. This has much to do with the fact that the Chinese nuclear industry is centralized domestically. Indeed, the civilian nuclear industry and the uranium mining industry are overwhelmingly controlled by two state-owned enterprises – China National Nuclear Corporation (CNNC) and China General Nuclear Power Group (CGNPG, formerly China Guangdong Nuclear Power Group) – that report directly to the State Council (Weitz, 2011a) (Figure 39). At least until 2011, only CNNC and CGNPC have been allowed to import uranium from overseas (see Figure 38).

**Figure 39 - Chinese Uranium Imports by Company (2011)**

![Chinese Uranium Imports by Company (2011, tonnes)](image)

Source: Chinese Customs Data

One senior uranium industry insider explained: “CNNC’s background is different from CGNPC (…), they have been on the ground forever, and they are also the owner and operator of most of the facilities. They are the old guard in China, CGNPC is the newcomer. They operate a little bit differently. CGNPC is a little bit more driven by pure economics and pure commercialism, whereas CNNC is coming more from a government entity’s perspective (…) and they feel a little more powerful in the whole situation than CGNPC. (…) They have
a healthy competition going, every once in a while. (…) and there is a third company… there is a good chance that other entities will emerge” (Interview 129, 2013).

The domestic uranium market is much more concentrated and consolidated than other commodity markets (contrary to other markets, many of which are far more fragmented and in which the government has struggled to implement strategic procurement policies). The fact that China’s domestic uranium/nuclear market is more concentrated and consolidated is at least partly due to the fact that uranium is on the list of strategic resources, and only selected companies can mine it (Interview 33, 2012). The fact that the Chinese uranium industry is consolidated matters because it reduces the risk of collective action problems and rogue behaviour by a significant number of companies, a situation that has created problems for China in the past (see domestic iron ore industry).

6.4.1 Overlap between SOE and government priorities in the sector

How can we explain the fact that CNNC (former Ministry of Nuclear Industry) has contributed more seamlessly to China’s resource security than, say, China’s National Oil Companies (NOCs)? The answer lies partly in the structure of the international uranium market, which does not include a liquid spot market, and is still dominated by long-term bilateral contracts.

The uranium that the leading Chinese nuclear SOEs have been procuring abroad has been finding its way back to China (whereas Chinese NOCs sell much of their contracted oil on the international market). In addition, according to Chinese experts, up to 2011, only CNNC and CGNPG have ventured abroad to invest in uranium mining (Xie et al., 2011). They argue that because of a lack of clear legal frameworks and support for the Going Out policy, other players have refrained from joining in. This may have allowed for more overlap between the two large SOEs and Chinese planners’ objectives. (although there is competition between CNNC and CGNPC (Xie et al., 2011) and author’s interviews, Beijing, 2012). A Chinese academic explained: “Uranium is a special strategic resource. It isn’t like iron ore. The company may lead the negotiations, but actually, you need a signature from above, very high. For instance, when China signed a big contract with Australia, Wen Jiabao signed it” (Interview 60, 2012).

In addition, the small number of domestic actors, and the past history of China National Nuclear Corporation (as Ministry), have prevented the emergence of a powerful
industry association. As a Chinese official explained: “Industry associations exist because they group an industry together, but in the nuclear industry, there are no companies to group together! There are only a couple or a few big ones… so no industry association” (Interview 51, 2012). Another government official from a central government agency said the NDRC did not really take care of uranium procurement strategies. “The one in charge is really CNNC (中核)” (Interview 57, 2012). “In the steel market, there is CISA, (…) in the nuclear case there is no middle man” (Interview 65, Think Tank, 2012). This was confirmed by a Chinese academic: “Zhonghe is a ministry. It used to be one, and it still is one. The head of Zhonghe has ministerial status. It behaves like a ministry” (Interview 60, 2012).

Another interviewee, a Chinese official from a large SOE, discussed this with me. He ventured: “Following western logic, we would think that strong concentration, for instance, with CNNC, leads to more independence, whereas weak concentration, such as in the steel industry, would be weak companies who would have to follow the central government lead. But it is the total opposite in China. You see, the strong, concentrated companies are so close to the government that they are much more close to its thinking, CNNC is a former ministry as well, which makes it all the more clear. CNNC has little leeway” (Interview 64, 2012).

6.5 Chinese Global Uranium Procurement Patterns

China has been able to comfortably fulfill and surpass its uranium procurement needs in the international uranium market. Despite the dominance of certain Western companies internationally (Cameco, Areva), Chinese importers have been able to avoid direct dependence.

Chinese planners working on uranium procurement policy have worked within the “Two Markets, Two Resources” framework (两个市场两种资源), as well as with the 1/3 - 1/3 - 1/3 concept: “By 2020, 1/3 of China's supply of natural uranium will come from domestic uranium production, 1/3 from direct procurement from foreign suppliers, and 1/3 from the overseas holdings of uranium production” (Xiao, 2012). There are similar targets in other commodity markets, but Chinese stakeholders have not been able to fulfill these, whereas indications are that the 1/3 - 1/3 - 1/3 policy is being more successfully carried out in

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83 Another interviewee explained that there is an industry association in the nuclear industry, but it does not have a lot of power. It acts more like a consultancy company (Interview 67, 2012).
the uranium market. Such a diversification strategy has spread the risk associated with a high import dependency ratio.

**Figure 40 - Chinese Uranium Procurement by Country (2006)**

Source: Chinese Customs Department

**Figure 41 - Chinese Uranium Imports by Country (2013)**

Source: UN COMTRADE

China signed a bilateral safeguards agreement that allows it to import uranium directly from Australia, and more recently, Canada. In terms of direct procurement, in 2006, China procured most of its uranium from Kazakhstan and Namibia (see Figure 40). By 2013, it had
diversified its import sources somewhat, while 79% of uranium continued to come from Kazakhstan (see Figure 41). Xiao and Gao describe Central Asia as a region where China has “strong geopolitical advantages” (Xiao et al., 2009).

