HEARING ON "PRICING THE FUTURE:
CHINA'S AMBITIONS FOR COMMODITY DERIVATIVES MARKETS"

HEARING BEFORE THE U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION

9:30 a.m.
Thursday, April 16, 2026

Russell Senate Office Building, Room 253, and Webex

U.S.-China Economic and Security Review Commission
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U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION

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Thursday, April 16, 2026

U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION

Washington, D.C.

The Commission met in Russell Senate Office Building, Room 253, and Webex at 9:30 a.m., Commissioner Livia Shmavonian and Commissioner Taylor Budowich (Hearing Co-Chairs) presiding.

OPENING STATEMENT OF COMMISSIONER LIVIA SHMAVONIAN, HEARING CO-CHAIR

COMMISSIONER SHMAVONIAN: Good morning, and welcome to the fourth hearing of the U.S.-China Economic and Security Review Commission's 2026 annual report cycle. Thank you for joining us. We welcome our witnesses and are grateful they are here to share their perspectives.

I would also like to extend our appreciation to the Senate Commerce Committee for use of their hearing room, as well as the Senate Recording Studio for their assistance in livestreaming this event. For those attending in person or watching online, witness testimony is available on the Commission's website, and a transcript of this hearing will be available.

Today's hearing will examine China's role in key commodities markets. For over two decades, China has quietly pursued the development of domestic futures exchanges, expanded their production and processing of core commodities, and became a key market maker in many segments and sectors. These actions are in furtherance of their ambitions to one day challenge existing global financial exchanges. China's 15th Five-Year Plan signals that it will step up its efforts to develop futures and derivatives markets, along with a whole host of enhancements to optimize the prediction, trading, and utilization of key commodities.

In 2025, China imposed stringent export controls on critical minerals and rare earths, focusing the world's attention on the fragility of supply chains for critical inputs and sparking discussion in the United States and around the world on building alternate supply.

China is the world's largest buyer of numerous commodities, from crude oil to soybeans. It dominates processing and refining in many industries producing inputs for its industrial sector. As we have seen over and over, access to factors of production is a national security issue, and that often runs through commodities markets.

In many markets, Chinese firms are the primary purchaser of goods and Chinese processors are the primary manufacturer. China has also demonstrated its capacity and will to cut off supply and require onerous disclosures. Taken together, these dynamics have the potential to present significant future risk to global commodities markets' safety and soundness.

Prices in physical markets are influenced by supply and demand, but the financial markets for these commodities runs deeper than the physical markets. Benchmark prices are set on the New York Mercantile Exchange, CME, or the London Metals Exchange, in addition to numerous other regional exchanges around the world. Traders on these exchanges are not just physical buyers and sellers hedging price exposure. The are international investment banks, hedge funds, individual investors, and large commodity traders.

With benchmarks set in U.S. dollars on international exchanges under the purview of U.S., U.K., or European regulators, China has been at a major disadvantage when it comes to pricing power for agricultural goods, base and precious metals, and energy products.

China recognizes this weakness and has made enhancing its pricing power an explicit goal in developing domestic exchanges. The volume of futures trading has grown rapidly on Chinese exchanges, which now count themselves among the largest in the world. Hong Kong Exchanges and Clearing acquired the London Metals Exchange, one of the three most important exchanges in the world, in 2012. China has also already begun to direct its state-owned traders and buyers to use Chinese pricing indices.

In 2020, Chinese exchanges accounted for 79 percent of all agricultural futures and options contracts traded, and in 2023, the top ten contracts were all traded on Chinese exchanges. Iron ore traded on the Dalian Commodity Exchange is the world's deepest market in terms of volume. The Guangzhou Futures Exchange has created the world's first futures contract for lithium, while a competing CME contract is more lightly traded.

China is also starting to show its future playbook, and in autumn 2025, the Big Three iron ore miners were pushed to switch contract prices away from the S&P's Platts price index in favor of a new price index, preferred by China. While only moderately successful, this demonstrates future ambitions and potential to sway contracts to preferred market facilitators.

Despite the large volumes on several Chinese exchanges, large institutional investors remain wary because the same standards and accountability that exist in U.S. markets don't yet exist on Chinese exchanges. But complacency and short-term thinking yields risk. We should plan for a future where these exchanges can credibly compete with U.S. exchanges.

This hearing will look not just at the current status quo but also look ahead to understand what success for China is in this sphere and what that would mean for global commodities trade, supply chains, and manufacturing.

I would like to thank my fellow Commissioners for their participation, our witnesses for their testimony, and the staff for their support in organizing this hearing.

I will now turn the floor over to my colleague and co-chair, Commissioner Taylor Budowich.

[The prepared statement of Commissioner

Shmavonian follows:]

OPENING STATEMENT OF COMMISSIONER BUDOWICH

HEARING CO-CHAIR

COMMISSIONER BUDOWICH: Thank you, Commissioner Shmavonian, and thank you to our witnesses for what you prepared today and for being here.

U.S. preeminence in global financial markets was built over centuries. From the founding of the Chicago Mercantile Exchange in the 19th century to today's U.S.-dollar-linked stablecoins, the United States has always been at the cutting edge of financial innovation.

Deep, liquid markets reduce volatility. They let buyers and sellers agree on a fair price, not one dictated by the government of a non-market economy. Investors come to the United States because they trust in the rule of law, smart regulations, and fair competition.

The United States has opened its markets to the world. China has not returned the favor. U.S. financial players remain walled off from Chinese markets, while Chinese capital moves freely through ours.

That asymmetry is beginning to shift, but on Beijing's terms. At the start of 2020, only 6 Chinese futures contracts were accessible to foreign investors. Today there are around 100. China is accelerating its effort to bring global futures trading -- and with it, the ability to set global prices -- to China.

What would a shift in pricing power to China mean for the United States? Three things.

First, market manipulation. An RMB benchmark set in Shanghai could reflect CCP interventions designed to advantage Chinese companies -- directives to state-owned traders, contract terms structured to favor Chinese producers, and price interventions that serve political rather than market objectives.

Second, currency risk. Contracts priced in yuan are exposed to China's currency policy -- including deliberate devaluation when it serves Beijing's interests.

Third, sanctions evasion. A yuan-denominated commodity system would let Chinese traders and their partners conduct global transactions entirely beyond the reach of U.S. financial tools -- undermining one of the most important instruments of American statecraft.

The Commission prides itself on identifying threats and advising Congress on risks before it is too late to respond. U.S. futures exchanges still play a dominant role in price discovery for the commodities that matter most. But China is ramping up its efforts to change that, and the direction of travel is clear.

Our witnesses today will offer different perspectives on how far China has come, how serious the threat is, and how the United States should respond. I look forward to your testimonies. Thank you.

[The prepared statement of Commissioner Budowich follows:]

PANEL INTRODUCTIONS BY COMMISSIONER SHMAVONIAN

COMMISSIONER SHMAVONIAN: Great. Thank you. Our first panel will provide an overview of China's efforts to enhance global pricing power by expanding its commodities futures exchanges and explore how the internationalization of China's commodity derivatives market ties to its broader aims for RMB internationalization.

We will start with Dr. Johannes Petry, Senior Researcher at the Goethe Institute, Frankfurt. Dr. Petry's testimony will discuss China's strategy to internationalize its futures markets and examine the consequences of existing price benchmarks.

We will then hear from Mr. Martin Chorzempa, Senior Fellow at the Peterson Institute for International Economics. Mr. Chorzempa will evaluate China's incremental efforts to accelerate RMB internationalization through digital currencies and the potential impact on RMB-denominated trade.

Thank you very much for your testimony. The Commission is looking forward to your remarks. I ask that witnesses keep their remarks to seven minutes.

Dr. Petry, we will begin with you.

STATEMENT OF JOHANNES PETRY, SENIOR RESEARCHER, INSTITUTE FOR POLITICAL SCIENCE, GOETHE UNIVERSITY FRANKFURT

DR. PETRY: Dear Commissioners, thank you for the opportunity to testify today.

China's efforts to develop commodity futures markets and enhance its influence over commodity pricing are understood as part of a broader strategy to reduce financial vulnerabilities and increase strategic autonomy. Commodity pricing power in this context is not simply about market efficiency or improving price discovery. It is about the ability to shape the financial infrastructures through which commodity prices are formed.

Current global commodity pricing was historically embedded in a U.S.-centered financial system. Benchmark prices for oil, metals, and agricultural products were predominantly determined through futures exchanges located in the United States and its allies. These benchmarks are sustained not just by physical supply and demand but by an ecosystem of financial institutions, regulatory frameworks, and dollar-based infrastructures. As a result, pricing power is not easily shifted by increasing physical market share alone. Instead it depends on institution credibility, liquidity, and network effects of the commodity futures markets that underpin benchmark formation.

China's efforts to increase pricing power must be understood in this context, and its strategy has evolved significantly over the past two decades. Initially, the focus was on developing domestic commodity futures markets to support internal price discovery, manage volatility, and serve broader industrial policy goals. In this phase, China's futures exchanges in Shanghai, Dalian, and Zhengzhou were primarily geared towards domestic actors and operated within regulatory framework that emphasized stability and state oversight.

More recently, however, China has moved towards selectively internationalizing its commodity market. This includes expanding foreign investor access, introducing internationally accessible contracts and key commodities such as crude oil or iron ore, and developing delivery and settlement infrastructures that link domestic markets more closely to global trading networks.

At the same time, China has sought to promote the use of RMB-denominated contracts as part of its broader efforts to internationalize its currency. This strategy is underpinned by China's position as the world's largest importer of many commodities and its growing role in processing, refining, and extracting key materials. By aligning its financial market development with its physical dominance in these sectors, China is incrementally increasing the relevance of its pricing infrastructure mechanisms within global markets, especially with its partners in the Global South.

Despite these advances, China's influence over globally recognized benchmark prices remain limited. While Chinese futures contracts are widely used domestically and are becoming more relevant regionally and in specific sectors, they have not achieved the levels of international adoption necessary to rival established benchmarks yet. The key constraints include restrictions on capital flows, continued regulatory intervention, limitations on participation in these markets, and broader concerns about transparency and governance.

These constraints reflect a deeper tension in China's approach. Efforts to internationalize its markets are pursued alongside a continued commitment to maintaining state control over financial activity. This model has proven effective in supporting domestic stability and industrial development. However, it also limits the extent to which Chinese markets can serve as globally trusted mechanisms for price discovery.

Benchmark status ultimately depends on sustained participation by a wide range of global actors, including commodity trading firms, financial institutions, and non-financial companies that hedge the fiscal risks in these markets, as well as confidence that prices are formed in a transparent and rule-based environment.

Looking ahead, a likely outcome of China's quest for pricing power is not a replacement of existing global benchmarks but rather the emergence of a more fragmented pricing system. In such a system, Chinese benchmarks will play a growing role alongside established ones, particularly in sectors where China holds a dominant position in physical supply chains, such as metals and critical minerals. In other sectors, like global oil markets, existing benchmarks are likely to remain dominant. This implies a future in which pricing power is more distributed and increasingly contested across regions and commodity sectors.

Maintaining U.S. leadership, therefore, requires, first, reinforcing the foundations of the existing system. This means sustaining the credibility, openness, and liquidity of U.S. financial markets, which remain the cornerstone or global commodity pricing. Ensuring that producers, traders, and financial actors continue to rely on U.S. benchmarks should be a key priority.

Second, the United States must actively support the global role of the dollar. The dominance of dollar-denominated pricing is not guaranteed and depends on the continued availability and trust in deep and liquid dollar markets. Expanding access to dollar liquidity, particularly in times of stress, through instruments such as central bank swap lines and related facilities will be critical. At the same time, policymakers should be mindful that the extensive use of financial sanctions, while undermining central bank independence, can create incentives for other countries to diversify away from the dollar-based systems.

Third, U.S. policy should place greater emphasis on engaging third countries, particularly in the Global South. The diffusion of pricing power depends on whether products and consumers choose to adopt specific benchmarks. Supporting these actors in accessing and using U.S. derivative markets can help sustain the global relevance of existing benchmarks.

Finally, there is a need for a more systematic monitoring of the evolving pricing landscape. The adoption of benchmarks, the current elimination of contracts, and the participation of key market actors are often difficult to observe, particularly in physical markets. Establishing a dedicated mechanism to track these developments would significantly improve the ability of policymakers to respond to shifts in global pricing structures.

The most effective response from the United States is therefore not to replicate China's model but to reinforce the institutional strengths that have historically underpinned its leadership in the global financial and commodity pricing system.

Thank you, and I look forward to your questions.

[The prepared statement of Dr. Petry follows:]

COMMISSIONER SHMAVONIAN: Thank you. Mr. Chorzempa.

STATEMENT OF MARTIN CHORZEMPA, SENIOR FELLOW, PETERSON INSTITUTE FOR INTERNATIONAL ECONOMICS

MR. CHORZEMPA: Thank you, Co-Chairs and Commissioners. It is an honor to be here today. My remarks are going to focus on broader RMB internationalization and how it interacts with the main focus of the hearing.

And the core connection is the following, that RMB internationalization in these commodities derivatives markets, in RMB, are mutually reinforcing. So the way to think about this is if RMB use overall is low, then liquidity is low, it is expensive to go in and out of RMB. Hedging instruments to hedge the risks of currency movements become more expensive, and there are also limited ways to invest the proceeds if you are holding RMB that you need to pay later on. This friction discourages participation in any Chinese markets.

But conversely, if these markets that are the subject of today's hearing become quite successful, that could be a kind of killer app that pulls people in to use the RMB and to get started with this chicken-and-egg problem. You actually then start to get the liquidity, there is demand for hedging instruments, then supply comes in, and that becomes a positive reinforcement. So that is the core dynamic to watch.

What we see so far is that the RMB use is still actually quite limited, despite China's goals. China's leaders have increased their ambition in RMB internationalization recently. Xi Jinping recently said China needs to be a strong financial country, have a strong currency, and for the first time affirmed that China needed to have a global reserve currency. This has not been part of China's goals in the past.

