NATIONAL SECURITY REVIEWS

The Feasibility of Game Theory Approaches:

An Investigative Study of Threats to U.S. National Security from Foreign Investment

By

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Abstract

The goals of this dissertation are twofold. The first goal is to investigate and explain how the key variable of national security impacts foreign direct investment in the United States. The second is to fill an important gap in the literature on the Committee on Foreign Investment in the United States (CFIUS) by offering a detailed conceptualization of how national security and trade policy converge, including the development of a modern pure-conflict game theory model. United States national security reviews have a material impact on foreign direct investment, with second and third order consequences not fully vetted by extant research. This thesis provides a critical interpretive synthesis of the related literature and uses empirical methods, including a Policy Delphi and qualitative investigative case study approaches. As the world economy continues to shrink due to globalization, the United States must consider the development of a modern game theory investment security model to address the complex convergence of economic modernization and the national security impact of foreign direct investment. This research identifies and outlines critical observations and implications for policymakers to establish stable national security and growth oriented economic policies.

Keywords: national security, CFIUS, geo-economics, game theory, foreign direct investment, economic espionage, trade policy, globalization

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Chapter 1: Introduction

"The supreme art of war is to subdue the enemy without fighting."

Sun Tzu, The Art of War

The age of intelligent warfare has created a fully integrated cyber, economic, and information state of adversarial capabilities within an emergent threat landscape. The landscape is shaped by multidimensional strategic interactions of globalization, vis-à-vis foreign direct investment (FDI), that are framed by the traditional guidelines of collaborative game theory. However, a modernized pure-conflict game theory model may be necessary to secure the interests of the United States. The pure-conflict model is utilized within the context of interactions where "power" is the scarce resource which has created the competition between nations, resulting in a zero-sum resource challenge (Chung, 2015). The complex concept of power within the broad scope of globalization and national security requires an evaluation which adequately addresses the threat environment in the 21st century – a modernized pure-conflict game theory model where investments, which create direct and indirect power over other nations, are weaponized.

At this convergence of FDI, trade policy, and national security are the reviews conducted by the Committee on Foreign Investment in the United States (CFIUS, subsequently also referred to as the Committee). CFIUS is an interagency committee tasked to evaluate the U.S. national security risk posed by foreign investment. The Committee evaluates transactions and provides recommendations to the President of the United States, who has the authority to block foreign investment transactions on national security grounds.

Foreign ownership, control, or influence over critical U.S. assets, whether physical or virtual, presents new and evolved threats in an increasingly complex world of non-traditional warfare. The investment activity provides for entry to – and influence over – the defense industrial base, domestic intelligence strategy, global technological superiority, as well as access and control of data as the world's most valuable resource. This thesis provides a critical interpretive synthesis of the related literature and uses empirical methods, including qualitative investigative case study approaches and the Policy Delphi technique, to identify and outline critical observations and implications for policymakers to establish stable national security and growth oriented economic policies.

Background - CFIUS

CFIUS is an interagency body, chaired by the Department of Treasury, that has the authority to review foreign direct investment in the United States to evaluate the impact such investments could have on U.S. national security. The Committee was established in 1975 by Executive Order 11858 of President Gerald Ford, and in 1988 Congress formalized CFIUS legislatively through the Exon-Florio Amendment to the Defense Production Act of 1950. Since that time, the authority of CFIUS has been expanded twice; once in 2007 by the Foreign Investment and National Security Act of 2007 (FINSA) and in 2018 by the Foreign Investment Risk Review Modernization Act (FIRRMA) which was signed into law by President Donald Trump on August 13, 2018 as part of the National Defense Authorization Act of 2019.

The statutory framework of FIRRMA stipulates that parties to a transaction will voluntarily file a notice with CFIUS identifying their transaction; noting that there are transactions in certain industries require mandatory declarations. The timeline starts with a 45-

day national security review, including an analysis by the Director of National Intelligence, after which the transaction can be cleared with no unresolved national security risk or moved to investigation. Upon completion of the 45-day review, the transaction can be placed into a 45-day national security investigation, with an option for an additional 15-days for extraordinary circumstances, after which the transaction can be cleared with no unresolved national security risk or recommended to the President of the United States for a 15-day Presidential determination. At any point during this statutory timeline CFIUS may clear the transaction, provide notice that there are unresolved national security risks, or the transaction parties may elect to abandon the transaction, for reasons related to national security or otherwise.

CFIUS Reviews

Although CFIUS has broad jurisdiction to review transactions whereby foreign persons acquire control (or, in some cases, certain types of non-control) rights over a U.S. business, the review is solely to determine the effect of the transaction on the national security of the United States (FIRRMA, 2018). When CFIUS reviews a transaction, it assesses the threat presented by the foreign investor, the vulnerability presented by the target company, and the overall potential consequence of the investment activity to national security. Covered foreign investment transactions refers to any merger, acquisition or takeover which results in foreign control of any person engaged in interstate commerce in the United States (FIRRMA, 2018). The CFIUS framework continues to be carefully circumscribed to evaluate foreign direct investment in the context necessary in order to protect national security; balancing the encouraging open investment policy of the U.S. while simultaneously enhancing national security (Wakely & Windsor, 2014).

The following table represents the number of covered transactions that CFIUS reviewed for the period from 2008 through 2019. The data provided, retrieved in August 2020, are the latest unclassified information available.

Table 1.
CFIUS Covered Transactions Reviewed for the period 2008-2019

Year	Number of Notices	Number of Investigations	Notices Withdrawn During Review or Investigation	Presidential Decisions
2008	155	23	23	0
2009	65	25	7	0
2010	93	35	12	0
2011	111	40	6	0
2012	114	45	22	1
2013	97	48	8	0
2014	147	51	12	0
2015	143	66	13	0
2016	172	79	27	1
2017	237	172	74	1
2018	229	158	66	1
2019	231	113	30	1
Totals	1794	855	300	5

Note. Data compiled from US Department of Treasury, "Reports and Tables," last updated July 2020, available at https://home.treasury.gov/policy-issues/international/the-committee-on-foreign-investment-in-the-united-states-cfius/cfius-reports-and-tables

FDI by Country

Based on the 2019 Annual Report to Congress, China represents the largest proportion of covered transactions for the period 2017-2019 with 140 notices (approximately 20.1% of the total notices filed). During the same period Canada (74), United Kingdom (36), Japan (97), and France (48) represented the remaining top five investor countries. The unclassified reports are published by CFIUS and released on the U.S. Treasury website with a minor delay in cadence. While the last disclosure of transactions for calendar year 2019 released in July 2020 indicate a reduction in filings for investment from China, from 60 in 2017 and 55 in 2018 to only 25 in 2019, public statements by top administration officials confirm that China continues as a primary focus for national security reviews. The U.S. Department of Justice National Security Division has stipulated "from 2011-2018, more than 90 percent of Department of Justice cases alleging economic espionage by or to benefit a state involve China, and more than two-thirds of the Department's theft of trade secrets cases have had a nexus to China."

The Current State of Engagement

As of the release of the last Annual Report to Congress, President Donald J. Trump had formally blocked three transactions. President Donald J. Trump, in 2017, blocked the acquisition of Lattice Semiconductor Corp. by the Chinese investment firm Canyon Bridge Capital Partners, in 2018 blocked the acquisition of Qualcomm by Broadcom (Jackson, 2019), and in 2019 prohibited the acquisition of StayNTouch, Inc. by Beijing Shiji Information Technology Co., Ltd. (U.S. Department of Treasury, Annual Report CY 2019). In 2018, 2019, and 2020 there have also been closed investments which were ordered to divest on national security grounds,

including Beijing Kunlun Co.'s divestment of Grindr LLC, an online dating site, over concerns of foreign access to personally identifiable information of U.S. citizens (Jackson, 2019).

On August 14, 2020 President Trump issued an Executive Order which ultimately ordered the divestment of TikTok's operations within the United States. Treasury Secretary Steven T. Mnuchin, the chair of the Committee on Foreign Investment in the United States released the following statement: "Today the President issued an order prohibiting the transaction that resulted in the acquisition of Musical.ly, now known as TikTok, by the Chinese company ByteDance. The order directs ByteDance to divest all interests and rights in any assets or property used to enable or support the operation of TikTok in the United States, and any data obtained or derived from TikTok or Musical.ly users in the United States. CFIUS conducted an exhaustive review of the case and unanimously recommended this action to the President in order to protect U.S. users from exploitation of their personal data" (U.S. Department of Treasury, August 2020).

National Security Game Theory

Game theory is a procedural framework that models an analytical approach designed to map interactions between cooperating or competing decision-makers, with two distinct assumptions: (1) that the decision-makers are rational, and (2) that they account for their opponents anticipated behavior when choosing a course of action (Taquechel, & Lewis, 2012). At the core of decisions made due to national security considerations, the reviews conducted by CFIUS may be appropriately modeled into a modernized pure-conflict framework as the evaluation itself falls outside of traditional parameters of collaborative game theory. The model

would require an expansion into an arena of warfare and espionage rather than one of trade policy and diplomacy.

Foreign direct investment is a multidimensional phenomenon which presents grave implications to national security due to the complex interdependencies of free trade, information security, and economic development acting as powerful forces presenting both threats and opportunities for the international community (Davis, 2003). As world superpowers continue to acquire strategic and critical assets, the U.S. may benefit from evaluating FDI as a zero-sum game with appropriate consideration given to economics, politics, intelligence, and warfare. The balance of power of the international system is anarchic, with each system of government unable to know the intention of others, while simultaneously working to protect and further their own interests (Avey, Markowitz, & Reardon, 2018).

In October 2018, the Office of Investment Security of the United States Department of the Treasury released a determination that although the vast majority of foreign direct investment in the United States provides economic benefits to our nation – including the promotion of economic growth, productivity, competitiveness, and job creation – some foreign direct investment threatens to undermine the technological superiority that is critical to U.S. national security. These known factors contribute to the argument for modifying U.S. national security trade policy to a more aggressive pure-conflict game both in terms of countries of origin as well as industries that are of strategic interest for the defense and military industrial base.

The Game Theory Narrative

As world superpowers continue to acquire strategic and critical assets, the United States must evaluate the game theory frameworks for foreign direct investment with specific regard to

the national security implications of these strategic investment decisions. Game theory has been utilized throughout history to evaluate and identify optimal decision-making for multiple parties, often with conflicting priorities and asymmetrical information. The Cold War is examined under game theory models by focusing on the doctrine of mutually assured destruction where each side reaches a Nash equilibrium per se as neither has an incentive to disarm or to initiate a nuclear war. These stakes map the world as a two-person, zero-sum game (Belletto, 2009). The theory transcends scholarly and practical disciplines from evaluations within the context of war and espionage between nation states through assessing trade policy within the framework of globalization and foreign direct investment.

The game theory model tasked with evaluating these two seemingly divergent topics of war and trade necessitates the consideration of a considerably closer alignment with the strategies of pure-conflict in war than the collaborative models of diplomacy. The threat vectors of the 21st century require a fundamental shift in how CFIUS may utilize a zero-sum game theory model. War exists as a visceral representation of a zero-sum game, certain death versus certain survival, in which no mutually cooperative strategy exists between the parties (Eggers, 2011). In contrast, parties to the game of globalization (e.g. foreign direct investment) employ a cooperative game theory strategy through multicategory models and variability in individual payoff scales (Costello and Costello, 2015). These strategies do not exist in a global vacuum, rather there exists a need for consideration of a modern approach with a zero-sum design.

Competing Explanations and Significance

While the national security implications of FDI may differ depending on the country of origin of the investment as well as the target U.S. business to be acquired, specific focus should

be placed on the emergent threat of Made in China 2025. This threat pervades both the economic and defense landscape of U.S. policy, from the U.S. position as the premier destination for foreign investment to America's strategic position as the most powerful military in the world. The threats that exist within China's publicly known economic policies around foreign direct investment in the United States enable opportunities for the proliferation of valuable intellectual property, access or control of non-public technical information and U.S. citizen information, or the ability to influence important business matters (Saha, 2012).

An existential crisis transcends the paradigm of attempting to balance an open investment policy with the national security risks associated with foreign direct investment. While globalization has the political, economic, and social potential to transform and improve the state of national security, the evidence to support a direct attribution for profound change is presently under supported (Paul & Ripsman, 2004). In order to adequately address both the national security threats and economic opportunities existing as a result of globalization and foreign direct investment, the game theory model requires an evaluation from the traditional economic model of collaboration to the pure-conflict zero-sum theory of warfare in the 21st century.

Threat Assessments

The evolution of the typology of national security threats has diversified from the classical threats of armed military conflict to asymmetric threats of cyber-attacks of computer networks and the exploitation of economic and financial instability (Constantinescu, 2017). One of the primary benefits of utilizing a modern pure-conflict approach to national security and FDI is that it addresses the risk of incomplete or imperfect information between the two sides that may not be conceivable a priori. Within this context of evaluating the potential national security

impact of foreign direct investment, the U.S. Government can continue to enhance the strength of CFIUS reviews by utilizing a traditional mosaic theory to gather, analyze, and connect seemingly insignificant and unrelated information (Jaffer, 2010).

Further, the use of Bayesian reasoning, requiring logical updating of information, balances the natural instincts of decision makers to excessively weight certain pieces of information by bounding the information in a zero-sum model (Paté-Cornell, 2012). This facilitates the ability of the Committee to address national security risks of investment activity while balancing the concept that there is also a risk to the U.S. longstanding open investment policy by not abiding by long-standing economic and trade norms. The Committee must exist independently as a counterbalance to the open-border and free market economies, as it is tasked with preserving and protecting the sovereignty of the United States.

Statement of the Problem

Current models of evaluating the impact of foreign direct investment in the United States focus primarily on the positive resulting factors of open borders and a free market economy; most of which assume that the opportunities of globalization are best addressed within the current U.S. democratic political system of collaboration (McKinsey, 2019; Patman & Southgate, 2016). However, foreign investments in critical and emerging technologies, critical infrastructure, and troves of sensitive data present a pervasive threat to U.S. national security.

CFIUS, as the interagency committee tasked with evaluating this national security paradigm, reviews the threat presented by the foreign investor, evaluates the vulnerability presented by the target company, and assesses the overall potential consequence of the investment activity to US national security. Therefore, there may be a need for the US

Government to consider the viability of a modern pure-conflict game theory approach to address the national security risk of foreign direct investment and enhance critical infrastructure protection. This research utilizes the Policy Delphi technique to examine the desirability, feasibility, and priority rankings of suggested resolutions.

Research Questions

The following inquiry-based research questions were used to investigate the impact of U.S. national security considerations on FDI, with additional observations on the added value or cost that may be realized by implementing a modern pure-conflict game theory approach.

1. What are the key game theory strategies employed by the US and investing countries, specifically China, in conducting national security reviews in conjunction with investment activity?
2. What impact does national security risk have on enterprise deal value, and execution deal risk, in foreign direct investment transactions in high-risk industries from high-risk jurisdictions?
3. To what extent do CFIUS reviews impact the development of critical technologies and economic incentives around foreign direct investment versus domestic investment?

Purpose of the Study

The purpose of this thesis is to examine, utilizing a Policy Delphi technique, the convergence of foreign direct investment (FDI), trade policy, and national security, specifically the reviews conducted by the Committee on Foreign Investment in the United States. The goals of this dissertation are twofold. The first goal is to investigate and explain how the key variable

of national security impacts foreign direct investment in the United States. The second is to fill an important gap in the literature on CFIUS by offering a detailed conceptualization of how national security and trade policy converge, including the development of a modern pure-conflict game theory model. The observations and associated implications drawn from this research are critical for policymakers to establish stable national security and growth oriented economic policies. This research is fundamentally rooted in the belief that U.S. national security considerations have a material impact on foreign direct investment, with second and third order consequences not fully vetted by extant research.

The grand strategy of the U.S. is contingent on the reference and understanding of core U.S. values, a means to maximize American security, prosperity, and liberty; ultimately assuming the optimal grand strategy furthers these core interests as those of the U.S., not the world (Avey, Markowitz, & Reardon, 2018). In the current age of intelligent warfare, the global landscape has created a fully integrated cyber, economic, and information state of adversarial capabilities within an emergent threat environment. To assist with its mission to assess the national security risk inherent in foreign direct investment, CFIUS may benefit from using a modern pure-conflict game theory approach – an approach not currently applied – to address the national security risk of foreign direct investment and enhance critical infrastructure protection.

Study Design

This dissertation utilized the Policy Delphi technique to examine the feasibility, desirability, and priority of game theory approaches to U.S. foreign investment national security reviews. The Policy Delphi technique develops a national security foreign direct investment framework through meta-analysis and a comprehensive synthesis of the related literature. The

methodological design utilized empirical methods, including both a qualitative critical interpretive synthesis and investigative case study approaches. The overall goal of this thesis is to investigate and explain how the key variable of national security impacts foreign direct investment in the United States. A nuanced research focus emphasizes addressing a critical gap in the literature on the Committee on Foreign Investment in the United States by offering a detailed conceptualization of how national security and trade policy converge. While there is literature on trade policy and investment strategy, there appears to be no comprehensive research effort that synthesizes the United States national security considerations of foreign direct investment.

Critical Interpretive Synthesis

Research synthesis has emerged as an important methodological approach within the social and public policy domain, as well as providing critical integration points to guide evidence-based decision making in practical settings (Cooper, Patall, & Lindsay, 2009). Systematically reviewing available literature can help inform governance, security, and economic policy; however, there is a noted lack of available literature on the primary objective of this dissertation specific to the Committee on Foreign Investment in the United States. With consideration to the gap in literature, this research adopts the critical interpretive synthesis (CIS) approach to a qualitative review, which is best suited to develop a theoretical framework drawn from divergent sources that may not necessarily meet traditional study design or quality criteria (Moat, Lavis, & Abelson, 2013).

This thesis is designed to integrate a critical methodological approach that permits both inductive and deductive reasoning in evaluating key characteristics and frameworks of national

security reviews. In addition, the CIS approach facilitates the strategic inclusion of relevant peer-reviewed literature, government records, as well as think-tank whitepapers, Congressional inquiries, and opinion pieces regarding the topics under review. Categorically, this retrospective data provides critical inductive and inferential observations relative to both objective and subjective decision making. The CIS design permits this research to provide a comprehensive and holistic interpretation of available information and data in order to derive a synthesizing argument which forms a new theoretical framework for national security reviews in the United States.

Investigative Case Study

This research further utilizes a qualitative investigative case study approach to review specific historical subjects with specific national security implications in order to assess the available public records, economic considerations, national-security review deliberations, and future-state optimization of game theory strategies. A qualitative case study approach has been deemed most appropriate for this research given that the design provides for a smaller sample which will include in-depth analysis of political dynamics and government motivations. Given that every investment decision is different, there exists a significant challenge in addressing confounding variables when attempting to empirically address large scale data for purposes of generalization.

Additionally, based on the confidential and classified nature of much of the information and data surrounding the CFIUS process, quantitative data is significantly limited and generally unavailable to the public. This confidentiality extends to government personnel as well as private sector company professionals. The level of dynamism at the convergence of trade policy,

national security, and investment economics requires a meta-analysis of specific investment activity through an investigative case study approach – a design which focuses on existing publicly available documentation, records, and data.

The case study approach is designed to present a comparative examination of whether the observations and theories developed through the critical interpretive synthesis hold when real-world cases are comprehensively investigated. This inurement of theoretical frameworks developed is what drives the analytic utility of the case study approach, creating causal mechanisms to enhance the transferability of the research conclusions (Gerring, 2001). The comparative examination provides a richness to the research through this intense in-depth analysis of historical materials, particularly within the domains designed to evaluate complex political, social, and national security related dynamics.

The selection criteria for cases to be included in this research is critical in both establishing and testing the theoretical frameworks developed throughout the study. As the goal of this research is to examine cases that are representative of the central issue of national security reviews in investment activity, the selection of cases will be based on unclassified and publicly available information which explicitly stipulates that: (a) the transaction was reviewed by CFIUS, and (b) the primary determining factor in the transaction not being effectuated, or being forced to divest, was the national security implications of the proposed transaction. The cases will be considered deviant from the majority of investment activity which occurs in the United States based on prima facie grounds as they represent outliers in a traditional sense and in the context of U.S. national security reviews (Gerring, 2001). The intent of this research is to examine three (3) cases which are representative of the core theoretical objectives of the study.

Policy Delphi

The framework developed through the critical interpretive synthesis and investigative case study approaches will be further validated using the Policy Delphi technique. This technique is a variant of the Delphi technique but differs in that its purpose is to introduce and explore disagreement, in addition to consensus, on complex policy issues in order to fully investigate issues and contribute to an informed analysis of all possible options and supporting evidence (Turoff, 1975). Turoff further describes that in policy issues do not have, nor can research seek, a consensus resolution; rather, in the face of these issues experts can only supply a factual basis for advocacy. This research will utilize participants across the public and private sectors in the broad disciplines of business strategy, U.S. national security and trade policy to examine the models developed through the course of the research. The Policy Delphi technique will follow the model designed by Turoff (1975) and be completed vis-à-vis in-depth interviews conducted by the researcher, followed by surveys in successive phases of the research.

Limitations

This study contains certain significant limitations that are considered factors outside the researcher's control. The primary, and most impactful, restriction is the confidentiality of U.S. national defense and national security information. The reviews conducted by CFIUS are governed by the confidentiality and disclosure requirements specific to matters of interest of national defense as set forth in 50 U.S.C. §4565 and under 5 U.S.C. §552(b) which stipulate that "any information or documentary material filed… shall be exempt from disclosure… and no such information or documentary material may be made public." This researcher, a subject matter expert on transactions before the Committee, will utilize available open source

intelligence and public records to capture pertinent information relevant to this study. The results may limit the availability to draw absolute conclusions or generalizations on matters of national security which are of a classified nature; however, will facilitate a mosaic interpretation to mitigate the limitation (Jaffer, 2010).

This study is further limited by a gap in the literature surrounding reviews by the Committee. The reviews conducted are governed by United States Code, which codifies the subject matter in permanent federal statutes; however, the broad and interpretative conceptualization of these laws is oft diverse and conflicting in nature. This research seeks to contribute a more meaningful and precise conceptualization of the issues before the Committee as well as to provide a nuanced theoretical view of the topic.

The investigative case study approach to this research presents a structural constraint based on the unique nature of a cross-border investment transaction, including confounding variables which exist within strategic business decisions that may be financial, political, or security related. The risk of confounding variables may limit the generalizability of the study beyond the unique circumstances of a transaction. Further, the assessment of countries, investment targets, and the political landscape of the U.S. and global allies and adversaries exists in a constant state of dynamic evolution, resulting in variability of time limited decisions.

Finally, the transferability of this research study is limited to an explicit domain in government so it may or may not be applicable or germane to other constituents outside this domain.

Delimitations

This dissertation contains certain delimitations as designated by the researcher in order to establish a viable study. The first delimitation is the choice to utilize an investigative case study design that will focus on the review, analysis, and synthesis of publicly available government documents, regulatory filings, company financial statements, and open source information; however, the design will not include interviews or questionnaires with practitioners on the record. This design decision was made in order to respect and reflect the confidentiality of national defense and national security information, noting that attribution of information to government officials or private sector professionals may create a risk of unauthorized disclosure of information. The investigative case study approach of reviewing a select number of historical and current cases may limit generalizability a larger population of foreign direct investment, particularly in evolving global geopolitical environments.

Globalization presents a complex paradigm when evaluating the second and third order consequences of this economic development activity. While globalization has extensive and empirically documented positive results for developing nations, there exists a paradox when considering whether investments between world superpowers facilitates a similar net benefit. In this research design, the foundational principle is that of comparing superpowers competing for finite resources – such as the power associated with technological innovation, military and defense dominance, and economic superiority. As such, while the researcher acknowledges net positive benefit of globalization in certain circumstances, and particularly for developing nations, this research focuses on the paradigm shifting to a zero-sum game, which dictates that a gain for one country results in a loss for another.

The researcher also relies on publicly available documentation that may contain certain information that was misstated in the information used as substantiated fact. The study will not address national security determinations based on classified information, nor non-public information that was gleaned based on personal subject matter expertise on a particular transaction. This study does not address U.S. partisan political factors that may impact trade policy. Lastly, the study will focus on examining publicly available, unclassified, CFIUS covered transactions from 2008 through 2019, limiting the time frame of the review, as well as limiting the sample size.

Plan of the Dissertation

Utilizing the Policy Delphi technique, this research develops a new theoretical framework for evaluating foreign direct investment in the United States, while providing meaningful insight into why these changes are necessary in an era of modern warfare. The study aims to provide nuanced explanations for complex, and often politically challenged, concepts of globalization and free trade.

This research follows four additional chapters which illuminate the darkness of economic warfare and the ever-shrinking world economy. Chapter 2 provides a comprehensive review of available literature specific to CFIUS, national security, game theory, and the increasing threat of China as an adversarial world superpower. Chapter 3 presents the concept of research synthesis and empirically-driven investigative case studies with a modern game theory approach towards pure-conflict. Chapter 4 provides the empirically-driven investigative case studies of foreign direct investment in the United States with specific national security (CFIUS) risk, comparing and contrasting critical variables in those investments. Finally, Chapter 5 provides

comprehensive analysis, synthesis, and commentary that derives strategies and modern game theory models for future success of the U.S. in balancing open investment and national security.