In terms of overseas holding and joint ownership, recent Chinese increases in uranium demand has led China to seek equity in Niger and Kazakhstan mines, and it is exploring the addition of Uzbekistan, Mongolia, Namibia, Algeria and Zimbabwe, and other sources. Beijing is also using creative ways to engineer procurement contracts. As mentioned above, in November 2006, two Chinese firms established a joint venture with Kazakhstan’s state-owned Kazatomprom in a uranium mining project (49% stake), in exchange for stakes in either Chinese nuclear power plants or fuel reprocessing facilities for Kazatomprom (Komesaroff, 2007). China has also “provided interest-free soft loans to the governments of Uzbekistan, Niger and other uranium-rich countries” (World Nuclear News, June 10, 2010; November 4, 2008; Reuters, April 24, 2010). (Weitz, 2011c) Xiao and Gao suggest that China seeks to emphasize overseas holding and investment to neighbouring countries such as Kazakhstan and Mongolia, while continuing to procure directly from developed countries such as Canada and Australia (Xiao and Gao, 2009).

I asked one senior global uranium industry insider whether China had already started to change things, and whether it had pushed for financialization at all. He explained that it had not yet had that kind of impact on the global uranium market, because it had been a small player until recently. But he added that China has top negotiators, and will be better positioned to affect change in the coming years. “China is one of a sudden a bright spot in the nuclear industry, so they are increasingly going to have more influence.” The Chinese have already started “playing games on the import-export side,” he said. He foresees a near-term future in which China is able to wrestle even more influence, “especially in a market like ours, where, you know, post-Fukushima and it is slowing in other parts of the world” (Interview 129, 2013). I asked him whether he thought China saw its relationship with global uranium firms differently from their relationship with firms in the iron ore market. He answered: “With Rio and BHP, I can see how they felt like they were pushed around a little bit, whereas in the uranium market they are probably feeling like they have a pretty good hold on things and nobody has got the power to make problems for them” (Interview 129, 2013).
For once, Chinese market stakeholders may feel like they have carved out a position for themselves in the international market that is commensurate with their share of global consumption, and possibly even a bit better. The industry insider continued: “There is nowhere else in the world like China, nowhere else in the world where [companies] ship to that country strictly for that country’s demand. They want concentrates shipped in there and they want to process them all. (…) and at the end of the day, they hold the key! They hold the key to the import licenses” (Interview 129, 2015).

All in all, China has successfully developed a multi-pronged strategy of procurement in the uranium market, in contrast to the iron ore and potash markets. This has allowed it to increase its total uranium imports more than four-fold, and to forge ahead with the world’s most ambitious civilian nuclear power development plan, all within the span of a few years.

6.5.1 Active participation in international initiatives

Enhanced cooperation on issues of nuclear security at an international level had already started with the Washington Nuclear Security Summit held in 2010, but the Fukushima accident the following year brought to the fore the need to enhance state capacity to cope with the unexpected, and the need to address issues of nuclear safety.

Indeed, the second Nuclear Security Summit held in Seoul in March 2012 broadened its agenda to include nuclear safety, and proved to be an important step following the Fukushima accident and the need to discuss this issue in a multilateral setting. China has shown a willingness to take the issue seriously and learn from the Japanese accident.84

The summit is useful despite the fact that sovereignty concerns and economic and technological differences hinder the establishment of binding safety standards across the board. There are difficulties in harmonization of safety standards, but China has demonstrated a will to work in cooperation with other developed nations in this regard. It shows great confidence on China’s part to fully engage developed countries on this sensitive

84 In China, “five days after the earthquake and tsunami, the State Council suspended approval of new nuclear projects and started conducting comprehensive safety inspections of all nuclear projects — those in operation as well as those under construction. It also decided to halt four approved projects due to start construction in 2011” (Liu, 2012). A foreign industry expert (scientist with access to the Chinese nuclear industry) confirmed to me that the safety review had been thorough. He said that the myths about China are wrong and that the safety review was comprehensive (he said that one of CNNC’s 100,000 employees told him he was working 14-hour days doing reviews) from mining to every step along the way (Interview, 90, Beijing, 2012). China subsequently affirmed that it was going ahead with its extensive expansion of civilian nuclear power plant program, albeit at a slower rate.
issue. “In July 2010 a 22-strong IAEA team from 15 countries carried out a two-week Integrated Regulatory Review Service mission to review of China's regulatory framework for nuclear safety. The IAEA made a number of recommendations but said that the review had provided “confidence in the effectiveness of the Chinese safety regulatory system and the future safety of the vast expanding nuclear industry” (Nuclear Power in China, 2012). China has also “requested and hosted 12 Operational Safety Review Team (OSART) missions from IAEA teams to October 2011” (Nuclear Power in China, 2012).

In the past years, China has made substantial efforts in this regard. China has also made relatively noticeable efforts in reaching out regarding nuclear safety, as it has done with the US (implemented in 1998 and reinforced in 2005 by a Memorandum of Understanding that granted Westinghouse the contract to build four commercial nuclear reactors in China). China is part and parcel of the international community and its efforts to enhance nuclear security and safety globally. (Xu, 2012)

As a case in point, China is a fully-fledged member of the International Atomic Energy Agency, meaning it is committed to international non-proliferation efforts, and to cooperating on issues of civilian nuclear technology with France (Areva), Canada (Atomic Energy of Canada - CANDU), and the US (Westinghouse) among others, as well as to participating in related international frameworks.

China’s energy needs are growing at such speeds that the parallel growth of its civilian nuclear program appears inevitable. But, as President Hu Jintao emphasized in his Seoul speech, China needs to “face the risk of nuclear safety, to learn the lessons of the nuclear accident, and take effective measures to enhance security and reliability of nuclear energy, to promote the safety of nuclear energy, sustainable development” (President Hu Jintao delivers a speech, 2012).