And one of the reasons for that is, of course, as Johannes mentioned, autonomy. China's central bank governor has said that there is a tendency to weaponize a dominant currency that is related to the sanctions risk.

China has engaged in a multifaceted campaign to try and expand the use of the RMB. It has built an infrastructure called the Cross-Border Interbank

Payment System. It has engaged in CBDC innovation and signed swap lines, and also ordered banks to use more RMB.

So what have the results of those so far been? Actually, quite limited, considering China's overall economic weight. China is the world's largest trading nation. About 14.6 percent of global trade involves China. But China's share of global foreign exchange trading is actually much lower. It is 8.5 percent. That has increased substantially from 2 percent in 2013, but the U.S. in this period has gone from 87 to 89. So all of China's gains have come at the expense of other secondary currencies. It has not eroded the core role of the U.S. dollar in the international system.

If we look at interest rate derivatives, which should be crucial in these kinds of markets, RMB is only 1 percent, and actually has lower volume than the Swedish krona or the South African rand. It really does not suggest that China is really becoming a key hub for this kind of trading.

If we look at SWIFT payments, which is the best data that we have on globally which currencies are being used in payments, we see that China had major gains after Russia's invasion of Ukraine, up to 4.7 percent of global trade, and everybody focuses on that, and then they ignore that actually in the last year and a half those numbers have actually come back down, and China is now the sixth most used currency, after the Canadian dollar, which is quite incredible that it would have less volume than such a smaller economy.

One interesting point about the SWIFT data that illustrates a broader point, there is a divergence between the data on China's own payment systems and the SWIFT data. So the CIPS data, which is China's own infrastructure, has stagnated for the last year and a half, and the SWIFT numbers have come down. That is an indication mostly likely that China has attracted more banks internationally to become direct participants of the CIPS system, and then they don't need to use both CIPS and SWIFT. And, therefore, it is only counted in CIPS, and it also means that sanctions that touch on SWIFT would have less of an impact on China. So watching direct participation in the CIPS system is an important factor to watch.

Then a lot of people talk about the digital currency space, and mBridge, in particular, which is a multilateral central bank digital currency system, was originally at the Bank for International Settlements as an international system, and now it has been taken over by China, and they recently added Saudi Arabia to this. We only have one public data point on the volume in the system. It is 4,000 transactions in its total history as of November last year, and $387 RMB that has been transacted. Ninety-five percent of those transactions were in RMB. That 95 percent figure sounds positive for the RMB, but it is actually a negative because it means that the other participants in the system are not using it to trade amongst each other, that almost all of the transactions are just between those other countries and China.

And one interesting data point, there were all these Reuters headlines about how amazing the volumes are in this system. The U.S. system called CHIPS, which handles most U.S. dollar payments, handles a higher volume of transactions between 9 a.m. and 9:04 a.m. than the entirety of the history of the mBridge system at this point. So it is just simply not yet playing a role in the internationalization of the RMB.

However, we shouldn't dismiss the system, because we do not know when exactly China started operating it. It could have been operating it only for a month before November, and then those numbers would show that maybe the data, it is ramping up much more quickly than we expected.

I will conclude looking at stablecoins. So middle of last year, the U.S. passed the GENIUS Act. Stablecoin volume was growing substantially, and it looked like China was going to face a serious strategic challenge, because it was all in on central bank digital currency and doing nothing on stablecoins. It was at that point considering expanding a pilot program in Hong Kong that would allow Chinese fintech companies, in particular, to issue stablecoins. That has since been shut down, and China has decided not to move forward except with a few traditional financial institutions, and they have scaled back that massively. So far they are not regretting that decision, because the stablecoin market has frozen. It has not grown at all since late last year.

So I will conclude with what to watch for. RMB internationalization indicators, there is no stable equilibrium here. If some of these numbers start to go up, then the others could rise with it. So that is something to really keep an eye on in real time. Pay attention to whether China opens its capital account, and pay attention to mBridge transaction volumes, if we see any more data on that. Thank you.

[The prepared statement of Mr. Chorzempa follows:]

PANEL I QUESTION AND ANSWER

COMMISSIONER SHMAVONIAN: Great. Thank you. Much appreciated. I am going to exercise Chair's prerogative with the first questions. This question is for both of you. You both touched on this in your testimony, but can we drill down a little more on why China views commodity pricing power as a component of geopolitical competition, and why that is important to China, more broadly? Not a meaty question at all. Dr. Petry, we can start with you.

DR. PETRY: Yes. Thank you for that question. I think the key experience that one needs to keep in mind is where China was 20 years. There was one event which really shaped how Chinese regulators thought about, and authorities thought about pricing power, which was the so-called "Battle of the Beans" in 2004, where essentially China and Brazil wanted to conduct soybean trading, bypassing the Western agricultural multinationals like Cargill and ADM. And what happened in that process was they tried to hedge the risk on the Chicago Board of Trade in the trading of soybean contracts. But essentially they completely overpaid, and future market volatility, at the time, essentially led to a lot of these soybean crashes in China to become bankrupt. They were essentially bought up by exactly these firms that they wanted to avoid in the first place.

And, I mean, this kicks our debate in China about kind of a new imperialism and vulnerability in the financial system that needed to be addressed. In 2008, 2009, with the kind of global financial crisis we saw a lot of volatility in global food prices. This kind of strengthened this debate in China that they need to have a say in commodity pricing more generally, especially as China, at the time, had become the largest importer of a lot of these commodities and really had to rely on prices that were made elsewhere. So this could have kickstarted the creation of futures markets in China that had been shut down in the 1990s, essentially.

MR. CHORZEMPA: So I will link it to a bigger issue, which is that countries around the world are concerned about the spillovers that they face because of the reliance on the U.S. dollar system and commodities that are priced in the USD. So it is not just a China issue. When the Fed changes its monetary policy that can make it, for example, more difficult for countries to get access to dollars, more expensive for them to get access to dollars, and constrains what they can do. And if all of their commodities are priced in U.S. dollars that can create a challenge for them.

China shares these concerns, but it also has the additional concern that it think it might be targeted with sanctions in the future, and therefore, they want to be able to continue to buy and sell key commodities, whether they can get access to dollars or not. And if they are shut off from access to dollars and can't access the main way these are traded, that is a big problem. We have seen this with Russia, for example, when it is not able to get access to dollars. Even when trading with China it has had to go to this kind of barter system to trade, that has made it much more cumbersome for them to handle even basic payments, and China doesn't want to be in that position in the future.

COMMISSIONER SHMAVONIAN: Thank you. What level of confidence do we have in the data that is coming out of China with respect to some of these benchmarks and systems that we are basing research and analysis on?

DR. PETRY: So, I mean, the data is really very patchy. The trading volumes of the exchanges are things that are fairly transparent, but what we don't have is whether these prices are actually adopted in physical commodity transactions between, let's say, a buyer and seller of copper, for instance. So actually we don't know which reference price they use for these contracts, so it is quite difficult to assess the actual pricing power.

MR. CHORZEMPA: Yeah, I deal with this question all the time myself. It is generally, I think, quite reliable, these data. I mean, China does not have an incentive to tell the world that its CIPS system is stagnating and not growing at all, so I look at the incentive and the data and is it diverging. And then the mBridge data, the only datapoint we have is one article by the vice-governor of the PBOC, who is trying to say that this is a great thing, that these numbers are so large, but again, they seem actually quite small.

So I feel pretty confident in these sets of indicators. In general, financial market indicators are a better marker of activity than something that just is calculated by Chinese statistical authorities, which might be more likely to be manipulated. Of course, the markets can be manipulated too, though.

COMMISSIONER SHMAVONIAN: So just to drill down on that point, and then we will turn it over to my Co-Chair, if the CIPS system could be indicative of not just transactions within China but also sanctions evasion, it would seem that there actually could be an incentive to hold those numbers steady so that we don't have insights into how alternative financial flows are going to China. Is that an appropriate read?

MR. CHORZEMPA: It is possible. And interestingly, just last month, the numbers in CIPS, after a year and a half of not moving, just rocketed up. So that might be a sign that these tollbooth payments to Iran for use of the Strait of Hormuz or something like that, can be over renminbi. So interestingly, we actually do see that spike, which would gather attention right there.

COMMISSIONER SHMAVONIAN: Thank you.

COMMISSIONER BUDOWICH: Thank you both. This has been great. We have talked about, a little bit, the lack or unclear data that is coming out of China. One of the things that I found interesting, that Mr. Petry, you have done almost 300 interviews in markets there. Can you first help me understand the context of those interviews and kind of the methodology behind it?

DR. PETRY: Sure, yes. I mean, this was for a larger book project on *Capital Markets with Chinese Characteristics,* is the title, and really tries to understand how financial markets in China organize differently than, let's say, in the U.S., understanding the role of the state, basically, in organizing these markets. The interviews were with exchanges, investors, brokers, hedge funds, and all the different market actors in China, commodity trading firms, trying to get good coverage of all the exchanges and most important active groups.

COMMISSIONER BUDOWICH: The point of that question is I wonder, it looks like you have done a couple dozen more interviews just recently. Was there anything that was being said in the last couple of weeks, versus last year when you did it, and can you talk through that.

DR. PETRY: Yes. I think the key point was that a few things are happening in China at the moment. I was just made aware of that on Monday, actually. The Shanghai government now has an action plan to link physical infrastructure for commodity trading with the futures markets, so expanding warehousing facilities and settlement for RNB and so on.

So these are some of the things that are happening. There is a lot of excitement about the new contracts that are being opened up. Them seem to have a larger role in pricing, increasingly, especially over the last years. Things have shifted here. So there is definitely a lot happening, and people are, yes, so there seems to be more movement in that area.

COMMISSIONER BUDOWICH: Thank you. Mr. Chorzempa, you talk a lot about, or you have made some arguments about sanctions and the fixed costs associated with them. What is the right balance? Because the United States has enjoyed its influence and use of these sanctions, how can we continue to utilize them in a responsible way?

MR. CHORZEMPA: Excellent question. Overall, I think we have to recognize that any time you use a piece of chokepoint leverage that creates a kind of antibody-like counter response. So, in general, the way that we use sanctions, on Russia, for example, in the aftermath of its invasion of Ukraine, was, I think, quite a positive example of doing that, in particular because that was global, so every single other reserve currency issuer, including the Swiss, actually imposed sanctions, as well, and that means somebody who wants to avoid sanctions can't just leave the U.S. dollar and go somewhere else. That is a crucial part. When we use sanctions unilaterally, I think it is less effective.

Also, when we use sanctions in kind of a half way, they are not very effective. So an example of that would be when there was this push to de-SWIFT Russian banks but not actually put them on the sanctions list, all that did was kind of politicize the infrastructure layer and make it a little more annoying for them to handle payments, but they could still legally handle those payments with China or anyone else. It should be, instead, either put them on a sanctions list or don't put them on the sanctions list, but don't really focus on the middle element.

And then I would say we should look at the record of using sanctions for human rights issues, for example. I think a lot of time there is a reflex to use sanctions when we are frustrated about something and maybe put people on the list in China, and I don't think it necessarily actually changes behavior. So I think we should look at really where can we actually make a strong impact with them so they don't look weak, because if we put sanctions on them that don't work, that weakens the potential deterrent effect.

COMMISSIONER BUDOWICH: Thank you. And you touched on this a little bit at the end of your testimony, so if there is anything you want to add, that is great. But I will pose it to you, as we talk about benchmarks, what are some benchmarks that we should look at? Because the picture you have painted is far from being an alarmist on this topic. So what would give alarm as we see movement? Is it regionally? Is it on certain specific commodities? What would give you alarm? Again, I know you have touched on this a little bit. And I would pose the same question to you, Mr. Petry.

MR. CHORZEMPA: I would look at the share of China's trade that is in renminbi as one. The other would be the CIPS volumes. You know, if this spike that happened last month continues, and continues to rise, that would be a sign that they are starting to get serious volume. And then also watch the derivatives markets in terms of currency risk and interest rate risk, because if those start to get very liquid, wide availability, it will be much easier to get into the renminbi.

And finally would be global investor interest in investing in China, because that actually declined a bit after U.S.-China tensions last year writ large, but then there was a kind of resurgence of interest in China. If a lot of people want to invest in China, that increases that demand.

DR. PETRY: Yes. I wanted to second that point, as well. The participation of global trading firms, investment banks, et cetera, in Chinese commodity futures marks is essential for gaining more pricing power. So that is something that needs to be focused on in how far these markets are really internationalizing, and are they then used for benchmarks.

You mentioned the example of the [unclear] producers, having to adopt RNB benchmarks. I think these are some of the key actors that we want to look at.

COMMISSIONER BUDOWICH: Thank you both.

COMMISSIONER SHMAVONIAN: Commissioner Brands.

COMMISSIONER BRANDS: Thank you. Maybe I could just pick up on your tollbooth comment. I am curious to hear from either or both of you. We have had some pretty significant global economic volatility in the last two years, so whether it is trade frictions in 2025 and after or the frictions associated with the conflict in the Middle East. How, if at all, have those frictions affected (a) Chinese thinking about the importance or the role of pricing power, and (b) the prospects of getting there?

MR. CHORZEMPA: Sure. One of the most important elements of volatility that have affected this is the decline in the U.S. dollar after April of last year. Many international investors who put money in the U.S. but report their earnings elsewhere were burned quite substantially by this, and it actually became significantly more expensive to hedge U.S. dollar exposure, if you are, say, a European or Southeast Asian investor. And that, of course, reduces interest in the U.S. It makes it more expensive to invest in the U.S. Then, of course, that money can go elsewhere, potentially including China.

And then also concerns about the U.S. fiscal situation with the expanding deficit and also some challenges in the Treasury market. The hope was that stablecoins would fix that and create all this new demand for Treasuries. We are not necessarily seeing that.

