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Why Did China Do This? An Analysis on China's New Gasoline "Price Floor" Policy

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WHY DID CHINA DO THIS?
AN ANALYSIS ON CHINA’S NEW GASOLINE “PRICE FLOOR” POLICY

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Abstract

Why did China choose certain policy over others that would achieve similar impact? Because China has a significant presence in the modern international community, it is difficult yet critical to understand the policy implications of the Chinese government under its unique political and socioeconomic context. This thesis shows the impact of a specific “price floor” policy China chose to employ in its oil and gasoline market, and identifies the factors concerning the Chinese regime that it took into consideration in the decision making process, through analysing data and official statements released by the government. After different parties affected by this policy are recognized, this thesis investigate how those impacts relate back to the Chinese government’s long-term agenda of energy security and environmental protection.
Acknowledgement

A huge Thank You to Professor Auerbach and Professor O’dell for your generous feedback, advice and support. Thank you to my family (my grandparents, my father, and especially my mother, Rong Shang). I hope you know that I could not have being where I am today without all of your endless encouragements and support.
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Introduction

On December 15th, 2015, an announcement released by the China’s National Development and Reform Commission stated the following: “Due to relevant provision of the current gasoline pricing mechanism, the adjustment of domestic gasoline price is hereby postponed.”

But what was the exact “relevant provision” that China’s NDRC referred to? Nobody knew. And no clear answer was provided. Not until January 13th, 2016.

The fundamental components of China’s domestic gasoline pricing mechanism are included this equation:

\[
\text{Gasoline “Government Referential” Price} = \text{Cost of refinement} + \text{Reasonable profit margin (up or down 4%)} + \text{Cost of Distribution} + \text{Adjustment based on International crude oil market price}
\]

According to the official document, this general equation summarizes the gasoline pricing mechanism, and all of its components did not change after the January 13th revision except the

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1 For the purpose of clarity in this thesis, several definitions and explanations will be provided in the footnote to better frame the intended research question.
2 “China” refers to the People’s Republic of China governed by the Chinese Communist Party, and this research is targeting the geographic region limited to mainland China, because regions such as Hong Kong and Macao follow different political systems under the “One nation, Two system” (一国两制) doctrine and the same analysis for mainland China might not be applicable.
3 The National Development and Reform Commission (国家发展改革委员会) will be referred to in this thesis by its abbreviation, NDRC. This commission is in charge of determining economic and development policies at the national level, which includes setting commodity prices for all “refined oil product”.
4 Chinese government’s pricing mechanism actually covers all “refined oil product (成品油)”, which is defined as gasoline, diesel and other fuel produced from crude oil. And “refined oil product (成品油)” was the term mentioned in all government documents. However, this thesis will target gasoline specifically in order to narrow the research question and achieve precision as well as clarity. Therefore, all of the research and analysis will directly address gasoline, instead of using the term, “refined oil product (成品油)”.
5 See policy read, “我国暂缓调整国内成品油价格_中国政府网” (China pausing adjustment for gasoline price_Chinese Gov. website), 2015
6 Note that, this pricing mechanism is applied to gasoline’s retail price only. There is another system for wholesale, therefore, manufacturing and other industrial sectors’ consumption are not impacted by this “price floor” policy and will not be included in this thesis’s analysis.
bolded adjustment section. In this equation, cost of refinement process and cost of distribution are assumed stable and isolated from international crude oil price. Before this new price floor policy was implemented, the NDRC was scheduled to announce adjustments for gasoline’s government referential price\(^7\) every two weeks. And the adjustment would be based on the percentage fluctuation of the international crude oil price. A decrease in international crude oil price would automatically lead to a proportional decrease in gasoline’s price. Unless the fluctuation was less than $1/barrel, then that adjustment would be accrued to the next period instead of being carried out immediately.

On January 13\(^{th}\), 2016, this new “price floor” of $40/barrel, which essentially maintains a higher price and suspends the adjustment of gasoline pricing mechanism when the international crude oil price is plunging, was announced. It took the NDRC a month to finally follow-up on the “relevant provision” mentioned in the beginning. And these are ther exact statement NDRC provided for applying a price floor to the existing gasoline pricing mechanism on January 13\(^{th}\):

> It is necessary to establish new limits for domestic pricing mechanism … a “price floor” of $40/barrel will be set … when the international crude oil price drops below $40/barrel, the gasoline government referential price will no longer adjust accordingly…\(^8\)

This “price floor”, or at least that’s what the Chinese officials called it, was a surprise because most relevant parties of the gasoline pricing mechanism were expecting a large scale

\(^7\) See Abaza and Jha, 2002. One example of application for such referential pricing system is towards banana producers in the European Union, since 1980s. And it is a single-industry case, whereas in China government referential price is the common practice.