On the top of that, recent international cooperation initiatives, which encourage transparency and collaboration, even if they are concentrating on nuclear safety and security issues, have provided China with the opportunity for cooperative and confident engagement. These international efforts have showcased China as a country ready to be a responsible player, including as a fully-fledged member of the International Atomic Energy Agency.
More recently, China signaled the highest level of attention to civilian nuclear safety and security issues by having President Xi Jinping personally attend the Nuclear Security Summit in The Hague in March 2014. The Chinese Minister of Information and Technology, Miao Wei, reiterated China’s commitments to nuclear safety and international cooperation: “China remains an active supporter of international cooperation in nuclear security and it supports the central role of the International Atomic Energy Agency (IAEA) in international nuclear security architecture” (China committed to global nuclear security: official, 2014). Among other initiatives, Miao Wei highlighted the new China-US Center of Excellence on Nuclear Security being built in Beijing, which will be “the biggest nuclear security international exchange, training and demonstration center in the Asia-Pacific region.” Also highlighted were continued Chinese efforts to help developing countries, including Ghana, fulfill their IAEA-sanctioned reactor conversion plans from Highly Enriched Uranium to low-enriched uranium reactors (China committed to global nuclear security: official, 2014).

Such cooperative behaviour is not exhibited by China across the full range of policy issues. Some argue that China (and others) only participates in such initiatives when it has “little to lose.” But the nuclear security initiatives China participates in also include self-imposed constraints, including on the export of dual-use technologies. Li Xiaojun has offered an explanation for China’s participation in such initiatives – despite the costs – based on socialization and social rewards mechanisms (Xiaojun, 2010). China’s active participation in the IAEA certainly seems to fit his framework.

Beyond China’s participation in international cooperation initiatives, many uncertainties remain, namely, the potential for a global uranium supply squeeze, delayed production due to mining accidents, and public opinion protests among others. Peaceful

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85 In recent years – and this trend has been compounded by the Fukushima disaster – we have seen the rise of another domestic challenge for the government in China, that of increased public awareness of the risks involved with nuclear power. This increased awareness, coupled with better access to information and means to express opposition via the Internet, has produced much activity online. A case in point is the opposition to the Gaozuang power plant in Nanyang, Henan province. (The reason why Nanyang is not suitable for the construction of a nuclear power plant “南阳不适合建核电站理由”. 2011. Tianya 天涯社区, http://bbs.city.tianya.cn/tianyacity/content/506/1/10108.shtml.) If anything, the government has been responsive to public pressure over the safety of its nuclear program and has put itself under exacting high-level international scrutiny and standards. Public scrutiny in this case may have fostered Chinese government officials’ willingness to engage in safety and security networks, as it has provided the government with a reassuring narrative directed at wary domestic audiences, but it does not seem to be a sufficient reason to
coexistence, or even cooperation, is therefore not a foregone conclusion. Indeed, it remains to be seen whether a conceptual frontier will remain between natural uranium ore mining and enriched uranium production and other civilian nuclear safety and security issues. Further research could look at the likelihood of positive spillover effects within the global nuclear industry.

6.6 Conclusion

Notwithstanding China’s uranium requirements being less than half than that of the US, China still imported almost as much uranium as the US did in 2010. This is despite the fact that the US has over 100 reactors in operation, as compared to China’s 15. The first signs of China’s growing impact on the global uranium industry have already been felt.

But perhaps counter-intuitively, in an issue area that is rife with security concerns and very closely related to military issues, and in which China is very dependent on imports to satisfy its resources demand, its behaviour has not been in line with realist/mercantilistic expectations. China has succeeded in establishing itself as a confident player and has even contributed meaningfully to peaceful coexistence of civilian nuclear powers. It has also been a full-fledged participant, at the highest levels, in relevant international cooperation initiatives.

I have argued that China’s behaviour and more seamless integration into the global uranium market is the result of the favourable position of market power asymmetry it has found itself in. On the one hand, at the domestic level, the consolidated structure of China’s uranium procurement industry has allowed more overlap between industry and government stakeholders’ objectives, which in turn led them to develop and implement a coherent procurement strategy (contrary to the situation in the fragmented iron ore market for instance). On the other hand, at the international level, the absence of an exporters’ cartel or institutionalized oligopolistic structure established before China’s emergence as a large purchaser, and the recent emergence of Kazakhstan, a new player not yet integrated in global market structures, and with which China is comfortable operating, have reduced constraints and enabled it to carve out a more comfortable place for itself in the global market.

explain overall levels of comfort in operating in the broader global uranium and civilian nuclear industry in the first place.
A conciliatory tone was established at the very top level by President Hu Jintao and Prime Minister Wen Jiabao in 2012. China has displayed willingness to collaborate on security issues that pertain to civilian nuclear programs and non-proliferation, and remains open to additional participation in global cooperation mechanisms on uranium enrichment. China is a fully-fledged member of the International Atomic Energy Agency, is committed to international non-proliferation efforts, and is cooperating on issues of civilian nuclear technology with France (Areva), Canada (Atomic Energy of Canada - CANDU), and the US (Westinghouse), among others. It is also participating in related international frameworks. Indeed, and this has generally flown beneath the radar, China has played a constructive role and has been a willing participant in key multilateral initiatives in the global uranium market. “The speech by Hu Jintao at the Seoul Summit was not merely a diplomatic exercise. It was very meaningful. It shows that the leadership has put a lot of thought, a lot of research into this” (Interview 14, 2012).

China has been able to successfully push forward a multi-pronged international uranium procurement strategy because of the room for manoeuvre it has had, at both the domestic and international levels. This may be because macro-level structural power asymmetries between foreign and domestic market stakeholders in specific industries heighten perceived vulnerability and undermine trust. Perceived vulnerability among the Chinese uranium market players is the lowest among the three markets being studied here, and that it is a critical factor in explaining varying outcomes. In fact, the large Chinese state-owned enterprises, as well as key Chinese state ministries (such as the NDRC), have also developed a relatively transparent and sophisticated engagement strategy with the global civilian nuclear multilateral institutions, including the International Atomic Energy Agency.

The uranium market is an unusual case in this regard. After all, China seeks to have a say in global market institutions – which have been created prior to its recent reemergence – that is commensurate with its share of its global purchasing power, something that it has not been able to achieve in most commodity markets.