Definition of Terms

Bayesian Models

As utilized in this research, Bayesian models are utilized to develop and test theories, for logical inference, to perform inductive and deductive reasoning, and in game theoretic designs. These models are designed to address complex decision support problems on a spectrum, allowing subjective factors to integrate with objective factors, while some or all sources of data within that system are in a state of constant progression (Paté-Cornell, 2012). Bayesian probabilities provide for valuable insight by dynamically incorporating diverse sources of information with new and existing information in the analytical model. Within Bayesian game theory, Colman (2003) describes that "expected utilities are based on subjective probability rather than objective relative frequencies, and what is maximized is subjective expected utility (SEU)."

Committee on Foreign Investment in the United States (CFIUS)

CFIUS is an interagency body, chaired by the Department of Treasury, that has the authority to review foreign direct investment (FDI) in the United States to evaluate the impact such investments could have on U.S. national security.

Espionage

The concept of espionage as defined in 18 U.S.C. §793 stipulates "Whoever, for the purpose of obtaining information respecting the national defense with intent or reason to believe that the information is to be used to the injury of the United Sates, or to the advantage of any foreign nation." In identifying common themes around this concept, Pun (2017) describes

espionage simply as “the unauthorized intentional collection of information by states” and further identifies that cyber espionage is the use of technology in order to meet the goals of espionage as traditionally defined.

Foreign Direct Investment (FDI)

FDI is an investment activity, whether merger, acquisition, or investment, by which an interest in a business in one country is acquired by an entity from another; it is generally understood to imply a controlling ownership interest (CFIUS 2015 Annual Report to Congress). For purposes of this dissertation, FDI will represent a non-U.S. entity making a controlling, or in some cases non-controlling, investment in a U.S. business.

Game Theory

Game theory is a procedural framework that models an analytical approach designed to map interactions between cooperating or competing decision-makers, with two distinct assumptions: (1) that the decision-makers are rational, and (2) that they account for their opponents anticipated behavior when choosing a course of action (Taquechel, & Lewis, 2012).

Globalization

Globalization can be broadly defined as the intensification of technologically driven links between societies, institutions, cultures, and individuals on a worldwide basis (Patman & Southgate, 2016). These links between countries relies on a phenomenon of free trade of goods and services, coupled with capital moving freely between countries (Costello & Costello, 2015). Overall, the concept of globalization implies an interconnectedness between nations around the world, creating a complex network impacting security, economics, and geopolitics.

Technology Transfer

The National Institute of Standards and Technology (NIST) defines technology transfer as: "…the overall process by which knowledge, facilities, or capabilities in measurement science, standards and technology promote U.S. innovation and industrial competitiveness in order to enhance economic security and improve quality of life" (U.S. Department of Commerce, 2018). This definition encompasses both the transfer of knowledge between parties as well as the use, commercialization, and adoption of the technology into the private or public sector. Technology transfer is critical within the United States to promote initiatives such as economic growth, sustainable development, and military superiority; particularly in the areas of science, engineering, and technology (U.S. Department of Commerce, 2018). Technology can be legally transferred in several ways, including intellectual property sharing of patents and licenses, collaborative research and development, as well as informal or formal information sharing activities. The United States seeks to limit technology transfer to various countries, including those countries which pose a risk to U.S. national security.

Chapter Summary

The United States has been challenged to balance an open investment policy and national security in an era of modern warfare. This study examines various opportunities and constraints for the complex, and often politically challenged, concepts of globalization and free trade. While the historical framework presents one path forward, this study presents a new framework as an alternative avenue to success. This study combines a critical interpretive synthesis of available literature as well as the insights and perspectives of experts in U.S. national security, trade policy, and intelligence as part of the Policy Delphi technique to establish critical elements for

the evolved framework. The literature review in Chapter II provides a comprehensive examination of foreign direct investment in the United States, national security reviews, and the inflection point where global economic collaboration meets conflict.

Chapter 2: Literature Review

"Models tend to be useful when they are simultaneously simple enough to fit a variety of behaviors and complex enough to fit behaviors that need the help of an explanatory model."

Thomas C. Schelling, 2005 Nobel Prize in Economic Sciences

Introduction

To better establish, understand, and interpret the impact of national security reviews on foreign direct investment in the 21st century, this literature review aims to examine several of the elements at the intersection of trade policy and national security. The review further examines the dynamic evolution over time, while providing artifacts for future-state considerations. First, the chapter examines the "CFIUS Review Model," including three phenomenological case studies which illustrate the multiple-vector impact of these reviews. Next, the chapter examines "The China Threat," a section that will briefly introduce the mosaic of China as a global economic and technological superpower, as well as those circumstances which have established China's current unique role in the global economy. The third section of the chapter examines "National Security Game Theory," which approaches the literature that asks whether, how, and how much national security impacts the underlying game theoretic concepts of collaboration versus conflict. The factors, decision sets, and potential solutions are imprecise: however, there exists significant policy value in the bricolage.

Within the fourth section of this review of the literature the researcher outlines the critical conceptual framework for this study, the Policy Delphi, which was introduced in 1970 by Murray Turoff. The premise of the Policy Delphi, to encourage and embrace conflict in decision making while redefining decision makers as advocates and referees rather than homogeneous

experts, is explained in detail in order to establish meaningful alignment with the processes of evaluating national security risk from foreign direct investment. To conclude, the last section of the chapter discusses the influence of collaboration and conflict on U.S. national security with the threats and opportunities of globalization.

CFIUS: Review Model

With the United States locked in global strategic competition, the norms which govern – whether formally or informally – world order are in dispute based on competing visions of the future. The U.S., along with international partners, advance an economic vision which embraces free and fair trade, transparent standards for technology and data, as well as adherence to both national and international regulations which govern economic order (Ratner et al, 2019).

The economic vision of the U.S. converges with national security interests through the reviews conducted by the Committee on Foreign Investment in the United States (CFIUS, subsequently also referred to as the Committee). CFIUS is authorized through Section 721 of title VII of the Defense Production Act of 1950, as amended (50 U.S.C. 4565) to review any covered transaction and to mitigate any risk to the national security of the U.S. that arises as a result of such transactions; further authorizing the President to suspend or prohibit any covered transaction when, in the President's judgment, there is credible evidence that leads the President to believe that the foreign person engaging in a covered transaction might take action that threatens to impair the national security of the United States (C.F.R. Parts 800 and 801, *Provisions Pertaining to Certain Investments in the United States by Foreign Persons*, 2020).

The current regulatory framework for foreign investment national security reviews foreshadow the evolution of threats to the U.S. with respect to a risk matrix which now includes

vectors such as data security, cybersecurity, early-stage technology, and real estate transactions in close proximity to sensitive facilities. While the regulations are jurisdictionally broad in their scope, the regulations are explicitly silent on directly addressing the economic realities – whether positively correlated commercial considerations or negatively correlated activities with a nexus to espionage.

National Security Threat Assessment

The risk-based analysis performed by CFIUS with respect to a covered transaction is focused on the effects of the transaction on U.S. national security. The Code of Federal Regulations Parts 800 and 801, *Provisions Pertaining to Certain Investments in the United States by Foreign Persons* (2020), stipulate that the analysis of risk shall include and be informed by consideration of the following elements:

(a) The threat, which is a function of the intent and capability of a foreign person to take action to impair the national security of the United States;

(b) The vulnerabilities, which are the extend to which the nature of the U.S. business presents susceptibility to impairment of national security; and

(c) The consequences to national security, which are the potential effects on national security that could reasonably result from the exploitation of the vulnerability by the threat actor.

Economic Security Threat Assessment

Logical and proper expansion of the theory of national security in the twenty-first century should include distinct economic considerations. Brigadier General (U.S. Air Force, Ret.) Robert Spalding, who served as chief China strategist for the chairman of the Joint Chiefs of Staff and as

senior U.S. Defense official and Defense attaché to the People's Republic of China, asserts that war between nation states is presently about ones and zeros and dollars and cents – economics, finance, cybersecurity, and data; increasing the sphere of influence globally through theft, coercion, economic sabotage, and commercial monopolization (Spalding, 2019).

The economic dimension of national security is highly dependent on a nations ability to synchronize with the changes in the global ecosystem, with globalized risks in goods, services, human capital, the labor force, and information (Constantinescu, 2017). Foreign powers can further this influence through investment activities to pursue strategic objectives through diplomatic, informational, military, and economic capabilities which underpin their interests (Heffington, Oler, & Tretler, 2019).

This research argues that the strategic framework underpinning U.S. national security reviews presently overlooks this key intervening variable; and that evidence exists which supports a modern game theoretic model that incorporates the variable of economic security. Evaluating economic security during foreign investment reviews aligns with the principles of national security as global superpowers, including China, have the ability to impact trade terms, exasperate trade imbalances, stagnate the job market, and recruit top tier U.S. experts in industries key to both military and civil applications (Spalding, 2019). The ability for the U.S. to ensure a fair, secure, and competitive economic ecosystem with China has been significantly reduced; and furthers the question of whether the path forward is one of conflict or collaboration in an increasingly complex environment where differences are as clear as the governing principles of Communism versus Democracy (Shobert, 2019).

CFIUS: Case Studies

The use of case studies permits the researcher to further develop theories, link those theories to real-world scenarios, and to ultimately assess the validity and reliability of the research observations (George & Bennet, 2005). The cases selected for this research were deliberately selected to evaluate key components of the research questions; specifically, (a) the national security threat assessments undertaken, (b) the deal risk associated with investments from "high risk" jurisdictions (e.g. China), and (c) the economic, technological, and commercial impact of national security investment reviews.

These cases are representative of the critical issues under evaluation in this research, not random selection, and as such, are utilized to hypothesize the perspectives and principles which illustrate similar outcomes from divergent investment activity. The association of outcomes from the cases strengthens and extends the usefulness of the research theories (George & Bennet, 2005).

Veritas, US Genetic Sequencing Company

Founded in 2014, Veritas Genetics is a privately held Massachusetts-based whole genome sequencing company that has raised more than $50 million in financing, with investors including Lilly Asia Ventures, a biomedical venture capital firm headquartered in China, as well as China-based Simcere Pharmaceutical (Kavallines, 2019). In December 2019, Veritas suspended U.S. operations due to an adverse financing situation (Guerrero & Parry, 2019). The company, which was on the 2019 CNBC Disruptor 50 list of private companies whose innovations are revolutionizing industries and the way humans live, noted that the suspension of

operations impacted U.S. operations only and all customers outside of the U.S. would continue to be serviced (Kavallines, 2019).

The personal genome sequencing, which represents advanced and comprehensive genetic testing, represents sensitive personal data as explicitly defined within the updated FIRRMA regulations. The Code of Federal Regulations Parts 800 and 801, *Provisions Pertaining to Certain Investments in the United States by Foreign Persons* (2020), identifies sensitive personal data of U.S. persons to include the results of an individual's genetic tests, including any related genetic sequencing data, whenever such results constitute identifiable data. Several genetic and biopharmaceutical companies provided public comments regarding a negative impact on investment activity due to the broad scope of genetic information as it relates to national security concerns (C.F.R. Parts 800 and 801, *Provisions Pertaining to Certain Investments in the United States by Foreign Persons*, 2020).

While reviews by CFIUS are confidential and protected from public disclosure, a mosaic interpretation of the fact pattern of this case present a correlation of variables to link national security reviews of emerging technology, sensitive personal data of U.S. persons, and Chinese investment activity.

Grindr, US Dating Application

Initially released in 2009, Grindr identifies itself as "the world's largest social networking application for gay, bi, trans, and queer people" with over 27 million total users and 3.5 million daily active users. In 2016, Beijing Kunlun Tech Co., Ltd., headquartered in China, acquired 60 percent of Grindr and in 2018 acquired the remaining equity in the company (Song, 2019). In March 2019, multiple news outlets reported that Kunlun was preparing to sell the application due

to regulatory involvement – specifically an Order to Divest – from the Committee on Foreign Investment in the United States (Kim, 2019). This followed Kunlun's consolidation of operations of Grindr's software development and database administration to engineers based in Beijing (Song, 2019).

National security concerns specific to data privacy and the collection of sensitive personal data of U.S. citizens is explicitly defined within the updated FIRRMA regulations. The Code of Federal Regulations Parts 800 and 801, *Provisions Pertaining to Certain Investments in the United States by Foreign Persons* (2020), identifies sensitive personal data of U.S. persons to include identifiable data that is maintained of collected by a U.S. business that is greater than one million individuals at any point over the twelve (12) months preceding, non-public electronic communications including email, messaging, or chat communications, geolocation data, biometric enrollment data, or data stored or processed for generating a state or federal government identification card. Further, Kim (2019) noted that the potential access to information collected and retained by a dating application such as Grindr may be extremely valuable to foreign intelligence agencies for purposes of obtaining compromising information that may create personnel vulnerabilities for those holding a U.S. security clearance.

While reviews by CFIUS are confidential and protected from public disclosure, a mosaic interpretation of the fact pattern of this case present a correlation of variables to link national security reviews of mobile application technology, sensitive personal data of U.S. persons, Chinese investment activity, and the potential for data weaponization.

MoneyGram, US Money Transmitter

MoneyGram International Inc. is a global provider of money transfer services based in Dallas, Texas. In April 2017, MoneyGram and Ant Financial entered into a merger agreement wherein Ant Financial would acquire all outstanding shares of MoneyGram (MoneyGram Press Release, 2019). Ant Financial is an affiliate company of Alibaba Group Holding Limited, a Chinese multinational conglomerate holding company whose executive chairman Jack Ma is a Chinese citizen with links to China's Communist Party leadership (Roumeliotis, 2018). On January 2, 2018 MoneyGram issued a Press Release announcing the termination of the merger agreement stating that the cause was an inability to obtain the required approval for the transaction from the Committee on Foreign Investment in the United States.

The circumstances surrounding the termination, notably the focus on cybersecurity and the integrity of personal data provided for key insights into CFIUS' focus in sectors not traditionally associated with national security (Roumeliotis, 2018). This sensitive personal data includes identifiable data maintained or collected on greater than one million individuals, financial data, and geolocation data (C.F.R. Parts 800 and 801, *Provisions Pertaining to Certain Investments in the United States by Foreign Persons*, 2020).

While reviews by CFIUS are confidential and protected from public disclosure, the press release by MoneyGram and a critical interpretation of the fact pattern of this case present a correlation of variables to link national security reviews include: vulnerabilities or interference in U.S. lawful process requests specific to anti-money laundering or terrorist financing regulations, foundational financial technologies, sensitive personal data of U.S. persons, and Chinese investment activity.

Case Study Summary

The representative cases enumerated create a bricolage of similar outcomes from divergent investment activity in multiple economic industries. Associating the outcomes to strengthen the research thesis, as described by George and Bennet (2005), correlate hypotheses that evaluate the key components of the research questions; specifically, (a) the national security threat assessments undertaken are specifically targeted towards technology and sensitive personal data, (b) the enhanced deal risk associated with investments with a nexus to China, and (c) the economic, technological, and commercial impact of national security investment reviews which caused the suspension of operations, a forced divestment, and an abandoned transaction. The association of outcomes from these cases will further support and facilitate expansion of the research objectives.

Foreign Direct Investment and CFIUS: The China Threat

During the Annual Threat Assessment on January 29, 2019, the U.S. Director of National Intelligence stated: "China's pursuit of intellectual property, sensitive research and development plans, and U.S. person data, remains a significant threat to the U.S. government and private sector." Within a policy context, the pervasive paradigm of conflict versus collaboration established between the U.S. and China as the two leading global superpowers, as well as the two largest economies, creates circumstance which places the game pieces of the two countries at opposing ends of the board.

The rules of the game between trade policy and warfare exist in defined spectrums of collaborative game theory and pure-conflict game theory, respectively, which did not previously fully consider the state of play in twenty-first century power dynamics. Spalding (2019) furthers

that China's view of economic power is that it strengthens all fields of engagement – from the purchase or investment in technology to driving out commercial competitors to creating an army of academics. While China appears to embrace the underlying concepts of globalization, their totalitarian government actually limits most principals governing international behavior in free trade.

China as a Global Superpower

The state of foreign policy in China has shifted from relative neutrality into an assertive stance to secure China's core interests; wherein, the peaceful model for securing economic power may give way to considerable national security hard power interests (Zeng, 2017). These economic policies present both threats and opportunities for the global economy, particularly for the United States. The two countries maintain vastly different governments, politics, economies, and social orders which will impact the path forward as the nation's vie for global superiority. A key characteristic of how China continues to evolve as an economically independent superpower is the unique perspective of the socio-philosophical cultural foundation working in parallel process with the economics (Kasznár, 2018). This cultural foundation, rooted in an authoritarian ruling regime, permits longer-term strategic efforts based on the Chinese government, rather than the shorter-term Presidential and Congressional cycles within the United States.

Shobert (2019) describes China's globalization advancements in simple economic terms: China represents an expansive new market with untapped consumer demand and is home to a rising middle class. The heuristic evidence, generally, supports the proposition that the U.S. focus on free trade capitalism has created an economic justification as tacit endorsement for the authoritarian and hierarchical governmental structure in China. The current asymmetry of

objectives between the countries, according to Spalding (2019), has allowed China to weaponize its wealth and influence against the United States (and other countries around the world).

The influence expands, as China aims to be the world's leader in science and technology by 2050, a goal furthered through the 2008 launch of the Thousand Talents Plan which incentivizes individuals engaged in research and development in the U.S. to transmit that knowledge and research back to China in exchange for economic incentives (U.S. Senate Staff Report on China's Talent Recruitment Plans, 2019). These science and technology initiatives create a broad intersection between national security, military, and economic interests, with much of the research performed has dual-use applications in both a civil and military context. Financial influence is extant in various investment vehicles which originate from China, with the U.S. forced to take responsibility in addressing the threat.

CFIUS and China

The threat of economic espionage from China continues as an increasing concern for the national security interests of the U.S., principally around the power of technological superiority or the sensitivity and confidentiality of U.S. citizen information (Saha, 2012). China's Made in China 2025 plan sets forth direct initiatives with respect to the economic vision for the country, which includes the acquisition of intellectual property, sensitive information of both businesses and persons, as well as emerging and foundational technologies through various investment policies (McKinsey, 2019). These complex dynamics are clear when considering that not only is China the largest single investor in the U.S., but also has the largest number of CFIUS filings, as well as the largest number of transactions blocked and or forced to divest on national security grounds (CFIUS 2015 Annual Report to Congress).

The strategic priorities set forth in the China 2025 plan create a complex threat environment for the Committee on Foreign Investment in the United States ("CFIUS") to evaluate when considering inbound investment activity arising from China. CFIUS maintains a distinct mission to evaluate only the national security threats of investments; however, national security can be broadly defined and dynamic when considering the evolving state of power and conflict. The expansive interpretations of the terms U.S. national security, U.S. critical infrastructure, emerging technologies, and foundational technologies permit CFIUS to evaluate inbound investments in a holistic manner while effectively addressing the evolving threat landscape of the 21st century with cybersecurity and economic espionage at the forefront.

As the global economic power dynamics continue to shift, China and the United States both have a vested interest in a stable world order; however, each country does maintain their own national interest in preserving and expanding their power-role both economically and politically. Each country will react to this dilemma of "riding a tiger" in its own way, experiencing the forces of sitting on the back of a tiger (e.g. the global economy) and at the same time having difficulties stepping down (Christensen & Li, 2013). Within the context of the aggressive investment landscape in the ever-shrinking global economy, the tiger represents a pure-conflict between nations who are forged in a battle for economic, social, and technological superiority. CFIUS must act as the arbiter of this conflict in the U.S. with a focus on protecting the nation's infrastructure, public health and safety, and economy. The charge for the Committee must not only be on traditional war and conflict, but expand to include U.S. economic interests, intelligent warfare, and the constantly expanding dark web of cyber espionage.

National Security Game Theory

On February 6, 2020, Attorney General William P. Barr delivered the keynote address at the Department of Justice's China Initiative Conference, stating: For China, success is a zero-sum game. In the words of then-General Secretary Xi, Communist Party members should "concentrate [their] efforts on . . . building a socialism that is superior to capitalism." Such efforts, Xi claimed, would require Party members to "consecrate [their] entire spirit, [their] entire life," for socialist ideals. The reward for this sacrifice, Xi promised, is "the eventual demise of capitalism." This zero-sum game between the United States and China, in which the outcome of mutual cooperation does not exist, is described by Eggers (2011) as the naturally occurring "state of war" in the competition for vital goods. While game theory's original purpose was to explain economic behavior through "mathematical notions of suitable games of strategy" by John von Neumann and Oskar Morgenstern in 1944 in Theory of Games and Economic Behavior, a modern pure-conflict game theory must be utilized in the twenty-first century to examine the strategies at the convergence of national security and economics (Yin and Hamilton, 2018).

The traditional mathematical approach to game theory involves two (or more) decision-makers, who have clearly defined preferences among possible outcomes, with strategies which will enable them to evaluate and assign utility to themselves and to their competition; ultimately, the game has players, strategies, and outcomes. Colman (2013) argues that these assumptions which underpin game theory models create an impractical abstraction functioning as an idealization of social (or political in the context of this study) interaction. This phenomenon occurs when the actions of the players within the game defy the economically predicted outcome, which is supported by non-economic factors which influence player behavior.

Varoufakis (2008) argues that a modern approach to game theory in the social sciences embraces the coherent incorporation of greater organizational complexity (and social dimensions) in the game's framework, which can be particularly useful when evaluating national security as an economic game with non-economic variables.

Varoufakis (2008) vision to utilize game theory as a unifying framework for social sciences research is further supported by the 2017 research of Hafner-Burton, Haggard, Lake, & Victor which evaluates the birth of behavioral game theory within the context of complex political theory. The research further opens the door to less rigid decision metrics for international relations, and rather notes a behavioral revolution that is comparable with neoclassical theory that will provide new insight into political and decision-making processes for cooperation and conflict. These complex decision vectors that exist at the convergence of national security and trade policy present an opportunity to evaluate a modernized approach to the study of investment reviews by CFIUS, particularly in the context of pure conflict competition.

Theory Convergence

Game theory models follow an analytical approach that is designed to map interactions between cooperating or competing decision-makers, with two distinct assumptions: (1) that the decision-makers are rational, and (2) that they account for their opponents anticipated behavior when choosing a course of action (Taquechel, & Lewis, 2012). Within the context of national security and an investment evaluation by CFIUS, the decision-makers operate under a rational assumption following the mission of the Committee; however, what cannot be known is whether the investment decision by the foreign entity was rational on economic factors or whether the

decision was an irrational business move but rational from the perspective of espionage (i.e. the control, access, or influence over the U.S. business). Hafner-Burton et al. (2017) identify that an updated behavioral game theoretic for international relations contrasts rationality with individual choice processing and strategic interactions, noting that fundamental differences may be at work.

Due to this first unknown specific to rationality, the Committee can also not assume that their opponent's behavior can be reasonably anticipated; as such, any evaluation of foreign direct investment that follows a traditional theory of collaboration in trade policy is flawed. Under these two distinct assumptions of game theory, the Committee must consider the investment using a pure-conflict model in order to adequately address the potential threat, vulnerability, and consequence to U.S. national security.

Similarly, Taquechel and Lewis (2012) expand away from the traditional game theory approach to distinguish between the effects of information asymmetry and availability, which creates a bias as part of the adversary design-basis threat approach. As the two underlying game theory assumptions are dynamic, so is the availability of information in CFIUS evaluation. The Committee reviews information from multiple sources, classified intelligence from the U.S. government, unclassified publicly available information, as well as information that the parties to the transactions disclose. Conversely and asymmetrically, the parties to the transaction only have direct access to the information that they have elected to disclose; and while they may obtain publicly available information, they will be unable to obtain any classified intelligence. This information asymmetry furthers the case for pure-conflict game theory, as each side knows a distinct gap between the availability of information.

Further, Caudle (2009) and Constantinescu (2017) argue that strategies for protecting national security are fundamentally evolving away from narrowly focused military threats to a broader globalized context, and the broader threat environment should not be compartmentalized but rather evaluated in a holistic manner which include the economic warfare arena as well as the intangibles of culture as well as physical and virtual assets within borders. The holistic evaluation of national security by CFIUS creates further imbalance in the transactional review because the parties to the transaction were primarily driven to their investment decision by business, economic, and financial factors, while CFIUS reviews the transactions with those items as ancillary – as the primary focus is on the broadly defined nexus of national security.

Research conducted by Costello and Costello in 2015 identified that negative outcomes can occur when, during the course of global economic games, participants utilize propaganda to impact the perception of stakeholder payoffs – such as reinforcing the concept that evaluating investments on national security grounds will curb free and open investment into the United States, as is often the case with critiques of CFIUS reviews. At the fundamental core, national security reviews conducted by CFIUS should be considered pure conflict as the evaluation itself falls outside of traditional parameters of collaborative game theory. The model requires an expansion into an arena of war and espionage rather than one of trade policy and diplomacy. While the model exists as a foundational framework for the reviews, CFIUS needs to review the transactions in a manner consistent with both asymmetric information and asymmetric warfare.