\(^8\) See policy read, "国家发展改革委就进一步完善成品油价格机制有关问题答记者问 (NDRC Q&As on Revising the Gasoline Pricing Mechanism through Price Floor Policy)".
down-regulation since the international crude oil price had plunged again from $43/barrel (November 2015) to $36/barrel (December 15th). The exact explanation provided alongside the decision to impose a “price floor” is the following:

*if price of oil is too low, in the short-term supply cost of gasoline can decrease. However, due to the nature of our country’s crude oil composition and high cost of production for this raw material, a plunging international crude oil price will increase China’s level of oil dependence to an even higher level (currently at above 60%), and letting that happen could harm China’s energy security. Besides, low gasoline price caused by low international crude oil price is harmful to the conserving scarce resources and treating air pollution, as well as adjusting the structure of energy sector for development of sustainable clean energy. Therefore, a “price floor” is necessary for maintaining stability of domestic companies and achieving long-term energy and environment goals.*

Since its implementation on January 13th, this new pricing mechanism has been effectively impacted by the “price floor” policy for 6 cycles. As shown in Figure 1, the international crude oil price recovered and reached a value greater than $40/barrel in April. Consequently, the adjustment resumed and the mechanism began to carry out as usual on April 26th. Therefore, the additional “price floor” is actually effective only for 4 months, even though the policy was implemented.

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9 See policy read, "油价调控设置“地板价”（政策解读）(Setting a Price Floor on Gasoline)" 2016.
Cheap crude oil in the international market made it difficult for China to follow its agenda of producing more crude oil domestically for energy independence and selling less gasoline domestically to discourage consumption for environmental protection. Being a temporary solution to this problem of international market disrupting domestic system, this “price floor” was not a straight forward decision. After NDRC’s statement of pausing the adjustment on December 15th, the government apparently hosted several closed-door hearings and discussions before reaching a decision as to whether a revision on the government referential price of gasoline is necessary. So, why did China do this? Why did China choose to manage this artificially higher price through the “price floor” policy?

11 See “专家：如何正确认识成品油价格调整_政策法规解读_中国政府网 (Expert: On How to Correctly Understand the Price Floor Policy and Gasoline Price Adjustment)”. 2016
Literature Review

As early as the 1970s, scholarly research began investigating the relationship between oil and politics. Actions within the world oil market often weighs into many countries’ decision making process due to the integration of political and economic impact in the international oil market. As the oil market evolves and countries grow, it becomes evident that more oil-related policies are in place to regulate or restrain powerful influence and spill-over effect of the oil industry\textsuperscript{12}. Application of “price floor” was discussed but never actually applied to the US gas industry, even though the conclusion of specific literature provides a positive result for a potential price floor\textsuperscript{13}. China’s decision of implementing the “price floor” policy has not be discussed by any scholarly research yet. Therefore, research in this thesis should be able to provide more insight serving both as an individual case study of oil-related policy in China and as an analysis that could be generalized on China’s policy making process to future research.

Due to the versatility of oil-based product, literatures also vary in their different focus on impacts by the oil market. Analysis had been done using VAR or SVAR model, CGE model, etc., as well as other more qualitative methodological approaches to examine the impact of oil price fluctuation and policies on a country’s economy and political position\textsuperscript{14}. Correlations between oil price and wage, unemployment rate, consumption, are some of the most common focus in

\textsuperscript{12} See Odell, 1971; Chen, Chen and Hhrdle, 2014.
\textsuperscript{13} See Weijermars, 2011.
\textsuperscript{14} See Duan, 2010; Wu 昊 et al., 2011; Liu et al., 2015.
literatures of the past decades. However, most of such analysis are directed towards the US, Japan and the Middle East. Though these countries are the traditional giants in the oil industry as well as centers of international geopolitics, framework of the international oil market has changed gradually in the last decade. China took over the US’s position as the world’s largest oil importer in 2013, yet literatures do not pay much attention to China’s policies and its critical position in international economics as well as politics. This thesis should be able to account for the impact oil price policy has on China’s current position, and China’s consideration behind this gasoline “price floor” policy.