The uranium story is counter-intuitive, as it highlights the possibility that China’s state-centred economic development policy does not necessarily lead to destabilizingmercantilist behaviour on the global stage, or to economic conflict, even when it is wrought by large SOEs and aligns well with state priorities. In other words, a strong and
confident China (in a given issue area) does not necessarily act in a belligerent manner, and in fact, may act quite the opposite.
CHAPTER 7 - POLICY RESPONSES TO GLOBAL MARKET CONCENTRATION

We have seen that Chinese stakeholders’ procurement behaviour has at times positioned the country as a catalyst for increased marketization of global commodity market pricing regimes. A range of Chinese procurement behaviours, both intended and unintended, are having liberalizing effects. Running parallel to the patterns examined in this dissertation, Chinese policy makers and large consumers have also actively tried to encourage higher levels of competition in global commodity markets, through import diversification strategies, direct investments abroad, joint ventures and various regulatory interventions. Taking into account the state of global commodity market structures, and given the fact that they exhibit extremely high levels of concentration and collusive behaviour, it may be that it is indeed China’s best bet to induce more competition in international markets. This goal has appeared within the general anti-monopoly narrative that has emerged in China in recent years.

China has implemented coherent policies that led to further marketization of the potash and iron ore markets, such as the diversification of supply, the creation of an iron ore trading platform, and the investment in third-country producers (such as Laos, Uzbekistan and Myanmar in the potash market). In the iron ore market, this strategy has not been very successful, whereas in the potash market, we have seen more success through the emergence of middle-size players in the global market, such Israel.

7.1 China’s Attempt to Reduce its Dependence Relative to the Big Three Iron Ore Suppliers

“China has ambitious outlines in its 12th Five-Year Plan to reduce its dependence on foreign-controlled iron ore companies by obtaining control of or influence over half the companies providing its imported supply through mergers and acquisitions abroad. But foreign countries have not responded favorably to allowing China any say over their iron sectors, preferring to be the ones to set prices for a buyer who cannot say no. Australia, for example, has rejected deals that would have given China the ability to acquire assets in the Australian iron ore industry. Similarly, the foreign mining giants have the ability to set prices. This foreign resistance to Chinese control is not likely to change.”(Chinese Dependence on Foreign Iron Ore: A Special Report, 2011)

Faced with this situation, and starting in 2008, the Chinese government first attempted to directly invest in stakes in iron ore mining companies, most notably in Australia. At the 12th International Steel & Raw Materials Conference in 2012, Shougang’s Vice General
Manager, Hong Shu, explained that the company procures its iron ore from three sources: direct imports, captive mines and domestic outsourced ore, with the vast majority of the ore coming through import channels. But he then went on to explain that the company was working to “set up a strategic resource supply system” by doing three things: 1) “continue to develop domestic captive mines,” 2) “diversify import channels,” and 3) “expand overseas investment in mining development” (Shu, 2012).

“Changes to the ownership structure of the Asia-Pacific iron ore market have been less dramatic than those for its price determination arrangements, but somewhat more successful from the Chinese perspective. On one hand, producer-side ownership has become less concentrated as a result of Chinese governmental investment promotion policies to sponsor new regional suppliers. Some thirty new entrants to the Asia-Pacific iron ore market have received Chinese sponsorship, which collectively intend to add at least 425mtpa of new supply to regional markets over the coming five years. (…) However, it is less likely that these new projects will ultimately dilute the ownership position of the Big-3 as the Chinese investment programme has intended. As few are yet to enter production, the degree to which these new entrants have restructured producer-side ownership has so far been negligible.” (Wilson, 2012, 338)

As a case in point, “in 2008-2009, Beijing aggressively tried to take advantage of the ailing global economy by investing in or purchasing assets or equity stakes from iron-ore mining companies. [However,] governments chose to protect national assets from Chinese acquisition” (China: Lessons, 2009). Indeed, in 2009, Rio Tinto rejected Chinalco’s proposal to invest up to 18% in the company, following a controversial debate in Australia.

“China is also seeking to diversify its iron-ore suppliers to enable greater bargaining power, mainly by investing in smaller producers more susceptible to Chinese influence, and is reaching out to Brazil for a closer working arrangement with Vale, in hopes of breaking the powerful iron-ore triangle of BHP Billiton, Vale and Rio Tinto. Meanwhile, China is attempting to prevent closer coordination between Rio Tinto and BHP, who have set up a joint venture in Australia. Incensed after the failure of China's own bid for a partnership with Rio Tinto, Beijing is threatening to use anti-monopoly laws to fight the joint venture and block its imports into China. (…) [However,] Beijing's attempts to drive a wedge between Brazil and Australia are obvious and not particularly effective. China also has not gotten international support for its accusations of monopoly against Rio Tinto and BHP, and its threats to block imports belies the fact that it needs the iron ore. Last but not least, China's detention of the Rio Tinto executive has not helped it win friends in the industry. Fundamentally, China's bargaining position with its iron-ore suppliers has worsened, not improved. Chinese demand is growing ferociously, and Beijing, unwilling to inflict economic pain upon itself, cannot
credibly threaten to boycott the iron-ore majors. Producers recognize this and will not relent from their position, which grows stronger as global demand recovers and iron prices rise.” (China: Lessons, 2009)

**Figure 42 - Chinese Iron Ore Imports by Country (2001)**

![Chinese iron ore imports by country (2001)](image1)

Source: China Mining Yearbook, 2002

**Figure 43 - Chinese Iron Ore Imports by Country (2012)**

![Chinese iron ore imports by country (2012)](image2)

Source: Mysteel Data (Panda, 2012)

Despite the attempts by China to sponsor new entrants into the Asia-Pacific iron ore market, looking at Chinese iron ore imports by country over the years, it is evident that China’s efforts have not been successful in reducing the dominance of the Australian and
Brazilian suppliers. In 2001, 68% of Chinese iron ore imports came from those two countries, as compared to 66% in 2012 (see Figures 42 and 43).

7.2 Attempts to Increase Competition in the Global Potash Market

The oligopolistic situation of the global potash market is often commented on by Chinese actors: “According to Li Qiang, a spokesperson for Sinochem Group, the international price rise of potash fertilizer is partly caused by the international price rise of raw materials and resources. ‘However, the most important and fundamental reason is the intensified monopoly of the international suppliers in this field’ [...] In a bid to cope with the price rises and potash fertilizer shortages, China needed to establish a strategic fertilizer reserve system for the off-season as well as strengthen the ‘negotiation mechanism of potash fertilizer import’” (Cai, 2011).