The Game Theory Narrative

As world superpowers continue to acquire strategic and critical assets, the United States must evaluate foreign direct investment ("FDI") as a zero-sum game with specific regard to the

national security implications of these strategic investment decisions. Game theory has been utilized throughout history to evaluate and identify optimal decision-making for multiple parties, often with conflicting priorities and asymmetrical information. The Cold War is examined under game theory models by focusing on the doctrine of mutually assured destruction where each side reaches a Nash equilibrium per se as neither has an incentive to disarm or to initiate a nuclear war. These stakes map the world as a "two-person, zero-sum" game (Belletto, 2009). The theory transcends scholarly and practical disciplines from evaluations within the context of war and espionage between nation states through assessing trade policy within the framework of globalization and foreign direct investment.

The game theory model tasked with evaluating these two seemingly divergent topics of war and trade requires a much closer alignment with the strategies of pure conflict in war than the collaborative models of diplomacy. The threat vectors of the 21st century require a fundamental shift in how CFIUS should utilize a zero-sum game theory model. War exists as a visceral representation of a zero-sum game, certain death versus certain survival, in which no mutually cooperative strategy exists between the parties (Eggers, 2011). In contrast, parties to the game of globalization (e.g. foreign direct investment) employ a cooperative game theory strategy through multicategory models and variability in individual payoff scales (Costello and Costello, 2015). This cooperative strategy is dominant in evaluating the factors associated with FDI within the context of national security reviews.

The current model for evaluating foreign direct investment in the United States by CFIUS, as well as the underlying models which set the foundation for the U.S. open investment policy, act in inherent conflict because the national security risk of investments by foreign

powers needs to be more adequately addressed using a zero-sum model. The pure-conflict model is utilized in situations where power is the scarce resource which countries are in competition for, as power over others occurs as a zero-sum resource challenge (Chung, 2015).

The complex concept of power within the broad scope of espionage between nations require an evaluation which adequately addresses the threat environment in the 21st century – a pure-conflict game theory model where investments (i.e. power over other nations) are weaponized. Structurally, it can be argued that the rapidly evolving landscapes of economic and cyber espionage via investment activity or cyber-attacks may be considered an act of international war due to violations of sovereignty and territorial integrity, furthering the position to evaluate FDI as a national security game bounded by zero-sum utility (Pun, 2017).

FDI as a Zero-Sum Game

Globalization, vis-à-vis foreign direct investment, is a multidimensional phenomenon with grave implications to national security due to the complex interdependencies of free trade, information security, and economic development acting as powerful forces presenting both threats and opportunities for the international community (Davis, 2003). As world superpowers continue to acquire strategic and critical assets, the U.S. needs to evaluate FDI as a zero-sum game with regard to the defense industrial base, intelligence strategy, technological superiority, and data as the world's most valuable resource. The balance of power of the international system is anarchic, with each system of government unable to know the intention of others, while simultaneously working to protect and further their own interests (Avey, Markowitz, & Reardon, 2018).

In October 2018, the Office of Investment Security of the United States Department of the Treasury released a determination that although the vast majority of foreign direct investment in the United States provides economic benefits to our nation – including the promotion of economic growth, productivity, competitiveness, and job creation – some foreign direct investment threatens to undermine the technological superiority that is critical to U.S. national security. This public acknowledgement should act as the lynchpin for modifying U.S. national security trade policy to a more aggressive pure-conflict game both in terms of countries of origin as well as industries that are of strategic interest for the defense and military industrial base.

China Pure-Conflict

While the U.S. and China present close economic ties that benefit both countries, the reality exists that the two nations are not strategically aligned; this complex dynamic shifts the game theory from collaborative open markets towards pure competition (zero-sum) with respect to the national security issues on which CFIUS adjudicates (Mir, 2019). As one country wins the battle for superiority another must lose, whether the stakes are economic, political, or social. These stakes are defined, but the intentions of each country cannot be known in a world of information asymmetry. CFIUS cannot be certain whether a proposed investment is a bonafide strategic business investment or an action taken to further an adversary state interest. For this reason, CFIUS must view the current state of play as one of zero-sum, particularly with countries such as China that have distinct and public strategies to overtake the U.S. in multiple industries.

Yin and Hamilton (2018) identify that while the U.S. and China remain the world's two largest economies, as well as each other's largest trading partners, that significant multi-dimensional disputes put the countries at the brink of a trade war. Traditional trade metrics have

been conducted vis-à-vis economic game theory that sought collaborative two-player benefit for both countries; however, significant non-economic pressures have made the current state of play unsustainable. While a trade war, or a pure conflict game theory model, may have been deemed non-optimal under mathematical conditions, an updated model notes that conflict can become a favorable position for the state if it can inflict greater asymmetric losses and a greater loss of comparative advantage (Yin and Hamilton, 2018). The United States, through pure conflict CFIUS reviews that include economic and non-economic factors, can obtain the favorable competitive position against China, when considering future game theoretic strategies.

As evidenced by the Made in China 2025 plan, as well as the number of CFIUS filings originating from Chinese investors, it is clear that the acquisition of U.S. businesses and intellectual property are a key component of China's long-term strategic plan for global economic dominance. The strategy, however, is not only an economic one – as evidenced by the number of transactions that CFIUS has investigated, blocked, and forced to divest on national security grounds. The U.S. needs to continue to strengthen the national security reviews and the evolution of how globalization and foreign direct investment are viewed within the confines of national security. As a country, the U.S. can elect to collaborate with China and maintain an open investment policy while still ensuring the national security of the country remains intact, by ensuring that CFIUS views these investments through the lens of pure-conflict rather than the traditional win-win collaborative games.

The Policy Delphi: Embracing Conflict

The Policy Delphi process for this research focused on the introduction and exploration of disagreement on the complex policy issues facing the United States specific to the national

security and economic security issues exigent in foreign direct investment activity. The Policy Delphi technique is a structured communication which will investigate the underlying frameworks and theories and contribute to an informed analysis of all possible options and supporting evidence (Turoff, 1975). The research does not, and was not intended to, result in a consensus resolution but provides a factual basis for advocacy of a modern game theoretic when considering these complex problems. Importantly, the role of the Policy Delphi in this research was to expound on the principles of conflict which are present in the twenty-first century, examining the nexus of the conflict while creating model conditions necessary for the future of the United States.

Chapter Summary

This research develops a new theoretical framework for evaluating foreign direct investment in the United States, while providing meaningful insight into why these changes are necessary in an era of modern warfare. The study aims to provide nuanced explanations for complex, and often politically challenged, concepts of globalization and free trade. This interpretation must be informed by longstanding and bipartisan U.S. policy of foreignness to foreign investment, while placing limitations on foreign investment necessary for the protection of national security (Wakely & Windsor, 2014). However, for the United States to maintain its national security, the nation must secure a position of economic strength and leadership in technology; acknowledging that in the twenty-first century yielding global power and influence has a direct nexus to economics (Barr, 2020; Constantinescu, 2017).

Global Trade Optimism

Costello and Costello (2015) argue that many people are led to believe if global trade was curbed from the format it operates under today, World War III would start; a concept found in International Business textbooks, as well as business publications such as the Wall Street Journal rehashing trade wars that hurt global production in the 1930s (e.g., Davies, 2005) (p. 33). The United States maintains an open investment policy because of the economic imperative for outside investments to spur economic growth and technological innovation. The United States Treasury Department, as well as Congress, have openly recognized the vital importance of foreign investment to the U.S. economy (C.F.R. Parts 800 and 801, *Provisions Pertaining to Certain Investments in the United States by Foreign Persons*, 2020).

However, the capital and risk tolerance required to act as a catalyst for these high-risk investment categories is considered too large for domestic investment only, with the issue further compounded by a lack of public sector investments in these emerging industry categories. The U.S. government does not presently exist in a manner which would permit the public sector to invest heavily in innovative technology sectors at a scale large enough to replace private sector investment from foreign companies and countries (Spalding, 2019).

In addition to structural investment issues within the U.S., there is firm evidence that globalization furthers a path towards the promotion of economic prosperity, the reduction of poverty, and the advancement of equality worldwide; these opportunities are only possible if the process leading towards economic growth aligns with nation-state policies (Davis, 2003). There is both global benefit as well as a real threat to global utility if countries begin to isolate and take on protectionist economic policies. Patman and Southgate (2016) illustrate this global utility in

evaluating that the Obama administration utilized a multilateral approach based on collective action and common security when addressing global economic and trade policy.

While globalization has extensive and empirically documented positive results for developing nations, there exists a paradox when considering whether investments between world superpowers facilitates a similar net benefit. In comparing superpowers competing for finite resources – such as the power associated with technological innovation, military and defense dominance, and economic superiority – the landscape shifts to a zero-sum game, which dictates that a gain for one country results in a loss for another.

Modern Framework

While existing literature specific to CFIUS and national security reviews for global investment is limited, this research focused on establishing a critical interpretive synthesis of available literature (i.e. case studies, theory papers, book chapters, and government records) on the broader mosaic concepts of national security, economic espionage, China grand strategy, and game theoretic concepts for competing superpowers. Although there are gaps identified in the empirical research at the convergence of national security and trade policy, the key literature synthesized within this research support both the conceptual framework, as well as the exigent need for additional empirical studies to further examine the diverse and complex body of knowledge.

Chapter 3: Methodology

"It is tempting, if the only tool you have is a hammer, to treat everything as a nail."

Abraham Maslow (1966), Law of the Instrument

Methodology

The beliefs and values of the individual exist as intellectual tools, or instruments, through which they view the world. It is for this reason that setting forth new policy framework is not easily achieved, as the beliefs of the individual – as evaluated in the Policy Delphi technique – is best achieved through diverse and conflicting positions. Informed interpretations, as those Plato identifies in The Republic, shape the perspectives that man draws from the shadows of the cave (Zamosc, 2017). Navigating these issues in a complex and modernized global ecosystem requires objectively reevaluating the mosaic factors of national security, economics, intelligence, and trade policy; subverting beliefs gleaned through the "shadows" to force reality to define perspective. Appropriate global governance requires that this educated framework be one which considers and bounds national security reviews considering the perspectives of all stakeholders, not one which ignores the law of unintended consequences.

Introduction

The purpose of this study was to investigate the utility of the Policy Delphi technique to evaluate and establish a modernized framework for addressing national security risk in foreign direct investment. This study centered on the reviews conducted by the Committee on Foreign Investment in the United States (CFIUS), the interagency committee tasked with evaluating the U.S. national security risk posed by foreign investment. The study examined the complex mosaic of an open investment policy at a time where economic security and national security are becoming

indistinguishable. This study utilized the Policy Delphi technique to identify, evaluate, and examine multivariate policy issues that either directly or indirectly influence the decisions reached by CFIUS.

This thesis provides a critical interpretive synthesis of the related literature and used empirical methods, including qualitative investigative case study approaches and the Policy Delphi technique, to identify and outline critical observations and implications for policymakers to establish stable national security and growth oriented economic policies. This chapter describes the design, methodology, statement of problem, research questions, participant selection, and implementation of procedures for the study.

Problem Statement

Current models of evaluating the impact of foreign direct investment in the United States focus primarily on the positive resulting factors of open borders and a free market economy; most of which assume that the opportunities of globalization are best addressed within the current U.S. democratic political system of collaboration (McKinsey, 2019; Patman & Southgate, 2016). However, foreign investments in critical and emerging technologies, critical infrastructure, and troves of sensitive data present a pervasive threat to U.S. national security.

CFIUS, as the interagency committee tasked with evaluating this national security paradigm, reviews the threat presented by the foreign investor, evaluates the vulnerability of the target company, and assesses the overall potential consequence of the investment activity to US national security. Therefore, there may be a need for the US Government to consider the viability of a modern pure-conflict game theory approach to address the national security risk of foreign direct investment and enhance critical infrastructure protection. This research utilized the Policy

Delphi technique to examine the desirability, feasibility, and priority rankings of suggested resolutions.

Policy Delphi Technique

The Policy Delphi technique is a dynamic process which seeks to generate the strongest possible opposing views of a major policy or strategy issue (Mcgeoch, Brunetto, & Brown, 2014). Turoff (1975) describes that policy issues do not have, nor can research seek, a consensus resolution; rather, in the face of these issues experts can only supply a factual basis for advocacy. This research utilized participants across the public and private sectors in the broad disciplines of business strategy, U.S. national security and trade policy to examine the models developed through the course of the research. Meskell, Murphy, Shaw, & Casey (2014) further identify that the Policy Delphi technique provides practitioners a useful benefit in assessing and validating expert knowledge that could be contestable in a range of practical situations.

The Policy Delphi technique followed the model designed by Turoff (1975) and was completed vis-à-vis in-depth interviews conducted by the researcher, followed by surveys in successive phases of the research.

A Policy Delphi should be able to serve any one or any combination of the following objectives (Turoff, 1975):

- To ensure that all possible options have been put on the table for consideration
- To estimate the impact and consequences of any particular option
- To examine and estimate the acceptability of any particular option

Policy Delphi Research Design

The research design of a Policy Delphi for a specific policy issue is critical, as the process can be very demanding for both the researcher and the participants. Turoff (1975) identifies six broad phases, which this research has customized for appropriateness of fit to the statement of the problem and research questions.

(1) Formulation of the issues. What is the issue that really should be under consideration? How should it be stated?

(2) Exposing the options. Given the issue, what are the policy options available?

(3) Determining initial positions on the issues. Which are the ones everyone already agrees upon and which are the unimportant ones to be discarded? Which are the ones exhibiting disagreement among the respondents?

(4) Exploring and obtaining the reasons for disagreements. What underlying assumptions, views, or facts are being used by the individuals to support their respective positions?

(5) Evaluating the underlying reasons. How does the group view the separate arguments used to defend various positions and how do they compare to one another on a relative basis?

(6) Reevaluating the options. Reevaluation is based upon the views of the underlying "evidence" and the assessment of its relevance to each position taken.

These six broad phases as described represent a systematic effort which requires from two to five rounds of Delphi procedures. For purposes of this research, the six phases have been integrated into four representative phases for four rounds. The four rounds and four phases (4x4) have been selected as an appropriate alignment for the research in order to obtain meaningful information, and in recognizing the time, resource, and participant limitations of this study.

Policy Delphi Research Implementation

For purposes of this research, the design of the Policy Delphi was implemented through the following phases:

(1) Issue deconstruction and framing

(2) Position identification, justification; counter position identification, justification

(3) Explore and assess motives for disagreements; defense of positions

(4) Generate a framework and guidelines for the analysis of national security investment policy; provide recommendations for consideration

The four distinct rounds of this research were conducted in the following manner:

(1) Critical Interpretive Synthesis. The researcher identified and synthesized issues through critical interpretive synthesis of mosaic sources; including, but not limited to case studies, empirical research, non-empirical information, government data and documentation, public records.

(2) Individual Interviews (Appendix A). The researcher utilized a qualitative open-ended interview to perform issue deconstruction and framing with each participant individually. During this round the participants were encouraged by the researcher to fully examine their own position and the contrarian position. Following the three primary research questions of the study, the researcher then utilized inquiry-based research questions to investigate the impact of U.S. national security considerations on FDI, with additional observations on the added value or cost that may be realized by implementing a modern pure-conflict game theory approach. The interview further examined the respondent's perspective on the current state of globalization, geopolitics, and national security issues.

These interviews sought to develop observations for issue ranking, refinement, and potential resolutions to these complex issues.

(3) Survey: Issue Ranking (Appendix B). This sequential phase of the research represented the second of three data collection activities. The survey followed the initial interview, at which time the research questions were deconstructed and framed into pertinent policy issues. The survey contained a list of ten (10) issues, each with an abstract summary description. The participants were asked to score the importance of each issue using a five-point Likert rating scale from very important to very unimportant, including a neutral point for "no judgment." The importance ranking was determined through the average rank value of the responses. Following each issue, there existed an open text box for the participant to provide a potential resolution for each of the ten issues.

(4) Survey: Desirability, Feasibility, Importance, Confidence of Consensus Policy Recommendations (Appendix C). This sequential phase of the research represented the third and last of three data collection activities. The survey followed the participation in the interview and issue ranking survey. The ten (10) issues were listed in the survey by their order of importance as ranked by the participants in this study; noting that the final rankings below may not be the exact order in which any individual participant personally ranked the issue. Following each of the issues were two potential resolutions that had been synthesized by the researcher based on resolutions proposed by participants in this survey. Participants were asked to score each resolution from best to worst based on the desirability, feasibility, importance, and confidence in the resolution. The ranking was then determined through the average rank value of the responses.

Turoff (1975) broadly describes these factors as follows: desirability represents the effectiveness or benefits of the resolution, feasibility represents the practicality of the resolution, importance represents the priority or relevance of the resolution, and confidence represents the validity of the argument or premise of the resolution.

Participant Selection

Grisham (2009) asserted that one of the key factors of the usefulness of Policy Delphi research is in the selection of participants; with Turoff (1975) further recommending the inclusion of devil's-advocate types and lateral thinkers. Participants for a Policy Delphi study should be selected to represent a diverse spectrum of views on a topic, with ranges of participants from ten (10) to a maximum of approximately fifty (50) (Turoff, 1975; Grisham, 2009; Meskell, Murphy, Shaw, & Casey, 2014). The initial population selected for this study was thirty (30) carefully selected participants who were chosen based on domain expertise. Due to the multiple round structure of the Delphi method utilized, attrition was not to exceed 50 percent to ensure validity.

The participant selection criteria for this study was chosen carefully by the researcher to ensure that all sides of the issues under examination would receive fair representation by informed participants, maintaining the requisite heterogeneity to ensure the validity of the study (Turoff, 1975). While Turoff (1975) denotes that issues addressed by a Policy Delphi are such that there are no groups of homogeneous experts, the participants must be informed advocates and referees of the issue at hand. The respondents were selected from a defined population of interest based on a known or disclosed expertise (academic or professional), in the public or private sector, within the domains under review for this research. The participants have collective involvement in more than 1,000 transactions under CFIUS jurisdiction with cumulative transaction value in excess of

500 billion dollars. Many of the participants hold an advanced degree or terminal degree in public policy, international relations, economics, or national security.

The participants included current and former government officials involved in the CFIUS process, private sector attorneys and consultants who advise on transactions under national security investment review jurisdiction, company executives and board members who have been through the CFIUS process, and scholars who study matters of geopolitics and globalization. Specifically, the government officials are distinguished by more than 200 years of aggregate military, government, and intelligence community service, including having held senior leadership positions at the National Security Council (NSC), the Joint Chiefs of Staff (JCS), the National Security Division (NSD) at the U.S. Department of Justice (DOJ), the Foreign Investment Risk Management division at the U.S. Department of Homeland Security (DHS), the U.S. Department of Commerce, the National Security Agency (NSA), the Central Intelligence Agency (CIA), as well as other defense, economic, and security agencies.

The private sector participants in this research included U.S. entrepreneurs and company founders who have received foreign direct investment which resulted in a national security investment review. The sample also included investors, consultants, academics, and legal advisors based in the U.S., China, and the broader Asia-Pacific region to provide broad perspective on the issues addressed by this research. These individuals often hold prestigious fellowships at leading global think tanks such as the Council on Foreign Relations (CFR), the Center for Strategic and International Studies (CSIS), and the Center for a New American Security (CNAS).

Although the respondent sample were ultimately self-selected to participate in the study based on an invitation to participate, the researcher acknowledges that there may exist a possibility of inappropriate selection based on the researchers defined target population parameters.

Research Questions

The following inquiry-based research questions were used to investigate the impact of U.S. national security considerations on FDI, with additional observations on the added value or cost that may be realized by implementing a modern pure-conflict game theory approach.

1. What are the key game theory strategies employed by the US and investing countries, specifically China, in conducting national security reviews in conjunction with investment activity?
2. What impact does national security risk have on enterprise deal value, and execution deal risk, in foreign direct investment transactions in high-risk industries from high-risk jurisdictions?
3. To what extent do CFIUS reviews impact the development of critical technologies and economic incentives around foreign direct investment versus domestic investment?

Instrumentation

Individual interviews were conducted by the researcher with each responsive participant to deconstruct and frame each critical policy issue based on the initial themes gathered from the critical interpretive synthesis (Appendix A). These qualitative open-ended interviews followed a disclosure of these themes which were sent to participants in advance of the interviews for cognitive preparation to enhance the rigor and validity of the positions. The researcher utilized a

semi-structured interview protocol in order to ensure each issue was vetted to the degree in which it would be useful for the study.

Two online surveys were then developed utilizing Question Pro and sent to responsive participants from the interviews (Appendices B and C). The online surveys followed a linear sequence, with the first as a call to determine the importance ranking of the issues. The second online survey was then sent to evaluate the variant factors of the policy recommendations. Both online surveys ultimately reflected an emergent theme that was formulated from the individual interviews during reconstruction, consistent with the development of themes from the critical interpretive synthesis and literature review (Turoff, 1975).

Data Collection

The data collection for this research was conducted utilizing a mixed methods approach. The individual interviews permitted the researcher to collect, analyze, and review qualitative open-ended responses to establish themes which underlie policy principles. The online questionnaires provided quantitative data which indicated levels of consensus and direction of consensus, as well as rating scales for the desirability, feasibility, importance, and confidence of the consensus policy recommendations.

Data Analysis

The analysis of data collected during the three phases of this research was completed using a mixed methods approach. The responses to the phase-one interviews were qualitatively evaluated and deconstructed until emergent themes were exposed. These themes were then bracketed to create the ten policy issues for phase-two of the research. During phase-two of the research the ten policy issues were then ranked according to the relevant importance to each participant using a

Likert-like scale. A mathematical calculation was then performed on the numerical scale selections for phase-two to generate the ranking using an overall weighted average value of the response for each policy issue.

Each of the policy issues during phase-two also contained suggested resolutions by participants, which were then grouped under the policy issue headings to develop themes. For each of the policy issues, the themes were refined into two primary resolutions per issue; this synthesis resulted in a total of twenty resolutions for ten policy issues. The decision to consolidate into two themes was made based on an evaluation of the similarities and differences of the respondent resolutions, as well as to mitigate the potential for respondent fatigue and attrition.

These two primary resolutions per policy issue, developed through synthesizing themes, were utilized to structure the framework for the final phase of the research which represents the desirability, feasibility, importance, and confidence of resolution. Participants were then asked to rank each resolution for these four factors, again in a Likert-like scale. The results were then evaluated in the same manner as the previous phase to generate a ranking based on the overall weighted average value for the potential resolution.

Ethical Issues

This research obtained approval from the Robert Morris University Institutional Review Board (IRB) following a review of the participants informed consent letter. The entire target population, including and excluding those voluntary study participants, were informed of the core components of the study as well as the associated confidentiality, privacy, and voluntary nature of the research. This research was denoted as quasi-anonymous as while the participants, and their respective responses, are considered confidential and will not be disclosed, the researcher could

link the participants to their responses. This quasi-anonymous status permitted the researcher to dispatch subsequent phase surveys to respondent participants. It also allowed the researcher to better synthesize, interpret, and draw observations from the responses. Participants were informed of this study characteristic, noting that the confidentiality of their identity and any link to their responses was guaranteed and will not be disclosed in any written or published material resulting from this study.

Researcher Bias

The researcher discloses three biases at the convergence of U.S. national security and trade policy, noting that the researcher has spent the last few years of his career professionally addressing these issues in all phases of the CFIUS national security review process. After spending years assisting companies in navigating the CFIUS process, as well as working with the U.S. government in enforcing conditions on transactions, the researcher holds the belief that, in some cases, the economic and business realities are not adequately addressed in unilateral decisions made by the U.S. government. Equally as important, however, is the position that the national security, economic, technological, and political threat posed by China should be considered the most critical risk posed to the U.S. as the leading global superpower.

While the researcher acknowledges their own expertise and bias within this investigative research, these professional experiences provide key sources of insight throughout this study through a nuanced understanding and interpretation of the literature, case studies, and Policy Delphi. It is the researchers position that this domain expertise mitigates the risk of misinterpretation of the author's intent or of the resulting observations.

Limitations of Research Method

There exist inherent limitations in the mosaic approach taken for this research, which combines a critical interpretive synthesis of available literature, an investigative review of case studies, and a Policy Delphi. This research is inherently limited by a present lack of empirical literature on the CFIUS process and global national security investment reviews in general; as the concepts have not yet been examined due to various factors – including the length of time the regulations have been established, and the classified nature of much of the information.

Due to the conventional, and unconventional, interpretations of diverse sources of literature, including un-classified U.S. government reports, public statements by government officials, non-empirical evidence, and the participants selected by the researcher, it is unlikely that the conclusions drawn by this study could be precisely replicated. Replicability, in this case, is further hindered by point-in-time economic and political considerations of the parties in power. The insights proffered by a qualitative synthesis within an academic arena lacking in literature creates both limitation and opportunity for future integrative research.

The participant selection criteria for this study was chosen carefully by the researcher to ensure that all sides of the issues under examination would receive fair representation by informed participants. The respondents were selected from a defined population of interest based on a disclosed expertise (academic or professional), in the public or private sector, in any of the following arenas: CFIUS, trade policy, economic espionage, national security, China, or business strategy. Although the respondent population self-selected to participate in the study based on an invitation to participate, the researcher acknowledges that there may exist a possibility of inappropriate selection based on the researchers defined target population parameters.