In addition to literatures on impact of oil price, research done on policies resembling this more resent “price floor” China implemented done by other countries also contributes to the literature review. The US sugar policies is a critical topic surrounded by many scholarly discourse, in fields of economics and politics. Protection towards domestic produce (sugar in particular) in the US had both positive and negative externalities, but most were economic related factors. Literature on protectionism policies by the US discussed problems with such policy including glut in the market, and diminishing profit due to decreasing demand. For the “price floor” policy China is using now, this thesis will try to investigate the motives for China to engage in this policy that does not appear to be protectionism, but actually allows suppliers to charge an artificially higher gasoline price.

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Part 1

Structure of China’s Oil and Gasoline Market

The overarching CCP regime is controlling oil and gasoline markets through regulations implemented by government institutions like the NDRC. The NDRC makes decisions about all policies regarding commodity pricing. Since the Chinese government has almost absolute control over the domestic oil production and refinement markets, previous pricing mechanism revisions were all implemented without any backlash. The CCP was clearly satisfied with the results of its existing gasoline pricing mechanism (before the international crude oil plunged) which was established three years ago:

... For the past 3 years, the mechanism has been stable and effective in promptly reflecting the international crude oil market’s fluctuations, ensuring gasoline market’s normal supply, promoting healthy competition within the market; in addition, the enhancing transparency of price adjustment represents one step closer to marketization...16

Figure 2 shows the monthly rate of fluctuation comparison between crude oil and gasoline price in the international market. And the proximity of these two lines reflects a similar rate of change on crude oil price and gasoline price internationally. The existing gasoline pricing mechanism in China is evidently trying to close the gap between its gasoline price’s fluctuation and the international crude oil price’s fluctuation. NDRC official’s statement shows the Chinese government’s support of this pricing mechanism.

16 See policy read, "国家发展改革委就进一步完善成品油价格机制有关问题答记者问 (NDRC Q&As on Revising the Gasoline Pricing Mechanism through Price Floor Policy)".
However, China was forced to take actions when the international crude oil price made an unexpected turn for the worse, so that other higher priorities such as energy independence and reduction of pollution would not be hindered. The final response was this “price floor” applied to the existing gasoline pricing mechanism.

Any price-related policy requires market participation, meaning companies of the targeted market must be involved. The oil production and refinement industries in China are drastically different from a free market. Domestic oil and gasoline markets are controlled by the oligopoly of these three state owned enterprises(SOE): PetroChina\textsuperscript{18}, SinoPec and CNOOC. Table 1 provides some details related to their current standing in the production and refinement markets.

\textsuperscript{17} Data Source: World Bank
\textsuperscript{18} Direct subsidiary of China National Petroleum Corporation (CNPC).
Table 1

<table>
<thead>
<tr>
<th>Company Title</th>
<th>Scope of Business</th>
<th>Amount of Crude Oil imported as Raw Material for Refinement</th>
</tr>
</thead>
<tbody>
<tr>
<td>PetroChina</td>
<td>Focus predominantly on crude oil production, with a relatively small oil refinement sector.</td>
<td>30%</td>
</tr>
<tr>
<td>Sinopec</td>
<td>Focus predominantly on oil refining, and a relatively small crude oil production sector.</td>
<td>80%</td>
</tr>
<tr>
<td>China National Offshore Oil Corporation (CNOOC)</td>
<td>Focus solely on offshore crude oil production, with a significantly smaller oil refinement sector.</td>
<td>N/A</td>
</tr>
</tbody>
</table>

These SOEs’ top priority is to achieve the party’s assigned goals, whether it being economically or politically oriented. To achieve “long-term energy security, and eventually energy independence” that the Chinese Communist Party is hoping for, these SOEs have been striving to increase their crude oil production for the past decade. Despite “the low quality of domestic crude oil endowment and high production cost,” Figure 3 shows this general trend of

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19 Information gathered from annual reports of each company.
20 Referred to as CCP in other parts of this thesis.
21 See policy read, "国家发展改革委就进一步完善成品油价格机制有关问题答记者问 (NDRC Q&As on Revising the Gasoline Pricing Mechanism through Price Floor Policy)".
growth in crude oil production that supports the understanding of the Chinese government having control over these SOEs’ behaviors.

Figure 3

Together, these three oligopolies represent both the crude oil production sector and the gasoline production (oil refinement) sector impacted by this new “price floor” policy.

Last party that would be influenced by this new “price floor” policy is the consumers who are paying retail prices based on this government referential price mechanism for gasoline. Figure 4 provides a general summary of vehicles owned by domestic consumers, that can be translated into demand for gasoline consumption.