An article published in the China Chemical Journal (中国化工报) makes the following comment: “due to China's fast economic development, the resulting growing demand for potash, serious imbalances between supply and demand, and excessive external dependence, this situation has resulted in high potash prices” (author’s translation) (Chen, 2013). The same analysis quotes Chinese experts saying that in order for China to break the global potash monopoly and price-setting power, it needs to not only pay attention to production levels, but also, importantly, to resource characteristics and reserves, as national potash reserves are an enabler of greater global influence. Investment in the development of potash resources overseas is seen as contributing to the country’s national food security objectives (author’s translation) (Chen, 2013).

Chinese stakeholders’ perception of the global potash market has been described as one of feeling “stuck between two tectonic plates” (“两大块板”): the Russian/European plate, and the North-American plate, which together account for over 80% of global potash production capacity (Chen, 2013). It has been emphasized that for China to drive a wedge between the two plates dominant in global potash production, a third region of the world should be developed, namely, the large geological area that runs from Laos, Thailand and Myanmar to China’s western areas, to Uzbekistan, Turkmenistan and the Middle East. Chinese experts have been quoted as saying that one way for China to reinvent its global potash procurement strategy in the context of China’s Going Out strategy, would be either through controlling stakes or equity participation in some of the world’s most important
potash producers. This way, by investing in either in Russian, Canadian or even Israeli or Jordanian companies, would give Chinese domestic companies real initiative in the global potash market (author’s translation) (Chen, 2013).

Chinese potash market stakeholders’ continued struggle to dilute the market share of the two large global producers’ associations (BPC and Canpotex) continues, and has been more successful than in the iron ore case. To this end, China is investing heavily in smaller potash producers such as Thailand, Laos, Myanmar and Uzbekistan, and tripled its sourcing from external player Israel. A Chinese industry insider confirmed that “Chinese companies are involved in potash production in Laos” (Interview 24, 2012). In 2001, 83% of Chinese potash imports came from Russia and Canada, against 60% in 2011 (see Figures 44 and 45).

**Figure 44 - Chinese Potash Imports by Country (2001)**

![Chinese potash imports by country (2001)](image)

Source: China Mineral Statistical Yearbooks, 2002
Among the Chinese enterprises that have undergone overseas acquisitions, we find: Yunnan Neilian Mining Development Investment Co.; Sichuan Kaiyuan Company; China's Hydropower Laos Potash Mining Company Limited; Qinghai CATIC Resources Co.; Nakagawa International Mining and Yanzhou Coal Group; Shandong Mining; AVIC; Weihai International; and Evergreen. One analysis mentions four Chinese companies operating in Laos, and 11 in Canada, among many other investments around the world. For the time being, though, success rates are excessively low, with more than 80% project failures, as mentioned in the recent Beijing International Mining Conference. Experts are also calling for relevant Chinese departments to prevent competition among Chinese enterprises (Chen, 2013). China’s attempt to diversify its sources of supply has yielded better results when we look at the import mix evolution over the past decade (see Figures 44 and 45 above).
CONCLUSION

“There was a shift in the last ten years. Ten years ago you couldn’t dream of talking about global governance in China. It didn’t even make sense to think about it. Now, the government is very open to the idea, and sees the necessity to think about the world in this way. China is going to have an impact on the world.” (Interview 20, Canadian Diplomat, 2012)

We stand at the very beginning of a period of change, where emerging economies are playing ever-increasing roles globally. To understand the implications of a transition towards a Pacific-based centre of global economic activity, we need to continue to develop fine-grained tools to evaluate major emerging economies’ impact on global markets. This dissertation demonstrates the importance of studying global market changes from the perspective of institutional resonance and complementarity between global and domestic markets. The fall of the benchmarking regime, the blocking of Valemax cargoes from docking at Chinese ports, the behaviour of Chinese potash importers in 2012 or Japan’s emergence and the creation of the stable pricing regime in the second half of the twentieth century are all key events that cannot be explained from either a purely international or domestic perspective. Domestic-level and international market characteristics combine to create the conditions for institutional change at the global level.

The dynamics outlined in this dissertation force us to profoundly reevaluate widespread assumptions about global markets prior to China’s arrival. Global markets are not best characterized as Liberal or, paraphrasing Ikenberry (2008), open, accessible, legitimate, and durable. The global extractive resource industry today operates under very high levels of industry concentration and coordination, and this has created high barriers to entry for newcomers like China. In fact, China emerged in a world in which market concentration had reached very high levels. Indeed, the four top companies control more than 50% of exports in most of the commodity markets reviewed here. Compared to Japan at the time of its emergence, China faced different global markets, including higher levels of concentration and coordination among global market stakeholders. This situation allowed China less leeway than Japan enjoyed in pursuing its resource acquisition strategy. This assessment is very much in line with the widespread Chinese perception of the global economy as skewed against it: Chinese stakeholders do not see a level playing field. This state of affairs is not
taken into sufficient consideration in the current literature on China’s emergence and its likely impact on the global economy.

We need to re-think the presumption of uniformity of international markets. This analysis of a divergence in outcomes across markets illustrates the advantages of studying global markets in comparative perspective. Variation in global market structures has an impact on emerging countries’ procurement behaviour. I have shown that the likelihood and direction of change in global pricing regimes caused by the emergence of a newcomer is not uniform across markets. Indeed, consumers (producers) behave differently depending on global (domestic) market structures. We gain analytical leverage by disaggregating global markets according to their various institutional characteristics. I have argued that markets are transnational institutional systems of exchange built on asymmetric relations of power, which vary along variables such as concentration, coordination, governance structures, the role of the state and systemic stability. Further research is needed to pursue the initial work conducted here in developing a typology of global markets in order to help us make better sense of market change at the global level.

Chinese domestic markets also vary in significant ways across industries. In some cases, they are fragmented due to weak state capacity to coordinate behaviour, and in other cases they are more concentrated and have better capacity to coordinate behaviour. This matters for our understanding of China’s procurement behaviour internationally. It also matters because it leads to a variation in China’s impact on global market structures. To understand this variation, we need to trace procurement patterns back to their domestic roots and unveil the policy and industrial processes that led to current dynamics.