The researcher further discloses that the timing of the study, when the Policy Delphi was developed and administered, was during calendar years 2019 and 2020. These dates are important based on the economic, trade, and political issues which arose during the Presidency of Donald J. Trump, as well as the fact that 2020 was a U.S. election year. The global economic, national security, and trade environment during this period was extremely dynamic, which was denoted by significant conflict with China, Russia, and Iran. The researcher notes that during other periods of time, historical or future, the observations drawn from a similar study may differ meaningfully.

Lastly, the researcher discloses that in any Policy Delphi there exists a risk for attrition of respondents. The researcher notes that during this study the attrition rate had no significant impact on the validity of the Policy Delphi process or the resulting observations.

Chapter Summary

This research investigated and analyzed the complex convergence of national security, trade policy, and economics through three distinct methodological approaches in four rounds: (1) critical interpretive synthesis, (2) individual interviews, (3) survey for issue ranking, and (4) survey for desirability, feasibility, importance, and confidence of consensus policy recommendations. The individual interviews were conducted by the researcher to deconstruct and frame each issue, while the surveys were developed and sent to responsive participants in an online format. The online surveys followed a linear sequence to first rank the issues and then evaluated the variant factors of the policy recommendations.

The findings in this study provide for a modern conceptual framework to further inform how the United States should evaluate national security issues in the twenty-first century, with the results to be utilized by policymakers to improve decision making as it relates to the U.S.

position as a global superpower. In addition, this research makes recommendations for enhancing national security risk assessments through the direct inclusion of economic considerations in order to improve the process for evaluating foreign direct investment.

Chapter 4: Results

"The process of perception links people to their environment and is critical to accurate understanding of the world about us." - Donald Daniel and Katherine Herbig (1982)

Overview

The findings of the Policy Delphi are presented in this chapter, reflecting the sentiments of the participants on the policy issues ranked by importance as well as the recommended resolutions and associated desirability, feasibility, importance, and confidence. The resolutions provide meaningful insights for policymakers, government officials, and private sector stakeholders to consider when evaluating the interconnected domains of national security and trade policy. While the participants represent diverse perspectives, from US government officials to foreign investors, the consistency of the order rankings and resolution rankings are illustrative of a valid representation of global viewpoints on these issues.

This chapter describes the results of this study in two primary sections. First, the results of the issue ranking survey, based on importance of the national security and trade policy issues, are presented and described. Second, the results of the ranking of recommendations, based on the four factors of desirability, feasibility, importance, and confidence, are explained. These two sections create the foundational information for the recommended policy resolutions, key observations, and strategic guidance provided in Chapter 5 of this research.

Results of the Study: The Importance of National Security and Trade Policy Issues

A total of thirty participants were included in the first phase of the participant contributions to this research, which was the interview with the researcher. Subsequently, twenty-seven of the participants completed phase two of the research by completing the online

survey to rank the ten policy issues. Finally, twenty-eight of the original thirty participants completed phase three of the research by completing the online survey to rank the recommended resolutions for the policy issues.

During the first phase of interviews the researcher utilized a qualitative open-ended interview to perform issue deconstruction and framing with each participant individually. The interviews were conducted via teleconference and videoconference with participants, with an average length between thirty and sixty minutes. During the interview the participants were encouraged by the researcher to establish and expand on their position of broad globalization, geopolitical, and national security themes, and then to specifically examine the research questions posted by this research. The results of these interviews allowed the researcher to bracket the top ten key concepts in order to develop themes for issue ranking, refinement, and potential resolutions to these complex issues. These ten policy issues, with abstract descriptions, are as follows:

1. **Zero-sum game theory in technology, data, and infrastructure industries.** The U.S. government reviews investments from China with an orientation toward pure-conflict zero-sum game theory, which reduces Chinese investment in U.S. businesses.
2. **Clarification of emerging, foundational, and critical technologies.** The expansion of jurisdictional scope in national security reviews for technologies may be misinterpreted or inconsistently applied based on either limited definitional mandates or overly broad representative sectors as it relates to these categories of technology.
3. **United States industrial policy, technology policy, and research and development funding.** The U.S. presently lacks a well-formulated and coordinated industrial policy

that promotes economic advancement, technological innovation, and national security.

4. **Creating economic incentives for U.S. companies with limited capital market access under national security investment review jurisdiction.** National security investment reviews may impact the ability of companies to raise funds at the front-end of the business lifecycle before commercial viability or to continue to operate profitably through commercial end-of-life.
5. **Information asymmetry between transaction parties and the U.S. government.** The national security investment review process operates within a model which creates information asymmetry due to the discretion that governments have over classified intelligence and national security specific information, with limited public oversight or ability to effectively litigate.
6. **Clarification of value considerations of U.S. companies by Chinese investors.** The national security investment review process creates an increased transaction premium for foreign investors, particularly in a competitive bid process.
7. **CFIUS Zeitgeist – inconsistent standards for evaluating national security risk.** The political ideologies of administrations can cause agencies within the national security review process to evaluate national security considerations inconsistently, creating an inefficient outcome due to an imbalanced risk and reward calculation.
8. **Incomplete understanding and acknowledgement of Chinese culture, politics, and economic systems.** The relationship between the U.S. and China is not

adequately understood and is often evaluated through an ideological perspective of pure conflict.

9. **Exploration of collaboration as the path forward.** The dynamism of globalization has created an environment where U.S. grand strategy must include collaboration and geopolitical stabilization in the relationship with China.
10. **Expanded domain of national security**. With the increasing interconnectedness of national security with economic and technological considerations, national security investment reviews should have an expanded focus into these domains; with more consideration to second and third order consequences of non-traditional national security risks

The top ten policy issues that were developed from the interviews established the framework for the next phase of the research, the issue ranking survey. In the issue ranking survey, conducted via an online survey platform, the participants scored the ten policy issues by importance on a five-point Likert-like scale. The importance ranking was determined through the average rank value of the responses. Additionally, the participants were asked to provide a recommended resolution for each policy issue, if possible. The results of the rankings, based on importance, are reflected in Table 2.

Based on the scale, issues were ranked as very important to very unimportant, with scores ranging from five to one, respectively. A score of 2.0 or less would result in a policy issue being deemed unimportant for purposes of this evaluation. As illustrated within Table 2, the minimum score for the ten issues was 3.37; meaning that overall, none of these issues was deemed unimportant. The scores, ranging from 3.37 to 4.30 are interpreted by the research to indicate

that all issues included in this research merit the attention of stakeholders involved in national security and trade policy. Further, a score of 4.0 or higher, of which there are four policy issues, is interpreted to mean that the issue is deemed important to very important by the consensus of respondents and critical factors for the decision-making process in national security investment reviews.

Table 2.
Importance Ranking of Policy Delphi Issues

Policy Issue	Ranking
1. US Industrial Policy, Technology Policy, and Research & Development Funding	4.30
2. Clarification of Emerging, Foundational, and Critical Technologies	4.15
3. Exploration of Collaboration as the Path Forward	4.07
4. Expanded Domain of National Security	4.04
5. Zero-Sum Game Theory in Technology, Data, and Infrastructure Industries	3.85
6. Incomplete Understanding of Chinese Culture, Politics, and Economic System	3.78
7. Chinese Investor Valuation Considerations	3.67
8. CFIUS Zeitgeist - Inconsistent Standards for Evaluating National Security Risk	3.63
9. Creating Economic Incentives for US Companies	3.44
10. Information Asymmetry Between Transaction Parties and the Government	3.37

Note. Ranking based on five-point Likert-like scale

Policy Issues, Resolution Ranking, and Recommendations

In the final phase of the research, respondents were asked to evaluate two alternative policy resolutions for each of the ten issues (twenty total resolutions) and rank the resolution on a five-point Likert-like scale for desirability, feasibility, importance, and confidence. The ranking was then determined through the average rank value of the responses. The results of the survey

are detailed within this section, with each of the ten issues described in detail, with the corresponding scores for each of the four categories.

The issues as examined below, policy issue one through policy issue ten, are provided in the order which they were ranked based on importance by participants in this research. Policy issue one was ranked 4.30 (on a five-point Likert-like scale), while policy issue ten was ranked 3.37. The overall results of the twenty recommendations is presented following policy issue ten, providing an examination of the policy issues and resolutions ranked based on the average score of the resolution.

Policy Issue One

U.S. industrial policy, technology policy, and research & development funding. Defined policy issue: The United States presently lacks a well-formulated and coordinated industrial policy that promotes economic advancement, technological innovation, and national security. The absence of policy has created domestic market deficiencies on a global scale, highlighted by the decline in federal R&D funding in constant dollars or as a percent of GDP.

As stated by one U.S. government participant, "one of the challenges the U.S. is having is that we are not used to competing, and that historical dominance has created an apathy for grand strategy." Another participant, a U.S. technology founder stated, "the establishment of a robust technology strategy for the U.S. may establish reasonable justifications for national security interventions." Without the codification of the policies that comprise a nation's grand strategy, the U.S. jeopardizes its position as the world's greatest superpower.

Resolution 1: This issue would be best solved by focusing on funding and the allocation of resources. There should be a formal establishment of U.S. Industrial Policy and Technology

Policy that would dedicate, at minimum, 2 percent of U.S. GDP to scientific research and development. In addition, the U.S. should reallocate 10 percent of the defense budget to technology-focused R&D, including but not limited to quantum computing, 5G and mobile technologies, artificial intelligence, biometrics and nanotechnology, blockchain, energy tech, robotics and the internet of things (IoT). These policies would be designed to rebuild and ensure a sustained science and technological superiority within the U.S.

Resolution 2: This issue would be best solved by focusing on human-centric policies around STEM education. Sustainable technological innovation requires the U.S. to develop and maintain a reliable pipeline of domestic and international STEM talent. These education initiatives must include economic and social incentives for domestic students to enter STEM fields. The policies must also consider necessary reforms to the immigration system as it pertains to students and employment, as the U.S. must attract and retain the best and brightest international students to receive an education and remain in the U.S. post-graduation.

The resolution rankings of this policy issue with respect to desirability, feasibility, importance, and confidence appear in Table 3.

Table 3.
Resolution Ranking of Policy Delphi Issue One

Issue (4.30)	Desirability	Feasibility	Importance	Confidence	Average
Resolution 1	3.89	2.96	3.89	3.54	3.57
Resolution 2	4.25	3.64	4.04	3.64	3.89

Note. Ranking based on five-point Likert-like scale

Strengths and Limitations: In addressing the policy issue of industrial and technology policy, as well as research and development funding, participants rated both of the proposed resolutions as desirable, important, and having confidence in the premise of the resolution. While

participants rated these three factors between 3.54 and 4.25 on the scale, the feasibility of resolution one was identified as not feasible. The limitation identified by participants of this potential resolution was the required expansion of government funding and re-allocation of resources away from traditional national defense. Further, the development of a distinct industrial and technology policy was considered unlikely based on the associated level of effort required. The strengths of the resolutions included the importance of STEM talent and education, focusing on comprehensive immigration reform as a national security issue. In addition, retention of the best and brightest students would result in advancements in innovation for the critical science and technology superiority of the U.S.

Policy Issue Two

Clarification of emerging, foundational, and critical technologies. Defined policy issue: The expansion of jurisdictional scope in national security reviews for technologies may be misinterpreted or inconsistently applied based on either limited definitional mandates or overly broad representative sectors as it relates to these categories of technology. Both the definition and the operational implementation of these technology standards can have significant impact on both US and global businesses, from intra-company collaboration to distinctions between emerging and mature technology.

Resolution 1: The issue of better defining emerging, foundational, and critical technologies would be best solved through collaboration between the U.S. government and the private sector. This should occur through a congressionally mandated solarium project, which would organize three task forces to develop reports on how to address national security risks associated with the inclusion and exclusion parameters of controlled technologies, dual-use (e.g.

military civil fusion) capabilities, and the development level of the technologies. The three task forces would include representatives from government, academia, and the private sector in order to fully vet the model and advocate for an approach. Reports would be provided to a U.S. Congressional Committee for review and rulemaking. Note: The original Project Solarium was a Cold War exercise in foreign policy and competitive strategy under President Dwight D. Eisenhower. In March of 2020 the Cyberspace Solarium Commission was established to develop a consensus on a strategic approach to defend the U.S. in cyberspace.

Resolution 2: There is no reasonable resolution for the U.S. government to effectively define or control emerging or foundational technologies beyond the existing Export Control model. The problem with emerging technologies is that it may be too early to control them effectively; attempts at general prohibitions are often too broad and lack technical parameters and applications. Conversely, the problem with foundational technologies is that it may be too late to control them effectively. Foundational technologies, by definition, have widespread use and are typically available from sources outside the U.S., as such many of the unilateral or multilateral restrictions have already been sharply reduced.

The resolution rankings of this policy issue with respect to desirability, feasibility, importance, and confidence appear in Table 4.

Table 4.
Resolution Ranking of Policy Delphi Issue Two

Issue (4.15)	Desirability	Feasibility	Importance	Confidence	Average
Resolution 1	3.86	3.57	3.64	3.68	3.69
Resolution 2	3.29	3.29	3.39	3.25	3.30

Note. Ranking based on five-point Likert-like scale

Strengths and Limitations: In addressing the policy issue of the definition and interpretation of emerging, foundational, and critical technologies, participants rated both of the proposed resolutions as desirable, feasible, important, and having confidence in the premise of the resolution. As both proposed resolutions were scored in this manner, it created a paradox with this policy issue as resolution one attempted to solve the issue, while resolution two indicated no resolution was possible. The limitation identified by participants of these resolutions was identified by resolution two, which described that there is no reasonable resolution to better define or control these technologies due to timing issues in the development lifecycle. The strengths with a potential resolution to this issue, as described by participants, is that it illustrates the ability for different regulatory bodies within the government to effectively work together to address these complex issues.

Policy Issue Three

Exploration of collaboration as the path forward. Defined policy issue: The dynamism of globalization has created an environment where US grand strategy must include geopolitical stabilization in the relationship with China. Domestically and internationally there will always be distributional issues; however, there is not an ability to look at purified relationships to set international trade policy. The US must evaluate how to ensure national security while also participating meaningfully in the global economy. The path will include a diplomatic solution with China to maintain free trade which is also fair trade, the protection of intellectual property, and meaningfully engaging on issues which impact national security.

As stated by one China-based participant, “the U.S. needs to recognize that welcoming Chinese investment and partnering with Chinese companies significantly benefits American

companies and the U.S. economy." Another participant, a U.S. entrepreneur noted, "Chinese investors will make investments when others won't, in high-risk high-reward early stage technologies that are yet to be proven." These mutually beneficial global relationships don't come without risk, but a nuanced approach to harmonizing globalization and national security is essential for free markets.

Resolution 1: This issue would best be solved through the concept of collective pressure. The effort would involve the strategic and tactical inclusion of allied nations to facilitate greater cooperation in holding China accountable for global norms – politically, economically, and militarily. This collective pressure effort would seek to hold China accountable for previously agreed to regional and international order (e.g. WTO obligations). Collective pressure continues to recognize and include China as a key global power, while establishing an international network of allies to confront existing violations of defined international order. Lastly, this concept would involve greater involvement, investment, and pressure from the U.S. in geopolitical initiatives, from international infrastructure investments to stronger penalties for human rights violations.

Resolution 2: This issue would best be solved through decoupling rather than collaboration. The U.S. should focus on creating a sustainable and independent economy in order to reduce dependence on China while continuing as the world leader in technology and innovation. The U.S. should carefully consider its willingness to trade with geopolitical rivals, such as China, who do not reciprocate the fair-trade policies, violate human rights, and steal intellectual property. The U.S. should divide the global economy into closed and open economic, social and political systems, and until such time that China is willing to adhere to the

fundamental principles of an open system (e.g. U.S. and allied nation defined global order) then China should be excluded from market access.

The resolution rankings of this policy issue with respect to desirability, feasibility, importance, and confidence appear in Table 5.

Table 5.
Resolution Ranking of Policy Delphi Issue Three

Issue (4.07)	Desirability	Feasibility	Importance	Confidence	Average
Resolution 1	4.61	3.25	4.32	4.00	4.04
Resolution 2	3.11	2.75	3.61	3.07	3.13

Note. Ranking based on five-point Likert-like scale

Strengths and Limitations: In addressing the policy issue of engaging with China collaboratively to ensure national security, fair trade, and the protection of intellectual property, participants rated both of the proposed resolutions as desirable, feasible, important, and having confidence in the premise of the resolution. Markedly, the rank score of resolution one, specific to collective pressure, was 4.04 which was the second highest score of all recommendations in this research. Conversely, the rank score of recommendation two, economic decoupling, had an average score of 3.13 with the specific score for feasibility as 2.75 (unfeasible).

The strengths of resolutions one, collective pressure, focus on the strengths of multilateral global regulations which are agreed to and enforced by allied nations. Participants argued that single nation state economic conflict is less likely to succeed than a coordinated international network of allies. The primary limitation identified by participants of resolution two, decoupling, was the negative externalities which would occur for U.S. companies both domestically and abroad. The global economy, with China as an economic superpower, is too interconnected for

countries such as the U.S. to become self-sustaining and self-sufficient without Chinese supply chains.

Policy Issue Four

The expanded domain of national security. Defined policy issue: With the increasing interconnectedness of national security with economic and technological considerations, national security investment reviews should have an expanded focus into these domains; with more consideration to second and third order consequences of non-traditional national security risks. These may include, but are not limited to, the potential offshoring of advanced and innovative US technology businesses, the loss of human capital to areas of the world with more open and inclusive technology R&D incubators, or the direct reduction of investment flows into US capital markets.

As stated by one U.S. government participant who now works in the private sector, "CFIUS was established to review the national security implications of transactions from different perspectives, from the economic and trade policy agencies to the strictly national security and defense agencies, but now it seems to err on the side of national security which creates risk aversion." Another participant, a private sector consultant stated, "national security in the present day is so complex that we should be evaluating based on risks and rewards, including the risk of harming U.S. business due to lack of capital."

Resolution 1: This issue would be best solved by updating the regulations to expand the CFIUS mandate to include economic security and technology policy as component parts of a more holistic national security review. The broad theory of "national security" and the underlying considerations remain undefined in current regulations, which leads to inconsistent or

ad-hoc application, inclusion, or exclusion of these potentially expanded domains. Explicitly including these domains, which are critical to the re-visioning of warfare and statecraft in the twenty-first century, will make the investment review process more transparent and provide a more consistent application of the threat, vulnerability, and consequence of a transaction on a holistic interpretation of "national security."

Resolution 2: This issue would be best solved by redesigning and reconstituting CFIUS to act as an independent committee. Each of the current members of CFIUS would nominate a representative to serve a fixed term within the Committee to represent that departments equities as well as the broader interests of U.S. national security. The representative would be appropriately educated and trained to evaluate the expanded domains of national security and would be responsible for overarching national security assessments, not just reviews within their agency equity. The independence from the agency would provide additional structural controls to prevent ideological or political motivations into the decision-making process of the Committee. Representatives, and their associated support teams, would review and vote on all transactions under CFIUS jurisdiction.

The resolution rankings of this policy issue with respect to desirability, feasibility, importance, and confidence appear in Table 6.

Table 6.
Resolution Ranking of Policy Delphi Issue Four

Issue (4.04)	Desirability	Feasibility	Importance	Confidence	Average
Resolution 1	3.46	3.43	3.54	3.39	3.46
Resolution 2	3.21	3.25	3.11	2.89	3.12

Note. Ranking based on five-point Likert-like scale

Strengths and Limitations: In addressing the policy issue of the expanded domain of national security, participants rated both of the proposed resolutions as desirable, feasible, and important. However, participants lacked confidence in resolution two which recommended a reconstituting of CFIUS as an independent committee, which would require re-writing and passage of new legislation.

The strength of resolution one, which scored higher of the two potential resolutions, was focused on the benefit of explicitly expanding the CFIUS mandate to include economic security as national security. Participants identified that the inclusion would allow for increased transparency and interpretations of how economic statecraft impacts the review process. The primary limitation, which focused on resolution two but also has applicability for resolution one, is that both resolutions will require an update to the regulations. Any update to the regulations will take significant time, effort, and consensus amongst the government stakeholders, none of which are guaranteed in the current, or any, political climate.

Policy Issue Five

Zero-Sum game theory in technology, data, and infrastructure industries. Defined policy issue: The US Government reviews investments from China with an orientation toward pure-conflict zero-sum game theory, which reduces Chinese investment in US businesses. The US has a longstanding open investment policy, and when reviewing investments that are, in the judgement of the commercial parties, commercially beneficial, the U.S. government should view economic security as national security. In this view, the review process can lead to bad national security outcomes due to economic inefficiencies, which runs contrary to rational game theory. Specifically, there are a group of transactions that, if approved subject to mitigation, would

improve U.S. national security more than prohibiting the transaction would because they would provide the government with information, insight, and control that cannot otherwise be obtained.

As identified by one U.S.-based attorney, "the semiconductor industry is the most extreme example – which is a circumstance where CFIUS views the U.S. and China competition as most clearly zero-sum; any incremental increase in the capabilities of China is potentially a detriment to U.S. national security." Another participant, a China-based geopolitical consultant disagreed, "China does not take a zero-sum approach to trade with the U.S.; and faults the U.S. political regime for doing so." With the nuances required to examine industry-specific game theoretic approaches, many participants argued that the game was in a constant state of fluidity.

Resolution 1: This issue would be best solved by updating the review to a risk-benefit analysis rather than a risk-based analysis. The analysis should be conducted with a balanced view towards recognizing national security risks and benefits as well as economic risks and benefits. The U.S. government should approve transactions where the benefits to U.S. national security arising from the transaction outweigh the risk to national security. Specifically, the current requirement for approval is that there be "no unresolved risk to national security," which should be updated to require CFIUS only to conclude that approving a transaction "better protects the national security of the United States by comparison to other options available to the Committee."

Resolution 2: This issue would be best solved by codifying in the regulations that economic security is a component of national security. The CFIUS review process would include both the traditional economic benefit considerations (i.e. increased economic growth, lower government spending, job and economic security, and the development of an innovation

ecosystem) as well as the threat vectors of non-traditional economic warfare (i.e. the gray zone of economic coercion, cyber-linked economic espionage, and information operations) in the national security investment review process. This process would include more expertise of the analysts reviewing the cases to provide insight and perspective on the business operations, economic considerations, and technology.

The resolution rankings of this policy issue with respect to desirability, feasibility, importance, and confidence appear in Table 7.

Table 7.
Resolution Ranking of Policy Delphi Issue Five

Issue (3.85)	Desirability	Feasibility	Importance	Confidence	Average
Resolution 1	4.04	3.57	3.79	3.71	3.78
Resolution 2	3.68	3.07	3.50	3.39	3.41

Note. Ranking based on five-point Likert-like scale

Strengths and Limitations: In addressing the policy issue of zero-sum game theory in technology, data, and infrastructure industries, participants rated both of the proposed resolutions as desirable, feasible, important, and having confidence in the premise of the resolution. The primary strength of this resolution is to evaluate transactions not only for the risk, but also for the potential benefit. This would require updating the analysis to a risk-benefit analysis and including the potential benefits of economic security within that evaluation. Additionally, participants noted that the approval of a transaction should not be an absolute determination of no national security risk, but that permitting the transaction provides the best available option. The primary limitation identified by participants was whether it was feasible to include economic benefit analysis within the assessment, as the current regulations do not explicitly mandate an economic test, nor is the government presently staffed to evaluate such metrics.

Policy Issue Six

Incomplete understanding and acknowledgement of Chinese culture, politics, and economic system. Defined policy issue: During the last decade, China has established a well-articulated view of the future. Broadly, the Chinese attitude towards the future focuses on two issues: dependency and control. China has been historically dependent on the rest of the world to be consumers and suppliers; however, there is a desire to have control over those two concepts in order to control their fate. The heart of Made in China 2025 and the Belt and Road Initiative (BRI) are to reduce dependency to create a positive societal and cultural impact in China. Investment from China, and investment in China, create opportunities which significantly benefit the United States and the rest of the world. The risks associated with this relationship are known. In addition, much of the narrative around China as a nefarious actor lacks nuance and an ability to consider private industry and entrepreneurs as business actors from China rather than agents acting on behalf of the Chinese government.

Resolution 1: The issue of an incomplete understanding of the Chinese cultural, political, and economic systems would be best solved through subject matter experts (SME) and cultural education programs within the U.S. government. The enhanced educational programs would be designed and deployed within U.S. government agencies that have direct dealings with Chinese companies and investors (such as CFIUS) in order to better inform staff and decision-makers about the nuances of Chinese grand strategy. In addition, these same U.S. government agencies would increase the amount of country-specific subject matter experts, while ensuring that a China SME is assigned to every national security investment review to provide cultural, political, and economic perspective of a proposed transaction.

Resolution 2: This issue would be best solved by the U.S. government providing a written advisory statement on whether a Chinese business or Chinese entrepreneur can be considered independent of the Chinese government for purposes of investment activity in the U.S. This advisory would include under what scenarios, and with consideration to what factors, a Chinese investor is considered an extension of the government as a State-Owned Enterprise (SOE). The advisory would also include guidance on how a Chinese investor could proactively address and/or mitigate the issues which may arise from this link to the Chinese government, whether direct or indirect.