So the more stable and attractive our markets are, the less room there is for China to step in and get this international interest. But over the last year I think there has been more interest, and also just generally China's technological innovation has led there to be more international interest in going into Chinese AI companies, for example, or chip companies, or robotics companies. A lot of people have made a lot of money investing in those areas in the last year. That is something to watch.

DR. PETRY: I think what also matters here is that China had, for a long time, had this idea of gaining pricing power in commodities and has been building the financial infrastructures to enable that eventually, so putting in all the railways that it needs, like a CIPS system, et cetera.

And what we saw in the last couple of years was especially that other countries started rethinking. We had all these debates about de-dollarization around the world. So I think this is something that really changed, as well. Other countries are also thinking about, okay, should we do something in RMB. There is this one example where, just recently, I think it was in October last year, copper miners in Zambia can now pay their taxes in RMB. These are Chinese copper miners. It is a small country, but still, it is these kinds of things that we see more and more often happening, that other countries think differently about the dollar and China.

COMMISSIONER BRANDS: And Dr. Petry, you talked a little bit about, in your testimony, in your written statement, the need to engage third parties to shore up the foundations of the existing U.S.-led system. Could you just talk a little bit more about what that looks like and what steps you think would be particularly important?

DR. PETRY: Yes. I think one issue might be to actually incentivize these actors to trade on U.S. commodity markets. I mean, it is quite difficult for some countries to do that still. I think even if you were to allow the Chinese brokers to trade on these markets, I think there is one FCM at the moment, in

Chicago. I mean, there are more than 100 Chinese commodity brokers, right. So this would at least -- they would play in your backyard, basically, instead of in China. So I think generally allowing other countries, easing access to U.S. markets.

COMMISSIONER BRANDS: Thank you very much.

COMMISSIONER SHMAVONIAN: Commissioner Hodges.

COMMISSIONER HODGES: Hi. Thank you. Building off of Commissioner Shmavonian's question earlier, I want to talk a little bit more about goals and ambitions. Since sort of 2008, the time frame you referenced, can you give us a clear assessment of how much they have gained in capabilities today? Have they reached those goals and ambitions? Are they still making progress toward that, in sort of clear terms? For both of you.

DR. PETRY: So I think what we see is that the markets in China have developed quite substantially in that period. In the early 2000s, commodity markets really didn't exist, to a large degree, in China, and since then they have listed more than 100 contracts, which are now open to international investors, either through the QFI channel, which is a bit more cumbersome but increasingly also by internationalizing them, making it a lot more attractive to invest in them for international investors.

So I do think we see quite a lot of the kind of supply from the Chinese side being provided. The question is now whether others might accept these prices. So it is really a question of demand, knowing how third parties react to what China is increasing offering, but markets are definitely way more open than they were a few years ago.

MR. CHORZEMPA: One way to think about the progress they have made is kind of as an insurance policy. So up until, if we look back at 2008, many currencies literally could not be traded directly between the renminbi, and then they would have to go through the U.S. dollar. Now there is a lot more ability for China to trade directly. There are banks throughout Southeast Asia and Central Asia and elsewhere which have been authorized to trade renminbi directly between those currencies. You have the CIPS system, which did not exist. You have mBridge, which did not exist. The swap lines has expanded.

So there is a large variety of this kind of basic infrastructure, but the fundamental problem is back to this chicken-and-egg problem. If they are not used very much they are very expensive, they are clunky. And so if no one uses them, then no one wants to use them. If no one wants to use them, no one uses them.

But the point is that if there were a situation, for example, some conflict over Taiwan, in which major financial institutions are put on the sanctions list, these are kind of existing pipes that could be expanded and activated in major ways if the main way of transacting through the U.S. dollar is no longer available to them.

COMMISSIONER HODGES: Thank you. And, Mr. Petry, you previously talked about how China uses commodity futures, it changes those instruments of structural financial power. What sort of policy architecture should we be considering as we are looking at addressing and remedying some of the Chinese tools used to suppress competition?

DR. PETRY: Yes. I think the main mechanism would be to really strengthen the commodity markets in the U.S. and ensure others use these benchmarks, as well. But China will continue to open up, I think, so it is really about third parties, whether they choose to use these Chinese benchmarks or U.S. benchmarks. So engaging with countries from the Global South that are major commodity providers that might have dealings with China to trade in U.S. markets, use U.S. benchmarks instead of using the Chinese ones.

COMMISSIONER HODGES: And just to drill down on that a little bit further, because since you raised that third party, this isn't just working country-to-country. This is also working with international companies and such. Correct?

DR. PETRY: Yes, indeed.

COMMISSIONER HODGES: Thank you.

COMMISSIONER SHMAVONIAN: Commissioner Miller.

COMMISSIONER MILLER: Thank you. Dr. Petry, I would like to pull on a thread that you were discussing in your testimony, which is the implications for housing commodities exchanges and pricing commodities in an economy with a closed capital account. In my day job I spent a lot of time tracking the flow of capital around the economy, and we have a term for that called the "money ball." The money ball bounce is based on what the average citizen assumes is going to be the government preference of the day, of the month, of the year, and the money ball bounces from equities to bonds to property, and also to commodities and commodities futures.

So you have a very interesting dynamic in this closed capital account where there is high-level retail speculation, and of course, if you look at the data it does show that there is a fairly low ratio of open interest to volume, which would suggest that there is a very high level of retail speculation, at least compared to the United States, versus commercial hedgers.

What are the actual implications of this? Is this something that we should be worried about? Is this something that Beijing is worried about? How does the closed capital account feature of this change the dynamic of what we are talking about?

DR. PETRY: Yes, that's a great question.

Beijing is definitely worried about the return investment in its markets and has been for quite some time. And there have been quite a few efforts to try to make these markets more professional and more sophisticated. There have been a lot of efforts to educate investors.

What we saw over the last decade was the share of retail investors actually decreased quite significantly. They are still very active, but their share has increased over time, both in the stock market and in a lot of different commodity futures contracts. And part of the opening process of these markets is to get international investors into the market, kind of as a counterbalance, as well, against retail investment in China.

So that is definitely something that we have seen. What we also saw was a lot of trading or kind of program spot exchanges, Chinese exchanges trying to get commercial hedges, to use these markets more regularly. That seems to have picked up, as well.

So from Beijing's side, they are actively working towards making these markets more mature. They are still not where they would like to be, but I think they are kind of on that path.

MR. CHORZEMPA: I agree with Johannes. One of the challenges that China has had is trying to move away from these retail-driven, especially in the equity market where people just, as you say, pile in when the state council starts talking really positively about stocks. And the fundamental challenge here, as I am sure you know, is that China wants to have all the positives of these markets with none of the volatility and the negative side, and that means that you don't actually get many of the positive elements of having true market pricing because on the way up, in 2015 for example, they love that the equity markets are rocketing up. And then when they start to go down and you find that margins are getting unwound and it potentially threatens financial stability, then they call in the national team and put a floor on the prices, which means that you don't properly price anything anymore. You don't properly price the downside risk.

And I see this across markets for interest rates, for credit. They want the market, but they don't really want the full package, and that is not really how it works. So then you muddle through and get something that doesn't really function as efficiently as it should.

COMMISSIONER MILLER: Thank you. So let me flip the first question over and talk about it from the other direction. The renminbi is soft-pegged to the U.S. dollar, so there is a lot of concern on this side of the Pacific, certainly, about commodities pricing being done more in yuan than in dollars. But what are the actual implications of that if the currency is soft-pegged to the dollar anyway?

DR. PETRY: I think the most important indication is, as Martin already mentioned, that it does give Beijing the ability to evade sanctions potentially. And for Chinese consumers, or commodity trading companies, et cetera, or buyers of commodities, I mean, there wouldn't be an FX transaction risk. I think it is between 1 and 3 percent cost savings that it could have by using renminbi contracts instead of dollar contracts because they wouldn't have to do any hedging, and so on. So that is probably the two most important aspects, I would say.

MR. CHORZEMPA: Yeah. The other element is that even though it is soft-pegged, as you say, the renminbi does move against the dollar in potentially significant ways. And in the last, if I recall correctly, the last time the dollar depreciated they kind of let the renminbi appreciate. So that then leans against some of the other pressures. They do get some autonomy from U.S. financial conditions because of the fact that the renminbi is sort of guided up and down. It is not really a free market, definitely, but it is not fully coupled to the U.S. dollar.

COMMISSIONER MILLER: Thank you both.

COMMISSIONER SHMAVONIAN: Commissioner Price.

COMMISSIONER PRICE: Thank you, and thank you both for being here today. I want to focus particularly on some of your recommendations. My colleagues have asked similar questions, but that won't stop me from re-asking. First of all, just as an overview, is there any reason to believe that the

U.S. and our allies are not paying enough attention to this issue?

MR. CHORZEMPA: It's possible. I think the main thing is, I think there is generally a sense that insufficient urgency to improving our own systems may be here. The U.S. is often late to adopt new international standards, for example, in the payment side, and if we look at what the Europeans and the British are doing, for example, they are building out new ways of doing payments, potentially, with wholesale central bank digital currencies, and we are kind of doing a completely different approach with stablecoins that might not necessarily interact as well as we might hope.

And meanwhile, one of the things I mentioned in my recommendations is it is not generally recognized, but the correspondent banking system has been shrinking quite substantially. And what this means is that somebody who is in an emerging market economy or a developing market economy, to get from their bank to a bank that has direct access to the U.S. dollar infrastructure, they have to go through more hoops, more steps. And each of those steps adds a delay to the payment. It adds cost to the payment. It adds risks that the payments are going to get held up and have some data problem, that somebody needs more information to make that clear. And every delayed payment in the dollar is a potential that someone is interested in moving towards an alternative system.

We have kind of slept on it because our payment system at home works really well for most consumers, and everything is really liquid. But we really need to keep innovating and not giving China the space to get ahead of us.

DR. PETRY: I think the point on correspondent banking is very important, because what we also saw was that Chinese banks are internationalizing themselves right now. A lot of countries in Africa, they will have a presence, but U.S. correspondent banks might not have one, and then they are more incentivized to do bilateral trade with China in RMB. Especially because these are the commodity producers for a lot of the contracts that are then being traded either in China or in Chicago, for instance. So I think this is something where more attention needs to be paid to these countries, because I think this probably has been lacking recently.

COMMISSIONER PRICE: Thank you. And you specifically talked about engaging third-party countries. Commissioner Brand asked you the first question on that. Can you specifically focus not just on the Global South but, in general, Latin America, and what might need to happen there?

DR. PETRY: Yes. One option could be to include central banks in Latin America into the Fed swap line system, to offer them dollar liquidity in times of crisis. That could be one option, or maybe kind of a FIMA repo facility access for these commodity-producing countries, expanding that. Maybe leveraging EXIM or DFC to more actively finance commodity production in these countries, or kind of infrastructure projects linked to commodity production, maybe then conditioning this support on the use of certain benchmarks in the U.S.

COMMISSIONER PRICE: Thank you. Mr. Chorzempa, you talked a bit about overreach and sanctions, and

Commissioner Budowich remarked on that also. Can you talk a little bit about what overreach looks like?

MR. CHORZEMPA: I think the overreach is when we engage in significant unilateral sanctions that the rest of the global community, including our allies, are not interested in doing. That creates a perception that we are weaponizing the dollar. Maybe one example could be on the International Criminal Court, depending on your point of view on that, because that is an organization that is controversial, but is that a good use of U.S. sanctions authority?

I think this administration has actually been pretty careful about sanctions, in general, because of concerns about undermining the role of the U.S. dollar. But we have to be careful that we don't go too far and just become averse to using them at all, because then, again, they lose their deterrent power.

COMMISSIONER PRICE: Thank you. I have one more but I will do it if we have time at the end.

COMMISSIONER SHMAVONIAN: Thank you. Commissioner Schriver.

CHAIR SCHRIVER: Thank you, Madam Chair, and thank you to our witnesses. I really appreciate your statements and learning opportunity for me. This has really been interesting.

Dr. Petry, you mentioned that commodity markets might become more fragmented and pricing might become more contentious. Pulling the thread on that, using your best crystal ball, how do you see this playing out in 10, 15 years?

DR. PETRY: Interesting question. Thank you. I think what we will see is that, I mean, the two countries are currently proceeding on very different paths when it comes to energy policy. The U.S. is more doubling down on fossil fuels, whereas China is really doubling down on green energy, green transition technologies. For instance, I would not see WTI or Brent, which is very much influenced by WTI right now, I would see them remaining the main oil benchmarks globally, also because the U.S. is the largest producer and exporter of oil globally.

Whereas China has a much stronger role when it comes to, let's say, materials for batteries or production of photovoltaic and so on. So let's say in lithium, for instance, on nickel, or copper, we might see China having a much stronger role in pricing in a few years.

CHAIR SCHRIVER: Thank you. Mr. Chorzempa, same question for you, but with respect to RMB internationalization.

MR. CHORZEMPA: Good question. I suspect China's RNB internationalization will continue to rise. If we look at the share of China's trade in renminbi, currently 28 percent, that will probably continue to increase. I think over time they will increase the financial volumes in many areas of trading, including -- you know, it is kind of curious to me why they haven't developed these hedging markets and created liquidity. They have the biggest banks in the world. They can order them to do these things, but they haven't really taken those steps so far, largely because they have been more concerned about domestic stability than opening up in a bigger international role. I think it will also depend on the extent to which we use sanctions. If we start to ramp up the use of sanctions again then they will ramp these up.

One thing to think about in terms of whether they actually really take over from the U.S., I suspect that the CBDC system is not going to work as well as they hope, that mBridge is going to have trouble expanding its volumes in a major way, but also that the U.S. might not find that stablecoins are as good at internationalizing the dollar as we might hope, have some drawbacks. And what we might see instead is a kind of blending of those two systems, where there are CBDC infrastructures and stablecoin infrastructures, and they are able to interact amongst each other, and people use stablecoins but kind of in the background as just like a settlement thing.