In the case of the fall of the benchmarking regime, the key determinants of Chinese behaviour were domestic fragmentation and collective action problems. In the case of the Valemax cargo saga, the key determinant of Chinese behaviour was the successful coordination of multiple Chinese stakeholders by COSCO, over and against the interests of some Chinese steelmakers and other SOEs. We cannot presume country-wide patterns of behaviour.

A better understanding of Chinese domestic market dynamics is crucial to our understanding of future trends in the global economy as China continues to play a larger role. Recognizing China’s fragmented domestic markets is necessary for an accurate assessment of
China’s capabilities, preferences and behaviour abroad. It is too often assumed that China’s bold behaviour is the result of a position of strength, whereas a position of weakness would lead to seamless integration into international market institutions. In fact, Chinese positions of weakness have destabilized long-lasting global market institutions and empowered global firms to pursue their preferred course of action. In other words, Chinese weakness has enabled significant change internationally. A fragmented domestic political economy does not necessarily mean that China will have little to no impact on global markets.

Expectations in terms of the direction of institutional change as a result of China’s emergence are also more complex than simply reflecting domestic market tendencies. China’s statist economy does not necessarily have a mercantilist effect on global markets. In fact, one of the most counter-intuitive findings of this dissertation is the fact that it can, under certain circumstances, lead to marketization trends. China’s sheer size and its arrival in global market structures that offer little room for manoeuvre put it in a position in which both disorganized procurement and purposeful actions can have the effect of destabilizing concentrated and cooperative sales patterns among producers.

To reemphasize, counter-intuitively, in cases in which Chinese domestic market stakeholders have been least coordinated, we have seen the most dramatic impact on global market structures (iron ore case), and this has taken the shape of a “marketization impulse” or an unsettling of power relationships in the global market in question. Indeed, contrary to common status quo/revisionist power expectations, a weak, fragmented Chinese position has led to bold behaviour and systemic change in the direction of marketization at the global level (iron ore), whereas a domestically confident China facing fewer hurdles in its international procurement strategy has been able to operate comfortably at the global level (and even has been willing to participate in related international cooperation initiatives) but with a larger role for the state (uranium). An equally interesting angle is that a centralized domestic market where actors’ behaviour is more closely aligned with state organs’ priorities (uranium) has integrated more peacefully with the global market, whereas a decentralized domestic market populated by large numbers of companies (iron ore) has led to a disruption in the continuity of global pricing institutions. As such, it may be that in certain cases, the Chinese state is more risk-averse in its international behaviour than are companies.
The pathways through which China will continue to effect change on the global economy are complex. China is dealing with the fact that increasingly, domestic policy choices and even uncoordinated procurement behaviour can have significant impacts on global markets, beyond the intended policy objectives. China thus has to pay close attention to the likely international impacts of its domestic market dynamics, even when these domestic dynamics have no international intent per se. The consequences of such dynamics sometimes come back to haunt China down the road. As a case in point, the fall of iron ore benchmark pricing regime was not necessarily in China’s long-term interests. One of the difficulties that China faces in carefully analyzing likely intended and unintended impacts of policy making abroad is the fragmentation of its decision-making structures and interface with the global economy, and the complexity of its industrial structure. China’s domestic political economy now resonates at a global level.

The two-level theory presented in this paper can also help us understand current policy debates in China. Given that China is facing oligopolistic markets in many areas of the global economy, and is itself home to many fragmented markets, it often finds itself in a position of market power asymmetry (Quadrant 2, the least advantageous position). It then has two choices. The first is to match high levels of global coordination with concentration and coordination of its own. Indeed, the Chinese government has been trying to encourage domestic industrial consolidation, and the production of “global giants.” The second is to foster more competition among global firms. For example, the global anti-monopoly narrative that is developing in China is also a way for China to frame its annoyance at high concentration/oligopolistic levels in the global economy. Should the country be able to achieve both objectives at once, it would find itself in Quadrant 3, with concentrated domestic market players facing fragmented international suppliers, the most advantageous asymmetric position of power. When it loses the battle, such as in the case of the iron ore benchmark pricing regime, disorganized behaviour gives global players the upper hand.

In addition, this dissertation seeks to bring the study of power back into the study of global markets. The enthusiasm for the global liberal order that followed the end of the Cold War had an impact on academic studies of global markets in the political science literature. The emergence of China, and the systemic structural changes in the global political economy that come with it, has made the return of the study of power in markets all the more pressing.
But power never actually disappeared from markets, despite the waning of the era of producers’ cartels. The Comparative Political Economy literature continued to take the interrelation between power and markets within the context of national polities seriously. The International Political Economy (IPE) literature needs to reconnect with its roots. The idea that markets and power cannot be studied separately was at the very origins of the field of IPE.

In an ironic twist of fate, in a global economy that is undergoing transformation, and in which power dynamics are ever more prevalent, Chinese market stakeholders may have an advantage. Because of their political economic history, most of my Chinese interviewees conceived of markets as created by the most powerful, and not as natural and inherently fair occurrences. The perception that relations of power are a critical part of global economic relations is much less the norm among Liberal Market Economies’ market stakeholders. This divergence in expectations about how markets work will play a role in future market design, should Chinese stakeholders have a bigger say.

My research indeed shows that power transitions have an impact on power relations in markets. It also shows that relative positions of power, at the domestic level and between the domestic and the international levels – that is, at the interface – have direct implications for market stakeholder preferences, behaviour, and ultimately market institutional change.

One of the core insights of this dissertation is that market players’ relative position of power in domestic and international markets determines whether or not they prefer open markets, as well as whether they have the capacity to follow through and effect change. The argument presented in this dissertation thus allows us to refine one of the core tenants of Hegemonic Stability Theory, proponents of which argue that dominant economies prefer open and free markets. In fact, I show that only under certain conditions do China’s (or any other dominant economy’s) market actors “possess strong preferences for free and open international exchange.” Further work remains to be done on the resonance between systemically relevant emerging economies and international market institutions.