The resolution rankings of this policy issue with respect to desirability, feasibility, importance, and confidence appear in Table 8.

Table 8.
Resolution Ranking of Policy Delphi Issue Six

Issue (3.78)	Desirability	Feasibility	Importance	Confidence	Average
Resolution 1	3.50	3.18	3.21	3.25	3.29
Resolution 2	3.14	2.75	3.07	2.93	2.97

Note. Ranking based on five-point Likert-like scale

Strengths and Limitations: In addressing the policy issue of the inadequate understanding or misunderstanding of China, participants rated both of the proposed resolutions low on all factors, except for the desirability of having more subject matter experts on China. Resolution two had an average score of 2.97, which was interpreted to mean that overall, this resolution was not considered a reasonable resolution. The primary strength of resolution one was the desirability of the subject matter experts to contribute key insights on the cultural, political, and economic perspective of the transaction. Participant responses indicated significant limitations in understanding the complex and non-transparent nature of the Chinese economy, corporate

structures, and authoritarian government, all of which do not encourage better or more positive understanding.

Policy Issue Seven

Clarification of valuation considerations of U.S. companies by Chinese investors. Defined policy issue: There is enhanced scrutiny for Chinese investors as they will often pay a higher premium for strategic US companies, particularly those which align with national interests. The national security investment review process creates an increased transaction premium for foreign investors, particularly in a competitive bid process. In addition to financial and operational metrics, the seller in a transaction focuses on timing and certainty. The increased premium paid for a US company accounts for the CFIUS risk, the longer timelines, and the potential cost of the regulatory event (e.g. mitigation). The higher price paid by a Chinese investor can be to account for these deal considerations, and also for other legitimate commercial purposes such as: China market opportunity for US companies, the strategic element of the transaction, and for an increased valuation on a longer timeline than a western investor may be willing to entertain.

As stated by one U.S. economic consultant, “different valuations can be legitimate, partnerships with Chinese companies can create a strategic element globally, market access in China, or additional capabilities otherwise not possible.” Another participant, a former U.S. government official noted, “the motivation for a higher deal premium can be hard to identify, it may be legitimate, or it may be an espionage-premium for access to technology with civil-military fusion.” An Asia-Pacific based investor further explained, “the true motivation isn’t always financial, as capital is so available through stimulus or policy loans; and the time

horizons are defined by opportunity, with acquisition strategies more perpetual in nature to acquire strategic assets."

Resolution 1: The issue of a "CFIUS-premium" would be best solved through expediting the national security investment review process. The mandate for CFIUS should require the resolution of investment reviews as rapidly as possible through pre-filing, review, and investigation phases, consistent with national security requirements, rather than determinations occurring at the late stages of the statutory timelines. This would ensure that any differential treatment of foreign investors is limited to no more than necessary, which in turn creates greater competition in the capital markets and better results for U.S. companies. The efficiency (i.e. speed of review) will decrease the "CFIUS-premium" that arises in a competitive bid process and thereby reveal where a premium is being paid for other legitimate or nefarious reasons.

Resolution 2: The issue of a "CFIUS-premium" would be best solved through additional financial disclosures to the U.S. government specific to the valuation. Establish a requirement that all investors provide specific support for their valuation and require that parties in an auction process disclose competing bids confidentially to the U.S. government. These disclosures would include components such as the valuation method, open market considerations (i.e. market entry opportunities and/or operational synergies), economic incentives, or any other criteria for evaluation. The requirement would further assist the U.S. government in evaluating whether the interest in the acquisition aligns with traditional capital market principles or whether there are alternative considerations such as tactical political or military advantage.

The resolution rankings of this policy issue with respect to desirability, feasibility, importance, and confidence appear in Table 9.

Table 9.
Resolution Ranking of Policy Delphi Issue Seven

Issue (3.67)	Desirability	Feasibility	Importance	Confidence	Average
Resolution 1	3.75	3.21	3.36	3.36	3.42
Resolution 2	3.00	2.89	3.00	3.00	2.97

Note. Ranking based on five-point Likert-like scale

Strengths and Limitations: In addressing the policy issue of how Chinese investors value U.S. target companies, participants rated resolution one as desirable, feasible, important, and having confidence in the premise of the resolution, while resolution two as not a reasonable resolution. The strength of resolution one, which scored high in desirability, is the potential to expedite the review process to clear cases faster than the statutory timelines require. Participants identified that timing of deals is critically important and if the reviews could proceed more expeditiously it would mitigate against some of the differences in financial valuations. The primary weaknesses of resolution two, which focused on increased financial disclosures and economic factors, was that the reviews were not designed nor are they staffed, to perform complex financial valuation comparisons within the required timelines. In addition, while this financial data may be beneficial in specific scenarios, the goal of the reviews are specific to national security risk assessments and not valuation considerations.

Policy Issue Eight

CFIUS Zeitgeist - inconsistent standards for evaluating national security risk.

Defined policy issue: The executive branch of government has an impact on the national security investment review process as the principles of agencies are often political appointees. With changes in administrations, the investments are within the judgment of these government appointees. At times, this may cause agencies within the national security review process to take

a more expansive and defense-oriented view of their agency equities, which can create inefficient outcomes or procedural issues that are politically motivated. This zeitgeist creates an imbalanced risk and reward calculation which is prone to short-term risk aversion. As stated by one U.S.-based attorney who is a former senior government official, "the structure of the process can lead to bad outcomes from a national security perspective as well as creating an economic inefficiency; there are a number of transactions that if they were approved, subject to mitigation, would have created a better national security outcome for the U.S. than prohibiting the transaction or forcing a divestment."

Resolution 1: This issue would be best solved through updating the regulations to establish explicit guidelines regarding the analysis that CFIUS undertakes and the factors which resulted in the ultimate determination. The guidelines should expressly require the Committee to consider all potential mitigation options and require agencies that seek to prohibit a transaction to product a written assessment of the risk presented and the specific reasons that mitigation is not sufficient to address the identified risk. The final determination by CFIUS should be made by a vote of each agency that has taken an equity interest (e.g. 2/3 or 3/4), rather than by consensus which may allow a single politically motivated agency to block a transaction.

Resolution 2: This issue would be best solved by explicitly identifying each agency's direct equity interest in a transaction. Roles that specific agencies play in the process would be divided to align with the equity of the respective agency, with appropriate deference on issues outside of those direct interests. The fixed long-term U.S. economic policy of open investment would be advocated by USTR, Commerce, State, and Treasury. The variable national security policy and associated risks that are situation dependent would be advocated by DOD, DHS, DOJ,

DOE. The issues surrounding U.S. technology policy would be advocated by OSTP. The threat environment posed by the transaction would be factually represented by the Intelligence Community.

The resolution rankings of this policy issue with respect to desirability, feasibility, importance, and confidence appear in Table 10.

Table 10.
Resolution Ranking of Policy Delphi Issue Eight

Issue (3.63)	Desirability	Feasibility	Importance	Confidence	Average
Resolution 1	3.43	3.43	3.46	3.43	3.44
Resolution 2	3.39	3.21	3.32	3.07	3.25

Note. Ranking based on five-point Likert-like scale

Strengths and Limitations: In addressing the policy issue of inconsistent standards for evaluating national security risk, participants rated both of the proposed resolutions as desirable, feasible, important, and having confidence in the premise of the resolution. The strengths of resolution one, which focused on the factors under review, are that by publishing the factors reviewed to make a determination it would increase the transparency of the process; thereby increasing the confidence in the decision. Additionally, specific voting by each agency would mitigate against political motivations interfering in determinations.

The strength of resolution two, which defines each agency's equity interest, is that it provides clearly delineated equities that align with the agency's expertise. Participants specifically noted that economic agencies should focus on economic considerations, while defense agencies should focus on national security. It was identified that when agencies cross into alternative domains that determinations may be made with adverse impact. The primary weakness identified for both resolutions was the requirement to materially update the

regulations, which is a process that would be time consuming and impose limitations that may not be agreed to by each agency.

Policy Issue Nine

Creating economic incentives for U.S. companies with limited capital market access under national security investment review jurisdiction. Defined policy issue: National security investment reviews may impact the ability of companies to raise funds for R&D or to continue operations to profitability or through commercial end-of-life. This scenario is specific to those companies which are at the front-end of the business lifecycle that are not yet commercially viable; and conversely those who are at the back-end of the business lifecycle which may be no longer commercially viable (i.e. those with a technology that is no longer innovative in the U..S but may be extremely valuable in another country without indigenous capability). The U.S. government should consider how to appropriately incentivize domestic companies who have limited access to capital markets, specifically if the government either restricts investment or forces divestment of an existing investment.

As stated by one U.S. entrepreneur, “there is no such thing as a free market economy, there is always a gentle or invisible hand of the government through policies and incentives – whether those be tax, aid, subsidies, or social.” Another participant, a U.S. government official stated, “while the government isn’t good at picking winners and losers, there are certain things that a free market just can’t do.”

Resolution 1: The issue of economic incentives would best be solved through consortium funding of specific national security impact sectors. This model would be based on the original SEMATECH (Semiconductor Manufacturing Technology) concept of the 1980s which was

established as a partnership between the U.S. government and 14 U.S.-based semiconductor manufacturers to regain the competitiveness for the U.S. semiconductor industry. Like SEMATECH, this venture would be funded by public subsidies from the Department of Defense (via DARPA). This model would focus on providing broad financial support to defined technology sectors of interest in various capacities including the funding of R&D, manufacturing, and equipment and material suppliers.

Resolution 2: The issue of economic incentives would best be solved through individual company funding in a "Trusted Capital Program 2.0." The updated trusted capital program, (the current iteration which is presently being piloted by the Department of Defense), would provide a mechanism for pre-screened trusted capital members to invest in national security focus areas at key funding points for the business. Trusted capital members would be private sector investors who are mapped to investment opportunities which fit their portfolio and investment decisions are solely that of the private parties. These investments would not result in any obligations to the U.S. government (e.g. the traditional obligations which result from DARPA-funded, or other similar U.S. government funded, initiatives).

The resolution rankings of this policy issue with respect to desirability, feasibility, importance, and confidence appear in Table 11.

Table 11.
Resolution Ranking of Policy Delphi Issue Nine

Issue (3.44)	Desirability	Feasibility	Importance	Confidence	Average
Resolution 1	3.75	3.39	3.75	3.64	3.63
Resolution 2	3.75	3.29	3.71	3.54	3.57

Note. Ranking based on five-point Likert-like scale

Strengths and Limitations: In addressing the policy issue of domestic economic incentives for U.S. companies, participants rated both of the proposed resolutions as desirable, feasible, important, and having confidence in the premise of the resolution. Participants rated both resolutions as high in desirability and high in importance within the rankings. The primary limitation identified by participants was that it would require additional government funding and increased government intervention in the capital markets. Participants noted that the U.S. has been historically hesitant to interfere or intercede in free and open markets, as the role of government is not to pick winners and losers, but rather to ensure the economic stability and resilience of the country as a whole.

However, the arguments made by participants for the strengths of these resolutions were focused on the fact that economic stability and resilience, at times, requires the government to become an active participant. Considering the current circumstances as it relates to certain technology sectors, which other countries such as China are actively funding, the government has an obligation to further the national interests through establishing direct and indirect incentive structures. Further, the U.S. government must become a more active participant to facilitate the distribution of capital from trusted investors to domestic companies which are critical to national security through both public and private capital market programs.

Policy Issue Ten

Information asymmetry between transaction parties and the U.S. government. Defined policy issue: The national security investment review process operates within a review and investigation model which creates an information asymmetry between the parties to a transaction and the government. The discretion that governments have over classified

intelligence and national security specific information, with an inability to effectively litigate (i.e. limited public oversight), can create outcomes which are contrary to the concepts of free markets and an open investment policy.

As noted by all U.S. government participants, and many of the private sector participants, "the classified nature of the threat assessment is imperative to national security and should not be shared." However, some participants described, "we can't mitigate a risk we don't know about or don't fully understand; there should be greater latitude to share information to help companies address the national security risks while making the business work."

Resolution 1: The issue of information asymmetry would be best solved with the by establishing a CFIUS Public Advocate or Special Private Advocate. This independent advocate would review the notice of the transaction submitted to CFIUS, have direct interaction with the transaction parties to fully understand the business and purpose of the transaction, have access to all relevant classified and non-classified information relied upon during the review and investigation period, and have appropriate authority to exercise remedial powers on behalf of the transaction parties. This advocate would not be directly representing the views of either party, but rather the general interests and rights of all parties in reviewing the commercial considerations of the transaction and the potential effect of the transaction on the national security of the United States. The advocate would maintain an active U.S. government security clearance and have appropriate credentials to perform in the role.

Resolution 2: There is no necessity and no reasonable resolution which would solve the issue of information asymmetry caused by classified information. The parties to a transaction and

the US government both knowingly enter a national security investment review with this understanding.

The resolution rankings of this policy issue with respect to desirability, feasibility, importance, and confidence appear in Table 12.

Table 12.
Resolution Ranking of Policy Delphi Issue Ten

Issue (3.37)	Desirability	Feasibility	Importance	Confidence	Average
Resolution 1	2.68	2.50	2.61	2.50	2.57
Resolution 2	3.96	4.18	4.14	4.18	4.12

Note. Ranking based on five-point Likert-like scale

Strengths and Limitations: In addressing the policy issue of information asymmetry caused by classified national security information, participants concluded that there is no necessity and no reasonable resolution which would solve this issue. Resolution one, which described an independent advocate who would have access to such classified information, was the lowest ranked resolution in this research; while resolution two, indicating there was no reasonable resolution, was the highest ranked resolution in this research.

Overall Results

As illustrated within Table 13, the maximum average score for the twenty resolutions was 4.12 and the lowest average score was 2.57. Seventeen of the twenty resolutions received a score of 3.0 or higher, which is interpreted to mean that these recommendations are desirable, feasible, important, and there exists confidence in the premise of the resolution.

Table 13.
Ranking of Policy Delphi Issue Resolutions, Ordered by Average Score

Policy Issue and Resolution	Average	Desirability	Feasibility	Importance	Confidence
Issue 10, Resolution 2	4.12	3.96	4.18	4.14	4.18
Issue 3, Resolution 1	4.04	4.61	3.25	4.32	4.00
Issue 1, Resolution 2	3.89	4.25	3.64	4.04	3.64
Issue 5, Resolution 1	3.78	4.04	3.57	3.79	3.71
Issue 2, Resolution 1	3.69	3.86	3.57	3.64	3.68
Issue 9, Resolution 1	3.63	3.75	3.39	3.75	3.64
Issue 9, Resolution 2	3.57	3.75	3.29	3.71	3.54
Issue 1, Resolution 1	3.57	3.89	2.96	3.89	3.54
Issue 4, Resolution 1	3.46	3.46	3.43	3.54	3.39
Issue 8, Resolution 1	3.44	3.43	3.43	3.46	3.43
Issue 7, Resolution 1	3.42	3.75	3.21	3.36	3.36
Issue 5, Resolution 2	3.41	3.68	3.07	3.50	3.39
Issue 2, Resolution 2	3.30	3.29	3.29	3.39	3.25
Issue 6, Resolution 1	3.29	3.50	3.18	3.21	3.25
Issue 8, Resolution 2	3.25	3.39	3.21	3.32	3.07
Issue 3, Resolution 2	3.13	3.11	2.75	3.61	3.07
Issue 4, Resolution 2	3.12	3.21	3.25	3.11	2.89
Issue 6, Resolution 2	2.97	3.14	2.75	3.07	2.93
Issue 7, Resolution 2	2.97	3.00	2.89	3.00	3.00
Issue 10, Resolution 1	2.57	2.68	2.50	2.61	2.50

Note. Ranking based on five-point Likert-like scale

The two highest scores in the resolution ranking, 4.61 in desirability and 4.32 in importance, were designated for the same issue and resolution. These factors were scored for the policy issue ranked third in the importance ranking, the exploration of collaboration as the path forward. The policy issue identifies that dynamism of globalization has created an environment where U.S. grand strategy must include geopolitical stabilization in the relationship with China. This environment will include a diplomatic solution with China to maintain free trade which is also fair trade, the protection of intellectual property, and meaningful engagement on issues which impact national security. The resolution solved this issue through the concept of collective pressure, which involves the strategic and tactical inclusion of allied nations to facilitate greater cooperation in holding China accountable for global norms – politically, economically, and militarily. The model for collective pressure will continue to recognize and include China as a key global power, while establishing an international network of allies to confront existing violations of defined international order.

For the ten issues under consideration, each with two proposed resolutions, the ten highest rated resolutions for desirability shared seven common top ten resolutions when sorted by feasibility, eight when sorted by importance, and nine when sorted by confidence. The lowest four rated resolutions in terms of desirability were also the lowest rated with respect to feasibility; while the lowest four rated in terms of importance were also the lowest rated with respect to confidence. Three of the four lowest rated resolutions were common amongst all scales, with average scores less than 3.0, interpreted to mean these are not desirable, not feasible, not important, and there exists low confidence in the recommendation.

Summary

This chapter detailed and ranked the ten significant policy issues at the convergence of national security and trade policy. Furthermore, this chapter developed and ranked twenty total potential resolutions for these policy issues, evaluating two resolutions per issue. The policy issues and proposed resolutions helped to frame key frameworks and guidelines for the research questions in this study.

This chapter methodically followed key phases of the research in order to: (a) deconstruct and frame the policy issues, (2) identify participants positions, counter-positions, and reasonings, and (3) explore the relevance of resolutions, defensibility of the position, and motives for disagreement. The four rounds of research, the first a critical interpretive synthesis of available literature followed by three rounds of participant involvement, facilitated a robust evaluation of the issues while seeking and finding areas of distinct disagreement amongst participants.

The first round of this research was the critical interpretive synthesis performed by the researcher, wherein a review was conducted based on empirical research, non-empirical information, government data and documentation, public records, and publicly available case study information. The researcher also used his own domain expertise and professional experience in this arena to establish a framework of information for the research questions.

The second round of this research, which was the first phase of the Policy Delphi instrument, was thirty independently conducted open-ended interviews between the researcher and the participants. The researcher provided participants the research questions in advance of the interview and permitted the interviewee to fully expand on their perspectives on the key issues. These themes were then deconstructed and framed with each participant to develop the

ten policy issues utilized in the online survey rankings in the third and fourth round of the research.

The third round of this research, which was the online issue ranking survey provided to participants, evaluated the policy issues on a five-point Likert-like scale. The minimum score for the ten issues was 3.37, meaning that overall, none of the issues were deemed unimportant for purposes of the study. Further, four of the policy issues scored a 4.0 or higher, which is interpreted to mean that the issue is deemed important to very important by the consensus of respondents.

The fourth round of this research, the final online survey, provided two recommended resolutions for each of the ten policy issues to be ranked on a five-point Likert-like scale. Seventeen of the twenty resolutions received a score of 3.0 or higher, which is interpreted to mean that these recommendations are desirable, feasible, important, and there exists confidence in the premise of the resolution.

The mosaic of information gathered and analyzed through these phases of the research constructed primary themes, which are utilized to develop the policy-making strategies discussed in Chapter Five: (a) a preference for a global collaborative effort for the design, development, and enforcement of standards for interactions between nations as it relates to the convergence of national security and trade policy (b) a desire to preserve and expand the U.S. domestic ecosystem which encourages, facilitates, and incentivizes innovation in key national security industries (c) a concern for the lack of a defined U.S. industrial policy, technology policy, and funding for essential research and development (d) an acknowledgement that the domain of national security includes both economic security and technology policy.

Chapter 5 will further dissect these concepts in order to connect the themes to modern geopolitical grand strategy and novel game theory frameworks, providing recommendations that will establish stable national security and growth oriented economic policies.

Chapter 5: Summary, Conclusions, and Recommendations

"I think game theory creates ideas that are important in solving and approaching conflict in general." - Robert Aumann, 2005 Nobel Prize in Economic Sciences

Summary of Study

This research investigated and analyzed the complex convergence of national security and trade within the context of a twenty-first century world of global competition and collaboration. Utilizing the Policy Delphi technique, the researcher focused on exploration of disagreement on the complex policy issues facing the United States specific to the national security and economic security issues exigent in foreign direct investment activity. The research does not, and was not intended to, result in a consensus resolution but provides a factual basis for advocacy of a modern game theoretic when considering these complex problems. Importantly, the role of the Policy Delphi in this research was to expound on the principles of conflict which are present in the twenty-first century, examining the nexus of the conflict while creating model conditions necessary for the future of the United States.

This future state model must account for factors of both stability and change within the constructivist elements of the dynamic national security environment. Cohen et al. (2020) suggest that the rise of China, the search for new and scarce resources, and increasing pressure on the global trading system represent global trends that increase the probability for future conflict. In evaluating both the potential for conflict and the trends that shape the categories of conflict, this research provides insights and recommendations into this complex domain.

The primary outcomes of this research, comprised from a mosaic of instruments including a critical interpretive synthesis, open-ended participant interviews, and online surveys, are represented by the following key observations:

- The domain of national security includes both economic security and technology policy.
- A global collaborative effort, in the form of collective pressure, is necessary for the design, development, and enforcement of standards for interactions between the United States and China as it relates to the convergence of national security and trade policy.
- The United States must preserve and expand incentives for a robust domestic ecosystem which encourages, facilitates, and promotes innovation in key national security industries, including the expansion of public private partnerships.
- The United States would benefit from the establishment of an effective industrial policy and technology policy. These policies would define parameters for the funding of essential research and development, as well as encouraging meaningful updates to factors impacting U.S. global competitiveness such as education and immigration.

The specific observations of this research that will guide the development of a modern game theory investment security model to address the complex convergence of economic modernization and the national security impact of foreign direct investment are represented as follows:

- Pure-conflict zero-sum models exist in technology, data, and infrastructure industries, particularly with investment activity between the United States and China.

- Rationality, or irrationality, is contingent on perspective; the influence of ideology, culture, sophistication, biases, or institutional constructs act as influences outside of traditional constructs of rationality (Schelling, 2010).
- Payoff matrices can be either symmetrical or asymmetrical and exist as an acceptable solution for both parties based on their analysis of the specific situation; outcomes for parties to a particular transaction may be dominant, optimal, or suboptimal while ultimately being suitable.
- Information asymmetry is an accepted limitation in national security investment reviews.

Wicked Problem

The domains which set the foundation for this research – national security, globalization, economic espionage, industrial policy, and technology policy – present wicked problems, resulting in wicked research questions with plausible resolutions. Issues within political and social sciences often present wicked problems. These types of problems differ from those in the natural sciences because they are not clearly definable due to incomplete, inconsistent, and dynamic criteria, and they rely on judgment for resolution as there is no single solution (Rittel & Webber, 1973). Rittel and Webber (1973) suggest that these problems are not "wicked" because of moral or ethical characteristics, rather the concept of "wicked" prescribes that these problems require non-traditional methods to attempt to solve and re-solve them over time, considering the context and variables are incomplete, with resolutions which are imperfect.

The Policy Delphi technique was utilized in this research because this thesis examines a wicked problem. The Policy Delphi provides a structured communication which investigates the

underlying frameworks and theories to contribute an informed analysis of all possible options and supporting evidence (Turoff, 1975). The research does not, and was not intended to, result in a consensus resolution but provides a factual basis for advocacy of a modern game theoretic when considering these complex and unsolvable problems. The dynamism of these issues will create further refinements over time of both the policy issues and recommended resolutions. The issues contained within this research are wicked as they are highly complex, information about the impact of interventions is limited, and there is broad disagreement about both the cause of the issues and potential resolutions (McConnel, 2018).

Rittel and Webber introducing the concept of wicked problems in 1973 identified ten properties which distinguish wicked problems from more ordinary problems that can be solved with traditional methods:

1. There is no definitive formulation of a wicked problem.
2. Wicked problems have no stopping rule.
3. Solutions to wicked problems are not true-or-false, but good or bad.
4. There is no immediate and no ultimate test of a solution to a wicked problem.
5. Every solution to a wicked problem is a “one-shot operation” because there is no opportunity to learn by trial-and-error, every attempt counts significantly.
6. Wicked problems do not have an enumerable (or an exhaustively describable) set of potential solutions, nor is there a well-described set of permissible operations that may be incorporated into the plan.
7. Every wicked problem is essentially unique.

8. Every wicked problem can be considered to be a symptom of another problem.
9. The existence of a discrepancy representing a wicked problem can be explained in numerous ways; the choice of explanation determines the nature of the problem's resolution.
10. There is no right to be wrong, the individual is liable for the consequences of the actions generated by the resolution.

These properties exist in form and substance when considering the dynamic nature of national security policy issues as well as the grave impact that decisions may have on nations or the world. McConnell (2018) contends that a policy approach to wicked problems incorporates a broad range of evidence ranging from clarity of the issue to the examination of actors, institutions, and networks. Contextualizing the issues contained within this research as wicked problems provides a more appropriate framework for defining the policy issues and identifying sound positions for the advocacy of potential resolutions.

