

VERTICES

Duke's Undergraduate Research Journal

Spring 2023

Volume 2, Issue 1

**Modeling the
Northern Great
Barrier Reef
Population
of Green Sea
Turtles**

7

29

**Relations of
and Between
Family
Business and
Private
Enterprise**

51

**The Birth of a
New China**

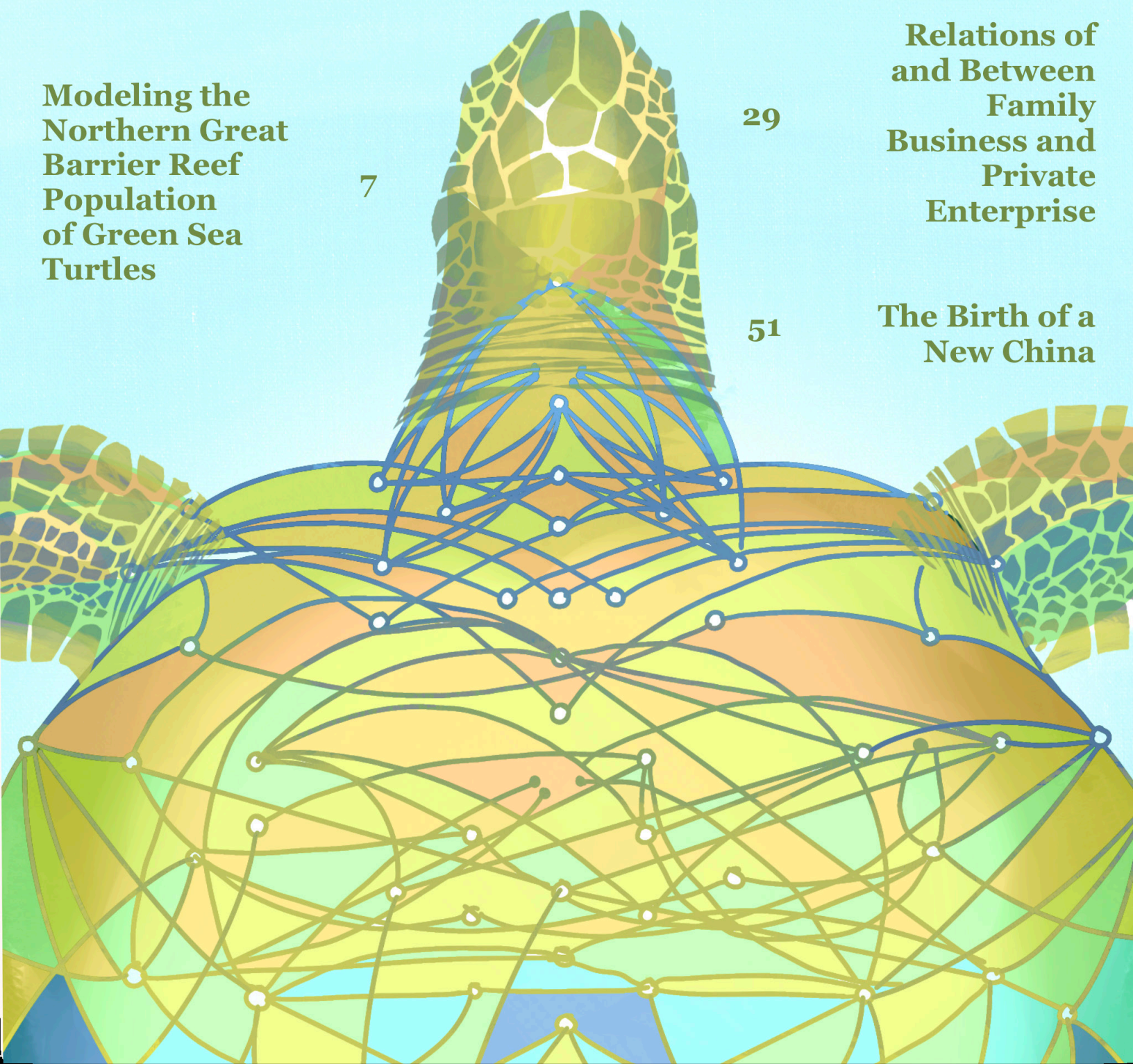


Table of Contents

Letter from the Editor	5
Articles	
Modeling the Northern Great Barrier Reef Population of Green Sea Turtles Jackson Nowacek	7
Relations of and Between Family Business and Private Enterprise Michael Cao	29
The Birth of a New China: How the US-China Trade War Affected the Economy and Foreign Policies of Vietnam in 2016-2020 Tri Truong	51
Meet Our Editing Team	92
Meet Our Design Team	97
Acknowledgements	99

Letter from the Editor

Dear Reader,

Welcome to the third issue of Vertices: Duke's Undergraduate Research Journal. Over the past couple of years, Vertices has grown immensely in all our departments, and our hardworking team of editors, reviewers, collaborators, artistic and web designers have shaped the academic publishing side of this organization to showcase the exceptional research of our undergraduate contributors. In working on this third issue, we've integrated input from our team members to refine our review and publishing process to foster collaboration and communication.

I'm proud to share this multidisciplinary publication here. This issue includes four outstanding articles that were selected from our submissions pool and rigorously reviewed by undergraduates, Duke faculty, graduate students, and Georgetown collaborators. First we present a literature review on the mechanisms of communication and virulence in *Pseudomonas aeruginosa*, a highly antimicrobial resistant pathogen for which alternative treatments must be developed. Our second article provides a computational model of how a sea turtle population might be affected by environmental changes. Third, we present a study into the relationship and attitudes between family business and private enterprise, an important dynamic in the U.S. economy. Our final article examines the effects of the U.S.—China Trade War on Vietnam's economic and political systems, providing valuable insights into Vietnam's international affairs and foreign policy.