This research also shows that a more accurate way to describe the interaction between China and established commodity market players around the world is not to pit “the state” against “the markets,” as has often been portrayed. Instead, this interaction is one in which China, in a multifaceted and not necessarily coherent way, has tried to limit the power of
existing oligopolies, and create a place for itself on the global stage that is commensurate with its purchasing clout. This sometimes takes the shape of a marketization impulse. I show that the prediction that China would bring an increased role of the state in global markets does not hold true, at least not across all cases. But I also show that the prediction that China will simply adopt global market rules so as to integrate into existing competitive market institutions is misleading, especially because the markets China has been engaging with for the past decade were not very competitive to start with. More importantly, these predictions do not do justice to the dynamics I identify in my case studies. Rather, the core dynamic I observed in my cases has been one of fighting for market power.

Finally, my dissertation makes progress in our common quest towards a better understanding of change at the global level. I argue that power asymmetries, under certain conditions, lead to instability in global market institutions. Much like excessive inequality leads to social instability, global market power asymmetries can lead to change in a variety of ways, some intended, some unintended. This brings me to another implication of this dissertation: notions of fairness, vulnerability and trust are key to understanding China’s relations to the global economy.

This is another implication of my research into global market power asymmetries. Macro-level structural power asymmetries between foreign and domestic market stakeholders in specific industries heighten perceived vulnerability and undermine trust. This is important since the healthy conduct of economic activity within specific market institutions is dependent on solid trust levels. Asymmetries matter because they impart a sense of inequality and lack of fairness, which influence behaviour. Simply stated, if market institutions are perceived as being unfair, or market players perceive their position as one of relative weakness, trust levels will be low and behaviour will vary as a result.

China is particularly aware of power asymmetries, as it has not taken part in the establishment of market institutions over the second half of the twentieth century. In the current global context in which commodity markets are very concentrated, fragmented Chinese stakeholders are likely to experience situations of mistrust, since they are facing situations in which there is a mismatch between China’s actual aggregate economic weight and its regulatory and pricing power in global markets.
The presence of high levels of mistrust on behalf of the Chinese stakeholders in the iron ore market has had concrete consequences. The lack of trust in price indices, and more generally in market actors in the iron ore market, pushed the Chinese to create an iron ore trading platform in Beijing in May 2012 to compete with the BHPB-backed GlobalOre trading platform based in Singapore. The perception of vulnerability in this market has also led the Chinese to put a particular emphasis on the secrecy of their reserves, which has contributed to price volatility.

Chinese stakeholders have some soul-searching to do regarding what kind of global governance systems for commodities they want to encourage globally. At the moment, many Chinese stakeholders say that China is unsatisfied with the current arrangements, and feel that global markets are truly unfair. Facing extremely concentrated global commodity markets, it may be that China’s best bet in the short term is to encourage liberalization. But in the long term, when I ask: “What does a fair market arrangement look like?” few of my interviewees said they believed that purely competitive global commodity markets are desirable, or even likely – yet they do not express precise preferences.

As emerging countries claim more space in the global governance of natural resources, there needs to be a renewed round of exchanges and research about what a “fairer” system of governance for global commodity markets could look like.

From the point of view of international stakeholders, who often scold China for not playing by market rules, some soul-searching may be warranted as well. The extractive resource industries operate under extraordinary levels of industry concentration, and this has created extremely high barriers to entry for newcomers like China. Exhortations to liberalize ring false to many in China, who see global markets as oligopolistic and controlled by entrenched interests.

Commodity markets are facing major challenges today. These challenges arise from the lack of global governance and continued financialization. These concerns include the traditional drawbacks of financialization – increased volatility and increased systemic risk – at the same time that we see the fading away of decades-old pricing institutions, the rise of power asymmetries and a pervasive lack of trust by many countries. All these challenges are made even starker by China’s emergence.
Deeper global market restructuring of the sort needed in many other international organizations may be needed to facilitate China and other developing countries playing a role that is commensurate with their size. Minimal reforms, such as increased price index transparency, although useful, will not be enough to provide a sense of security and fairness to developing countries that are highly dependent on imports. Institutional design, as well as careful management of incentives and undue concentration, can mitigate perceptions of unfairness and create market systems that are more conducive to the pursuit of mutually beneficial allocation of resources. The creation of space and the sharing of market power are a prerequisite for the creation of fairer global market institutions in the face of the emergence of China and other emerging economies.

This is a study about the deepest sort of economic interdependence, that of institutional resonance and complementarity between global markets and their systemically significant stakeholders. A coherent, stable, and fairer global economic system cannot develop in the face of critical market vulnerabilities and lack of power of its key constituents.
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## APPENDIX 1: LIST OF INTERVIEWEES

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<td>- Government of Newfoundland and Labrador</td>
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<td>- Chinese Industry Association 1</td>
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### APPENDIX 2: CODE CO-OCURRENCE IN INTERVIEW EXCERPTS

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<tr>
<td>Financialization</td>
<td>17</td>
<td></td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Demarketization</td>
<td></td>
<td></td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Increase in frequency of trades</td>
<td>7</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Spot market</td>
<td>30</td>
<td></td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Trust</td>
<td>8</td>
<td></td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total excerpts</strong></td>
<td>310</td>
<td>35</td>
<td>160</td>
<td>144</td>
</tr>
<tr>
<td><strong>Total interviews with direct mention of each case (114)</strong></td>
<td>38</td>
<td>8</td>
<td>36</td>
<td>32</td>
</tr>
</tbody>
</table>
APPENDIX 3: TOP 10 IMPORTERS OF POTASH, AND THEIR AFFILIATION