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The steady increasing trend in Figure 4 can be used as projection to demand for gasoline in 2016. As the international crude oil price decreases gradually over the years, it is reasonable to predict a higher demand for gasoline and more automobile usage in 2016. However, the circumstance changed after this new “price floor” was implemented by the NDRC. Consumers are directly impacted by this artificially high price of gasoline.

Figure 5 shows the number of private vehicle ownership in China’s major cities in blue bars, and red bars represents number of private vehicle ownership in major automobile-concentrated cities worldwide for the purpose of comparison. After calculation with respect to numbers shown in Figure 5, roughly 80% of China’s vehicle population are owned by private individuals.

Data Source: China Ministry of Public Security; Xinhua News Agency.
Impact on Different Sectors

Like mentioned earlier, the gasoline pricing mechanism was regulating market price in a direction that the Chinese government expected until the international crude oil price plummeted to its lowest point since 2003 (as shown in Figure 6).

24 See "Counting Cars: Rising Private Automobile Ownership In Chinese Cities Paves Road For Gasoline Demand | China Signpost™" 2013
China’s NDRC released this statement of adding “price floor”, as a response to stop the falling trend of international crude oil price leading to a large downward adjustment on domestic gasoline price required by the pricing mechanism at that time. It could be a short-term solution to China’s

The NDRC that released the policy did not have any other role but that of an observant after the “price floor” became effective. As long as the market remained relatively stable and isolated from the international crude oil price shock, which it did, the NDRC only needed to monitor the market trend and kept track of the international crude oil price so that it knew when to resume the adjustment function of gasoline pricing mechanism.

Between January 13th and April 26th, the “price floor” was effective as the international crude oil price fluctuated below the $40/barrel baseline. After that period, the “price floor” was

\[ \text{Data Source: World Bank.} \]
neutralized while the policy remained in place as the international crude oil market gradually recovered and the crude oil price became higher than $40/barrel. When the NDRC stated the conclusion that China’s domestic crude oil and gasoline market would be better off with a “price floor” in place, it did not specify the impact such “price floor” has on different parties involved.

For that 4-month period, the SOEs who are suppliers in the gasoline markets were able to keep an artificially higher price for their products. A higher price in the market can lead to higher profit, but also reduces demand for gasoline. At least a proportion of those two consequences will cancel out, so the positive impact of this “price floor” is likely less than expected. At the same time, the plunging international crude oil price led to a struggling domestic crude oil market for all three oligopolies that also produced crude oil. According to semiannual reports in accordance with IFRSs, PetroChina’s net profit for the first half of 2016 was 77 million US dollars, with a Year-on-Year decreases of 98%; Sinopec’s net profit was 2.9 billion US dollars, with a YoY decrease of 22%; CNOOC experienced a net loss of 1.1 billion US dollars. Because of the plunging international crude oil price, PetroChina and CNOOC, focusing more on crude oil production than refinement, experienced more problems trying to generate profit as they competed against cheaper crude oil produced at lower cost in other countries than in China. PetroChina reached its worst performance of the same period since it went public in 2007. And it was the first time CNOOC experiences a net loss since its listing in 2001. Sinopec, on the other hand, focuses on oil refinement and distribution, imported 80% of its crude oil used in

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26 Year-on-Year (YoY) rate refers to the compared % change with the same period from last year.
refinement from the international market. Because it was paying a lower price for imported crude oil input and charging higher price for gasoline output which was facilitated by the government’s “price floor” policy, Sinopec reflected more directly on the positive impact of this policy as it experienced less loss than the other two oligopolies.

Finally, the impact of this “price floor” is reflected on consumers. All retail consumers had to purchase gasoline at a higher price while being exposed to the news about plunging crude oil price. The decrease in demand was inevitable when price was higher than the expected equilibrium, and resulted in excess supply from the domestic market. However, Figure 4 from earlier section does indicate one fact: there are at least 172 million vehicles already in the demand pool by 2016. Even if growth of vehicle population between January and April of 2016 is assumed to be zero, this artificial high price would have little impact as to the usage of gasoline for the majority of that pool due to inelasticity of demand. When the price floor freezed the adjustment of domestic gasoline price between January and April, the price was kept at $3.45-$3.67 per barrel. This was more than double of the international gasoline price, which was around $1.35/barrel during the same period.

Part 2

Why this “price floor” Policy?