I hope you enjoy this third issue of Vertices as a celebration of knowledge, scientific investigation, and diligent study!

Sincerely,



Sasha Bacot, Senior Editor

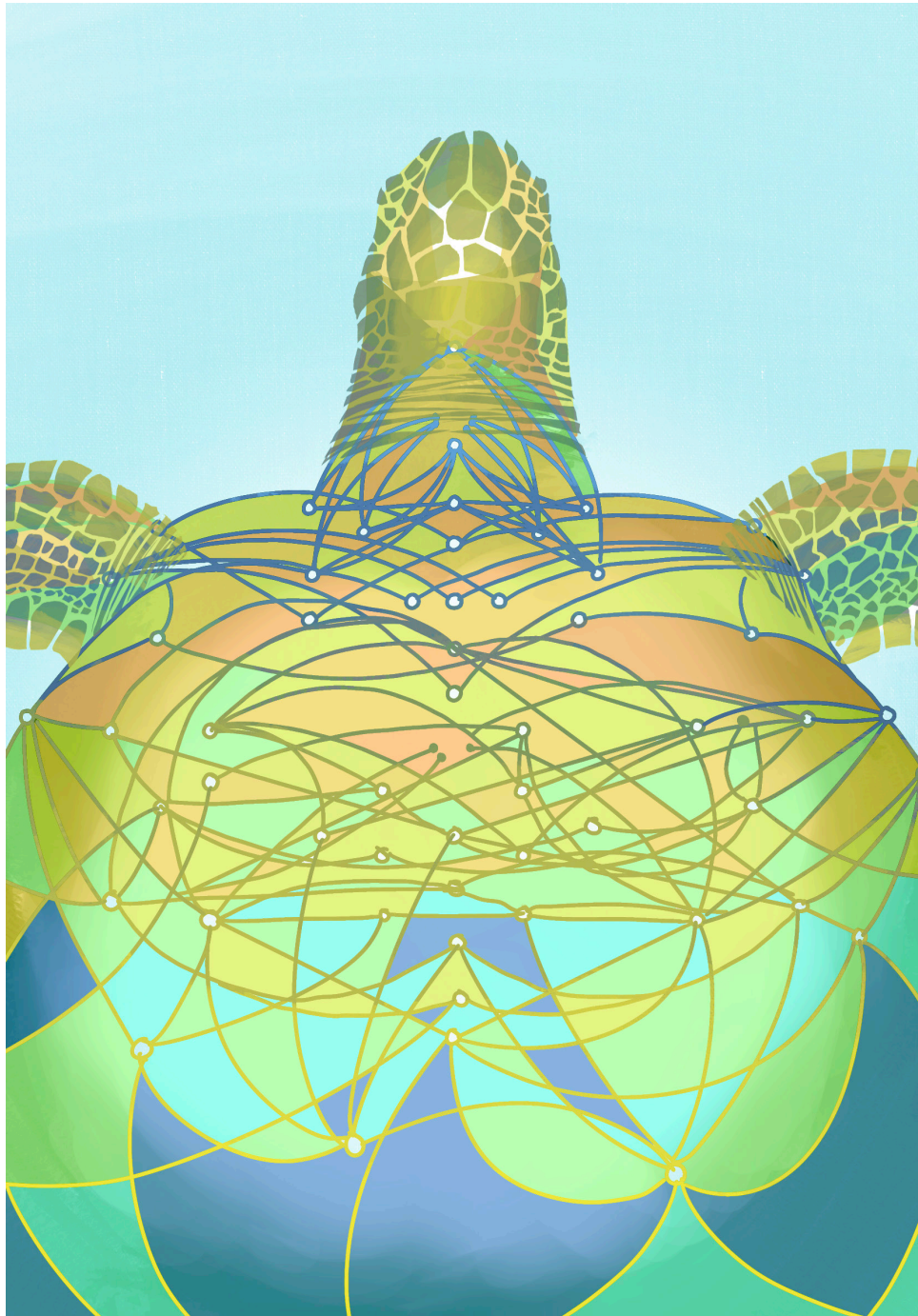
Modeling the Northern Great Barrier Reef Population of Green Sea Turtles

Jackson D. Nowacek



Article Synopsis

In this paper, a computational model representing a population of sea turtles is outlined. The model includes eggs, hatchlings, juveniles, adolescents, and adults. It also includes some common predators and food sources of these sea turtles. The bulk of the paper is about what happens to the turtles when different variables like food availability and predation and changed slightly.



Graphic by Cindy Ju

Modeling the Northern Great Barrier Reef Population of Green Sea Turtles

Jackson D. Nowacek

NCSSM Online, Duke University, Durham, North Carolina
<https://doi.org/10.55894/dv2.12>

Abstract

Population modeling is an established, effective tool for assessing the effects of environmental conditions on a specific population. The model this paper outlines is based on the Green Sea Turtle (*Chelonia mydas*) population of the Northern Great Barrier Reef. The model shows the effects of variable temperature, light, nutrients, predation, and availability of food (seagrass) on the long-term health of the population. Several tests were run by adjusting variables such as initial seagrass levels, seagrass threshold, mortality rates, nest temperature, light, and nutrients. The model showed biologically and ecologically plausible reactions to each variable change.