<table>
<thead>
<tr>
<th>Top 10 importers (Customs data)</th>
<th>2001</th>
<th>Quantity (metric tonne)</th>
<th>2006</th>
<th>Quantity (metric tonne)</th>
<th>2011</th>
<th>Quantity (metric tonne)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 中国农业生产资料集团</td>
<td>1,679,515</td>
<td>中国中化集团公司</td>
<td>2,115,418</td>
<td>中国中化集团公司</td>
<td>2,215,183</td>
<td></td>
</tr>
<tr>
<td>2 中化化肥公司</td>
<td>1,258,900</td>
<td>中国农业生产资料集团</td>
<td>1,403,857</td>
<td>中国农业生产资料集团</td>
<td>1,307,253</td>
<td></td>
</tr>
<tr>
<td>3 中化国际化肥贸易公司</td>
<td>451,328</td>
<td>中深圳赤湾港股份有限公司</td>
<td>411,953</td>
<td>中化学股份有限公司</td>
<td>769,312</td>
<td></td>
</tr>
<tr>
<td>4 湛江金源保税仓有限公司</td>
<td>406,434</td>
<td>绥芬河市广成经贸有限责任公司 (Zhongnong)</td>
<td>379,440</td>
<td>绥芬河市龙生经贸有限公司</td>
<td>295,691</td>
<td></td>
</tr>
<tr>
<td>5 中深圳赤湾港股份有限公司</td>
<td>318,617</td>
<td>绥芬河元元经贸有限公司</td>
<td>347,839</td>
<td>绥芬河市龙生经贸有限公司</td>
<td>288,748</td>
<td></td>
</tr>
<tr>
<td>6 李载明</td>
<td>138,587</td>
<td>绥芬河市龙生经贸有限责任公司</td>
<td>330,486</td>
<td>绥芬河市广成经贸有限责任公司</td>
<td>221,001</td>
<td></td>
</tr>
<tr>
<td>7 N/A</td>
<td>131,673</td>
<td>二连浩特市天宇商贸有限责任公司</td>
<td>276,463</td>
<td></td>
<td>208,370</td>
<td></td>
</tr>
<tr>
<td>8 广州港集团有限公司</td>
<td>109,520</td>
<td>满洲里恒超经贸有限公司</td>
<td>262,599</td>
<td>江苏奥喜埃化工有限公司</td>
<td>185,050</td>
<td></td>
</tr>
<tr>
<td>9 招商局地产控股股份有限公司</td>
<td>88,891</td>
<td>绵阳市广成经贸有限责任公司 (CNCCC – CNOOC)</td>
<td>169,469</td>
<td>优利德(江苏)化工有限公司</td>
<td>162,374</td>
<td></td>
</tr>
<tr>
<td>10 绥芬河市利顺达经贸有限责任公司</td>
<td>53,372</td>
<td>绥芬河市新凯源贸易有限公司</td>
<td>158,625</td>
<td>满洲里京铁经贸有限公司</td>
<td>156,543</td>
<td></td>
</tr>
<tr>
<td>% of total imports</td>
<td>10 top importers</td>
<td>85.50%</td>
<td>10 top importers</td>
<td>78.70%</td>
<td>10 top importers</td>
<td>87.90%</td>
</tr>
</tbody>
</table>

Sinochem or subsidiaries: Orange
(Sinochem (中国中化集团公司), Sinofer (中化化肥公司), Sinochem International (中化国际化肥贸易公司), Manchuria Kaiming Fertilizer Co. Ltd. (满洲里凯明化肥有限公司) [private enterprise, invested by Sinochem (中化化肥) (Sinochem Fertilizer Co. Ltd., 2009)]

Suifenhe New Kaiyuan Trading Co. Ltd. (绥芬河新凯源贸易有限公司) [private enterprise, invested by Sinochem (中化化肥)]

Sino-Agri Group or subsidiaries: Purple
(Zhongnong or Sino-Agri Group (China National Agricultural Means of Production Group Corporation, 中国农业生产资料集团公司). Subsidiaries include CNAMPGC Holding Limited Corporation – 中农集团控股有限公司), Suifenhe Guangcheng Economic And Trade Co., Ltd (绥芬河市广成经贸有限责任公司) [Subsidiary of Sino-Agri (中农控股)]; Wuhan Huaken Import and Export Trade Co., Ltd. (武汉华垦进出口贸易有限公司) (Wuhan Zhongnong
International Trade Co. Ltd. (武汉中农国际贸易有限公司) [state-owned enterprise, Subsidiary of Sino-Agri (中农国际集团化)]

CNOOC or subsidiary: Blue
(CNOOC, 中国海洋石油总公司, subsidiary: CNCCC (中国化工建设总公司)

China Merchants Group: ☓
Shenzhen Chiwan Wharf Holdings Ltd. (深深圳赤湾港航股份有限公司) [state-owned enterprise, belonging to China Nanshan Development Corporation (中国南山开发集团公司), which is owned by China Merchants Group (China Merchants Group)]
China Merchants Property Development Company Ltd. (招商地产控股股份有限公司) [central state-owned enterprise, belonging to China Merchants Group]

Other firms
Zhanjiang Jinyuan Wharehouse Ltd. (湛江金源保税仓有限公司) [non-state-owned enterprise registered in Hong Kong, Joint venture between Zhanjiang Port Authority (湛江港务局) and the Hong Kong Maritime Management Ltd. (香港金源海运管理有限公司)]
Guangzhou Port Holdings Ltd. Newport Harbour Branch (广州港股份有限公司新港港务分公司) [state-owned enterprise, belonging to Guangzhou Port Holdings Ltd.]
Suifenhe Lishunda Economic Trading Co., Ltd. (绥芬河市利顺达经贸有限责任公司) [private enterprise]
Suifenhe Kaiyuan Trading Co. Ltd. (绥芬河市开元经贸有限责任公司) [private enterprise]
Suifenhe dragon trade company Ltd. (绥芬河市龙生经贸有限责任公司) [private enterprise, belongs to Heilongjiang Abundant Agriculture Corporation (黑龙江倍丰农资集团)]
Inner Mongolia Manchuria Economic and Trade Co. Ltd. (内蒙古满洲里恒超经贸有限公司) [private enterprise]
Erlianhaote Tianyu Trade Co. Ltd. (二连浩特市天宇商贸有限责任公司) [private enterprise]
Jiangsu AoXi Egyptian Chemical Co., Ltd. (江苏奥喜埃化工有限公司) [Sino-Foreign Joint Venture between Egyptian Chemical Co. Ltd. and Jiangsu AoXi (OCI)]
Youlde (Jiangsu) Co., Ltd. (优利德（江苏）化工有限公司) [Korean invested enterprise]
Manzhouli Railway Beijing Economic and Trade Company (满洲里京铁经贸公司) [belongs to record belongs to Beijing Rail Economic Development Group (北京京铁多元经贸发展集团)]