Being required to follow the gasoline pricing mechanism, China’s domestic gasoline
had to adjust at the same rate of fluctuation as that of the plunging international crude oil price. Stated by the NDRC official, this “price floor” is supposed to keep the gasoline price domestically at a higher level. On the face of it, this “price floor” is China’s response to problems raised by international crude oil price shock. As identified in previous section, the result of this “price floor” allowed suppliers to charge higher gasoline price and decreased demand. Ideally, the short-term results will support the government’s goals such as environmental protection and providing a buffer for domestic companies involved in both crude oil production and gasoline refinement.

**Environment**

One clear incentive for this “price floor” is for environmental protection. In any model of regular demand and supply, higher price causes a decrease in demand and less consumption on complimentary goods. As a result of this “price floor” policy, the higher gasoline price led to a small decrease in consumption of gasoline and discourage usage of automobiles. Less car usage meant less tailpipe emissions, so the mitigating effect on air pollution would help in supporting China’s long-term environmental protection goal.

Environmental problem in China has gained its exposure and the government’s attention over the past five years as the situation deteriorated. The key contributing factors is usage of non-renewable energy. China’s heavy pollution is the serious byproduct of generations of industrialization and urbanization. Beijing, being the capital of China, is selected to reflect on the
general condition of China, as it is one of the cities marked average on China’s environmental pollution ranking. Figure 7 shows China’s rapid increase in CO₂ emissions from energy consumption after the millennium.

Figure 7

And Figure 8 maps out the PM 2.5 levels country wide in 2012, and Beijing is marked as a dark red region, meaning its PM 2.5 level is at 70.00 or more. The average PM 2.5 level for China in 2012 is 48 mg/m³. What does that number mean? World Health Organization says that anything above 10 units is unhealthy. China’s average was 3 times more than that standard value, and Beijing’s PM 2.5 level was at least 6 times over the limit.

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27 Figure from "The East Is Grey", 2013.

28 PM 2.5 measures tiny particles that reduce visibility and cause air to appear hazy. It is defined as an air pollutant that is a concern for people's health when levels in air are high. And this measurement is assumed to be a more accurate reflection on individual level pollution.
The problem did not alleviate much since. According figures provided by the Beijing Environmental Protection Bureau, this country’s capital city had 179 of the 356 days in 2015 marked as “polluted”, and 43 of those 179 were “heavily polluted”\textsuperscript{30}. For the purpose of more coherent and accurate data presentation, PM 2.5 value is used as a proxy to represent environmental conditions. The trend for Beijing’s PM 2.5 value from 2008 to 2014 is shown in Figure 9, whereas 2015 and 2016 are jointly graphed out in Figure 10 and Figure 11 for comparison. Figure 9 show an obvious trend of increasing PM 2.5 levels, but the peak is still below 200 mg/m\textsuperscript{3}.

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\textsuperscript{29} Figure from “Browner, But Greener”, 2014.
\textsuperscript{30} The definition of “heavily polluted” by the Chinese government is “children, elderlies, people with lung and heart conditions are advised to avoid outdoor activities and stay inside; healthy population could experience different symptoms if exposed outdoor for a period of time.”
Figure 10 below shows the PM 2.5 value monitored daily by the US Embassy in Beijing before implementation of the “price floor” and after. Both sets of data are between the months of January to April, to control other influencing factors to the maximum extent possible. The blue line consists of data points from 2015, with the yellow dotted line showing the general trend of PM 2.5 value in 2015. The green line consists of data from 2016, with the red dotted line showing the general trend of PM 2.5 value in that period. As the yellow and the red dotted lines in this graph indicates, the air pollution is on a better trend with smaller PM 2.5 values in 2016 since the implementation of the “price floor” in general. But the proximity of the yellow and red dotted lines points to a relatively small scope for the positive impact of this price floor.

Data Source: US Embassy (Beijing) Official website. Note that the small gap at the end of 2008 is due to missing data around the time right after the Beijing Olympics, when the US embassy raised more attention with its daily PM 2.5 monitor and the data release was suspended.
Additionally, data points at the beginning of January 2016 showed a PM 2.5 value at above 500, when international oil price was plunging and the “price floor” was not yet in the picture. And the zigzag shape of the blue and green curves presents suggests a high volatility for the air pollution, which is proven with a standard deviation calculation. 2015 data series has a standard deviation of 95.1, and 2016 data series has a standard deviation of 92.8.