Problem Statement

The purpose of this study was to investigate the utility of the Policy Delphi technique to evaluate and establish a modernized framework for addressing national security risk in foreign direct investment. This study centered on the reviews conducted by the Committee on Foreign Investment in the United States (CFIUS), the interagency committee tasked with evaluating the U.S. national security risk posed by foreign investment. The study examined the complex mosaic of an open investment policy at a time where economic security and national security are becoming indistinguishable. This study utilized the Policy Delphi technique to identify, evaluate, and

examine multivariate policy issues that either directly or indirectly influence the decisions reached by CFIUS.

Conclusions and Recommendations Drawn from Research Questions

Research Question 1: What are the key game theory strategies employed by the US and investing countries, specifically China, in conducting national security reviews in conjunction with investment activity?

In delivering the keynote address at the Department of Justice's China Initiative Conference on February 6, 2020, Attorney General William P. Barr stated: "China has emerged as the United States' top geopolitical adversary, based on competing political and economic philosophies. For China, success is a zero-sum game."

During the interviews conducted for this research, participants provided a consistent perspective that while not all investment activity from China was zero-sum, those investments within technology, data, and infrastructure industries represent the most direct instances of pure-conflict game theory. In these cases, the interviews indicated that any incremental increase in the capabilities of China represents a detriment to U.S. national security. The instances of investment activity that include situations where the outcome of mutual cooperation is not available, specifically in the competition for vital goods, is consistent with zero-sum games as what one player (China) gains – the other player (United States) loses (Eggers, 2011).

In the issue ranking survey conducted, the policy issue of zero-sum game theory in technology, data, and infrastructure industries was scored as 3.85 with respect to importance (on a five-point Likert-like scale), which ranked the issue in the top five of the ten issues under consideration. As advancements in technology continue, particularly in those areas where

commercial innovation may drive military application vis-à-vis civil-military fusion (e.g. dual-use technology), the issue of over-inclusive control versus under-inclusive control of these sectors as it pertains to foreign investors presents for difficult balance (Wakely & Indorf, 2018).

In the resolution ranking survey conducted, one of the recommended resolutions for this policy issue received an average score of 3.78 with respect to the desirability, feasibility, importance, and confidence (on a five-point Likert-like scale). This resolution was the fourth highest ranked out of the twenty recommendations under consideration.

The recommended resolution stated: This issue would be best solved by updating the review to a risk-benefit analysis rather than a risk-based analysis. The analysis should be conducted with a balanced view towards recognizing national security risks and benefits as well as economic risks and benefits. The U.S. government should approve transactions where the benefits to U.S. national security arising from the transaction outweigh the risk to national security. Specifically, the current requirement for approval is that there be "no unresolved risk to national security," which should be updated to require CFIUS only to conclude that approving a transaction "better protects the national security of the United States by comparison to other options available to the Committee" (Wakely & Indorf, 2018).

The challenges associated with the interactions between the U.S. and China are represented by the themes of security and competitiveness. Nevertheless, evaluating these economic interactions using purely formal game theory in the form of zero-sum with pure-conflict limitations will result in suboptimal outcomes (Schelling, 1958). These complex interactions require a modern game theoretic that is grounded in "soft" game theory (as compared to "hard" game theory defined by mathematical models with intelligent rational

decision-makers) in the social sciences which considers the context of focal points dependent on intention, time, expectations, influence, interdependence, and payoffs (Schelling, 1960; Schelling, 2010).

Research Question 2: What impact does national security risk have on enterprise deal value, and execution deal risk, in foreign direct investment transactions in high-risk industries from high-risk jurisdictions?

The consensus position gathered within this research was that national security risk creates an increased deal premium for foreign investors in high-risk industries. Based on the interviews conducted, the factors that influence this higher valuation premium are twofold, relating to the variables of timing and certainty. The majority of respondents indicated that it was their experience that in a competitive bid scenario for a U.S. asset, an investor from China had the greatest probability of having the highest bid. However, this premium is not exclusive to Chinese investors, as simply extending the timeline with a low risk investor would require a higher premium. The single characteristic of the transaction being within the jurisdictional bounds of CFIUS correlates to a higher valuation premium.

A foreign buyer of a U.S. asset who will require government approval will often require a longer timeline to close in order to account for the national security investment review process. The CFIUS timeline starts with a 45-day national security review, after which the transaction can be cleared with no unresolved national security risk or moved to investigation. Upon completion of the 45-day review, the transaction can be placed into a 45-day national security investigation, after which the transaction can be cleared with no unresolved national security risk or recommended to the President of the United States for a 15-day Presidential determination

(FIRRMA, 2018). At any point during this statutory timeline CFIUS may clear the transaction, provide notice that there are unresolved national security risks, or the transaction parties may elect to abandon the transaction, for reasons related to national security or otherwise.

The CFIUS Annual Report for 2019 identified that the average calendar days for the Committee to complete a review to permit the transaction to proceed was 45 days, and to complete an investigation to permit the transaction to proceed was 85 days. Notably, during 2019 there were 231 notices filed with CFIUS and 113 of those were moved to the investigation phase, which indicates that there is a reasonable probability for half of transactions to be required to extend a transaction timeline for 85 days of uncertainty.

In the issue ranking survey conducted, the policy issue specific to the national security investment review process creating an increased transaction premium for foreign investors was scored as 3.67 with respect to importance (on a five-point Likert-like scale), which was interpreted to mean that it is an important issue to stakeholders. In the resolution ranking survey conducted, one of the recommended resolutions for this policy issue received an average score of 3.42 with respect to the desirability, feasibility, importance, and confidence (on a five-point Likert-like scale).

The recommended resolution stated: The issue of a "CFIUS-premium" would be best solved through expediting the national security investment review process. The mandate for CFIUS should require the resolution of investment reviews as rapidly as possible through pre-filing, review, and investigation phases, consistent with national security requirements, rather than determinations occurring at the late stages of the statutory timelines. This would ensure that any differential treatment of foreign investors is limited to no more than necessary, which in turn

creates greater competition in the capital markets and better results for U.S. companies. The efficiency (i.e. speed of review) will decrease the "CFIUS-premium" that arises in a competitive bid process and thereby reveal where a premium is being paid for other legitimate or nefarious reasons.

While the results of the research provided evidence of the importance of this issue, the second resolution specific to the transaction parties providing additional financial disclosures or enterprise deal value documentation to the U.S. government received an average score of 2.97 with respect to desirability, feasibility, importance, and confidence. The participants identified that the timing and certainty of a transaction vis-à-vis execution deal risk created a significant impact on the deal premiums; however, the implementation of economic valuation metrics directly into a national security review was not feasible. Participants noted that the jurisdictional bounds of the regulation do not permit this activity nor is it desirable for the U.S. government to interfere in this segment of the capital markets.

The present valuation considerations align with the foundations for cooperative game theory in interactions, which contemplates the economic value of equity and fairness in exchange partners (Colman, 2003). Cooperative game theory does not represent an outcome in equilibrium, but rather one of an agreement, with the payoffs for each party as part of a longer-term super game in subsequent stages (Aumann, 2006). Considering these factors on a longitudinal horizon, a foreign acquirer agreeing to a higher deal premium can be considered collaborative game theory as both parties have reached agreement on the outcome.

Research Question 3: To what extent do CFIUS reviews impact the development of critical technologies and economic incentives around foreign direct investment versus domestic investment?

The Council on Foreign Relations (CFR), within its 2019 Independent Task Force Report No. 77 *Innovation and National Security: Keeping Our Edge*, identified that "with renewed dedication to a national innovation security strategy, the United States can ensure its continued and future economic growth and national security" (p. 75). The CFR report details a national strategy which includes two key pillars which align with the results of this research: (1) the issue of funding and allocating resources vis-à-vis restoring public support and funding for science, and (2) focusing on human-centric policies for attracting and educating the world's best STEM talent. In the issue ranking survey conducted, the issue of developing a robust U.S. industrial policy, technology policy, and expanding research and development funding was scored as 4.30 with respect to importance (on a five-point Likert-like scale), making it the most important policy issue evaluated in this study.

In the resolution ranking survey conducted, one of the recommended resolutions for this policy issue received an average score of 3.89 with respect to the desirability, feasibility, importance, and confidence (on a five-point Likert-like scale). This resolution was the third highest ranked out of the twenty recommendations under consideration.

The recommended resolution which scored 3.89 stated: This issue would be best solved by focusing on human-centric policies around STEM education. Sustainable technological innovation requires the U.S. to develop and maintain a reliable pipeline of domestic and international STEM talent. These education initiatives must include economic and social

incentives for domestic students to enter STEM fields. The policies must also consider necessary reforms to the immigration system as it pertains to students and employment, as the U.S. must attract and retain the best and brightest international students to receive an education and remain in the U.S. post-graduation.

Additionally, a second recommended resolution for this policy issue received an average score of 3.57 with respect to the desirability, feasibility, importance, and confidence (on a five-point Likert-like scale). This resolution was the eighth highest ranked out of the twenty recommendations under consideration.

The recommended resolution which scored 3.57 stated: This issue would be best solved by focusing on funding and the allocation of resources. There should be a formal establishment of U.S. Industrial Policy and Technology Policy that would dedicate, at minimum, 2 percent of U.S. GDP to scientific research and development. In addition, the U.S. should reallocate 10 percent of the defense budget to technology-focused R&D, including but not limited to quantum computing, 5G and mobile technologies, artificial intelligence, biometrics and nanotechnology, blockchain, energy tech, robotics and the internet of things (IoT). These policies would be designed to rebuild and ensure a sustained science and technological superiority within the U.S.

This research identifies that the role of government within this model will require institutional change, with potential government expansion, that updates both strategies and tactics across the public and private sectors. The recommended resolutions for the policy issues suggest that the U.S. government must expand its willingness to take on a more significant and risk-seeking role in investing in long term technologies with uncertain payoffs. The Council on Foreign Relations (CFR), within its 2019 Independent Task Force Report No. 77 *Innovation and*

National Security: Keeping Our Edge, suggested that the U.S. government should "restore federal funding for research and development to its historical average… only the government can make the type of investments in basic science that ignite discoveries; such investments are too big and risky for any single private enterprise to undertake" (p. 6).

The two recommended resolutions for creating economic incentives for U.S. companies to better compete globally were scored in the top ten on all four metrics of desirability, feasibility, importance, and confidence. Study participants determined that the U.S. government should provide consortium funding to critical national security industries, while also providing a structure for individual companies to receive funding from pre-screened trusted investors. Data have illustrated that the U.S. has long trailed countries such as China in investing in private sector companies due to differences in economic and industrial policy. Atkinson (2020) advocates for a robust and well-funded national innovation and competitiveness policy to not only combat the erosion of the manufacturing base but also to further advanced-industry innovation.

Themes and Recommendations from Policy Issues and Resolutions

The themes uncovered through this research provide insights into first principles thinking, as well as identifying second and third order consequences, at the convergence of national security, economic security, and industrial technology policy. These themes are represented in the following manner:

Economic security is national security. The publication of the National Security Strategy (NSS) of the United States is a statutorily mandated document which explains to the American people, allies and partners, and federal agencies how the President intends to put his

national security vision into practice domain of national security includes both economic security and technology policy (The White House, 2017). In December of 2017 President Donald J. Trump published the NSS and contained within explicitly stated "Economic security is national security" (p. 17). In addition, FBI Director Christopher Wray, during prepared remarks at the Hudson Institute in July 2020 stated that "the greatest long-term threat to our nation's information and intellectual property, and to our economic vitality, is the counterintelligence and economic espionage threat from China. It's a threat to our economic security—and by extension, to our national security" (Wray, 2020).

The link between economic security and national security is established through global economic competition and broader geopolitical grand strategy. The U.S. has long benefitted from this link as it facilitated wide ranging dominant influence in the global economy through international institutions (such as the World Trade Organization) and developing a strong domestic innovation incubator (McCormick, Luftig, & Cunningham, 2020). However, as the authors further note, economic interdependence can result in asymmetric or unstable relationships and influence over economic partners, creating distributional issues and negative externalities resulting from globalization.

This research further provided a consistent position by participants that economic security is national security. The policy issue specific to the expanded domain of national security stated: With the increasing interconnectedness of national security with economic and technological considerations, national security investment reviews should have an expanded focus into these domains; with more consideration to second and third order consequences of non-traditional national security risks. This issue, when ranked by participants based on

importance, scored a 4.04 (on a five-point Likert-like scale). A score of 4.0 or higher is interpreted to mean that the issue is deemed important to very important by the consensus of respondents and critical factors for the decision-making process in national security investment reviews.

One of the proposed resolutions for the expanded domain policy issue received an average score of 3.46 with respect to desirability, feasibility, importance, and confidence (on a five-point Linkert-like scale), making it one of the top ten resolutions. The resolution stated that this issue would be best solved by updating the regulations to expand the CFIUS mandate to include economic security and technology policy as component parts of a more holistic national security review.

Collaboration with allies on global standards. A global collaborative effort, in the form of collective pressure, is necessary for the design, development, and enforcement of standards for interactions between the United States and China as it relates to the convergence of national security and trade policy. The coordination between the U.S. and allies to engage using multilateral structures will create coherent and pragmatic strategies for both economic competition and combating national security concerns (Brown, Chewning, & Singh, 2020; McCormick, Luftig, & Cunningham, 2020; CFR, 2019).

The exploration of collaboration as the path forward, which was the third highest ranked policy issue based on importance to participants, scored a 4.07 (on a five-point Likert-like scale). A score of 4.0 or higher is interpreted to mean that the issue is deemed important to very important by the consensus of respondents and critical factors for the decision-making process in national security investment reviews.

One of the proposed resolutions for efforts to further collaboration received an average score of 4.04 with respect to desirability, feasibility, importance, and confidence (on a five-point Linkert-like scale), ranking it second of the twenty total resolutions. This resolution was also the highest scored with respect to desirability, with a score of 4.61 and highest scored in terms of importance, with a score of 4.32.

The resolution stated that this issue would best be solved through the concept of collective pressure. The effort would involve the strategic and tactical inclusion of allied nations to facilitate greater cooperation in holding China accountable for global norms – politically, economically, and militarily. This collective pressure effort would seek to hold China accountable for previously agreed to regional and international order. International trade policies and their respective alternative resolutions, as a constituent of the current geo-economic landscape, require global initiatives driven through formal organization such as the World Trade Organization (WTO) and the North Atlantic Treaty Organization (NATO) in addition to multilateral conferences of allies to respond to these global challenges. The modernization of national security investment reviews, as well as other critical economic challenges, remain a key focus in the U.S., across the intergovernmental Group of Seven (G7), as well as in China.

Collective pressure continues to recognize and include China as a key global power, while establishing an international network of allies to confront existing violations of defined international order. Lastly, this concept would involve greater involvement, investment, and pressure from the U.S. in geopolitical initiatives, from international infrastructure investments to stronger penalties for human rights violations.

Expand domestic incentives for investment and innovation. The United States must preserve and expand incentives for a robust domestic ecosystem which encourages, facilitates, and promotes innovation in key national security industries, including the expansion of public private partnerships. All governments make choices about what to invest in, whether directly or indirectly, through different economic policies and incentive structures within legislation. The National Security Strategy of the United States (2017) stated that the U.S. would "nurture a healthy innovation economy that collaborates with allies and partners, improves STEM education, draws on an advanced technical workforce, and invests in early-stage research and development" (p. 20).

The results of this research indicated that the policy issue of creating economic incentives for U.S. companies was an important issue as ranked by participants, scoring 3.44 (on a five-point Likert-like scale). Further, the average ranking of both resolutions for this policy issue were 3.63 and 3.57 (on a five-point Likert-like scale), which ranked the resolutions sixth and seventh out of the twenty potential resolutions. The first resolution focused on consortium funding of specific national security impact sectors, while the second resolution further refined the concept of a government funded trusted capital program. The ranking of the two resolutions for this policy issue was the only instance in the research where both recommended resolutions for a single policy issue ranked in the top ten of twenty potential resolutions.

The first resolution stated that the issue of economic incentives would best be solved through consortium funding of specific national security impact sectors. This model would be based on the original SEMATECH (Semiconductor Manufacturing Technology) concept of the 1980s which was established as a partnership between the U.S. government and 14 U.S.-based

semiconductor manufacturers to regain the competitiveness for the U.S. semiconductor industry. Like SEMATECH, this venture would be funded by public subsidies from the Department of Defense (via DARPA or other funding vehicles). This model would focus on providing broad financial support to defined technology sectors of interest in various capacities including the funding of R&D, manufacturing, and equipment and material suppliers.

The second resolution stated that the issue of economic incentives would best be solved through individual company funding in a "Trusted Capital Program 2.0." The updated trusted capital program, (the current iteration which is presently being piloted by the Department of Defense), would provide a mechanism for pre-screened trusted capital members to invest in national security focus areas at key funding points for the business. Trusted capital members would be private sector investors who are mapped to investment opportunities which fit their portfolio and investment decisions are solely that of the private parties. These investments would not result in any obligations to the U.S. government (e.g. the traditional obligations which result from DARPA-funded, or other similar U.S. government funded, initiatives).

The Path Forward. The themes that emerged from this research examine several of the key elements at the intersection of trade policy and national security. In conjunction with the recommended resolutions for the policy issues this research further examined the dynamic evolution over time, while providing artifacts for future-state considerations. The expert opinions provided by participants across a spectrum of experiences illustrate broad consensus on some of the most pressing issues facing the nation.

Suggestions for Future Research

There are several avenues of future research that are suggested from this study. In particular, the concepts of time, place, and space create distinct opportunities for the development of expanded and longitudinal research.

First, the ideology of the U.S. Presidential administration in power is critically important when evaluating policy issues specific to national security and trade policy. Agencies within the government, led by political appointees, represent the policies of the administration. This study was conducted during the period that President Donald J. Trump was in office and was completed during 2020 which was a Presidential election year in the United States. Further research performed under an alternative administration could help to determine whether disparities exist between ideologies or approaches to policy and to help identify the causes of those differences.

Second, this dissertation provided an examination of policy issues and potential resolutions for a purposefully selected participant group selected by the researcher. The participant selection and sample size of this study limits the generalizability and transferability of the results. Further research could examine a more expansive stakeholder group or elect to examine these issues utilizing purely homogenous groups in order to create themes by certain participant characteristics.

Finally, the key policy issues at the convergence of national security and trade policy, examined by the Committee on Foreign Investment in the United States (CFIUS) and established in 1975, remain underexamined by exigent research due to the lack of public disclosure and relative lack of meaningful data. The total number of notices during the last twelve years is less

than 1,800 with less than 10 Presidential decisions (U.S. Treasury, 2020). The recent updates to the regulatory regime for foreign investment national security reviews, increase in the number of cases reviewed and investigated, and geopolitical competition between the U.S. and China are variables that require additional research. The future of this domain is highly dynamic and should remain the focus of expansive investigation globally.

The Modernized Pure-Conflict Game Theory Framework

In awarding the 2015 Nobel Prize in Economic Sciences to Robert Aumann and Thomas Schelling, the Royal Swedish Academy of Sciences stated "As this year's Laureates have shown, the most important applications of game theory are to be found in such vital issues as security and disarmament policies, price formation on markets, as well as economic and political negotiations." This research has sought to further explore these vital issues, which have created wicked problems, providing paths for conflict and collaboration in the complex global interactions where trade policy and national security meet.

The wicked problems which exist in social sciences, reflected in zero-sum games, are dependent upon maxims of individualized self-interest that underpin traditional economic and political theory (Rittel & Webber, 1973). The core tenants of these games experience the bounding limitations of classified national security concerns, economic negative externalities, and institutional policy questions on incentivization, innovation, and lost opportunities.

In basic form, game theory is laid out in a well-known two-player matrix. In these scenarios, there are four potential outcomes in rank order 4, 3, 2, 1 (4 is most preferred, 1 is least preferred). Each player would choose an action based on their preference and the payoff is evaluated based on an ordinal characteristic. As Schelling (2010) notes, while these games

provide for a rudimentary understanding of the game theory concept, it lacks nuance due to the ordinal preferences and deceptive symmetry.

Figure 1.
Basic Payoff Matrix

		United States: Choice A	United States: Choice B
China	Choice a	3, 2	4, 4
	Choice b	1, 1	2, 3

Note: This figure represents a basic payoff matrix. The pairs of numbers represent the payoff for each country given the choices selected. China's payoff is the left (x) number and the U.S. payoff is the right (y) number.

Within the confines of abstract game theory that utilizes the simple 2x2 matrices there can be very useful analysis, particularly in the social sciences; however, the modern game theoretic considerations originating from this research focus on questions and solutions that do not fit cleanly into this construct. Schelling (2010) identifies that "The answer is not in the matrix. The question is nicely formulated in the matrix, the answer is not" (p. 33) and he further concedes that "it's hard to deal with matrices in more than two dimensions" (p. 35).

This research proposes a framework which will set forth the situations by which decisions can be made in the context of historical, current, and future global trade – a concept referred to as the "supergame." Aumann (2006) describes that repeated games, such as trade between the U.S. and China, enables cooperation, as the strategies that achieve cooperation in the long run (e.g. supergames) involve punishments in later games if one party is not forthcoming in the current game.

The specific observations of this research that guide the development of this framework are represented as follows:

Zero-sum games are necessary. Pure-conflict zero-sum models exist in technology, data, and infrastructure industries, particularly with investment activity between the United States and China. Collaborative models can and should be utilized for other industry sectors which receive investment; however, the players do need to view games in specific industries as zero-sum.

Situational awareness exemplifies the game. Rationality, or irrationality, is contingent on perspective; the influence of ideology, culture, sophistication, biases, or institutional constructs act as influences outside of traditional constructs of rationality (Schelling, 2010). Players actions only need to be rational considering their interpretation of the available payoffs, which can create expectable outcomes or inexplicable outcomes depending on both objective and subjective considerations.

Equilibrium is not required. The payoff matrices can be either symmetrical or asymmetrical and exist as an acceptable solution for both parties based on their analysis of the specific situation; outcomes for parties to a particular transaction may be dominant, optimal, or suboptimal while ultimately being suitable.

Information asymmetry is also an accepted limitation in national security investment reviews. This policy issue was rank ordered as least important to participants in this study. The proposed resolution for this issue, which ranked highest in the resolution rankings at 4.12 (on a five-point Likert-like scale) stated that there is no necessity and no reasonable resolution which would solve the issue of information asymmetry caused by classified information. The parties to

a transaction and the US government both knowingly enter a national security investment review with this understanding.

The uncertain future. The modern risk-benefit games are played on a paradigm with infinite dimensions. This research has provided observations and key points of inflection for policymakers and stakeholders to consider when evaluating the national security domain as it becomes more entangled with the fields of economics, technology, and politics. The decisions are influenced by factors that cannot be bounded by hard sciences but require solutions which include evaluating the variables within soft game theory in the social sciences. These decisions are further bounded by time, space, and place – and as each game has a potentially infinite number of players impacted, the game itself becomes a wicked problem.

Conclusion

The purpose of this research study was to provide a trailblazing level of transparency into the frameworks and processes surrounding the convergence of national security and trade policy. The study sought to identify key themes and provide recommendations for policymakers to enable the development of stable national security and growth oriented economic policies. As the United States contends with unbridled innovation, technological advancement, economic progress, and an increasingly competitive ecosystem, the country must evaluate the most appropriate path forward. This research suggests that the development of a modern game theory investment security model be utilized to address the complex convergence of economic modernization and the national security impact of foreign direct investment.

As the national security challenges facing the United States continue to rapidly advance in a highly dynamic, technologically connected, and economically dependent world, the model

for which the country makes critical decisions must also evolve. This research has endeavored to provide guidance and recommendations for stakeholders to make more informed decisions in navigating the wicked problems presented.

Economic statecraft has come into focus during the twenty-first century. Of distinct focus are businesses which exist in the dual-use zone of civil military fusion, emerging and critical technologies, healthcare and biotech, freight and aviation, in addition to those businesses which directly support the defense industrial base. Business growth, innovation, and economic control / influence can run at odds with national security; however, reviews must also consider the second and third order consequences of funding. Access to capital presents its own national security risk. The common global goal should not be economic decoupling, even during times of crisis, rather the goal must be to mitigate threats in a precise and targeted manner while maintaining funding in these critical sectors. The U.S. must address these wicked problems through the development of holistic solutions that balance the economic realities of the capital markets and the fundamental national security concerns.

All governments must consider their nations place in progressing towards the next industrial revolution. This advancement includes evaluating how global competition creates technological and economic resilience, security, and innovation. Key reflection points include how to create consistent and transparent standards, evaluating to what extent governments participate in the capital markets, how and where capital and resources are allocated, and by what measure are the consequences of action (or inaction) judged over time. We must look dispassionately at the impact on domestic industry that global competition creates by recognizing

that placing limitations on the ability of U.S. companies to compete on a global scale directly impacts national security, technology, and economic policy.

I have completed this research with a more nuanced understanding and admiration for the policymakers, national security officials, investors, and entrepreneurs that contend with these complex issues. Their commitment to balancing economic growth and innovation within a globally competitive ecosystem, while upholding the principles of national security, was manifest throughout the research process.

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Appendix A: Issue Deconstruction and Framing Interview

Dear [Participant]:

Thank you for consenting to participate in the Policy Delphi study on the issues at the convergence of national security and trade policy. Your participation is vital to the success of this research. This interview will take approximately 30 minutes to complete.

This phase of the research, which is the first of three data collection activities, is a semi-structured interview with the principal investigator John Lash. This interview will focus on deconstructing and framing of the key research questions for this study.