And when you are actually sending an international payment you don't actually touch the stablecoin itself. The person you are sending money to doesn't touch the stablecoin. So they keep all the kind of consumer protections and stuff. So maybe it won't change as much as people think.

CHAIR SCHRIVER: I appreciate both of your answers. The great American philosopher, Yogi Berra, said, "Predictions are hard, especially about the future," so thank you for those forecasts. I will yield back the rest of my time.

COMMISSIONER SHMAVONIAN: Thank you. Commissioner Stivers.

COMMISSIONER STIVERS: Thank you. Thank you both for your testimonies today. I would like to turn to cryptocurrency and stablecoin in Hong Kong, in particular, and Mr. Chorzempa, you talked about this, both in your written and oral testimony. And I am a little bit confused, and I am hoping you can help me out on this.

It is very clear that Hong Kong has positioned itself as a crypto and stablecoin hub, a gateway. They have calling on more investors. They have been hosting all sorts of conferences. It has been a major priority for the Hong Kong government.

So the question, specifically, that I would have, is Beijing using Hong Kong as a gateway to the international cryptocurrency and stablecoin markets, or are Hong Kong officials getting ahead of Beijing, especially considering that crypto is banned in Mainland China. What is going on here?

MR. CHORZEMPA: I think the most dangerous thing for anyone in Hong Kong to do would be to try and get ahead of Beijing and get over their skis. So I don't think that is likely, especially because of what has happened in Hong Kong, which I think this Commission knows quite a bit about, and how policed that has been.

I see that Beijing sees Hong Kong as a useful place for experimentation with things that they would not want to experiment with yet on the mainland, and the stablecoin regime is maybe the best example of that, where, since 2021 or so, all cryptocurrency business is banned in China. At one point they were dominant in Bitcoin mining, these was a ton of transactions, and they have effectively shut that out.

Now, many Chinese people are still using stablecoins to get money out around capital controls, but my sense is that Beijing explicitly authorized, as a way to hedge their all-in focus on CBDCs, seeing that there was an expansion at that time in stablecoin volumes that was enormous, and seeing this pressure maybe from the U.S., I mean, what if the U.S. strategy worked and we continued to see rises in stablecoin volumes and it entrenches the U.S. dollar around the world, that is a really bad scenario for Beijing. Currently the U.S. dollar share of stablecoins is like 98 percent, which is much higher than its share in other markets.

So I think they authorized it but then they always want these to be under controlled conditions and not get too far. And my sense of what happened is that the fintech companies got too excited. For a long time they haven't really been able to do anything exciting. Since Jack Ma made his speech and the crackdown happened they have been really in a tight box, and they saw this Hong Kong regime as a way to really build out the international networks that they haven't been able to create up until this point.

But then their stock prices started rocketing up, and they started talking about all these new things they were going to build, and Beijing is like, wait a second, this is a limited pilot program. And they didn't want to get to a situation where this gets so big that trying to contain it again leads to a big stock market decline and dashing of expectations and all that.

So there was a miscalculation, I think, on the side not of the Hong Kong authorities but of the Chinese firms who wanted to get those licenses, as a way to lobby Beijing and say, hey, the U.S. is going to eat our lunch if we don't do this. And that was an active debate in Beijing, with very influential people pushing for stablecoins there, but they ended up losing in this case, in part because the other side got overly ambitious.

COMMISSIONER STIVERS: So kind of break that down. So would you describe Beijing's attitude or policy on cryptocurrency in Hong Kong as an experiment that they are allowing to move forward, or is it something that they are actively trying to resist?

MR. CHORZEMPA: An experiment that they want to move forward, but in a very careful, limited box. So now they are saying stablecoins are fine but it has to be it is a joint venture with standard chartered on one side and HSBC on the other, kind of stalwarts that they know and understand and who have banking regulators breathing down their necks all the time, making sure they don't make what China has called irresponsible statements about really expanding.

And we just don't hear about the regime as much anymore. We don't see that these big volumes are occurring. Nobody expects that they are going to be a major competitor with Circle or Tether. Instead it is probably going to be some kind of back-end infrastructure thing that doesn't end up looking that exciting.

COMMISSIONER STIVERS: Okay. Mr. Petry, you look like you have some thoughts there.

DR. PETRY: Yes. Thank you. I would agree. I mean, Hong Kong is basically Beijing's sandbox when it comes to this. And I think there was a rethinking during recent years that Hong Kong is still needed as a financial center, as an international financial center, one that Shanghai can't be at the moment. So it's kind of role was reinstated. I mean, there were a couple of positive statements in recent years around that, as well.

And we can see it in commodity markets, as well, that Hong Kong exchanged [unclear] on the metal exchange, which the Shanghai futures exchange could have never done, right. Hong Kong did it. And I think we see that actually extending China's influence indirectly. It not only a state-owned exchange, the Hong Kong Exchange, but still there is some influence, and we see LME actually becoming more Chinese in the process.

COMMISSIONER STIVERS: Thank you.

COMMISSIONER SHMAVONIAN: Commissioner Kuiken.

VICE CHAIR KUIKEN: Thank you very regulatory much. As I was listening to you guys I was reminded of a speech that then Secretary Jack Lew gave at one of the think tanks around town about if we continued to use sanctions as the primary sort of weapon in conflicts that we are going to eventually sort of find the dollar becoming marginalized in international markets, and I think you have largely confirmed that, unless I misheard you. Is that correct? You have got to say it into the speaker, the microphone, so we have it for the record.

DR. PETRY: Yes.

VICE CHAIR KUIKEN: Thank you. Nodding works, but not if anyone isn't watching.

So traders need to post margin to collateralize their trades. What are the implications of Beijing allowing foreign traders to post U.S. dollar collateral for the internationalization of Chinese benchmarks in exchanges? Go ahead, both of you. Sorry.

DR. PETRY: I think, I mean, from Beijing's side that is maybe quite a smart move because it enables international investors to access these markets more easily because they always have U.S. dollar posted as as margins but the contract is still denominated in RMB. So if they would use it for kind of benchmarking, this would RMB denominated, but the trade is enabled through dollars. So from Beijing, I think it is a way to ease global investors into their markets.

MR. CHORZEMPA: I agree with Johannes, and one of the things we have seen, in China's financial markets, in general, foreign banks are vanishingly small as a portion of China's markets. And one of the reasons for that is that they have done the opposite of what you just described, where they say, "You have to have local capital. We are not going to count your international capital against the lending that you can do in China." And that has restrained the ability of international banks to compete.

But in this case they want the opposite. Instead of restraining the ability of the national banks to compete in their jurisdiction they are trying to pull them in. And recognizing what I was saying at the very beginning of my testimony about the fact that getting ahold of all this renminbi creates a lot of frictions right now, one way to get around that is exactly what you described.

VICE CHAIR KUIKEN: That is very helpful. I was just trying to think of something clever to say to follow on Commissioner Miller's comment about money balls, but I don't have anything on that front.

Is there a coherent, allied strategy that we can think about here on commodity market architecture, or are we letting this one sort of go by, by default? I am just thinking, the Australians use Chinese benchmarks in iron ore. We are seeing the Middle East start using Chinese benchmarks in oil. You sort of just talked about some of the things that other international banks are doing. Is there any way we sort of find a way with the Europeans, the Indians, the Japanese, the Koreans, to sort of think about an allied strategy here, or is that just wishful thinking?

DR. PETRY: I mean, this is definitely something that the U.S. could pursue, but I don't think it is that important, because we are not the countries that produce these commodities. I mean, Australia, yes, but Korea and Japan, not, for instance, or Europe either. So it is rather kind of finding new allies, reengaging countries that actually produce these commodities, in Africa, Latin America, Indonesia, for instance, really engaging more of these countries where we have the physical side of commodity production, which then kind of gets linked up with the financial side.

MR. CHORZEMPA: The link I would draw is in a little bit different category, which is thinking about the critical minerals issue, for example, and how many of these are not only traded in Beijing but their prices are entirely determined by Beijing's decision of how much supply and who gets what supply, and we are engaged in all these discussions with allies.

So the pricing element of those, whether we have offload agreements where we are effectively setting the price not in financial markets but politically amongst countries and market participants, that kind of thing is where I would focus the allied discussions, so that we can have something that provides enough price stability to get private capital into these markets and develop its alternative capacity, with the recognition that we are going to be paying way above the market price in Beijing, and someone has to pay for that to get the resilience that we hope, so that China can't keep using this as a chokepoint on us.

VICE CHAIR KUIKEN: Do you think that the countries, Mr. Petry, that you talked about, the African countries, the Latin American countries, is this something that you assess they would be open to or something they would just sort of dismiss out of hand, saying, "You know, we've seen this play before"?

DR. PETRY: I think there could be openness towards that, for sure. I mean, what see is there is hesitancy to adopt these Chinese benchmarks at this point, right, so there is definitely room to pull back these actors, basically, or kind of put them into the U.S. fold, if you will.

VICE CHAIR KUIKEN: Thank you.

COMMISSIONER SHMAVONIAN: Thank you. We are going to do a quick second round. I have a follow-up question, Commissioners Price and Stivers. Anybody else, let me know.

Dr. Petry, I have two questions for you. One, you mentioned how Shanghai is expanding its warehousing and for physical markets. What are the implications of that?

DR. PETRY: The implications for that is that it is much easier to actually receive commodity shipments that are kind of based on that price. So it is not just a purely financial transaction but actually we have a shipment, a delivery of commodities to a specific location, which without that it is very difficult to use this as a reference price. I mean, it is a financial price, but without actually having it delivered somewhere you can't really link it to physical trade, and expanding warehouses is exactly that link between physical trading and financial contract, that is needed for a reference price.

COMMISSIONER SHMAVONIAN: And then what does that mean down the road, or what could that mean down the road?

DR. PETRY: It could mean that these prices are used more often in actual physical delivery, which means that Chinese benchmarks become more important.

COMMISSIONER SHMAVONIAN: Thank you. And then you also mentioned that the LME is becoming more Chinese. Can you unpack that statement?

DR. PETRY: Yes. I think since the LME was bought by the Hong Kong Exchange in 2012, it used to have no Chinese member. Now it has six. You can use RMB to collect as a margin for all your trades on the LME. There are many contracts with the RMB denominated to kind of capture Asian -- to enable trading in RMB, if you will. And there are discussions also about using SHFE prices as a benchmark for LME trading, which hasn't materialized yet. And the LME established its first warehouses in Hong Kong, making delivery to China easier.

So all off these kind of elements, again, connect the physical trading with the financial side.

COMMISSIONER SHMAVONIAN: Thank you. Commissioner Price.

COMMISSIONER PRICE: Thank you. Mr. Chorzempa, this is to you, but Dr. Petry, feel free to chime in, as well. You have a line that says, or you talk about shocks that can change the status quo, and reference the conflict with Iran as an example. In that regard, what are you watching day-to-day most carefully now, with what is going on in the Middle East?

MR. CHORZEMPA: One side is U.S. sanctions policy, that we loosened to allow some of the pressures on global markets that are negatively affecting the economies of the U.S. and its allies. But then just flipped them back, so there is this inconsistency in policy, which creates challenges.

And then really focusing on the toll issue was potentially important for a period of time, because you could have imagined that out of this conflict Iran might not let go of its ability potentially interdict ships going through this crucially important corridor. And we were seeing reporting that at one point they were accepting payment only in renminbi or Bitcoin. And then we saw, after that, that there was reporting that maybe it was only in crypto.

So really watching China's actions here is important. If we rewind back to the Russia-Ukraine issue, what we saw is that Chinese firms really did not want to get themselves on the sanctions list. So once we started threatening secondary sanctions, Chinese banks pulled back massively, and then you'd see Russian banks complaining bitterly about all the documents that were required from the Chinese counterpart to facilitate a transaction to make sure that nothing in connections with sanctions violation, you know, no sanctioned individuals in Russia or export-controlled commodities or technology or anything like that. That shows the continued power of

U.S. sanctions, so watching is the renminbi really going to be used in a major way to help the Iranian regime? It is possible.

But if we had threatened secondary sanctions on them, maybe Iran doesn't want that because they are concerned that the Chinese, threatened by the U.S., would pull back, and then that leaves them with Bitcoin. And stablecoins were not included in that because the issuers often have U.S. law enforcement embedded in them to make sure they can freeze wallets that are used in sanctions-busting transactions.

So that is really a live situation that is worth watching. Of course, now we have blockaded the entire strait, so I am not sure how much the Iranians are making in Bitcoin or in yuan to get through their part of it.

COMMISSIONER PRICE: Thanks. Anything you would like to add? Thank you.

COMMISSIONER SHMAVONIAN: Commissioner Stivers.

COMMISSIONER STIVERS: Mr. Petry, you talked a lot in your testimony about how the Chinese government is trying to internationalize their futures exchanges to entice greater global participation, from U.S. investors, entities, individuals. Are there steps the U.S. government should be taking to try to disincentivize that participation in those markets for U.S., again, investors or individuals or companies?

DR. PETRY: I think it is a difficult question. In the short term, this might have a positive effect for the U.S., but I think in the long term it would further undermine the kind of foundations of the U.S. financial system. We talked a lot about one of the issues why China is struggling to actually receive more momentum here is because it has a state-controlled system where the state intervenes more into markets. If the U.S. does the same, the difference becomes smaller between the two systems. And we see that the more we have sanctions or weaponization of the dollar, be it perceived or actual. We see Beijing's RMB internationalization picking up and becoming more strong here.

So I do think that disincentivizing U.S. investors from participating in these markets would backfire in the end.

COMMISSIONER STIVERS: Okay, thanks. I just want to quickly go back to sanctions. Mr. Chorzempa, I do agree with your testimony that sanctions should be used carefully and to avoid overreach. But too often that is using it as an excuse to not go after some abhorrent individuals committing human rights abuses, entities that are violating U.S. national security, some very important things.