Figure 10

![PM 2.5 Value (Daily-Beijing)](image)

To better examine the effectiveness of this “price floor” on gasoline in improving environment, the comparison between same period of year 2015 and 2016 is plotted out in Figure 11. The orange sections again represent data from 2016, and the blue sections represent data from 2015. The dates when orange sections exceed blue ones shows a higher PM 2.5 value for

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32 Data Source: US Embassy (Beijing) Official website.
2016 than that of 2015, meaning the environmental condition is worse. Additional analysis on the raw data, presented in Figure 10, gives the exact number of days: 41. The number suggests two third of the entire 120-day period included in this 2016 data set have better air quality than that of 2015. Also, the median of 2016 data series is 39.5 and the mean is 76.9, which is significantly smaller than the median of 77.5 and mean of 104.1 in the 2015 data series. Together, they show a general improvement on environment during those four months. Yet, because of the 1:2 ratio of worse and better conditions and a high standard deviation of 92.8, it is evident that the volatility of environmental pollution is still high, which could be because this “price floor” policy only had a temporary effect on the gasoline price which ended in April 2016. Figure 11

The serious environmental pollution problem clearly motivates the Chinese government to

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33 Data Source: US Embassy (Beijing) Official website.
maintain gasoline price at a higher level to desensitize people from consuming gasoline and using vehicles. The assumption behind Chinese government’s motivation for this “price floor” is that with reasonably higher gasoline price introduced by the policy, demand for gasoline will decrease. It would then result in decrease of automobile usage, which leads to less tail gas emission, and improving the environment at least in the short-run. And according to figures presented above, it is showing a small but positive impact on the environment during the period when the “price floor” was effective.

However, taxation would have had a similar effect on the consumer side, but China NDRC did not choose to employ that tool. Instead, this “price floor” was implemented. So why not taxation? The short answer would be: tax is not welcomed by the society. The long answer would have to relate to China’s current political atmosphere. After President Xi took office in 2012, he has built up this reputation for trying to gain more recognition from ordinary citizens. Even though different from Trump’s kind of populism, Xi is known for endorsing many populism actions and reviving certain aspects from Mao’s era. He has been conscious of the social media, and news coverage, and has been engaging in more affable activities like tasting dishes at an ordinary Chinese dumpling restaurant, allowing supporter groups to call him “Xi Da Da” on social media, etc. The government under his ruling is more reluctant to choose the obviously unpopular solution, namely additional tax, when a more “hidden” means of taxation – the “price floor” – is available. Even though beneath the ambiguity on the surface of it, this “price floor” ultimately performs the exact process and leads to similar consequences, just like a tax would.
Another consideration the Chinese government might have kept in mind is the different channels those additional cash gained by a higher price would go through and the destination of those extra cash. A tax will input all cash gained into the government, whereas the “price floor” will allow the cash flow to move from consumers directly into the suppliers’ accounts. Indeed the suppliers are state-owned companies, but they are structured as independent entities that are not included in the government’s financial accounts. This allows the government to isolate itself more from the actual process taking place within the market.

**Desire to Subsidize/Protect Domestic Companies**

With the environmental problem in mind, the Chinese government could also be motivated to artificially push up gasoline price through this “price floor” due to its desire to subsidize companies in the energy market and potentially support a long-term energy security goal. Still categorized as a developing country, the “price floor” turned out to be more strategic and beneficial for China. Besides official explanations on China’s goals shown at the beginning of this thesis, the NDRC further explains the high production cost in China is unable to keep up with the plunging international crude oil price, which is bad for the domestic companies’ development. The NDRC indicated that would lead to obstacles in achieving China’s goal of gradually transforming its highly state-controlled oil and gasoline markets into free markets. The interconnected gasoline refinement and crude oil production sectors within those oligopolies would allow this “price floor” on gasoline to be a temporary shied for the domestic companies
when encountering high volatility in the international market like the case with plunging international crude oil price. However, China is the world’s largest importer of crude oil. The significant position it occupies also generates “spill over” effect on the international oil and gasoline markets every time this “price floor” that China just imposed is effective.