Keywords: Population, Green Sea Turtle, Adult, Adolescent, Juvenile, Hatchling, Egg, *Chelonia mydas*, Rate, Environmental Conditions, Seagrass

Introduction

Modeling is a modern computational tool used by many scientific disciplines to simulate experiments and ecological processes. Using computational software programs informed by known facts and processes, scientists can simulate various biological and ecological systems. These include populations, communities, ecosystems and the relations between them. To simulate these interactions, scientists use data-based inputs and parameters to set up the model then 'run' the model for a specific amount of time. The model can then be changed slightly to test

different scenarios and conditions, which can range from changes in temperature to changes in chemical concentrations depending on the model. Such models can be efficient replacements for, or complements to, empirical data collection.

Environmental science experiments can be logistically difficult because of the large survey areas and extended time periods needed to collect sufficient data. For example, if a scientist was curious about the effects of global warming on the open ocean surface ecosystem, even the sub-sampling surveys would require vast cov-

erage, take years, and be financially daunting. Another barrier to environmental study is the elusive nature of many species. To study snow leopards, for example, camera traps are needed to simply show the presence of individual leopards (Alexander et al. 2016). Modeling allows scientists to bypass these experiments by using the model to generate plausible simulated data.

The use of environmental models is one of the methods used by scientists to attempt to predict the effects of various events or conditions on an ecosystem or population. For example, Holmes et al. (2010) created a model showing the relationship between free space, hard corals, soft corals and algae on coral reefs. One of the key features of this model was its ability to simulate multiple coral reefs using slight adjustments to the model parameters. Models like this one are built using what we know: natural phenomena, environmental data, population structure, biotic and abiotic interactions, etc. These values can then be manipulated to explore the impacts of various conditions on the model, creating hypothetical scenarios which can give us insight into future trends we may see.

The goal of this specific model was to, as accurately as possible, simulate a population of Green sea turtles in one of their primary breeding grounds, the Great Barrier Reef. Green sea turtles frequent the Great Barrier Reef because of the warm, shallow water and the availability of seagrass, their main food source. The deep water off the reef also provides relatively safe refuge for hatchlings once they make it off the beach (Gyuris 1993). The reason for this relative safety is that the main predators of hatchlings, small sharks, grouper (Witzel 1981), and small predatory fish, generally do not leave the shallow waters of the reef. Once over the edge of

the reef, the young turtles have a chance to mature. After about 5 years as a juvenile (Godfrey personal communication) during which the turtles eat algae, seagrass, small crustaceans, malacostraca and insects (Fuentes et al. 2006, Boyle et al. 2008), the turtles mature to the adolescent life stage. Once adolescent, seagrass is effectively the turtles' only food source and the only predators large enough to prey on them are tiger sharks. This balance makes for low death rates and relatively stable populations. The only difference between the older adolescents and adults is sexually maturity, which comes in turtles at about 30 years of age (Limpus et al. 1997). Once sexually mature, the turtles are classified as adults. These adults breed for about 30 years before dying which constitutes their estimated 60 year lifespan. These parameters and many others about the lives and habitats of these animals were programmed into the software STELLA Architect, creating a comprehensive population model.

Computational Approach

The basis of this paper is a population model created using a differential equation solving software called STELLA Architect. Four different life stages and the main food source of sea turtles, seagrass, are represented by stocks i.e., changeable populations. Flows are the software piece used to denote the movement of individuals through the model, from stock to stock. Flows are affected by variables, which are represented by converters in the software. Each experiment in this study was conducted by changing one of these converters or stocks. These changes were evaluated both on the behavior of the stock over time as depicted in graphs, and on the final value of specific stocks. The model run time was changed based on the behavior of the graph and was increased well beyond the

point of stabilization to show that the stabilization was permanent and to show the small repeat oscillations present in some graphs (e.g., Figure 3)

To build a realistic and representative model, four distinct life stages were considered. The first stock, eggs and hatchlings, shows the number of eggs and the young turtles who have not yet reached the relative safety of deep water (Gyuris, 1993). Once the hatchlings reach the ocean side edge of the reef or other dropoff, they are considered juveniles. After 5 years

as a juvenile, the young turtles, if they make it through the high death rates associated with their small size, are considered adolescents. Once adolescent, the survival rate increases dramatically, mostly because the number of predator species capable of taking them is greatly reduced. Only large sharks are known to prey on adolescent or adult turtles. After 25 years as an adolescent, the turtles reach sexual maturity (Godfrey Personal Communication) and are then classified as adults. For the next 30 years of life, they are of breeding age and enjoy the highest survival rate of any life stage.