And sanctions, you know, are an alternative to conflict and war, and it is a powerful tool that the United States and others, obviously our allies and partners should try to use in conjunction but that is not often how it works. Other countries are not in the same position as the U.S. in terms of power to resist the Chinese government in many cases.

So I just want you to be very clear on your position here. I get that you would oppose -- it sounds to me, and correct me if I'm wrong -- that you would oppose the use of financial sanctions on allies and partners. You mentioned the International Criminal Court. But the use of targeted sanctions on entities and individuals in adversarial countries --

China, Iran, Russia -- those are important, and do you really believe that those sanctions really diminish the U.S. dollar system, especially when these countries are all trying to avoid that system and work against that already?

MR. CHORZEMPA: I tend to support use of sanctions in those cases, when we have a really good case. And one of the things that I think is very positive about our sanctions system is that it has a good judicial review system, compared to our export control system. Some of my positions in the past have been that sometimes we use these things without a good evidentiary basis, and then that also then undermines our case to allies to say you should join us in putting the same Chinese firm on the blacklist. If we have a really rock-solid case that there is negative impact to U.S. national security, we should do it.

Where the real risk of overreach comes is not in a specific, small, targeted sanction but in something that has massive spillovers. So if we think about Huawei as an example, I think there are probably few fans of Huawei in this room. But it is important to note that they are on every possible export control list, pretty much, but they are not on the SDN sanctions list. And part of the reason for that is that they are embedded into telecommunications networks all around the world, and our allies would then suddenly have to make a choice between continuing to pay for maintenance of their telecoms network or complying with U.S. sanctions.

That is the kind of position that would potentially be very negative for the use of the dollar and impose significant negative diplomatic costs. I would maybe kill the company, but maybe not, because there are places that would then have strong incentives to avoid U.S. sanctions.

And Chinese banks are another example. We are thinking about the kind of really bad scenarios that could happen regarding Taiwan. Putting massive, crushing sanctions on major Chinese financial institutions would have significant negative blowbacks for the global system. That doesn't mean we shouldn't do it, but it means we have to be very clear-eyed about the costs that would be imposed on ourselves from doing that, even in the absence of Chinese retaliatory actions.

COMMISSIONER STIVERS: Great. I appreciate that clarification.

COMMISSIONER SHMAVONIAN: Commissioner Kuiken.

VICE CHAIR KUIKEN: I haven't heard either of you guys offer any view on just crypto, in general. I don't really have a specific question here, but as I am listening to you guys, one of the things we just haven't talked about is sort of this decentralization movement, and whether that creates new dynamics, changes in the sort of assessments that you are making.

I mean, I think crypto is here to stay, from what I can tell, and it does have a real sanction evasions quality to it. It can also just change the dynamics of some of these things that are hard now, just because you can do it over the blockchain.

Just give me your sort of 15 or 30 seconds each, however much time you want to take, on how we should, as an overlay to the conversation we have had today, apply crypto to the conversation.

DR. PETRY: I think when it comes to crypto there is an interesting comparison between a more state-controlled system and a more market-based system. I mean, China banned crypto for a reason, and actually is one of the frontrunners when it comes to central bank digital currencies, for exactly that reason. Because if you have a system that demands state control of the financial sector, cryptocurrency is what you don't want to have.

So I think that is going to be well-defining features of financial systems is that we will have this kind of split between stablecoins, crypto, and CBDC system, because one lends itself more to state control than the other.

MR. CHORZEMPA: First is China is not in the crypto race at all. They have completely banned it. They had so much influence over the system when they had control of much of the coin mining, but they have given up on that because they are afraid of any contagion to their system. Another is, thinking about this, is there is a kind of double-edged sword with it, in that many countries, many individuals and countries, have gained significant financial freedom, especially from financial repression, because of their access to crypto. But that also allows officials to take bribes in crypto that don't show up in any of their bank accounts. It is much easier for criminals and ransomware operators to just get around any restrictions because they get the money and then they can move it into a mixer. It is a massive challenge for U.S. sanctions.

And the most important thing I would watch going forward is if crypto adoption continues to expand, and especially stablecoin adoption continues to expand, we will have less need for on- and off-ramps. Why that matters is, if you need to go to a U.S. financial institution and buy USDC or Tether, and then if someone who is the recipient to actually use that needs to sell that to someone and then get their domestic currency, that is a space that we can regulate, and that is a space that has to do a compliance, KYC, check, to make sure we are not doing money laundering or terrorism finance. If we have a massive crypto economy that just circulates amongst itself, and no one needs to go on and off into fiat money, we lose the main jurisdictional hook, and we won't be able to see those transactions, and we won't be able to control those transactions.

And one last thing on this that I think really needs to be understood is currently U.S. dollar is used for a lot of criminal stuff around the world. And to some extent that is cash. And the flip side of that negative bit is that that is free money for the U.S. Treasury, where the criminals all around the world who are moving briefcases full of hundred-dollar bills, that is free money to the U.S.

Now, if those criminals are instead doing stablecoins, then it is not free to the U.S. anymore. It is demand for Treasuries, underlying demand, but that is, instead of giving free money to the U.S. government, a free loan, the stablecoin issuer is making money, lending that money to the U.S. Treasury.

So a move from U.S. dollar physical cash to U.S. dollar stablecoins is a big loss, actually, to the U.S. Treasury, and I think few people know that.

VICE CHAIR KUIKEN: That is fascinating. So they have banned it. We are adopting it. The rest of the world, I would assume, is somewhere in between. If I am the Chinese, am I entering into this market to destabilize it and to sort of keep things messy, for lack of a better description, or am I just going to sort of let things happen there?

MR. CHORZEMPA: In the crypto market, you mean?

VICE CHAIR KUIKEN: Yes.

MR. CHORZEMPA: My sense is they just don't want to touch it. They think that it has too many risks to them. First they started by banning financial institutions from touching it, and they were fine with individuals. And then they kind of discouraged individuals, made exchanges hard for people to get their hands on it. And then it was only the miners who had access to digital currency. And then they shut down the mining because they didn't want anyone in China to have an inflow of crypto that they could then use in peer-to-peer transactions, trading with individuals.

You know, if I am a Chinese person, sell my apartment, I want to get my money out. Capital controls won't let me, but there is a Bitcoin miner over here who has lots of crypto and is happy to sell it to me in a one-on-one transactions with no exchange. That is a way to get money out, and they shut that off. So they want that ring fence really strong. But it still hasn't worked because people in China get access to it through VPNs. But my sense is they are not really participating in any direct way.

VICE CHAIR KUIKEN: Yeah, my question was less about internal to China, but how do the Chinese look at the market outside of China, the crypto market outside of China?

MR. CHORZEMPA: I think they expect it is going to collapse on its own accord, and they don't need to do anything about it. But the arguments against stablecoins in Beijing are, for example, the U.S. is going to really regret this while GENIUS Act thing. They are going to regret the stablecoins. They are going to collapse. And then they are going to have to figure out whether to bail them out and all that, and it is going to be a big negative then. And then we are going to be stepping in with our state-backed, super-stable thing, and the world will go around us. So I don't think they feel they need to intervene in it at all.

VICE CHAIR KUIKEN: Thank you.

COMMISSIONER SHMAVONIAN: All right. Thank you both for your testimony. Much appreciated.

We will take a short break and reconvene at 11:05 for the second panel.

[Recess.]

PANEL II

INTRODUCTION BY COMMISSIONER BUDOWICH

COMMISSIONER BUDOWICH: Our next panel will use case studies in base metals and critical minerals, agriculture to assess China's pricing power in key commodity markets, and its success in developing domestic alternatives to Western benchmark prices.

We will start with Ms. Susan Stroud, Founder of No Bull Agriculture. Ms. Stroud will discuss how signals from U.S. and Chinese futures markets impact physical production, trade, and stockpiling of agricultural products, and what China's strategic investment in Brazil's supply chains mean for U.S.

agricultural market share.

Next we will hear from Dr. Ian Lange, Professor of Economics and Business at the Colorado School of Mines. Dr. Lange will examine how China's dominance in processing gives it significant pricing power over critical minerals and how futures market participants are responding to growing trade in these minerals.

Finally, we will hear from Ms. Michelle Brouhard, Head of Policy and Geopolitical Risk at Kpler. Ms. Brouhard will survey how regional differences in crude oil trade have contributed to the uptick in China's oil futures contracts.

Thank you all very much for being here. The Commission is looking forward to your testimony. And with that we will get started. Ms. Stroud.

STATEMENT OF SUSAN STROUD, FOUNDER,

NO BULL AGRICULTURE

MS. STROUD: Thank you, Chairman and Commissioners, for the opportunity to testify today. My name is Susan Stroud. I am Founder and CEO of No Bull Agriculture, an independent market intelligence firm focused on grains, oilseeds, and biofuels. Prior to launching No Bull, I spent 15 years in commercial grain markets in the St. Louis region, working across logistics, freight, basis, and export flows.

I want to start with one simple point. The United States is not losing ground in global agriculture because of weak demand. We are losing ground because that demand is increasingly being met by competing suppliers, particularly Brazil. China sits at the center of that shift. China is the world's largest commodity buyer and the single most important export market for U.S. agriculture. For soybeans alone, roughly half of U.S. exports and about a quarter of total demand depend on China. That is not a customer that we can easily replace.

At the same time, China is actively working to reshape how global commodity markets function, not just through trade but through pricing infrastructure and financial systems. Today I will focus on three points: first, how China's role in commodity market is evolving; second, how global trade flows are structurally shifting away from the United States; and third, what it means for U.S. policy.

China's development of domestic commodity futures markets is often framed as a direct challenge to Chicago Board of Trade. In reality, it is more nuanced than that. China's markets, particularly on the Dalian Commodity Exchange, are large, liquid, and increasingly influential. They reflect Chinese domestic conditions and often act as a leading indicator of demand.

But they have not replaced Chicago as the global benchmark. Global agricultural trade is still priced in U.S. dollars, and exporters, including the United States, Brazil, and Argentina, continue to rely on Chicago for price discovery and hedging. What we have today is a two-market system. China is hedging domestically while the rest of the world hedges in

Chicago. And the two are connected, but they are not interchangeable.

This is where this becomes more complicated, is transparency. China's market data, particularly around reserves and stocks, is opaque by design. That creates information gaps that make it harder for U.S. producers and commercial participants to interpret demand. At times, China can step into the market aggressively, and at other times it can disappear entirely, drawing from internal reserves without signaling that shift to the rest of the world. That lack of visibility creates volatility and weakens the reliability of market signals. But the more important shift is not happening in futures markets. It is happening in physical trade flows.

Over the past two decades, Brazil has emerged as the dominant supplier to China. Since 2000, Brazil has accounted for roughly half of global soybean acreage growth. Today it exports more than twice as many soybeans as the United States. Since the first trade war in 2018, Brazil has added more than 30 million acres of soybean production and captured the majority of global supply growth.

The result is a structural shift. The United States is no longer the primary supplier to China. It is increasingly a residual supplier, filling demand only after South American supplies are exhausted. That shift is reinforced by policy, infrastructure, and investment. China has invested heavily in South American logistics, ports, and supply chains, giving it more control over the timing, flow, and sourcing of commodities.

At the same time, U.S. competitiveness has been constrained by infrastructure challenges, particularly on the inland waterway system, which directly impacts export costs and reliability here in the U.S. And layered on top of that is policy risk. Every period of trade disruption accelerates the shift. China adapts. It finds alternative suppliers and knows changes are not easily reversed.

So what does this mean for U.S. policy? In my written testimony I outline several recommendations, but I want to highlight four.

First, prioritize trade stability. The most damaging outcome for U.S. agriculture is not China's futures markets. It is sustained trade disruption that permanently redirects demand to competitors like Brazil.

Second, demand greater transparency. China's lack of market transparency creates real disadvantages for U.S. producers. Market access should be tied to clearer reporting around reserve stocks and trade activity.

Third, invest in U.S. export infrastructure. The Mississippi River system remains the most efficient exporter in the world, when it works. Modernizing locks, dams, and waterway infrastructure is not optional. It is critical to maintaining global competitiveness.

And fourth, strengthen U.S. market intelligence. We are operating with less visibility into Chinese markets than they have into global supply chains. That gap needs to be closed.

And I will conclude with this. China is both our most important customer and strategic actor working to reduce its depends on U.S. supply. Those two realities coexist. The question is not whether China will change the system. It already is. The question is whether U.S. policy will respond in a way that preserves our roll in it. This is about whether the U.S. remains competitive in the world's largest agricultural market.

Thank you, and I look forward to your questions.

[The prepared statement of Ms. Stroud follows:]

COMMISSIONER BUDOWICH: Thank you so much. Ms. Brouhard.

STATEMENT OF MICHELLE BROUHARD, HEAD OF POLICY AND GEOPOLITICAL RISK, KPLER

MS. BROUHARD: Hi. Thank you for the opportunity to testify today. My name is Michelle Brouhard. I serve as the Head of Policy and Geopolitical Risk at Kpler, where we provide commodity intelligence through satellite monitoring of storage facilities, vessel tracking across global shipping lanes, and data analysis oof physical commodity flows.

Before I joined Kpler I spent 25 years trading commodities on Wall Street. That combination of career of a trading desk and daily visibility into the physical market is the lens through which I wrote my brief before the committee today, and is the lens for which I offer my testimony.

This panel is inquiring about China's efforts to promote benchmark alternatives. What began as a domestic hedging mechanism and a way for Chinese state-owned enterprises and refiners to manage commodity price exposure in their own currency has evolved into something with broader implications. Beijing built a market structure that now gives countries a functional pathway to conduct commodity trade outside the dollar system, and some are using that pathway to circumvent sanctions.

But I want to be clear about something that often gets lost in the conversation. China's commodity exchange has serious structural problems that stand between where it is today and any credible claim to benchmark status. First, let me start with what a benchmark actually does, because I think it gets lost in the geopolitical discussions.