Official statement from NDRC confirms China’s concern regarding energy dependence on the international market:

...To mitigate the impact international market has on the domestic market, guarantee long-term domestic energy security, it is crucial to manage a limitation on the domestic refined oil product pricing mechanism. From the aspect of national energy security, maintaining a stable, healthy, and sustainable domestic oil and gas industry fits strategic direction of national interests. Basic energy policy orientation requires a production quantity of over 1.4 billion barrels/year to decrease overreliance on imports... Current situation of oil and gas companies shows a higher production cost than international crude oil price, so they have already been reducing production under the plunging oil price. If the trend continues, once the oil price bounces back, those companies will face an even higher cost to return to their original level of production. This possibility will hinder the normal functionality of domestic companies in the oil industry, resulting in greater economic losses. Therefore, it is in the nation’s best interest, as well as the industry’s, to implement reasonable regulations...34

Dominant interest of the Chinese government is clearly to achieve greater independence in the energy sector, and this “price floor” is signaling China’s attitude towards shifting its highly energy dependent position in the long-run.

Even though this “price floor” has been painted as a shield for domestic companies involved in oil refinement that were hit hard by the plunging international oil price, the intention of

34 See policy read, "国家发展改革委就进一步完善成品油价格机制有关问题答记者问 (NDRC Q&As on Revising the Gasoline Pricing Mechanism through Price Floor Policy)".
indirectly subsidizing SOEs beyond its gasoline sector is also stated in the NDRC official document:

... All extra amount of money gained because of the adjustment freeze imposed under this price floor will be categorized as contingency fund, which should be used mainly in improving energy conservation and emission reduction, upgrading quality of crude oil production, and ensuring crude oil supply security...  

Note that this “contingency fund” remained with the SOEs, and was not controlled directly by the government.

Though, previous analysis on the semiannual reports from all three SOEs showed a problem that the Chinese government did not account for, which contributed to the decrease in general profitability for the domestic companies. The assumption NDRC holds for this “price floor” did not address the contradiction between generation of profits and decrease in demand in the gasoline market. The decrease in demand of gasoline led to declining sales revenue, thus generating less profit for the companies than the Chinese government would have expected. But the counteraction was relatively small in scale, while the insulation between plunging crude oil price in the international market and domestic gasoline price through adjustment freeze created a large gap for companies involved in refinement to gain more profit. Evidence of this combined positive influence is extracted from Sinopec’s semiannual report which indicated that its refinement/gasoline sector achieved a net gain of 4.3 billion US dollars, yielding a YoY increase of 113%. An important factor for this positive result is the fixed majority of consumers who are

35 See policy read, "国家发展改革委就进一步完善成品油价格机制有关问题答记者问 (NDRC Q&As on Revising the Gasoline Pricing Mechanism through Price Floor Policy)".
purchasing gasoline for their vehicles as necessities. Though small alterations to this fixed majority of consumers might have contributed to the decrease in demand, generally inelastic demand for gasoline could not change much after the price was artificially set at a higher level by the “price floor”, assuming most private owners/consumers are purchasing gasoline for their automobiles with the intent to use them as means of transportation. Hence, the profit gain from higher gasoline price exceeded the loss of demand that was limited due to the nature of gasoline consumption in the retail market.

Being world’s largest crude oil importer, China is heavily dependent on the international oil market, hence the tremendous impact plunging oil price had on the domestic market causing China NDRC to issue the “price floor”. China continued to stock up crude oil by importing from a lower international price, as shown by Figure 12: Amount of crude oil imported by China of the one-year period between June 2015 and June 2016. In Figure 12, the peak of crude oil import in December was before this “price floor” policy was announced, and then a steady increasing trend was observed during the four-month period when the policy froze domestic gasoline adjustment. To further the goal of achieving long-term energy independence, this strategy enabled Chinese companies to maintain a higher price of gasoline (refined product of crude oil) which could be viewed as a form of subsidization through the market for their loss in the crude oil production sector. According the Chinese officials, the “price floor” is a “necessary
precaution on the path to marketization of the domestic oil industry.”\textsuperscript{36} This expectation of China relies on similar impact of a strategy many countries had employed in the past. Such protectionism policy would strategically isolate the domestic industry until it achieved an equivalent level of development to compete in the international market.

Figure 6\textsuperscript{37}

![Bar Chart]

Regarding the possibility that the government is using the “price floor” to indirectly subsidize domestic companies, China could have simply subsidized crude oil production to maintain a reasonable level of production domestically while the international price plummeted. NDRC decided to go with the “price floor” after consulting experts and holding several hearings, without explicitly respond to the reason behind choosing this form of indirect subsidy channeled

\textsuperscript{36} See "专家：如何正确认识成品油价格调整_政策法规解读_中国政府网 (Expert: On How to Correctly Understand the Price Floor Policy and Gasoline Price Adjustment)", 2016.