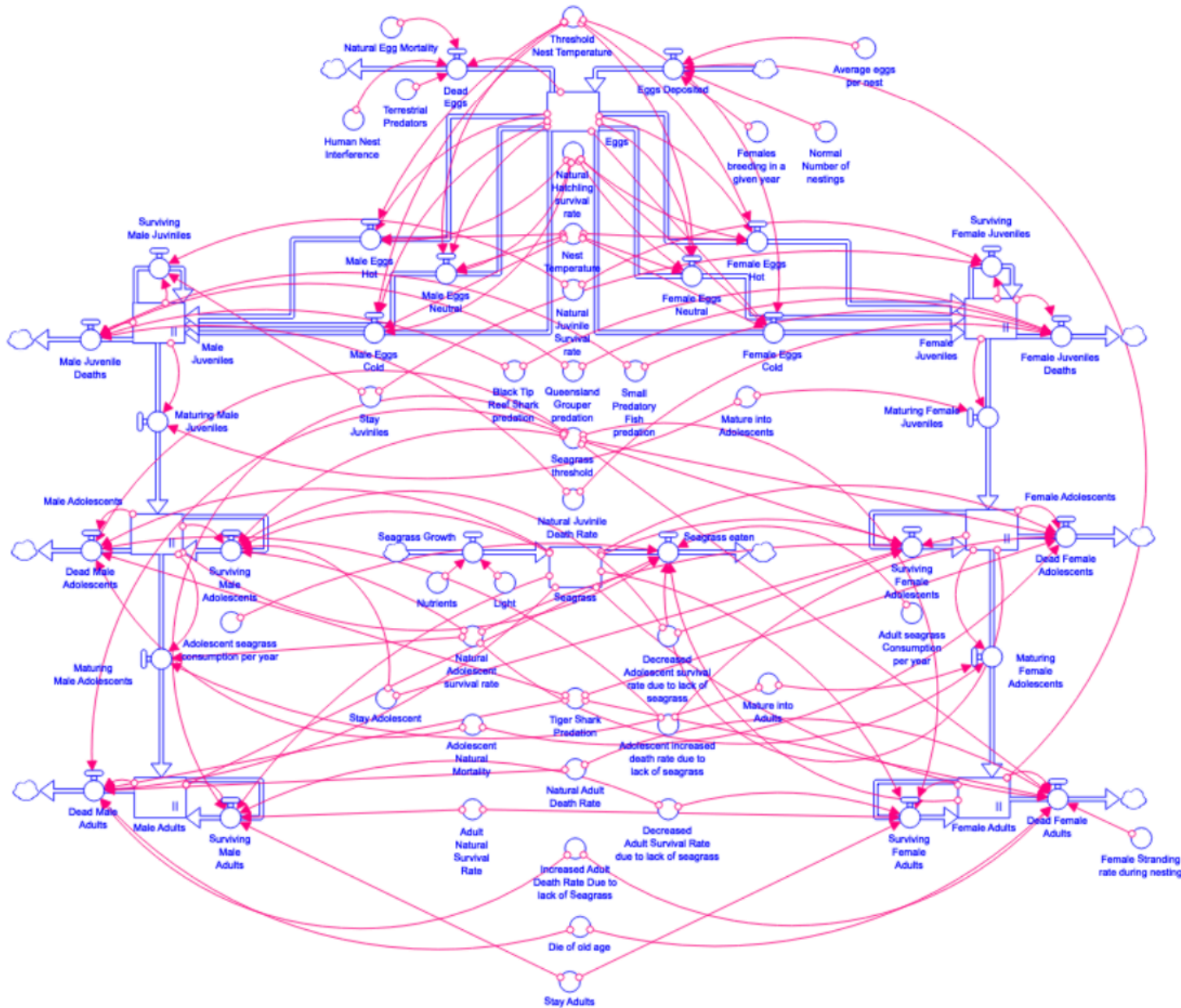


Figure 1: STELLA Model used in this study. Stocks are represented by the empty rectangles, flows are represented by arrows going from a cloud to a stock, a stock to a stock or a stock to a cloud. The clouds represent moving into or out of the model. The only cloud to stock flow is eggs lain. All death related flows are stock to cloud. Variables are represented by small, empty circles and the red arrows represent connections. These arrows all end at a flow and start at a variable or stock.

Eggs and hatchlings: The input into eggs and hatchlings is simply the number of eggs lain. The number of eggs lain is dependent on the number of female adults and three nesting re-

lated variables: average number of eggs per nest (100), the average number of nestings per female per breeding season (5), and, since females only breed about every 3 years, the fraction of

females breeding in a given year (1/3). There are eight flows out of the egg and hatchling stock. The first is egg death, which accounts for the approximately 10 percent of eggs that do not hatch due to predation, crushing, or other events. The second outflow represents the hatchlings who instead of following the light of the moon towards the water, follow artificial light away from the water. These hatchlings, about 5 percent of the total, do not reach the water and do not survive. The other 6 flows represent the eggs that hatch and make it to the deep water at the edge of the reef. Only two of the six flows are active at a time, one going to male juveniles, one going to

female juveniles. This is because Green sea turtle nests generally either produce all male or all females. At 27.5 degrees C, a nest is equally likely to produce all males as all females (Booth et al 2006). 27.5 degrees C is programmed in as the threshold nest temperature that determines which of the 6 flows are active. This is done using the IF THEN ELSE command sequence in STELLA Architect. The equation below is an example of the equations in each of the egg to juvenile flows. This specific equation is active only when nest temperature equals 27.5 degrees C, making it the male and female neutral flow.

IF Nest Temperature = Threshold Nest Temperature
THEN Eggs*.45*Natural Hatchling survival rate
ELSE 0

As the nest temperature increases, the likelihood of a female nest increases and the probability of a male nest decreases. As the nest temperature decreases, the probability of a male nest increases and the probability of a female nest decreases. These probabilities change very quickly. The entire spread of 100 percent male to 100 percent female occurs over only 3 degrees C. So, if the nest temperature is over 27.5 (Threshold Nest Temperature), a small fraction of the eggs hatch as males while most hatch as females. If the nest temperature is under 27.5, most hatch as males while a small fraction hatch as females. All of these flows include a multiplier of 1/500 (Natural Hatchling survival rate) which accounts for the tiny percentage of eggs that make it to the deep water and safety.