Benchmarks organize markets. They determine how prices are calculated, how risks are hedged, and which currencies and which financial infrastructures sit at the center of global transactions. When a refiner in South Korea buys a cargo of Iraqi Basra Light, the price they pay is referenced to a benchmark. When a trading house in Singapore hedges that cargo, they hedge it on an exchange.

For the last 50 years, those benchmarks have been Western exchanges, dominated in dollars, and clearing through U.S. financial infrastructure. In 2016, China's state-run *Economic Daily* wrote that developing domestic commodity futures market was essential in giving China more influence over how commodity prices are discovered and referenced globally. Now commodity prices are ultimately set in supply and demand, and which should be controlled by a market. But who runs the exchange and in whose currency contracts are settled and through whose financial infrastructure traders are cleared is determined by whoever builds and operates the market infrastructure.

The Shanghai International Energy Exchange, or the INE, was established in March of 2018. When it launched, many Western traders, including myself, expected it to be dominated by retail speculation prone to volatility and unlikely to gain serious international traction.

That proved largely incorrect. Less than 10 years later, the INE is now the world's third-largest crude oil futures market. Overseas traders from 31 countries account for more than 30 percent of daily trading volume and open interest. BP, Shell, and Mercuria registered on the exchange from day one. Shell signed a forward agreement indexing the INE reference point on its very first day of trading.

The design of the crude oil contract reflects careful thinking about where to compete. The INE's underlining crude is medium-sour. It was deliberately chosen to serve Asian refinery configurations to avoid direct competition with the light-sweet grades underpinning Brent and WTI. Physical delivery settles into bonded warehouses along China's coastline.

China is actively filling a gap that is missing in the marketplace. Medium-sour crude constitutes approximately 44 percent of global supply and had no dedicated future benchmark before the INE existed. Asia now consumes more oil than North America and Europe combined, yet Asian buyers historically price their purchases against the North Sea basket or a West Texas pipeline contract, and paid what literature calls an "Asian Premium." As a result, the INE addresses the structural market need that was unmet.

I want to be clear about that because the committee should understand that Beijing did not manufacture this opportunity. It identified a real gap and it moved to fill it.

The INE is not replacing Brant or WTI. Together, those two cleared over 400 million lots in 2023. The INE cleared 50 million. When a trader in New York checks oil prices at 3 a.m., they check NYMEX or ICE. They don't check Shanghai. Shanghai watches London and New York, not the other way around.

There are five structural reasons for this, and I have documented them all in my brief. The most significant is the daily price cap of +/- 4 percent, borrowed directly from China's equity market circuit breaker framework. In April 2021, WTI futures settled at negative $37.63. INE prices stayed within their band, decoupling from physical market reality at precisely the moment when hedging protection was most needed. A hedging instrument that fails in a crisis will not get used as a primary risk management tool.

Capital controls are the second obstacle. Foreign participants cannot freely repatriate renminbi. A firm hedging Basra Light on the INE is simultaneously managing commodity risk, RMD/USD exchange rate risk, and current repatriation risk. On NYMEX or ICE they manage one. The QFI channels introduced in 2022 reduce friction on market entry but left repatriation constraint entirely intact.

The three remaining obstacles -- opacity, regulatory risk, and a still retail-heavy participant base -- compound the mixture. China does not publish strategic petroleum reserve levels. Commercial inventory levels are unreliable and infrequently updated. At Kpler we partially fill through that gap using satellite-observed inventory of floating roof storage, but we cannot observe underground storage. Every trader pricing against a global benchmark must incorporate an unknown variable that Beijing controls unilaterally.

Here is the analytical point I want this committee to absorb. The INE does not need to solve these problems to be consequential. It needs to be a viable operational alternative when geopolitics make one necessary, such as sanctions. Before the INE launched in 2018, renminbi accounted for roughly 10 percent of Chinese cross-border trade settlements. By the fourth quarter of 2024, that figure had reached 40 percent. Russia's post-2022 pivot to the U.N.

settlement for China-bound oil exports has been the petroyuan's most significant proof of concept. And here is the part that should give the committee pause. The shift was not driven by the INE's quality as the market. It was driven by U.S. sanctions policy. Every application of dollar-clearing infrastructure as foreign policy instrument generates incremental demand for dollar alternatives among countries that have no ideological preference for the petroyuan, but a practical interest in managing sanction exposure.

I will leave it here because my time is running out. But I put some policy recommendations in the brief, and I look forward to your questions.

[The prepared statement of Ms. Brouhard follows:]

COMMISSIONER BUDOWICH: Thank you so much. Dr. Lange.

STATEMENT OF IAN LANGE, VIOLA VESTAL COULTER CHAIR OF MINERAL ECONOMICS, COLORADO SCHOOL OF MINES

DR. LANGE: Members of the Commission, thank you for the opportunity to testify today on China's ambitions on commodity market derivatives and the future of exchanges for critical global commodity markets.

My name is Ian Lange. I am a Professor of Economics and Business at the Colorado School of Mines, where I am also the Viola Vestal Coulter Chair of Mineral Economics. Colorado School of Mines is the world's leading university on minerals and mining engineering, and we are very proud to be the only U.S. institution that has a mineral economics program.

Relevant to today's hearing, I have served as Senior Economist for Energy on the Council of Economic Advisors in both Republican and Democratic administrations. I recently chaired a Commodity Futures Trading Commission Subcommittee on Critical Mineral and Derivative Markets, and I am currently involved in the Department of Energy's Critical Materials Innovation Hub.

The testimony today reflects my personal view and focuses on how China's dominance in the midstream and processing sector and its growing influence over pricing and settlement mechanisms interact with the small, volatile, and rapidly evolving critical mineral markets, a dynamic central to the U.S. supply chain resilience and national security.

To that point more specifically, most of the minerals that are traded on exchanges have a diverse set of companies and countries that are producing and refining that mineral. By definition, they are large markets, so think of things like copper, aluminum, iron ore, and precious metals like gold and silver.

For the minerals that are commonly found on critical mineral lists, they are orders of magnitude smaller in market size -- again, think something like hundreds of millions of dollars in market size -- with a very concentrated supply chain. And, obviously, those conditions, extremely small market, sort of opaque, concentrated supply chain, are not something that lend themselves well to the conditions that facilitate the benefits from exchange trading. Think of things like price discovery, investment facilitation, and risk management.

Numerous reports have shown that the United States mines, meaning pulls out of the ground, a large amount of many of the critical minerals that we are interested in. However, they are never separated from the overburden, or dirt, that occurs when you are, say, trying to move zinc to a zinc smelter. My colleague, Elizabeth Holley, testified to this fact at an earlier hearing today, and this just sort of has revealed to me that the problem is primarily economics in that we need to figure out a way to make it worth these firms' while to basically separate those products out.

I would also like to emphasize that the information needed for many of these smaller market minerals to facilitate a properly functioning traded product is available. However, it is generally in the hands of a few, and they do their best to keep that information opaque. There are obviously mineral traders for many small market minerals, and they know the market for those minerals. They understand well where sources of supply might be and who might be demanding them, at what price, and it is often this information that needs to be brought out for many to understand in hopes that those critical mineral markets facilitate investment and encourage price transparency.

Before I get to my recommendations just one word of caution. Pushing minerals towards exchanges, as are critical minerals that we deem important today towards exchange, and the benefits that we believe those exchanges might provide, can backfire in that many minerals, they provide some service within a consumer defense product but that service can be provided by other minerals, or that product through technical innovation might no longer be considered critical or useful. And there are examples of that that I highlighted in my testimony.

So given all of this I have a couple of recommendations. When I see subsidy schemes I often argue that they should focus on what might be like structured price partnerships rather than capital investment incentives. Maybe put another way, they need to be operational. Due to the pricing power that China commands, a lot of times capital support that has been given has not allowed these projects to move forward and instead we have a really nice, shiny piece of dirt. Capital subsidies have led to basically a lot of empty buildings and some well-studied dirt rather than domestic supply chains.

Perhaps to bring back something that was mentioned earlier, the great American philosopher, Bill Parcells would say, "The best ability is availability." So from a mineral standpoint, having some minerals available is super important. We can think of either like advanced market commitments, we can think of contract for differences, or we can think of some other kind of price floor as a way to spur actual production.

Lastly, lack of demand for U.S.-produced critical minerals is generally a strong hindrance. You think about demand pull as opposed to, say, supply push, has been a big problem, and something needs to be done to encourage demand for U.S.-based critical minerals. Whether this is in the consumer defense products, the downstream industry tends to be very price sensitive, or to some extent, maybe not even know what they are using in their products, say it's their supplier, supplier, supplier who buys it and they don't even understand that they use it.

So things like the Defense Federal Acquisition Regulation system, rules that are coming out for rare earth magnets, tungsten, and tantalum, these are set to go in effect July 1, 2027, can be a useful tool there. So any policies to support that enforcement or encourage compliance I believe will be very helpful to encouraging domestic or allied mineral production.

Thank you. I look forward to your questions.

[The prepared statement of Dr. Lange follows:]

PANEL II QUESTION AND ANSWER

COMMISSIONER BUDOWICH: Thank you, Doctor. I think as the Co-Chairs we are going to start questions again, and then we will go through the Commission.

Doctor, I will actually keep it with you. Lithium contract in China now appears to be the de facto in setting the prices, 15 times larger than Chicago. Did America lose the price-setting ability for lithium, and if so, how is that going to apply to some of these other rare earths? And what should we be doing about it?

DR. LANGE: One of the things that was mentioned earlier is just are we interested in a fossil fuel-based economy relative to a minerals- and electricity-based economy. So I think some of the answers there can answer the question of whether we should do something about it.

But, I mean, in general, for almost every mineral market, a small mineral market, let's say -- lithium is not quite a copper yet, but relatively small -- its production, maybe somewhere else around the world, in this case Australia is a large producer, but all the refining and processing is in China. So in some sense, the pricing or the movement has to be mostly to China. Additionally, where a lot of the downstream products are made is in China. So it is not surprising that the pricing moved there.

I mean, certainly to the extent that the U.S. builds out a domestic, better manufacturing industry or sector, that could help move some of the pricing back. But, in general, it wasn't a surprise that it moved over to China, and it seems like it is going to be hard to get it back, say, given the use of batteries, we'll say, in the economy, relative to other forms of energy.

COMMISSIONER BUDOWICH: Thank you. Ms. Brouhard, we didn't get to your recommendations so I am going to help get to one of them, at least. You recommended a petroyuan monitoring office within Treasury. Is that right?

MS. BROUHARD: That's right. I tried to be creative.

COMMISSIONER BUDOWICH: If that office existed today, and it was briefing Congress, what do you expect the results of that briefing to be? What would they be saying, especially related to the global oil settlement and RNB denominations, and what is the five-year trajectory?

MS. BROUHARD: Well, the panel before me had briefly mentioned about the sanction, how commodities, and specifically oil, has been trade on the INE, because of the sanctions, because of the sanctions policies by the U.S. government, as well as the toll booth that Iran had suggested they would set up. So as those ideas start to permeate through the marketplace there starts to become more of a need to want to be able to monitor how commodities are going to start traded and transactions.

So when I envision what the committee would look like, it would look like something that would regulate, if you participate in trading in U.S. exchanges or if you are a company that is a U.S. company and you trade on the INE, and you have to trade in petroyuan currency, it has to be registered with the CFTC or it would have to be registered with the SEC, so that it could be monitored, so that you would be able to have more transparency into actually how much is actually being transacted over time.

In five years, I don't know what that would look like. I assume it would look like, at least there would be a lot more transparency than what we have now. All we have now to go off of is a lot of assumption-based modeling that goes into it. So you assume, okay, Russian oil is trading hands. It must be trading hands in petroyuan. You kind of know the difference between the prices, and you can guess how many barrels are roughly being trade in it, so you can see roughly 20 percent of the oil market now is traded in yuan as opposed to the U.S. dollars.

COMMISSIONER BUDOWICH: Thank you so much. Ms. Stroud, it has been suggested the BRICS Grain Exchange as potentially the most significant structural challenge to Western commodity pricing. Can you walk us through the mechanics of what that would look like? If Brazil, China, and Russia stand that exchange up do they price in RMB? Is it a basket of various currencies? And what would that timeline be?

MS. STROUD: I think that it more becomes a situation where the U.S. is further squeezed out of various commodity markets. I think it has been a slow-moving process, and we are in the middle of it now, as we watch or we see other developments happening as relationships are strengthened between these other countries.

As far as a way specifically to -- I was trying to look here in my written testimony which number this is kind of going back to. I think as we are pursuing trade negotiations and relationships or potentially sanctions or whatever it may be with Russia, and as we are moving forward with China, I think that these things have to be top of mind for the U.S. Trade Rep and USDA additionally as we move forward.

COMMISSIONER BUDOWICH: Perfect. Thank you. With that I will hand it over.

COMMISSIONER SHMAVONIAN: Thank you. Ms. Stroud, pulling on that thread a little bit, you said the U.S. is being squeezed out of certain markets, and in your spoken testimony you referenced soy. Are we seeing that in other agricultural markets? Are we seeing that in wheat, as well? Is there potential for that in wheat? And then are there also risks with respect to specialty crops in addition to commodity crops?

MS. STROUD: What is probably the, I believe referenced the term "wheatification," because wheat is maybe the original commodity where we saw this happen to the U.S. Because the U.S. used to be a large exporter and an important global player in the wheat market, and we have quickly been overtaken, especially by Russian exports here over the course of the past decade or so. So wheat has turned into a non-event for the U.S.

Speaking of soybeans particularly, Brazil accounts for 60 percent of global soybean exports. China accounts for 60 percent of global soybean imports. So that dynamic in itself is one that has really driven or helped push and evolve the China-Brazil relationship and something that the U.S. has been squeezed out of because we are no longer competitive. But the biggest driving force there is that Brazil has had a tremendous amount of increase. They have had an average increase of 5 percent in soy planted area. That is an annual increase, on average, for the past 25 years running. So that is the biggest driver there, because you have more production. By default you have more bushels to export, and they are going to be cheaper to the world market.