\textsuperscript{37} Data Source: China General Administration of Customs; \texttt{WSI.com}. Note: the unit for y-axis is million metric tons.
through the gasoline market, instead of a direct subsidy towards the crude oil sector. However, the implicit political and economic explanation behind this policy lies in the nature of subsidies. A direct subsidy requires huge government spending, and leaves a record of China engaging in an act of protectionism. On the contrary, this new “price floor” transfers the financial burden of subsidizing those SOEs to consumers in the market, and disguise the intent of protection and long-term energy independence. Because China has been under strict scrutiny from the international community, this “price floor” helps China intervene in the market without leaving apparent evidence of subsidizing domestic companies and manipulating the oil industry.

Besides, China’s authoritarian regime provides the government with convenience of implementing a “price floor” at minimum economic cost domestically. Unlike a “price floor” in the U.S., for example, where the government must buy up the excess supply resulted from it, all that the Chinese government needs to do is issue the “guidance paper” and the SOEs involved will follow. In the case of this “price floor” policy, the “wheels” of domestic oil and gasoline market started spinning after this initial push. Cash flowed directly from consumers to suppliers, allowing SOEs to accrue their “contingency fund” and avoiding additional government spending for the regime. On the downside, though, the result of this “price floor” during its effective period between January and April of 2016 was an excess export dumped into the international gasoline market (shown in Figure 13), which raised problem for other foreign oil refineries. The orange arrow indicating a smaller slop shows the growing imports when international crude oil began to drop, whereas the red arrow shows a steeper slop indicating greater rate of increase in
China’s gasoline inventories. As the figure noted, this inventory increase resulted in a worldwide glut.

Figure 7

![Topped Off](image)  
China’s gasoline inventories are climbing amid a worldwide glut (in million barrels)

However, likely due to the relatively short time span, it did not cause a disturbance significant enough to draw attention to this “price floor”. As shown above in Figure 13, the trend stabilized and experienced a slight decrease as the international crude oil price recovered and the “price floor” was no longer blocking the gasoline price adjustment. Chinese government’s decision to implement this policy on top of its gasoline pricing mechanism has achieved, to an extent, the backward subsidizing effect that the government could be seeking. The ambiguity on the surface of this new policy provides China with the flexibility of denying it being interventionism, which

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38 Data Sources: Energy Aspects; WSJ.com.
would not be possible if it employed a direct subsidy policy.

**Conclusion**

It is obvious through presentation of impacts done by the “price floor” policy that the policy only mitigates China’s concerns in the short-term, as the “price floor” introduced the adjustment freeze in January and then resumed adjustment in April.

The environmental proxy, PM 2.5 value for major cities in China, shows positively changed slightly after the beginning of 2016 compares to the year before. But the volatility suggests that this policy is not a permanent solution to China’s concern for the environmental problem. However, it is utilized by the government under President Xi’s control to mask the policy’s nature of being a “hidden” tax. As for the desire to subsidize domestic oligopolies, this research shows that these domestic oligopolies are state-owned enterprises involving in both crude oil production and oil refining businesses. Data indicates China is decreasing its crude oil import while its domestic oil production is increasing, proving that China has been pushing for a higher level of oil, eventually energy, independence, after its decision of maintaining a price floor. This “price floor” could be a development strategy leading to oil independence while avoiding the negative image of direct subsidies towards domestic oligopolies. The choice between direct subsidy and this “price floor” is viewed as China’s good public relations decision since it now does not have present this image of directly involved in the market economy. In addition, the special political circumstance of China being a more totalitarian regime leads to this “price floor”
policy. The government did not have to buy up the excess supply to achieve the price floor, and was able to hold up this popular reputation for the party leader, President Xi.

To better understand conclusions reached from this research, limitations need to be recognized and potential solutions can be proposed for the purpose of future research. Biggest limitation is the relatively short effective period for this “price floor” policy. This thesis attempts to research the rationale behind this choice of “price floor” policy China made, and reaches the conclusion that the Chinese government is more conscious of the populism influence on the party and attention from the international community in their decision making process. Due to the short response time (less than a year) given to the market and the society, no comparison could be made to examine the conclusion of this thesis. Future researches could have access to additional time period where this “price floor” policy is effective and use that for comparison.

This research is significant because it could be applied to and assist in understanding other policies made by China in the Chinese political system. With the coal industry in China asking for this exact same policy now, scholars could analyse and anticipate China’s decision based on the research of this thesis.
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