Juveniles: There are two stocks in the juvenile population, a male and a female side. Input into the juvenile stocks comes from eggs, via the previously described temperature dependent flows,

and from themselves. Since the model is designed in years, and turtles stay in the juvenile stage for more than a year, a self-replacement flow is needed to show what happens to the 2-5 year old individuals. If they survive the 50 percent mortality rate each year, they have a one-in-five chance of maturing to adolescents (corresponding to a five year juvenile life) and a four in five chance to go through the self-replacement flow and stay juvenile. There are two output flows from each stock, death and maturation. Death in the juvenile population is the result of predation by reef sharks, grouper and other predatory fish, as well as a natural juvenile mortality caused by disease, lack of food, effects of pollution, and other events. The other outflow represents maturation and accounts for juveniles progressing to become adolescents.

Adolescents: Again, there are two stocks in the adolescent population, one male and one female. The input into these stocks is from juveniles and

from self-replacement flows similar to the ones used in the juvenile population. Once adolescent, the turtles enjoy a very high survival rate and very low predation. The death flow from the adolescent stocks represent natural death combined with tiger shark predation (five percent). Since turtles are not sexually mature until they are about 30 years old and the juvenile stage is five years, the turtles are considered adolescent for about 25 years. Given this, 24 in 25 turtles stay adolescent (96 percent) and one in twenty-five matures to adulthood (four percent). These individuals move through the second outflow, maturation.

Adults: The adult population in the model is set up much like the adolescent population. The only input into the adult population is the maturation of adolescents. There is a self-replacement flow showing 29 in 30 turtles staying in the adult population and 1 in 30 dying of natural causes. There are just one outflow from each adult stock. This flow considers natural mortality and tiger shark predation. Females have an additional variable affecting this flow accounting for the small fraction of females who get stranded on the beach during nesting and are not able to get back to the water (.01 percent).

Seagrass: The final stock in this model represents the primary food source of adolescent and adult green sea turtles: seagrass. Given that seagrass is essential to the survival of adolescents and adults, conditions (IF THEN ELSE) are placed in the flows so that when the amount of seagrass drops below a threshold level, death rates increase precipitously due to the lack of food. The input into seagrass is simply seagrass growth, which is dependent on both light and nutrients. Both of these variables are set on

a 1-5 scale. For light, a five indicates optimal penetration to the seagrass level (i.e., maximal growth potential) and for nutrients a five denotes that the full suite of essential nutrients (e.g., nitrogen, phosphorus, manganese, etc.) is available in excess. A one in both cases indicates the worst growth conditions with nutrient-poor water and poor light penetration. There is a condition in this flow to account for eutrophication, the excess of nutrients that often leads to excessive algal growth. If the nutrient rating is above three then the entire growth is cut in half due to the probable algal bloom that often follows high nutrient conditions. These algal blooms absorb sunlight and decrease the nutrient levels depriving the seagrass of the opportunity to take advantage of the otherwise good conditions. The seagrass stock only has one outflow, which is seagrass eaten by turtles which is affected by the adolescent and adult populations. Adolescents eat about 500 kilograms of seagrass per year while adults eat about 700 kilograms per year.

Results and Discussion

Test 1: Seagrass Biomass

The goal of this first test was to evaluate the effects of a higher or lower than normal initial amount of seagrass in the model on the adult population. By changing the initial value from its base value of one million kilograms, we are able to see whether the initial value of seagrass changes the value at which the adult population stabilizes or when it stabilizes.

Test 1 Results and Discussion:

The adult male population (Figure 2), which, since the nest temperature is neutral, is the same as the female adult population.