When we look at something like corn, on the other hand, the U.S. is the largest exporter of corn in the world, and we lost that. We were dethroned very briefly in 2022, because as Brazil expands its soy area they come in behind it with a double crop. Generally it is either cotton or it is corn. That is how Brazil has turned into one of the most, or the most important country in cotton, is all because of that double-cropping. They were heavy into corn for a while, and they still produce a lot of corn, but now they have a growing domestic corn ethanol program. So that is giving us a little bit of breathing room.

But getting back to your question on are there other commodities. Soybeans will continue to remain the biggest focal point. I don't think that we will get ourselves into a position where corn, where we see something that is similar, because we are the largest producer of corn in the world. And thankfully we have strong domestic biofuel programs that support that and will continue to support that.

COMMISSIONER SHMAVONIAN: Thank you. Dr. Lange, we will turn to you, but anyone else on the panel should feel free to respond, as well. Have we seen efforts to manipulate either spot prices through commodity trading or supply constraints, either actual supply constraints or fabricated supply constraints?

DR. LANGE: I would say less on the constraint side, but certainly if you think of most mineral markets have, we'll say, in the 2020s have the same pattern. They may run up a little bit and then you have just kind of a crash, an oversupply bringing the price down. Think of nickel. Think of polysilicon. And my general understanding in the Chinese market there are incentives to, say, open minds, find production. In nickel's case it's Indonesia, in polysilicon it would be in the Shenzhen region. And that overcapacity, of course, eventually crashes the price, and they say, "Gee, that wasn't good. What can we do about that," and, of course, generally nothing.

I guess the other example would be what happened with cobalt, and then the Democratic Republic of Congo, China limit cobalt concentrate exports.

But the pattern seems to always be the same. I sort of like this story that in a lot of ways the goal isn't to sort of get control and then run up the price. The goal is sort of to just get control and basically keep it, keep selling to the rest of the world these export products. So I am less concerned about a scenario where you say the Chinese government says, "Okay, you're hooked on cobalt, and now we're going to take it away," so the price skyrockets.

I don't know. Maybe that general idea is they are not profit maximizers. You might think that their output through maximizers, if I can use, again, an academic term. Their objective isn't profit maximization. It is more output maximization. I haven't seen any evidence that they are, okay, now we are going to jump up the price or artificially restrict supply.

COMMISSIONER SHMAVONIAN: Thank you. Anyone else?

MS. BROUHARD: Yeah, I just want to jump in really quickly. I think that markets like cobalt or lithium are easy to manipulate because the liquidity is very thin, but commodities like oil become much more difficult to manipulate. We see manipulation, perhaps, in shipping, which is also easy to manipulate because there is not a lot of liquidity there or there is not a lot of supply and demand. So I just want to also mention that the difference in the liquidity will depend on the difference in the manipulation.

COMMISSIONER SHMAVONIAN: Great. Thank you.

COMMISSIONER BUDOWICH: I guess that means it is back to me. Commissioner Stivers.

COMMISSIONER STIVERS: Thanks. Let me start with Ms. Stroud. We know that the U.S. and Brazil are the main competitors for commodity exports to China. It sure seems that China is playing the two countries off against each other and has been for a long time. Is there space, or do you have any ideas for how perhaps the U.S. and Brazil can work together? Do we have mutual interests at all in this relationship, and is there a way to push back on China in a way that serves, again, both countries' interests?

MS. STROUD: I think that would have been a very important question or concern to raise in the beginning of 2018, because the bigger concern at this point is that the first trade war with China effectively closed the door on U.S. growth and shoved all opportunity towards, or it only further accelerated Brazil's very rapid pace of expansion.

As far as the two finding a way to work together, I think the biggest concern now is that China is so deeply rooted in Brazilian agriculture that it would almost become nearly impossible for the two to work together in some fashion. I think that ship has probably already sailed.

COMMISSIONER STIVERS: Okay. I appreciate that. Ms. Brouhard, I would like to go to your excellent recommendations, and in particular I believe your third one on the immediate legislative actions, where requiring disclosure of U.S. financial institutions who are on the INE. I asked a question to the earlier panel on if there are things or actions that the U.S. government can take to disincentivize U.S. institutions or investors from participating in

China's domestic exchanges, and it would seem this would be a significant disincentive on this disclosure. I guess my question is, would it be a disincentive, and what would be the benefits of this disclosure for broader markets?

MS. BROUHARD: Well, there are a number of reasons. One, it would be probably disincentive but it would also require transparency in the Chinese market, because once you need those disclosures then you need to have more transparency in the Chinese market, and it is kind of an opaque market when it comes to all of the other markets. The U.S. is by far the most transparent market. We publish every piece of data that there is, whereas China doesn't publish hardly anything, and if they do publish it, it's really hard to quantify whether or not it is true or not. So it would open up transparency and it would make for a more transparent market, and transparent markets bring more efficiency in markets, which typically bring lower prices. So that is one thing.

I think that the number one thing that would really help, I mentioned this earlier and I think I have mentioned it also in my written testimony, which is China, when they stepped in and started the INE with their crude oil benchmark, it filled a gap that was existing in the marketplace, which was the sour-crude benchmark. And I think it would be hard to move away from that because there is no sour-crude benchmark. So what happens is if you trade a sour-crude it trades as a differential to the light-sweet crude, so it trades as plus or minus, normally minus, one of the light-sweet crudes. So if it is WTI minus $5.00, it is how you get the Mars price, for example, the U.S. Mars price.

So there is no real sour-crude benchmark, but all of Asia uses sour-crudes. So if you are doing business in Asia, you really do need a sour-crude benchmark. I don't think it would disincentivize them from not being on there, but it would require China to bring transparency to it.

I guess what I am saying is that benchmark is needed. One of my other recommendations is get one of the others, like Japan, South Korea, Australia, to create a sour-crude benchmark, so that there is more transparency in the market and there is another place where these producers that transact in sour-crude, and have consumers in sour-crude, are able to have a benchmark for that at a different exchange.

COMMISSIONER STIVERS: Okay. Thank you. Having worked on some of these disclosure requirements on other issue, industry usually screams holy hell whenever you try to do these sorts of things. I have a few more seconds left, but what would be the arguments from the different entities on these exchanges to disclose this information? Is it easy to disclose? Do they have this information?

MS. BROUHARD: No, it's not. It's not easy at all. And I think that China would push back on some of the disclosures that would be required, and it would probably force them off of the exchange unless China was willing to give the disclosure information. Let's say it is TOTO or something, and TOTO wants to do business in the U.S. and in China. In order to get those disclosures they have to get information from China energy space, whether it is inventories or refinery runs or what kind of crude they are processing in their refineries, and then they have to bring it back to the U.S. China is not going to be willing to give that, and TOTO is going to have to make a decision, and they are probably going to choose the U.S. market. So it would force them off, but begrudgingly.

COMMISSIONER STIVERS: Great. Thank you.

COMMISSIONER BUDOWICH: Commissioner Price.

COMMISSIONER PRICE: Thank you, and thank you all for your testimony. Dr. Lange, I am going to start with you because I need some remedial help. You talk in your first recommendation, subsidy schemes should focus on operational support over capital investment incentives, and then a contract for differences or price floor can ensure actual production. Walk me through this? What should it be, and how would this work?

DR. LANGE: Yeah. Most people would claim that this concern with critical minerals started around 2011, when China restricted some exports of rare earth into Japan, and the prices went up about 10,000 percent, or something like that. And since then it has been sort of a policy to say, "Hey, here is some money. Go look at some of that dirt, or, "Here is some money. Build a refinery." And at least from where I sit, it is sort of like we are 15 years later and we are in the same place. We don't make any of these minerals that we thought were critical or deemed critical or hoped to have happen.

I mean, sort of thinking of something like saying a contract for difference would probably be like, okay, we understand that the Department of War will need, whatever, X tons of tungsten. Auction off. Okay, for $10, who can give us that? For $12, who can give us that? And then what you are sort of doing is allowing firms to reveal their cost structure, reveal how much it is costing them to make it, and it sort of lets there be like an anchor customer. Because generally, if you are going to start making a lot of these products, you have a mine that you want to run all the time. You don't want to stop and start the mine. You have a smelter. Again, you want to run all the time. You don't want to stop and start it. So in order to meet a certain, we'll say, quantity, again, you are probably going to build capacity that is not exactly equal to whatever, say, your contract is. And then you open up the possibility that other people could be there to say, "Oh yeah, I'd also buy that. Hey, if you are making some and you're here, I might buy that."

Maybe another way to think of it is a bit of a chicken-and-egg problem. Nobody is out there saying "I want it," so no one is saying, "I will build it." And no one is out there saying, "I will build it," so no one is saying, "I want it." We need a way to sort of break that, not through, again, characterizing more dirt or helping somebody, say, lay concrete and start to make a building. Because, essentially, if they start along the capital subsidy line and you start building a building, say, a refinery or a smelter, and in the meantime nobody wants the product, you are like, "Why am I hurrying? I'll stop and wait until somebody is looking for this thing."

So I feel like if you can get some demand locked in, it starts to be a ball rolling downhill. I don't know if that is clarifying, or maybe all my euphemisms made it worse.

COMMISSIONER PRICE: No, I think it did work. Thank you. Lock in demand works. Thank you.

Ms. Stroud, you went through some of your recommendations, but you skipped number 4 about creating a clear national security framework. Can you talk about that for a moment?

MS. STROUD: Sure. I think that given the fact that China, as my friends here to the left and right, they have also testified that the Chinese market is very opaque, and so we, sitting here in the U.S., have very few ideas with certainty what is going on in China as far as -- can you excuse me for just one moment? I need to go to the restroom.

COMMISSIONER BUDOWICH: No problem. Whenever you are ready. Thank you.

COMMISSIONER PRICE: Okay. So Ms. Brouhard, we have covered two of your excellent recommendations. Commissioners Stivers and Budowich asked particular questions. If you have an extra minute to talk about your favorite. If those weren't it, what would it be?

MS. BROUHARD: Well, my favorite, of course, is that there is another exchange that can be competitive against the Chinese exchange. And like I said, that sour benchmark exchange is actually really an important benchmark. I don't necessarily think it is going to be set in the U.S. or set in Europe because the U.S. and Europe produce, and for the most part refine light-sweet crude oil, whereas in Asia they produce and refine heavy-sour crude oil. So it makes sense that it would exist in Asia. So that is my favorite.

It also feels like, to me, the easiest, because the market needs it. I mean, Singapore has tried, and there is somewhat of a Dubai contract, which has obviously had some problems today because of the war in Iran. So I think that is probably my favorite one.

My other favorite one, I like the disclosure one. I think that would force, but I think it would also cause a lot of pushback from the industry, but also the CFTC. So I think that the CFTC could also just require more regulation when it comes to dealing with companies that transact onto the Chinese exchange.

Sorry, I didn't realize I just went over. Sorry about that.

COMMISSIONER PRICE: That is okay. Thank you so much.

COMMISSIONER BUDOWICH: Commissioner Miller.

COMMISSIONER MILLER: Thank you, and thank you both for your testimonies. I thought they were excellent.

I want to get back to the petroyuan. Ms. Brouhard, I thought that your testimony was very balanced in that it presented a dual story. On the one hand you have got structural constraints limiting the ability of the petroyuan to rise. On the other hand, in the recommendations you see enough of a concern to recommend that we establish a monitoring office in U.S. Treasury Department.

So I want to push you on this a little bit more. If we are going to assume that petroyuan has anything to it, we have to be willing to assume that countries around the world will be willing to be paid in a currency they can't convert. A little bit hard to believe. And to the extent you have the yuan as a payment currency -- sure, it is trade with China, there is a sanctions issue -- but if it is payment and settlement in yuan but the ultimate commodity is denominated in dollars anyway, is this even petroyuan in any meaningful sense?

So what I would love for you to do is just walk us through why we should be concerned about a petroyuan really in the first place. If there are these structural constraints, both that you listed, that I just mentioned, why should we care about any of this?

MS. BROUHARD: There are so many more structural constraints, as well. Like the manipulation of the Chinese currency within the Chinese government. There are lots of constraints. Nobody wants that, whereas the dollar is just such a liquid asset. It has clear monitoring policies. And the Fed has done a good job at balancing monetary policies. So I think that there are plenty of reasons to not want to go in that direction.

But the reason to go in that direction is when you have no other options. For example, Iran. For example, Russia. For example, Venezuela. If you have nothing else to transact in, transacting in something is better than nothing. And China, while a price taker, which is one of the reasons why they wanted to establish this exchange, their idea of establishing an exchange because they didn't want to be a price taker and they wanted to be a price setter, well, the exchange does not set the price. The market sets the price, and the exchange is just where it transactions.

So China being a price taker means that if you are a supplier, such as the Saudis, and you want to sell your oil into China, and they mandate that you transact in yuen, then it will just happen that way, because they will have to.

Now, the Saudis would have to convert it back to dollars, if they possibly could, or they would have to somehow figure out another way. There could be an entire new microcosm that exists within the yuan system. Right now, if you have yuan you probably can do business then. You can do business in the Middle East. You can do business in Iran. You can do business in China. But if you have dollars you can also do business in all of those places, plus you can do business in Latin America. You can do business in Europe.

So I understand the constraints of it. It just feels like it's creeping a little bit more, a little bit more, a little bit more. Five years ago it wasn't even top of conversation, and now it must be a conversation that I have with traders every day when we talk about it. And when the toll booth, I wrote this long note about also if the transaction is in yuan then you have more yuan in circulation inside of the world.

COMMISSIONER MILLER: So essentially it is a sanctions story, and it is an issue if the dollar becomes increasingly toxic over time, more toxic.