The following inquiry-based research questions will be used to investigate the impact of U.S. national security considerations on FDI, with additional observations on the added value or cost that may be realized by implementing a modern pure-conflict game theory approach.

1. What are the key game theory strategies employed by the US and investing countries, specifically China, in conducting national security reviews in conjunction with investment activity?
2. What impact does national security risk have on enterprise deal value, and execution deal risk, in foreign direct investment transactions in high-risk industries from high-risk jurisdictions?
3. To what extent do CFIUS reviews impact the development of critical technologies and economic incentives around foreign direct investment versus domestic investment?

The interview will further permit you to provide your perspective on the current state of globalization, geopolitics, and national security issues which you consider of importance. These interviews will seek to develop observations for issue ranking, refinement, and potential resolutions to these complex issues.

If you have questions at any time about the interview or procedures, please contact: John Lash, Principal Researcher, jelst216@mail.rmu.edu or the Robert Morris University Institutional Review Board at irb@rmu.edu or the Human Subjects Protection Advocate of the IRB Office, Robert Morris University (412-397-6227).

Thank you for your participation.

Appendix B: Issue Ranking Survey

Dear [Participant]:

Please follow this link to complete the next phase of my research:

https://lashphdissuerankingsurvey.questionpro.com/

Thank you for consenting to participate in the Policy Delphi study on the issues at the convergence of national security and trade policy. Your participation is vital to the success of this research. This online survey will take approximately 30 minutes to complete.

This sequential phase of the research represents the second of three data collection activities. The survey follows your initial interview with principal investigator John Lash at which time you deconstructed and framed the research questions for this study. These issues have been developed based on both the results of collective interviews, as well as the critical interpretive synthesis of the literature performed by the principal investigator.

This survey contains a list of ten (10) issues, each with an abstract description. First, you are asked to rank the importance of each issue using the rating scale provided. Following each issue is an open text box for you to provide a potential resolution for each of the ten issues.

In the next phase of this research, you will be asked to rank the potential resolutions for each issue for desirability, feasibility, importance, and your confidence in the solution. In addition, you will be asked to offer pros and cons for each of those resolutions.

If you have questions at any time about the survey or procedures, please contact: John Lash, Principal Researcher, jelst216@mail.rmu.edu or the Robert Morris University Institutional Review Board at irb@rmu.edu or the Human Subjects Protection Advocate of the IRB Office, Robert Morris University (412-397-6227).

Thank you for your participation.

Directions: Please rank each issue according to its importance to you, identifying only one number for each. Following each issue is an open text box for you to provide a potential resolution for each of the ten issues.

Policy Delphi Issue 1: Zero-Sum Game Theory in Technology, Data, and Infrastructure Industries

The US Government reviews investments from China with an orientation toward pure-conflict zero-sum game theory, which reduces Chinese investment in US businesses. The US has a longstanding open investment policy, and when reviewing investments that are, in the judgement of the commercial parties, commercially beneficial, the U.S. government should view economic security as national security. In this view, the review process can lead to bad national security outcomes due to economic inefficiencies, which runs contrary to rational game theory. Specifically, there are a group of transactions that, if approved subject to mitigation, would improve U.S. national security more than prohibiting the transaction would because they would provide the government with information, insight, and control that cannot otherwise be obtained.

Please rank this issue according to its importance to you:

5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Given the issue and its relative importance to you, please identify one or more resolutions to the issue. There is no limitation on the number or length of resolutions.

Resolution:

Policy Delphi Issue 2: Clarification of Emerging, Foundational, and Critical Technologies

The expansion of jurisdictional scope in national security reviews for technologies may be misinterpreted or inconsistently applied based on either limited definitional mandates or overly broad representative sectors as it relates to these categories of technology. Both the definition and the operational implementation of these technology standards can have significant impact on both US and global businesses, from intra-company collaboration to distinctions between emerging and mature technology.

Please rank this issue according to its importance to you:

5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Given the issue and its relative importance to you, please identify one or more resolutions to the issue. There is no limitation on the number or length of resolutions.

Resolution:

Policy Delphi Issue 3: US Industrial Policy, Technology Policy, and Research & Development Funding

The United States presently lacks a well-formulated and coordinated industrial policy that promotes economic advancement, technological innovation, and national security. The absence of policy has created domestic market deficiencies on a global scale, highlighted by the decline in federal R&D funding in constant dollars or as a percent of GDP.

Please rank this issue according to its importance to you:

5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Given the issue and its relative importance to you, please identify one or more resolutions to the issue. There is no limitation on the number or length of resolutions.

Resolution:

Policy Delphi Issue 4: Creating Economic Incentives for US Companies with Limited Capital Market Access under National Security Investment Review Jurisdiction

National security investment reviews may impact the ability of companies to raise funds for R&D or to continue operations to profitability or through commercial end-of-life. This scenario is specific to those companies which are at the front-end of the business lifecycle that are not yet commercially viable; and conversely those who are at the back-end of the business lifecycle which may be no longer commercially viable (i.e. those with a technology that is no longer innovative in the US but may be extremely valuable in another country without indigenous capability). The US government should consider how to appropriately incentivize domestic companies who have limited access to capital markets, specifically if the government either restricts investment or forces divestment of an existing investment.

Please rank this issue according to its importance to you:

5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Given the issue and its relative importance to you, please identify one or more resolutions to the issue. There is no limitation on the number or length of resolutions.

Resolution:

Policy Delphi Issue 5: Information Asymmetry Between Transaction Parties and the Government

The national security investment review process operates within a review and investigation model which creates an information asymmetry between the parties to a transaction and the government. The discretion that governments have over classified intelligence and national security specific information, with an inability to effectively litigate (i.e. limited public oversight), can create outcomes which are contrary to the concepts of free markets and an open investment policy.

Please rank this issue according to its importance to you:

5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Given the issue and its relative importance to you, please identify one or more resolutions to the issue. There is no limitation on the number or length of resolutions.

Resolution:

Policy Delphi Issue 6: Clarification of Valuation Considerations of US Companies by Chinese Investors

There is enhanced scrutiny for Chinese investors as they will often pay a higher premium for strategic US companies, particularly those which align with national interests. The national security investment review process creates an increased transaction premium for foreign investors, particularly in a competitive bid process. In addition to financial and operational metrics, the seller in a transaction focuses on timing and certainty. The increased premium paid for a US company accounts for the CFIUS risk, the longer timelines, and the potential cost of the regulatory event (e.g. mitigation). The higher price paid by a Chinese investor can be to account for these deal considerations, and also for other legitimate commercial purposes such as: China market opportunity for US companies, the strategic element of the transaction, and for an increased valuation on a longer timeline than a western investor may be willing to entertain.

Please rank this issue according to its importance to you:

5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Given the issue and its relative importance to you, please identify one or more resolutions to the issue. There is no limitation on the number or length of resolutions.

Resolution:

Policy Delphi Issue 7: CFIUS Zeitgeist - Inconsistent Standards for Evaluating National Security Risk

The executive branch of government has an impact on the national security investment review process as the principles of agencies are often political appointees. With changes in administrations, the investments are within the judgment of these government appointees. At times, this may cause agencies within the national security review process to take a more expansive and defense-oriented view of their agency equities, which can create inefficient outcomes or procedural issues that are politically motivated. This zeitgeist creates an imbalanced risk and reward calculation which is prone to short-term risk aversion.

Please rank this issue according to its importance to you:

5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Given the issue and its relative importance to you, please identify one or more resolutions to the issue. There is no limitation on the number or length of resolutions.

Resolution:

Policy Delphi Issue 8: Incomplete Understanding and Acknowledgement of Chinese Culture, Politics, and Economic System

During the last decade, China has established a well-articulated view of the future. Broadly, the Chinese attitude towards the future focuses on two issues: dependency and control. China has been historically dependent on the rest of the world to be consumers and suppliers; however, there is a desire to have control over those two concepts in order to control their fate. The heart of Made in China 2025 and the Belt and Road Initiative (BRI) are to reduce dependency to create a positive societal and cultural impact in China. Investment from China, and investment in China, create opportunities which significantly benefit the United States and the rest of the world. The risks associated with this relationship are known. In addition, much of the narrative around China as a nefarious actor lacks nuance and an ability to consider private industry and entrepreneurs as business actors from China rather than agents acting on behalf of the Chinese government.

Please rank this issue according to its importance to you:

5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Given the issue and its relative importance to you, please identify one or more resolutions to the issue. There is no limitation on the number or length of resolutions.

Resolution:

Policy Delphi Issue 9: Exploration of Collaboration as the Path Forward

The dynamism of globalization has created an environment where US grand strategy must include geopolitical stabilization in the relationship with China. Domestically and internationally there will always be distributional issues; however, there is not an ability to look at purified relationships to set international trade policy. The US must evaluate how to ensure national security while also participating meaningfully in the global economy. The path will include a diplomatic solution with China to maintain free trade which is also fair trade, the protection of intellectual property, and meaningfully engaging on issues which impact national security.

Please rank this issue according to its importance to you:

5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Given the issue and its relative importance to you, please identify one or more resolutions to the issue. There is no limitation on the number or length of resolutions.

Resolution:

Policy Delphi Issue 10: Expanded Domain of National Security

With the increasing interconnectedness of national security with economic and technological considerations, national security investment reviews should have an expanded focus into these domains; with more consideration to second and third order consequences of non-traditional national security risks. These may include, but are not limited to, the potential offshoring of advanced and innovative US technology businesses, the loss of human capital to areas of the world with more open and inclusive technology R&D incubators, or the direct reduction of investment flows into US capital markets.

Please rank this issue according to its importance to you:

5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Given the issue and its relative importance to you, please identify one or more resolutions to the issue. There is no limitation on the number or length of resolutions.

Resolution:

Appendix C: Desirability, Feasibility, Importance, Confidence Survey

Dear [Participant]:

Please follow this link to complete the last phase of my research:

https://lashphdfinalsurvey.questionpro.com/

Thank you for consenting to participate in the Policy Delphi study on the issues at the convergence of national security and trade policy. Your participation is vital to the success of this research. This online survey will take approximately 30 minutes to complete.

This sequential phase of the research represents the third and final of three data collection activities. The survey follows your participation in the prior survey regarding issue ranking and the development of potential resolutions.

The ten (10) issues have been listed in this survey by their order of importance as ranked by you and the other participants in this study; noting that the final rankings below may not be the exact order in which you personally ranked the issue.

Following each of the issues are two potential resolutions that were proposed by participants in this survey, as well as the principal investigator, and grouped into a common theme. You are asked to rank each resolution from best to worst based on the desirability, feasibility, importance, and confidence in the resolution.

Desirability – represents the effectiveness or benefits of the resolution

Feasibility – represents the practicality of the resolution

Importance – represents the priority or relevance of the resolution

Confidence – represents the validity of the argument or premise of the resolution

If you have questions at any time about the survey or procedures, please contact: John Lash, Principal Researcher, jelst216@mail.rmu.edu or the Robert Morris University Institutional Review Board at irb@rmu.edu or the Human Subjects Protection Advocate of the IRB Office, Robert Morris University (412-397-6227).

This represents the final phase of this research. Thank you for your participation.

Policy Delphi Issue: US Industrial Policy, Technology Policy, and Research & Development Funding

The United States presently lacks a well-formulated and coordinated industrial policy that promotes economic advancement, technological innovation, and national security. The absence of policy has created domestic market deficiencies on a global scale, highlighted by the decline in federal R&D funding in constant dollars or as a percent of GDP.

Proposed Resolution 1: This issue would be best solved by focusing on funding and the allocation of resources. There should be a formal establishment of U.S. Industrial Policy and Technology Policy that would dedicate, at minimum, 2 percent of U.S. GDP to scientific research and development. In addition, the U.S. should reallocate 10 percent of the defense budget to technology-focused R&D, including but not limited to quantum computing, 5G and mobile technologies, artificial intelligence, biometrics and nanotechnology, blockchain, energy tech, robotics and the internet of things (IoT). These policies would be designed to rebuild and ensure a sustained science and technological superiority within the U.S.

Please make one selection in each of the four scales: desirability, feasibility, importance, and confidence

Desirability: effectiveness or benefits of the resolution				
5 Very Desirable	**4** Desirable	**3** No Judgment	**2** Undesirable	**1** Very Undesirable

Feasibility: practicality of the resolution				
5 Definitely Feasible	**4** Possibly Feasible	**3** No Judgment	**2** Possibly Unfeasible	**1** Definitely Unfeasible

Importance: priority or relevance of the resolution				
5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Confidence: validity of the argument or premise of the resolution				
5 Certain	**4** Reliable	**3** No Judgment	**2** Risky	**1** Very Unreliable

Proposed Resolution 2: This issue would be best solved by focusing on human-centric policies around STEM education. Sustainable technological innovation requires the U.S. to develop and maintain a reliable pipeline of domestic and international STEM talent. These education initiatives must include economic and social incentives for domestic students to enter STEM fields. The policies must also consider necessary reforms to the immigration system as it pertains to students and employment, as the U.S. must attract and retain the best and brightest international students to receive an education and remain in the U.S. post-graduation.

Please make one selection in each of the four scales: desirability, feasibility, importance, and confidence

Desirability: effectiveness or benefits of the resolution				
5 Very Desirable	**4** Desirable	**3** No Judgment	**2** Undesirable	**1** Very Undesirable

Feasibility: practicality of the resolution				
5 Definitely Feasible	**4** Possibly Feasible	**3** No Judgment	**2** Possibly Unfeasible	**1** Definitely Unfeasible

Importance: priority or relevance of the resolution				
5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Confidence: validity of the argument or premise of the resolution				
5 Certain	**4** Reliable	**3** No Judgment	**2** Risky	**1** Very Unreliable

Policy Delphi Issue: Clarification of Emerging, Foundational, and Critical Technologies

The expansion of jurisdictional scope in national security reviews for technologies may be misinterpreted or inconsistently applied based on either limited definitional mandates or overly broad representative sectors as it relates to these categories of technology. Both the definition and the operational implementation of these technology standards can have significant impact on both US and global businesses, from intra-company collaboration to distinctions between emerging and mature technology.

Proposed Resolution 1: The issue of better defining emerging, foundational, and critical technologies would be best solved through collaboration between the U.S. government and the private sector. This should occur through a congressionally mandated solarium project, which would organize three task forces to develop reports on how to address national security risks associated with the inclusion and exclusion parameters of controlled technologies, dual-use (e.g. military civil fusion) capabilities, and the development level of the technologies. The three task forces would include representatives from government, academia, and the private sector in order to fully vet the model and advocate for an approach. Reports would be provided to a U.S. Congressional Committee for review and rulemaking. Note: The original Project Solarium was a Cold War exercise in foreign policy and competitive strategy under President Dwight D. Eisenhower. In March of 2020 the Cyberspace Solarium Commission was established to develop a consensus on a strategic approach to defend the U.S. in cyberspace.

Please make one selection in each of the four scales: desirability, feasibility, importance, and confidence

Desirability: effectiveness or benefits of the resolution				
5 Very Desirable	**4** Desirable	**3** No Judgment	**2** Undesirable	**1** Very Undesirable

Feasibility: practicality of the resolution				
5 Definitely Feasible	**4** Possibly Feasible	**3** No Judgment	**2** Possibly Unfeasible	**1** Definitely Unfeasible

Importance: priority or relevance of the resolution				
5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Confidence: validity of the argument or premise of the resolution				
5 Certain	**4** Reliable	**3** No Judgment	**2** Risky	**1** Very Unreliable

Proposed Resolution 2: There is no reasonable resolution for the U.S. government to effectively define or control emerging or foundational technologies beyond the existing Export Control model. The problem with emerging technologies is that it may be too early to control them effectively; attempts at general prohibitions are often too broad and lack technical parameters and applications. Conversely, the problem with foundational technologies is that it may be too late to control them effectively. Foundational technologies, by definition, have widespread use and are typically available from sources outside the U.S., as such many of the unilateral or multilateral restrictions have already been sharply reduced.

Please make one selection in each of the four scales: desirability, feasibility, importance, and confidence

Desirability: effectiveness or benefits of the resolution				
5 Very Desirable	**4** Desirable	**3** No Judgment	**2** Undesirable	**1** Very Undesirable

Feasibility: practicality of the resolution				
5 Definitely Feasible	**4** Possibly Feasible	**3** No Judgment	**2** Possibly Unfeasible	**1** Definitely Unfeasible

Importance: priority or relevance of the resolution				
5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Confidence: validity of the argument or premise of the resolution				
5 Certain	**4** Reliable	**3** No Judgment	**2** Risky	**1** Very Unreliable

Policy Delphi Issue: Exploration of Collaboration as the Path Forward

The dynamism of globalization has created an environment where US grand strategy must include geopolitical stabilization in the relationship with China. Domestically and internationally there will always be distributional issues; however, there is not an ability to look at purified relationships to set international trade policy. The US must evaluate how to ensure national security while also participating meaningfully in the global economy. The path will include a diplomatic solution with China to maintain free trade which is also fair trade, the protection of intellectual property, and meaningfully engaging on issues which impact national security.

Proposed Resolution 1: This issue would best be solved through the concept of collective pressure. The effort would involve the strategic and tactical inclusion of allied nations to facilitate greater cooperation in holding China accountable for global norms – politically, economically, and militarily. This collective pressure effort would seek to hold China accountable for previously agreed to regional and international order (e.g. WTO obligations). Collective pressure continues to recognize and include China as a key global power, while establishing an international network of allies to confront existing violations of defined international order. Lastly, this concept would involve greater involvement, investment, and pressure from the U.S. in geopolitical initiatives, from international infrastructure investments to stronger penalties for human rights violations.

Please make one selection in each of the four scales: desirability, feasibility, importance, and confidence

Desirability: effectiveness or benefits of the resolution				
5 Very Desirable	**4** Desirable	**3** No Judgment	**2** Undesirable	**1** Very Undesirable

Feasibility: practicality of the resolution				
5 Definitely Feasible	**4** Possibly Feasible	**3** No Judgment	**2** Possibly Unfeasible	**1** Definitely Unfeasible

Importance: priority or relevance of the resolution				
5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Confidence: validity of the argument or premise of the resolution				
5 Certain	**4** Reliable	**3** No Judgment	**2** Risky	**1** Very Unreliable

Proposed Resolution 2: This issue would best be solved through decoupling rather than collaboration. The U.S. should focus on creating a sustainable and independent economy in order to reduce dependence on China while continuing as the world leader in technology and innovation. The U.S. should carefully consider its willingness to trade with geopolitical rivals, such as China, who do not reciprocate the fair-trade policies, violate human rights, and steal intellectual property. The U.S. should divide the global economy into closed and open economic, social and political systems, and until such time that China is willing to adhere to the fundamental principles of an open system (e.g. U.S. and allied nation defined global order) then China should be excluded from market access.

Please make one selection in each of the four scales: desirability, feasibility, importance, and confidence

Desirability: effectiveness or benefits of the resolution				
5 Very Desirable	**4** Desirable	**3** No Judgment	**2** Undesirable	**1** Very Undesirable

Feasibility: practicality of the resolution				
5 Definitely Feasible	**4** Possibly Feasible	**3** No Judgment	**2** Possibly Unfeasible	**1** Definitely Unfeasible

Importance: priority or relevance of the resolution				
5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Confidence: validity of the argument or premise of the resolution				
5 Certain	**4** Reliable	**3** No Judgment	**2** Risky	**1** Very Unreliable

Policy Delphi Issue: Expanded Domain of National Security

With the increasing interconnectedness of national security with economic and technological considerations, national security investment reviews should have an expanded focus into these domains; with more consideration to second and third order consequences of non-traditional national security risks. These may include, but are not limited to, the potential offshoring of advanced and innovative US technology businesses, the loss of human capital to areas of the world with more open and inclusive technology R&D incubators, or the direct reduction of investment flows into US capital markets.

Proposed Resolution 1: This issue would be best solved by updating the regulations to expand the CFIUS mandate to include economic security and technology policy as component parts of a more holistic national security review. The broad theory of "national security" and the underlying considerations remain undefined in current regulations, which leads to inconsistent or ad-hoc application, inclusion, or exclusion of these potentially expanded domains. Explicitly including these domains, which are critical to the re-visioning of warfare and statecraft in the twenty-first century, will make the investment review process more transparent and provide a more consistent application of the threat, vulnerability, and consequence of a transaction on a holistic interpretation of "national security."

Please make one selection in each of the four scales: desirability, feasibility, importance, and confidence

Desirability: effectiveness or benefits of the resolution				
5 Very Desirable	**4** Desirable	**3** No Judgment	**2** Undesirable	**1** Very Undesirable

Feasibility: practicality of the resolution				
5 Definitely Feasible	**4** Possibly Feasible	**3** No Judgment	**2** Possibly Unfeasible	**1** Definitely Unfeasible

Importance: priority or relevance of the resolution				
5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Confidence: validity of the argument or premise of the resolution				
5 Certain	**4** Reliable	**3** No Judgment	**2** Risky	**1** Very Unreliable

Proposed Resolution 2: This issue would be best solved by redesigning and reconstituting CFIUS to act as an independent Committee. Each of the current members of CFIUS would nominate a representative to serve a fixed term within the Committee to represent that departments equities as well as the broader interests of U.S. national security. The representative would be appropriately educated and trained to evaluate the expanded domains of national security and would be responsible for overarching national security assessments, not just reviews within their agency equity. The independence from the agency would provide additional structural controls to prevent ideological or political motivations into the decision-making process of the Committee. Representatives, and their associated support teams, would review and vote on all transactions under CFIUS jurisdiction.

Please make one selection in each of the four scales: desirability, feasibility, importance, and confidence

Desirability: effectiveness or benefits of the resolution				
5 Very Desirable	**4** Desirable	**3** No Judgment	**2** Undesirable	**1** Very Undesirable

Feasibility: practicality of the resolution				
5 Definitely Feasible	**4** Possibly Feasible	**3** No Judgment	**2** Possibly Unfeasible	**1** Definitely Unfeasible

Importance: priority or relevance of the resolution				
5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Confidence: validity of the argument or premise of the resolution				
5 Certain	**4** Reliable	**3** No Judgment	**2** Risky	**1** Very Unreliable

Policy Delphi Issue: Zero-Sum Game Theory in Technology, Data, and Infrastructure Industries

The US Government reviews investments from China with an orientation toward pure-conflict zero-sum game theory, which reduces Chinese investment in US businesses. The US has a longstanding open investment policy, and when reviewing investments that are, in the judgement of the commercial parties, commercially beneficial, the U.S. government should view economic security as national security. In this view, the review process can lead to bad national security outcomes due to economic inefficiencies, which runs contrary to rational game theory. Specifically, there are a group of transactions that, if approved subject to mitigation, would improve U.S. national security more than prohibiting the transaction would because they would provide the government with information, insight, and control that cannot otherwise be obtained.

Proposed Resolution 1: This issue would be best solved by updating the review to a risk-benefit analysis rather than a risk-based analysis. The analysis should be conducted with a balanced view towards recognizing national security risks and benefits as well as economic risks and benefits. The U.S. government should approve transactions where the benefits to U.S. national security arising from the transaction outweigh the risk to national security. Specifically, the current requirement for approval is that there be "no unresolved risk to national security," which should be updated to require CFIUS only to conclude that approving a transaction "better protects the national security of the United States by comparison to other options available to the Committee."

Please make one selection in each of the four scales: desirability, feasibility, importance, and confidence

Desirability: effectiveness or benefits of the resolution				
5 Very Desirable	**4** Desirable	**3** No Judgment	**2** Undesirable	**1** Very Undesirable

Feasibility: practicality of the resolution				
5 Definitely Feasible	**4** Possibly Feasible	**3** No Judgment	**2** Possibly Unfeasible	**1** Definitely Unfeasible

Importance: priority or relevance of the resolution				
5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Confidence: validity of the argument or premise of the resolution				
5 Certain	**4** Reliable	**3** No Judgment	**2** Risky	**1** Very Unreliable

Proposed Resolution 2: This issue would be best solved by codifying in the regulations that economic security is a component of national security. The CFIUS review process would include both the traditional economic benefit considerations (i.e. increased economic growth, lower government spending, job and economic security, and the development of an innovation ecosystem) as well as the threat vectors of non-traditional economic warfare (i.e. the gray zone of economic coercion, cyber-linked economic espionage, and information operations) in the national security investment review process. This process would include more expertise of the analysts reviewing the cases to provide insight and perspective on the business operations, economic considerations, and technology.

Please make one selection in each of the four scales: desirability, feasibility, importance, and confidence

Desirability: effectiveness or benefits of the resolution				
5 Very Desirable	**4** Desirable	**3** No Judgment	**2** Undesirable	**1** Very Undesirable

Feasibility: practicality of the resolution				
5 Definitely Feasible	**4** Possibly Feasible	**3** No Judgment	**2** Possibly Unfeasible	**1** Definitely Unfeasible

Importance: priority or relevance of the resolution				
5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Confidence: validity of the argument or premise of the resolution				
5 Certain	**4** Reliable	**3** No Judgment	**2** Risky	**1** Very Unreliable

Policy Delphi Issue: Incomplete Understanding and Acknowledgement of Chinese Culture, Politics, and Economic System

During the last decade, China has established a well-articulated view of the future. Broadly, the Chinese attitude towards the future focuses on two issues: dependency and control. China has been historically dependent on the rest of the world to be consumers and suppliers; however, there is a desire to have control over those two concepts in order to control their fate. The heart of Made in China 2025 and the Belt and Road Initiative (BRI) are to reduce dependency to create a positive societal and cultural impact in China. Investment from China, and investment in China, create opportunities which significantly benefit the United States and the rest of the world. The risks associated with this relationship are known. In addition, much of the narrative around China as a nefarious actor lacks nuance and an ability to consider private industry and entrepreneurs as business actors from China rather than agents acting on behalf of the Chinese government.