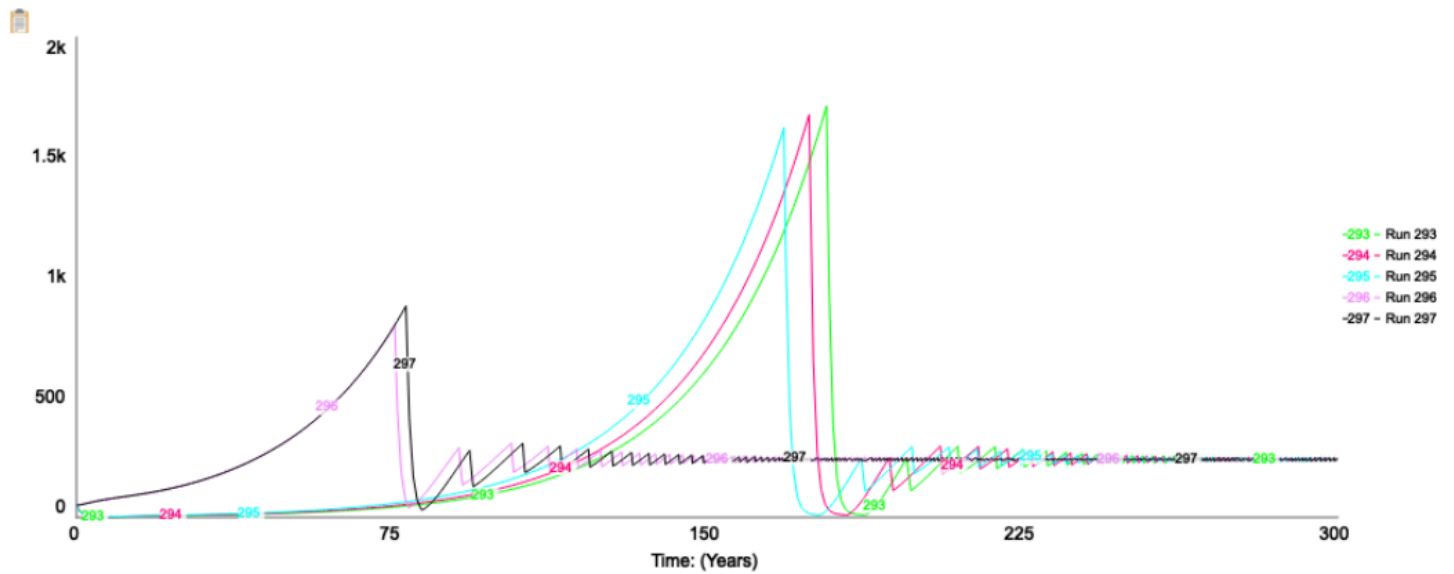


Figure 2: Adult population responding to changes in initial levels of seagrass. The runs correspond to the initial seagrass levels shown in Table 1. Note: run number value not important, runs are typical and sequential in this and all similar figures.

Table 1: Values for seagrass stock initial value for each run.

Run Number	Initial Seagrass (kg)
293	100,000
294	500,000
295	1,000,000
296	5,000,000
297	10,000,000

Two distinct groups of results are shown in Figure 2. The model runs with initial seagrass amounts 100,000 kg, 500,000 kg, and 1 million kg are very similar to each other, as are those with 5 million and 10 million. The first three runs show that, with relatively low initial levels of seagrass, the adult population takes about twice as long to hit the rapid growth phase and thus takes about twice as long to push the seagrass below the implemented threshold and consequently takes about twice as long to stabilize. The two largest initial amounts show much

faster growth in the first 75 years, but, since the population grows so fast, it pushes the seagrass below the implemented threshold about twice as fast. This tells us that the initial amount of seagrass in the model primarily affects the rate at which the adult sea turtle population stabilizes.

Test 2: Seagrass Growth Rates

This second experiment was designed to test the impacts of extreme increases in seagrass growth and increased seagrass death. To do this, a flow

was added to the model; one going into sea- grass to simulate seagrass disease and one out of seagrass to simulate a growth explosion. Fig-

ure 3 shows the impacts of five variations of this test.

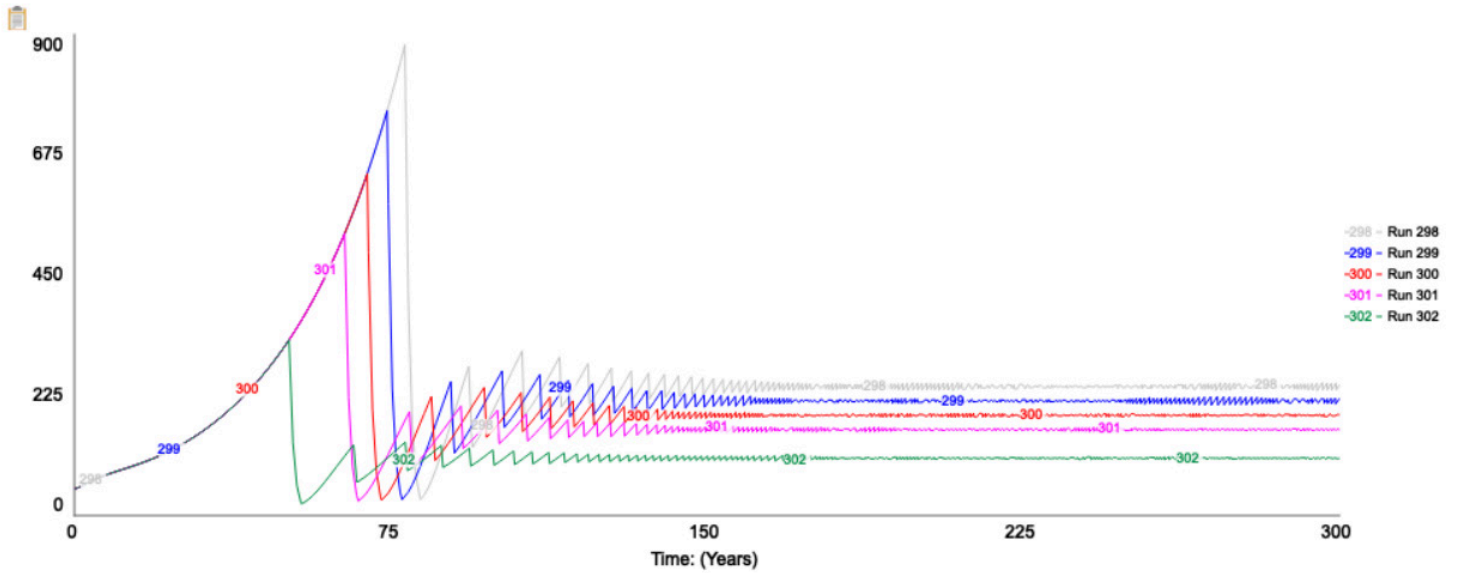


Figure 3: Adult population responding to changes to the added seagrass death flow.

Table 2: Values for seagrass death per year due to disease.