MS. BROUHARD: Yes.

COMMISSIONER MILLER: Thank you. Dr. Lange, let me ask you a technical question. You talk about physical settlement versus cash settlement, and you say physical is preferred. Why is that? I mean, if we were talking just gold, the issue might be rehypothecation. Is that an issue here, or are there other concerns related to settlement?

DR. LANGE: No, I think you are right. It is not crystal clear to me that physical settlement would lead to, say, some downstream investment or investment facilitation. But it sort of is a signal that the people around there, somebody is there to use these things. In the Western world there is a lot of cash settlements and it is a lot of looking to what's happening in China, for where it is actually being used.

So at least it is one, I guess you could say, suggestion or one hypothesis as to how there could be more production of these downstream products that we are really interested in is sort of ensuring that there are those inputs available through physical settlements.

COMMISSIONER BUDOWICH: Vice Chair Kuiken.

VICE CHAIR KUIKEN: Thank you. I am so glad you are back, Ms. Stroud, because I have been dying to say that when I named my consulting firm, No Bull never came up in my mind. And hashtag respect for naming your firm.

I wasn't expecting to hear about Brazil today, Ms. Stroud. So what I would love to actually hear you talk about is, so this is happening in Brazil now. Is there something that we should think about that is the next place?

MS. STROUD: That's a good question. I think the expansion will continue in Brazil. They have one of the largest amounts of available, arable land in the world. So a combination of conversion of degraded pasture land and the Brazilian Cerrado. So I don't think this is a situation where we see it slow down significantly. I do think that it will start to slow a bit, and it already has, just because of economics. But I think that this is really where the focal point must be, because there is no country in another situation like it.

VICE CHAIR KUIKEN: That is helpful. Soybeans. When I was preparing for this hearing I was not expecting to talk about soybeans. Is there a reason we shouldn't think about alternative crops, just given this competition space? And whoever wants to answer, just pile on. Ms. Stroud, you are in the middle so you get to go first.

MS. STROUD: Soybeans take front and center because that is our largest product by dollar trade with China every year. And soybeans are also front and center because China needs soybeans to import to crush, so they can feed the protein-rich soybean meal to their hog herd, the largest hog herd in the world.

As far as the U.S., soybeans are critically important to the U.S., and I am not certain that -- I might have to excuse myself.

VICE CHAIR KUIKEN: Sorry, Ms. Stroud. So the one thing I learned about was duckweed as a possible replacement for feedstock for hogs.

Mr. Lange, can you talk about which other critical minerals could see the introduction of new future contracts and how China is pursuing these opportunities?

DR. LANGE: Yeah. I mean, certainly battery minerals were big the last five years or so. And so I would say you are probably looking at markets for maybe hardeners or alloys to steels and aluminum. So we could imagine seeing exchange-traded products for, we'll say, scandium to go with aluminum. Obviously, there is lots of talk about rare earth, but I see that market sort of being limited to expand a lot, and a number of the production companies online is sort of through contracts with the U.S. government already. I mean, sure, there could be some value in making, say, neodymium, praseodymium, the rare earth that are in the magnets, exchanged through the contract, but I think that is relatively limited, given the activity that has already been there.

So, if anything, yeah, it would probably be something that alloys with materials like steel and aluminum as we look to produce more products that can handle the high temperature or what is needed to keep those things working.

VICE CHAIR KUIKEN: That is helpful. One more question for you, Mr. Lange, and I think I am going to run out of time. The China Mineral Resources Group got created not long ago. One first question is how has that, if at all, affected iron ore pricing globally, and then the second thing, what are the consequences of diversification away from Platts in iron ore, spot pricing toward competing indices?

DR. LANGE: Yeah, that is a good question. Iron ore is not usually my thing. It is not often listed as a critical mineral. Obviously it has some defense applications. But yeah, I don't have a good answer there. Obviously, China is a large producer of steel. They dump steel on the market, and, of course, as a result they would like cheap iron ore in order to be able to do that. And I think to the extent that either through some sort of anti-dumping provisions or through investments elsewhere, to use more allied or domestic steel we can sort of limit the impact of those changes that you refer to.

VICE CHAIR KUIKEN: Thank you.

COMMISSIONER BUDOWICH: Commissioner Hodges.

COMMISSIONER HODGES: Thanks for being here today. The conversation on Brazil made me think back to 2018, 2019, when I was meeting with the government of Brazil and talking to them about competition on technology and trusted vendors. And they raised sort of this factor of leverage related to soybeans and Brazil and commerce with China as a main obstacle impediment and a leverage point. It seems now, six and a half years later, this same issue of soybeans is being leveraged against the United States with commodities. So I think as we are looking at the ecosystem, what different leverage points the Chinese are using, they are increasing, not decreasing.

And Mr. Lange, my question for you today is you talk about midstream and downstream impacts and intermediate chemicals. And in your testimony it specifically says the U.S. has a few midstream assets. And as we are looking at this ecosystem, from a Commission standpoint, and making recommendations to Congress, we are looking at APIs, we are looking at other chokepoints.

Are you concerned, based off of the data you have seen and your research, that these U.S. assets could be squeezed out by China, and what are the implications if those are squeezed out?

DR. LANGE: Yeah. There are two copper smelters, and one of the things that China is definitely doing is trying to build a bunch of copper smelters, you might just say, to take over the copper market, for lack of a better word, on the midstream side. Right now it is still relatively diversified. And it has been well known that the net smelter returns at copper smelters have been negative for about 18 months. So you might argue their strategy is working.

And then the other ones I can think of are the zinc smelter in Tennessee, which there was just a big Department of War, Department of Commerce appropriation to. There is a platinum group smelter in Montana.

And so I would say, I don't know that we need a lot more, but having a couple more. And I have always thought maybe, for lack of a better word, those smelters, make sure they are using the whole buffalo. As I mentioned in my testimony, a lot of the critical minerals are byproducts. They are there with the zinc. They are there with the platinum. They are there with the copper. And it would be easier to stand up something that is already there, right. So you take the platinum smelter in Montana and you make sure it also recovers its nickel and cobalt. Because again, you are already mining it, it is already coming up out of the ground, you already have a smelter operating, you don't have to build a whole new thing. And so ways to encourage, we'll just say, using everything I think are winners and just the biggest bang for the buck, kind of way.

COMMISSIONER HODGES: And one thing that jumped out at me, and I didn't expect to see in your testimony, was the reference to intermediate chemicals. How relevant are those for what you are talking about, in the process, midstream to upstream?

DR. LANGE: Yeah. I have actually been asked that question a couple of times by other folks in industry. Especially for things like rare earth or a lot of these we are going to go from zero to a big number, so it is an infinite percent increase. That might be hard to do for the input manufacturers. You know, so far I have not found that it is a huge concern of the people who are trying to go from zero to infinite, or have an infinite percent increase.

COMMISSIONER HODGES: Let me ask the question in a different way. Are you seeing any data to suggest that the Chinese are trying to squeeze out these U.S. assets, where they are taking chemicals and they are then refining it and building the products?

DR. LANGE: A little bit, but yeah, I do feel like there is an understanding within the Western world, in the U.S., that we are going to need these intermediate goods, like the chemicals or the, whatever, the leaching techniques. And I have not found anybody to tell me we are really concerned. Everybody says, "We get what we need. It's on its way. Nobody is telling us we can't have it."

COMMISSIONER HODGES: Thank you. And Ms. Stroud, from your ground level view -- we were just having a conversation on sort of the shift in leverage points over the last six or so years, sort of squeezing Brazil on the soybean issue to leveraging I guess the United States and commodities. From your ground-view level, sort of grain supply, chemical precursors, would you, in your opinion, think the U.S. industry is aware of just how much the Chinese are increasingly having control of this market?

MS. STROUD: Yes, very much so. It goes back to 2008, when we saw the massive boom in China and it caught the world by surprise, and we saw a tremendous super-cycle begin in commodity markets, and a lot of that going back to China's tremendous growth, being the largest commodity importer in the world. Anything that is happening there has a direct impact on the rest of us.

COMMISSIONER HODGES: Thank you. No further questions.

COMMISSIONER BUDOWICH: Commissioner Brands.

COMMISSIONER BRANDS: Ms. Stroud, let's pick up on Reva's question. You had a recommendation about Chinese purchases of farmland in the U.S. Could you just talk us through that a little bit? What is the state of play at the moment, and tell us a little bit more about your recommendation for a more coherent and unified framework, please.

MS. STROUD: Yeah. You know, it kind of goes back to China's WH Group purchased Smithfield, the largest pork company in the United States and one of the largest in the world. And you look at something like that and then you look at the existing regulations or the way that I think we are seeing it at a state level start to crack down on who is okay with China owning farmland. And some of that goes back to, again, the WH Group and Smithfield.

I do think, though, that there needs to be additional -- we have to put it under scrutiny. We have Chinese companies that are very active in U.S. agriculture. COFCO is China's state grain trading entity, who also an international arm with a presence here in the U.S. I think they have started to divest some of those assets, but they are still very active in trading here in the U.S.

And just for example, COFCO, their agreement, so anything that they are sourcing here in the U.S., they are putting those bushels through a facility owned by a Japanese entity at the U.S. Gulf. So it becomes a little more complex.

COMMISSIONER BRANDS: Thank you. That is it for me.

COMMISSIONER BUDOWICH: I think we have one follow-up, Co-Chair.

COMMISSIONER SHMAVONIAN: Thank you. A couple of follow-up questions for the panel. We spend a lot of time focused on monopoly but don't really talk about monopsony, and China really does have the capacity in a lot of areas to exercise monopsony power in addition to being the primary manufacturer of a lot of components.

Dr. Lange, I see you nodding your head, so we will start with you, but welcome anybody else on the panel chiming in on that one.

DR. LANGE: Yeah. As you brought that up it brought to my mind that generally, with a monopsonist, what you want to do is you want to restrict how much you buy in order to force the firms to drop the price. And again, that is sort of to the earlier discussion. If the objective is profit maximization, that is what economic models suggest.

But I am most worried about this because I am not sure that is China's objective. They are not trying to produce less electric vehicles or solar panels or batteries in order to get, say, Australia to get them a better price on the spodumene that they are selling, the lithium that they are selling.

So it is a great question, and as it came to my head I am guessing that is the broken link as to why we just don't see the monopsony behavior that we might expect.

COMMISSIONER SHMAVONIAN: Thank you. Anyone else?

MS. STROUD: I do think a lot of China's actions can be perceived one way, but you also have to step back and remember that they are the largest commodity importer in the world, so just by scale it means that any purchasing decisions that they make have large impacts. I talked a lot about soybeans and the impacts there, but then there are also situations where they can swoop in and buy large amounts, somewhat unexpectedly, of U.S. commodities and different commodities. And it has extreme ramifications on the market when they buy those or, for instance, if they cancel or back out of those commitments, as well.

COMMISSIONER SHMAVONIAN: Thank you. Ms. Brouhard, you mentioned shipping infrastructure as a key chokepoint. I imagine it would be similar in the agricultural context, as well. Can you talk through any recommendations you have with respect to shipping infrastructure and the chokepoints that that might create?

MS. BROUHARD: Yeah. I think chokepoints tend to be on everybody's mind these days because there is currently one being strangled. Another chokepoint that has started to come into view is the Strait of Malacca, and I think China is very concerned about that. We just published a report on it yesterday, if anyone is interested in it, about how China has positioned their shipping boats, or some fishing boats, around.

So I can't help but think that the rules for shipping are about to be rewritten with what is happening right now in the Strait of Hormuz, and especially what happened in the Red Sea a couple of years ago. We could see a rewriting of rules of shipping lanes. I even wonder if we are going to go back to a time where there will be some sort of minimal toll that is paid as you cross through these straits. I know it is against International Maritime Law to have the toll. But just from a national security standpoint I wonder if we will start to see tolls so that ships know who is coming and going through the straits.

So I think that the rules, in five years, will look really different than what they look like today.

COMMISSIONER SHMAVONIAN: Interesting. Thank you. And then just nothing the INE and its focus on sour crude. To your point, that is a lot of the production in Asia, but I don't think we can leave this hearing without saying it also happens to be the primary oil that comes out of Iran and Venezuela. And do you view that as not just kind of a regional strategic play but also that China, because they import so much from Iran and import a significant amount of oil from Venezuela, that was also a strategic decision on their part?

MS. BROUHARD: No, because I think that we always look at China kind of like the bogeyman, but they are really opportunistic. So when they built their refineries, which have been over the last 20 years or so, when they started building their refineries sour crude was the cheapest crude on the market. So they built their refineries to process sour crude, and it was because Venezuela crude is really dirty, and it is very difficult to process it. The United States also processes a significant amount of sour crude.

So it is not that they created their benchmark for sour crude because that is the crude of the menaces of the world. They created the benchmark because that is what their refineries consume. And our refineries in the U.S. also consumer a significant amount of sour crude, and people built those because sour crude was so cheap relative to the light-sweet benchmarks and the light-sweet crude.

So now we have a large amount of refineries that consume sour crude because there are new refineries that were built in Asia, because those complex refineries were built to process the cheapest crude possible, and that gap that was between the light-sweet crude and the sour crude has really narrowed significantly, only because all of these new refineries that have been built are sour crude refineries, which is why that sour crude benchmark is so important.

COMMISSIONER SHMAVONIAN: Thank you.

CLOSING REMARKS

COMMISSIONER BUDOWICH: Amazing. Well, on behalf of this Commission I would like to thank you all for being here. We have had some great testimony. The testimony and the video can be found online. We are getting into the social media game, like Kuiken is going to do some dances, as well. If you would like to find those, follow us on Twitter.

And then I would like to note, to end, the Commission's next hearing, "Taking a Bigger Byte: China's Expanding Strategy for Data Dominance" will take place on Thursday, April 30th.

And with that we are adjourned.

[Whereupon, the above entitled matter went off the record at 12:30 p.m.]