Proposed Resolution 1: The issue of an incomplete understanding of the Chinese cultural, political, and economic systems would be best solved through subject matter experts (SME) and cultural education programs within the U.S. government. The enhanced educational programs would be designed and deployed within U.S. government agencies that have direct dealings with Chinese companies and investors (such as CFIUS) in order to better inform staff and decision-makers about the nuances of Chinese grand strategy. In addition, these same U.S. government agencies would increase the amount of country-specific subject matter experts, while ensuring that a China SME is assigned to every national security investment review to provide cultural, political, and economic perspective of a proposed transaction.

Please make one selection in each of the four scales: desirability, feasibility, importance, and confidence

Desirability: effectiveness or benefits of the resolution				
5 Very Desirable	**4** Desirable	**3** No Judgment	**2** Undesirable	**1** Very Undesirable

Feasibility: practicality of the resolution				
5 Definitely Feasible	**4** Possibly Feasible	**3** No Judgment	**2** Possibly Unfeasible	**1** Definitely Unfeasible

Importance: priority or relevance of the resolution				
5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Confidence: validity of the argument or premise of the resolution				
5 Certain	**4** Reliable	**3** No Judgment	**2** Risky	**1** Very Unreliable

Proposed Resolution 2: This issue would be best solved by the U.S. government providing a written advisory statement on whether a Chinese business or Chinese entrepreneur can be considered independent of the Chinese government for purposes of investment activity in the U.S. This advisory would include under what scenarios, and with consideration to what factors, a Chinese investor is considered an extension of the government as a State-Owned Enterprise (SOE). The advisory would also include guidance on how a Chinese investor could proactively address and/or mitigate the issues which may arise from this link to the Chinese government, whether direct or indirect.

Please make one selection in each of the four scales: desirability, feasibility, importance, and confidence

Desirability: effectiveness or benefits of the resolution				
5 Very Desirable	**4** Desirable	**3** No Judgment	**2** Undesirable	**1** Very Undesirable

Feasibility: practicality of the resolution				
5 Definitely Feasible	**4** Possibly Feasible	**3** No Judgment	**2** Possibly Unfeasible	**1** Definitely Unfeasible

Importance: priority or relevance of the resolution				
5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Confidence: validity of the argument or premise of the resolution				
5 Certain	**4** Reliable	**3** No Judgment	**2** Risky	**1** Very Unreliable

Policy Delphi Issue: Clarification of Valuation Considerations of US Companies by Chinese Investors

There is enhanced scrutiny for Chinese investors as they will often pay a higher premium for strategic US companies, particularly those which align with national interests. The national security investment review process creates an increased transaction premium for foreign investors, particularly in a competitive bid process. In addition to financial and operational metrics, the seller in a transaction focuses on timing and certainty. The increased premium paid for a US company accounts for the CFIUS risk, the longer timelines, and the potential cost of the regulatory event (e.g. mitigation). The higher price paid by a Chinese investor can be to account for these deal considerations, and also for other legitimate commercial purposes such as: China market opportunity for US companies, the strategic element of the transaction, and for an increased valuation on a longer timeline than a western investor may be willing to entertain.

Proposed Resolution 1: The issue of a "CFIUS-premium" would be best solved through expediting the national security investment review process. The mandate for CFIUS should require the resolution of investment reviews as rapidly as possible through pre-filing, review, and investigation phases, consistent with national security requirements, rather than determinations occurring at the late stages of the statutory timelines. This would ensure that any differential treatment of foreign investors is limited to no more than necessary, which in turn creates greater competition in the capital markets and better results for U.S. companies. The efficiency (i.e. speed of review) will decrease the "CFIUS-premium" that arises in a competitive bid process and thereby reveal where a premium is being paid for other legitimate or nefarious reasons.

Please make one selection in each of the four scales: desirability, feasibility, importance, and confidence

Desirability: effectiveness or benefits of the resolution				
5 Very Desirable	**4** Desirable	**3** No Judgment	**2** Undesirable	**1** Very Undesirable

Feasibility: practicality of the resolution				
5 Definitely Feasible	**4** Possibly Feasible	**3** No Judgment	**2** Possibly Unfeasible	**1** Definitely Unfeasible

Importance: priority or relevance of the resolution				
5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Confidence: validity of the argument or premise of the resolution				
5 Certain	**4** Reliable	**3** No Judgment	**2** Risky	**1** Very Unreliable

Proposed Resolution 2: The issue of a "CFIUS-premium" would be best solved through additional financial disclosures to the U.S. government specific to the valuation. Establish a requirement that all investors provide specific support for their valuation and require that parties in an auction process disclose competing bids confidentially to the U.S. government. These disclosures would include components such as the valuation method, open market considerations (i.e. market entry opportunities and/or operational synergies), economic incentives, or any other criteria for evaluation. The requirement would further assist the U.S. government in evaluating whether the interest in the acquisition aligns with traditional capital market principles or whether there are alternative considerations such as tactical political or military advantage.

Please make one selection in each of the four scales: desirability, feasibility, importance, and confidence

Desirability: effectiveness or benefits of the resolution				
5 Very Desirable	**4** Desirable	**3** No Judgment	**2** Undesirable	**1** Very Undesirable

Feasibility: practicality of the resolution				
5 Definitely Feasible	**4** Possibly Feasible	**3** No Judgment	**2** Possibly Unfeasible	**1** Definitely Unfeasible

Importance: priority or relevance of the resolution				
5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Confidence: validity of the argument or premise of the resolution				
5 Certain	**4** Reliable	**3** No Judgment	**2** Risky	**1** Very Unreliable

Policy Delphi Issue: CFIUS Zeitgeist - Inconsistent Standards for Evaluating National Security Risk

The executive branch of government has an impact on the national security investment review process as the principles of agencies are often political appointees. With changes in administrations, the investments are within the judgment of these government appointees. At times, this may cause agencies within the national security review process to take a more expansive and defense-oriented view of their agency equities, which can create inefficient outcomes or procedural issues that are politically motivated. This zeitgeist creates an imbalanced risk and reward calculation which is prone to short-term risk aversion.

Proposed Resolution 1: This issue would be best solved through updating the regulations to establish explicit guidelines regarding the analysis that CFIUS undertakes and the factors which resulted in the ultimate determination. The guidelines should expressly require the Committee to consider all potential mitigation options and require agencies that seek to prohibit a transaction to product a written assessment of the risk presented and the specific reasons that mitigation is not sufficient to address the identified risk. The final determination by CFIUS should be made by a vote of each agency that has taken an equity interest (e.g. 2/3 or 3/4), rather than by consensus which may allow a single politically motivated agency to block a transaction.

Please make one selection in each of the four scales: desirability, feasibility, importance, and confidence

Desirability: effectiveness or benefits of the resolution				
5 Very Desirable	**4** Desirable	**3** No Judgment	**2** Undesirable	**1** Very Undesirable

Feasibility: practicality of the resolution				
5 Definitely Feasible	**4** Possibly Feasible	**3** No Judgment	**2** Possibly Unfeasible	**1** Definitely Unfeasible

Importance: priority or relevance of the resolution				
5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Confidence: validity of the argument or premise of the resolution				
5 Certain	**4** Reliable	**3** No Judgment	**2** Risky	**1** Very Unreliable

Proposed Resolution 2: This issue would be best solved by explicitly identifying each agency's direct equity interest in a transaction. Roles that specific agencies play in the process would be divided to align with the equity of the respective agency, with appropriate deference on issues outside of those direct interests. The fixed long-term U.S. economic policy of open investment would be advocated by USTR, Commerce, State, and Treasury. The variable national security policy and associated risks that are situation dependent would be advocated by DOD, DHS, DOJ, DOE. The issues surrounding U.S. technology policy would be advocated by OSTP. The threat environment posed by the transaction would be factually represented by the Intelligence Community.

Please make one selection in each of the four scales: desirability, feasibility, importance, and confidence

Desirability: effectiveness or benefits of the resolution				
5 Very Desirable	**4** Desirable	**3** No Judgment	**2** Undesirable	**1** Very Undesirable

Feasibility: practicality of the resolution				
5 Definitely Feasible	**4** Possibly Feasible	**3** No Judgment	**2** Possibly Unfeasible	**1** Definitely Unfeasible

Importance: priority or relevance of the resolution				
5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Confidence: validity of the argument or premise of the resolution				
5 Certain	**4** Reliable	**3** No Judgment	**2** Risky	**1** Very Unreliable

Policy Delphi Issue: Creating Economic Incentives for US Companies with Limited Capital Market Access under National Security Investment Review Jurisdiction

National security investment reviews may impact the ability of companies to raise funds for R&D or to continue operations to profitability or through commercial end-of-life. This scenario is specific to those companies which are at the front-end of the business lifecycle that are not yet commercially viable; and conversely those who are at the back-end of the business lifecycle which may be no longer commercially viable (i.e. those with a technology that is no longer innovative in the US but may be extremely valuable in another country without indigenous capability). The US government should consider how to appropriately incentivize domestic companies who have limited access to capital markets, specifically if the government either restricts investment or forces divestment of an existing investment.

Proposed Resolution 1: The issue of economic incentives would best be solved through consortium funding of specific national security impact sectors. This model would be based on the original SEMATECH (Semiconductor Manufacturing Technology) concept of the 1980s which was established as a partnership between the U.S. government and 14 U.S.-based semiconductor manufacturers to regain the competitiveness for the U.S. semiconductor industry. Like SEMATECH, this venture would be funded by public subsidies from the Department of Defense (via DARPA). This model would focus on providing broad financial support to defined technology sectors of interest in various capacities including the funding of R&D, manufacturing, and equipment and material suppliers.

Please make one selection in each of the four scales: desirability, feasibility, importance, and confidence

Desirability: effectiveness or benefits of the resolution				
5 Very Desirable	**4** Desirable	**3** No Judgment	**2** Undesirable	**1** Very Undesirable

Feasibility: practicality of the resolution				
5 Definitely Feasible	**4** Possibly Feasible	**3** No Judgment	**2** Possibly Unfeasible	**1** Definitely Unfeasible

Importance: priority or relevance of the resolution				
5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Confidence: validity of the argument or premise of the resolution				
5 Certain	**4** Reliable	**3** No Judgment	**2** Risky	**1** Very Unreliable

Proposed Resolution 2: The issue of economic incentives would best be solved through individual company funding in a "Trusted Capital Program 2.0." The updated trusted capital program, (the current iteration which is presently being piloted by the Department of Defense), would provide a mechanism for pre-screened trusted capital members to invest in national security focus areas at key funding points for the business. Trusted capital members would be private sector investors who are mapped to investment opportunities which fit their portfolio and investment decisions are solely that of the private parties. These investments would not result in any obligations to the U.S. government (e.g. the traditional obligations which result from DARPA-funded, or other similar U.S. government funded, initiatives).

Please make one selection in each of the four scales: desirability, feasibility, importance, and confidence

Desirability: effectiveness or benefits of the resolution				
5 Very Desirable	**4** Desirable	**3** No Judgment	**2** Undesirable	**1** Very Undesirable

Feasibility: practicality of the resolution				
5 Definitely Feasible	**4** Possibly Feasible	**3** No Judgment	**2** Possibly Unfeasible	**1** Definitely Unfeasible

Importance: priority or relevance of the resolution				
5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Confidence: validity of the argument or premise of the resolution				
5 Certain	**4** Reliable	**3** No Judgment	**2** Risky	**1** Very Unreliable

Policy Delphi Issue: Information Asymmetry Between Transaction Parties and the Government

The national security investment review process operates within a review and investigation model which creates an information asymmetry between the parties to a transaction and the government. The discretion that governments have over classified intelligence and national security specific information, with an inability to effectively litigate (i.e. limited public oversight), can create outcomes which are contrary to the concepts of free markets and an open investment policy.

Proposed Resolution 1: The issue of information asymmetry would be best solved with the by establishing a CFIUS Public Advocate or Special Private Advocate. This independent advocate would review the notice of the transaction submitted to CFIUS, have direct interaction with the transaction parties to fully understand the business and purpose of the transaction, have access to all relevant classified and non-classified information relied upon during the review and investigation period, and have appropriate authority to exercise remedial powers on behalf of the transaction parties. This advocate would not be directly representing the views of either party, but rather the general interests and rights of all parties in reviewing the commercial considerations of the transaction and the potential effect of the transaction on the national security of the United States. The advocate would maintain an active U.S. government security clearance and have appropriate credentials to perform in the role.

Please make one selection in each of the four scales: desirability, feasibility, importance, and confidence

Desirability: effectiveness or benefits of the resolution				
5 Very Desirable	**4** Desirable	**3** No Judgment	**2** Undesirable	**1** Very Undesirable

Feasibility: practicality of the resolution				
5 Definitely Feasible	**4** Possibly Feasible	**3** No Judgment	**2** Possibly Unfeasible	**1** Definitely Unfeasible

Importance: priority or relevance of the resolution				
5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Confidence: validity of the argument or premise of the resolution				
5 Certain	**4** Reliable	**3** No Judgment	**2** Risky	**1** Very Unreliable

Proposed Resolution 2: There is no necessity and no reasonable resolution which would solve the issue of information asymmetry caused by classified information. The parties to a transaction and the US government both knowingly enter a national security investment review with this understanding.

Please make one selection in each of the four scales: desirability, feasibility, importance, and confidence

Desirability: effectiveness or benefits of the resolution				
5 Very Desirable	**4** Desirable	**3** No Judgment	**2** Undesirable	**1** Very Undesirable

Feasibility: practicality of the resolution				
5 Definitely Feasible	**4** Possibly Feasible	**3** No Judgment	**2** Possibly Unfeasible	**1** Definitely Unfeasible

Importance: priority or relevance of the resolution				
5 Very Important	**4** Important	**3** No Judgment	**2** Unimportant	**1** Very Unimportant

Confidence: validity of the argument or premise of the resolution				
5 Certain	**4** Reliable	**3** No Judgment	**2** Risky	**1** Very Unreliable

Comments: Provide any pros, cons, weaknesses, or strengths for any of the proposed resolutions, if appropriate

Comments: Please provide any additional comment or insight specific to the key themes of this research and your understanding of the interconnected domains of national security, economic policy, and the current geopolitical environment, if appropriate

Appendix D: Research Consent Form

DESCRIPTION / PURPOSE: The purpose of this thesis is to examine, utilizing a Policy Delphi technique, the convergence of foreign direct investment (FDI), trade policy, and national security, specifically the reviews conducted by the Committee on Foreign Investment in the United States (CFIUS). The Policy Delphi is a form of research design which is utilized to generate the strongest possible opposing views on the potential resolutions of policy issues.

The goals of this dissertation are twofold. The first goal is to investigate and explain how the key variable of national security impacts foreign direct investment in the United States. The second is to fill an important gap in the literature on CFIUS by offering a detailed conceptualization of how national security and trade policy converge, including the development of a modern pure-conflict game theory model. This research is fundamentally rooted in the belief that U.S. national security considerations have a material impact on foreign direct investment, with second and third order consequences not fully vetted by extant research.

This study is designed to test the national security and economic theories of the twenty-first century, and the results from this research will provide critical observations for policymakers to establish stable national security and growth oriented economic policies. You have been selected to participate in this study based on your specific professional and academic experiences at the convergence of trade policy and national security.

This study is being conducted as partial fulfilment of the Instructional Management and Leadership Doctoral Program at Robert Morris University.

PROCEDURES: Participation in this research will involve three (3) data collection activities; the first will be a semi-structured interview for issue deconstruction, the second will be a survey to rank the issues, and the third will be a survey to evaluate the desirability, feasibility, importance, and confidence in potential solutions.

TIME INVOLVEMENT: Your participation in each of the three (3) data collection activities is expected to take thirty (30) minutes each, for a total of ninety (90) minutes.

RISKS AND BENEFITS: Participation in this research presents minimal risk to participants, with the probability and magnitude of harm no greater than ordinarily encountered in daily life. The researcher will take reasonable care to keep all responses confidential through encrypted and password protected cloud storage. While there is always risk associated with the security of data and personal information, these risks are marginal considering the safeguards put in place. The benefits associated with participation in the study are twofold: to assist in establishing stable and growth oriented national security policy and to fill an important gap in academic literature on this topic.

PARTICIPANT RIGHTS: Participation in this research is voluntary and you have the right to withdraw consent or discontinue participation at any time.

CONFIDENTIALITY: The participant understands that any information obtained from this research will be kept confidential. At no time during the study will any participant know the identify of the other participants involved. It has been explained that my identity will not be revealed in any description or publication of this research. Therefore, I consent to such publication for scientific and scholarly purposes.

RESEARCHER CONTACT INFORMATION: If the participant has any questions or concerns about the research study, procedures performed, risks or benefits, or any other information contained herein, contact the principal researcher John Lash at jelst216@mail.rmu.edu or 814-659-4439.

VOLUNTARY CONSENT: All of the above has been explained to me and all of my current questions have been answered. I understand that I am encouraged to ask questions about any aspect of this research during the course of this study and that such future questions will be answered by the researchers listed on the front page of this form.

Any questions which I have about my rights as a research participant will be answered by the Human Subjects Protection Advocate of the IRB Office, Robert Morris University (412-397-6227).

By signing this form, I agree to participate in this research study. A copy of this consent form will be given to me.

_____ _____

Participant's Signature Date

Appendix E: Ranking of Policy Delphi Issue Resolutions

Table 14.

Ranking of Policy Delphi Issue Resolutions, Ordered by Desirability

Policy Issue and Resolution	Desirability	Feasibility	Importance	Confidence	Average
Issue 3, Resolution 1	4.61	3.25	4.32	4.00	4.04
Issue 1, Resolution 2	4.25	3.64	4.04	3.64	3.89
Issue 5, Resolution 1	4.04	3.57	3.79	3.71	3.78
Issue 10, Resolution 2	3.96	4.18	4.14	4.18	4.12
Issue 1, Resolution 1	3.89	2.96	3.89	3.54	3.57
Issue 2, Resolution 1	3.86	3.57	3.64	3.68	3.69
Issue 9, Resolution 1	3.75	3.39	3.75	3.64	3.63
Issue 9, Resolution 2	3.75	3.29	3.71	3.54	3.57
Issue 7, Resolution 1	3.75	3.21	3.36	3.36	3.42
Issue 5, Resolution 2	3.68	3.07	3.50	3.39	3.41
Issue 6, Resolution 1	3.50	3.18	3.21	3.25	3.29
Issue 4, Resolution 1	3.46	3.43	3.54	3.39	3.46
Issue 8, Resolution 1	3.43	3.43	3.46	3.43	3.44
Issue 8, Resolution 2	3.39	3.21	3.32	3.07	3.25
Issue 2, Resolution 2	3.29	3.29	3.39	3.25	3.30
Issue 4, Resolution 2	3.21	3.25	3.11	2.89	3.12
Issue 6, Resolution 2	3.14	2.75	3.07	2.93	2.97
Issue 3, Resolution 2	3.11	2.75	3.61	3.07	3.13
Issue 7, Resolution 2	3.00	2.89	3.00	3.00	2.97
Issue 10, Resolution 1	2.68	2.50	2.61	2.50	2.57

Note. Ranking based on five-point Likert-like scale

Table 15.

Ranking of Policy Delphi Issue Resolutions, Ordered by Feasibility

Policy Issue and Resolution	Feasibility	Desirability	Importance	Confidence	Average
Issue 10, Resolution 2	4.18	3.96	4.14	4.18	4.12
Issue 1, Resolution 2	3.64	4.25	4.04	3.64	3.89
Issue 5, Resolution 1	3.57	4.04	3.79	3.71	3.78
Issue 2, Resolution 1	3.57	3.86	3.64	3.68	3.69
Issue 4, Resolution 1	3.43	3.46	3.54	3.39	3.46
Issue 8, Resolution 1	3.43	3.43	3.46	3.43	3.44
Issue 9, Resolution 1	3.39	3.75	3.75	3.64	3.63
Issue 9, Resolution 2	3.29	3.75	3.71	3.54	3.57
Issue 2, Resolution 2	3.29	3.29	3.39	3.25	3.30
Issue 3, Resolution 1	3.25	4.61	4.32	4.00	4.04
Issue 4, Resolution 2	3.25	3.21	3.11	2.89	3.12
Issue 7, Resolution 1	3.21	3.75	3.36	3.36	3.42
Issue 8, Resolution 2	3.21	3.39	3.32	3.07	3.25
Issue 6, Resolution 1	3.18	3.50	3.21	3.25	3.29
Issue 5, Resolution 2	3.07	3.68	3.50	3.39	3.41
Issue 1, Resolution 1	2.96	3.89	3.89	3.54	3.57
Issue 7, Resolution 2	2.89	3.00	3.00	3.00	2.97
Issue 6, Resolution 2	2.75	3.14	3.07	2.93	2.97
Issue 3, Resolution 2	2.75	3.11	3.61	3.07	3.13
Issue 10, Resolution 1	2.50	2.68	2.61	2.50	2.57

Note. Ranking based on five-point Likert-like scale

Table 16.

Ranking of Policy Delphi Issue Resolutions, Ordered by Importance

Policy Issue and Resolution	Importance	Desirability	Feasibility	Confidence	Average
Issue 3, Resolution 1	4.32	4.61	3.25	4.00	4.04
Issue 10, Resolution 2	4.14	3.96	4.18	4.18	4.12
Issue 1, Resolution 2	4.04	4.25	3.64	3.64	3.89
Issue 1, Resolution 1	3.89	3.89	2.96	3.54	3.57
Issue 5, Resolution 1	3.79	4.04	3.57	3.71	3.78
Issue 9, Resolution 1	3.75	3.75	3.39	3.64	3.63
Issue 9, Resolution 2	3.71	3.75	3.29	3.54	3.57
Issue 2, Resolution 1	3.64	3.86	3.57	3.68	3.69
Issue 3, Resolution 2	3.61	3.11	2.75	3.07	3.13
Issue 4, Resolution 1	3.54	3.46	3.43	3.39	3.46
Issue 5, Resolution 2	3.50	3.68	3.07	3.39	3.41
Issue 8, Resolution 1	3.46	3.43	3.43	3.43	3.44
Issue 2, Resolution 2	3.39	3.29	3.29	3.25	3.30
Issue 7, Resolution 1	3.36	3.75	3.21	3.36	3.42
Issue 8, Resolution 2	3.32	3.39	3.21	3.07	3.25
Issue 6, Resolution 1	3.21	3.50	3.18	3.25	3.29
Issue 4, Resolution 2	3.11	3.21	3.25	2.89	3.12
Issue 6, Resolution 2	3.07	3.14	2.75	2.93	2.97
Issue 7, Resolution 2	3.00	3.00	2.89	3.00	2.97
Issue 10, Resolution 1	2.61	2.68	2.50	2.50	2.57

Note. Ranking based on five-point Likert-like scale

Table 17.

Ranking of Policy Delphi Issue Resolutions, Ordered by Confidence

Policy Issue and Resolution	Confidence	Desirability	Feasibility	Importance	Average
Issue 10, Resolution 2	4.18	3.96	4.18	4.14	4.12
Issue 3, Resolution 1	4.00	4.61	3.25	4.32	4.04
Issue 5, Resolution 1	3.71	4.04	3.57	3.79	3.78
Issue 2, Resolution 1	3.68	3.86	3.57	3.64	3.69
Issue 1, Resolution 2	3.64	4.25	3.64	4.04	3.89
Issue 9, Resolution 1	3.64	3.75	3.39	3.75	3.63
Issue 1, Resolution 1	3.54	3.89	2.96	3.89	3.57
Issue 9, Resolution 2	3.54	3.75	3.29	3.71	3.57
Issue 8, Resolution 1	3.43	3.43	3.43	3.46	3.44
Issue 4, Resolution 1	3.39	3.46	3.43	3.54	3.46
Issue 5, Resolution 2	3.39	3.68	3.07	3.50	3.41
Issue 7, Resolution 1	3.36	3.75	3.21	3.36	3.42
Issue 2, Resolution 2	3.25	3.29	3.29	3.39	3.30
Issue 6, Resolution 1	3.25	3.50	3.18	3.21	3.29
Issue 3, Resolution 2	3.07	3.11	2.75	3.61	3.13
Issue 8, Resolution 2	3.07	3.39	3.21	3.32	3.25
Issue 7, Resolution 2	3.00	3.00	2.89	3.00	2.97
Issue 6, Resolution 2	2.93	3.14	2.75	3.07	2.97
Issue 4, Resolution 2	2.89	3.21	3.25	3.11	3.12
Issue 10, Resolution 1	2.50	2.68	2.50	2.61	2.57

Note. Ranking based on five-point Likert-like scale