Run Number	Seagrass death due to disease per year (kg)
298	0
299	100,000
300	200,000
301	300,000
302	500,000

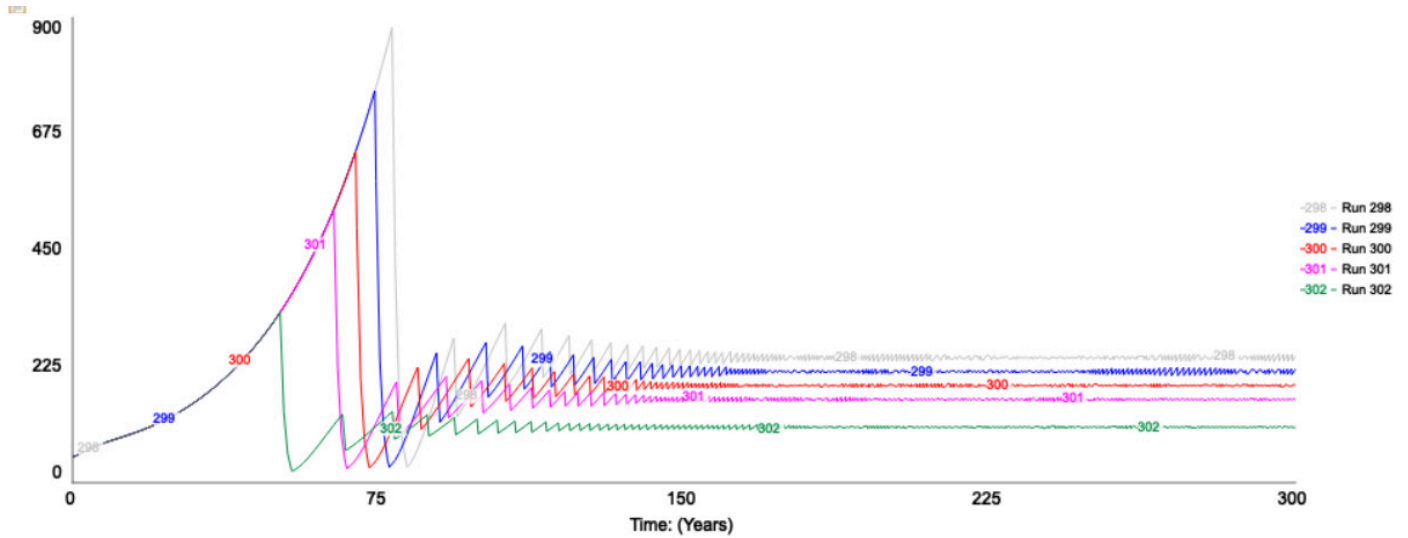


Figure 4: Adult population responding to changes to the added seagrass growth flow.

Table 3: Values for seagrass addition per year due to growth.

Run Number	Seagrass growth per year (kg)
303	0
304	100,000
305	200,000
306	300,000
307	500,000

Test 2 Results and Discussion:

Disease: As shown in Figure 3, disease affects the population in two distinct ways. First, as the amount of seagrass dying per year increases, the sea turtle population pushes seagrass below the threshold sooner and thus the population starts oscillating sooner. Second, the final value for the population decreases as the disease rate increases. If, for a substantial period of time, seagrass was affected by a disease, the effects on the turtle population would be substantial.

Growth: As shown in Figure 4, additional seagrass growth as shown in Table 3 has the inverse effects of seagrass death. As growth increases, the adult population follows the initial, nearly exponential growth pattern for longer and thus the oscillations are delayed. The other impact is that the value at which the population stabilizes increases as the growth increases.

Test 3: Impacts of Light and Nutrients

Light and nutrients are the two variables that determine how fast seagrass grows. Each combi-

nation was tested and evaluated by the final adult turtle population. This is the test that shows the effects on the sea turtle population when nutrients is rated above three, the threshold for eutrophication. Once nutrients is rated above

three, dissolved oxygen drops and sunlight becomes less available for the growing seagrass. Figures 5 and 6 show the effects of various combinations of light and nutrient ratings (1-5 for each) on the final adult turtle population.

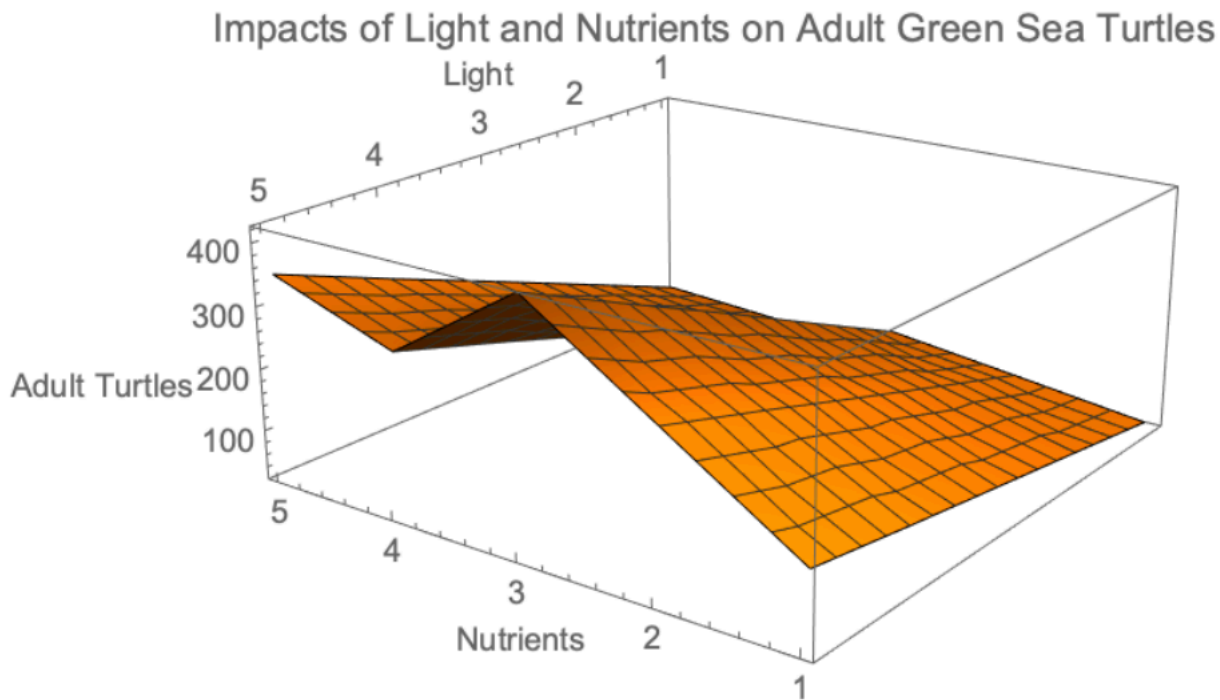


Figure 5: List plot showing the effects of changing light and nutrients on the turtle population. This side of the plot shows the effects of high light rating

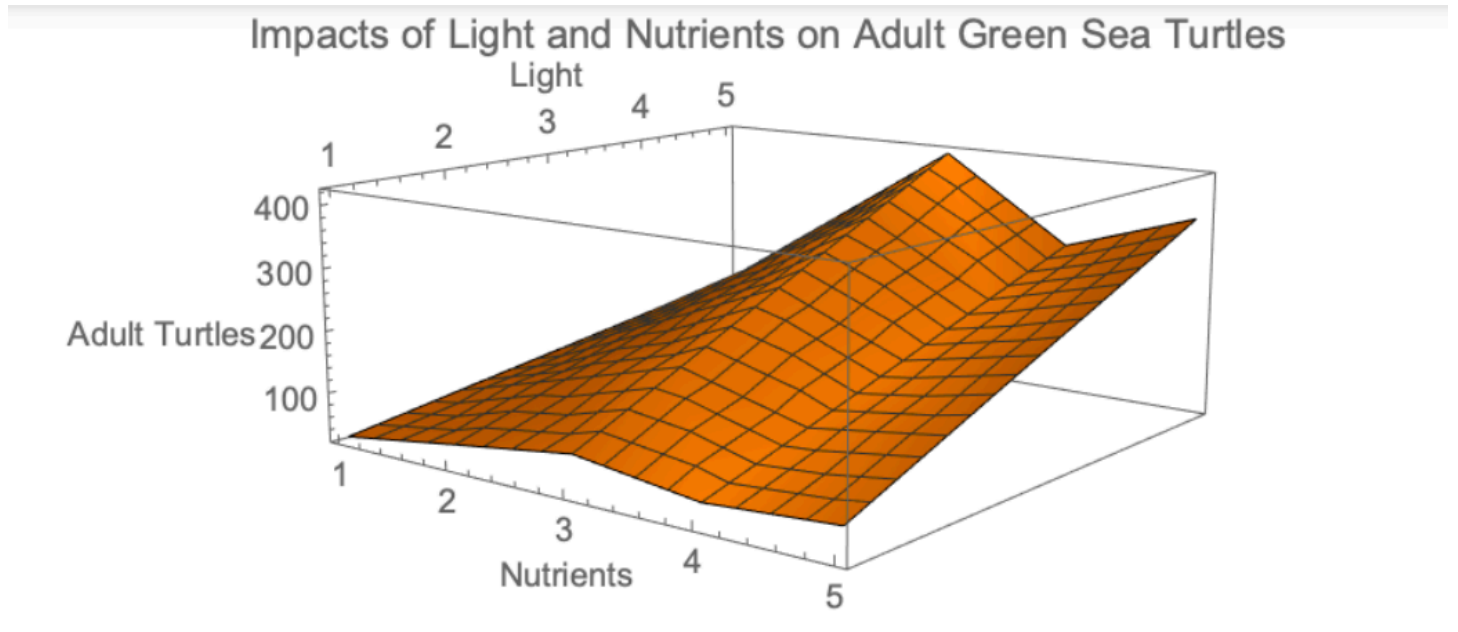


Figure 6: List plot showing the effects of changing light and nutrients on the turtle population. This side of the plot shows the effects of low light rating.

Test 3 Results and Discussion:

Given that 25 data points were considered, a 3-D plot was a better tool to display the results than the STELLA results window. Figures 5 and 6 show a relatively constant increase in turtle numbers corresponding to the increase in light (x-axis). On the other horizontal axis (y axis), rising nutrients corresponds to an increase in turtles, but there is a distinct decrease in turtles as the nutrients pass three. This effect is due to the eutrophication parameter. Once the nutrients rating rises above three, the algal growth resulting from eutrophication takes away from the light and nutrients available to sea-grass, which translates to a decreased adult turtle population.

Test 4: Mortality Rate

This test explores the effects of varying the mortality rates of juveniles (4a), adolescents (4b),

and adults (4c) on all three populations. While this test generated nine sets of results, only three are shown as examples, while the rest of the results are described in the discussion section.

Test 4 Results and Discussion:

Juvenile populations of sea turtles have historically suffered high mortality from anthropogenic sources, primarily bycatch in fish trawl nets. This fourth test was designed to evaluate the effects of changing the mortality rates in the juvenile population on the juvenile, adolescent, and adult populations. The same five model runs are depicted in (fig 7-9). The first run, 394, shows the effects of a juvenile mortality rate of 0 and each subsequent run shows the effects of a .125 increase in this rate with the final run, 398, showing the impacts of a .5 mortality rate.

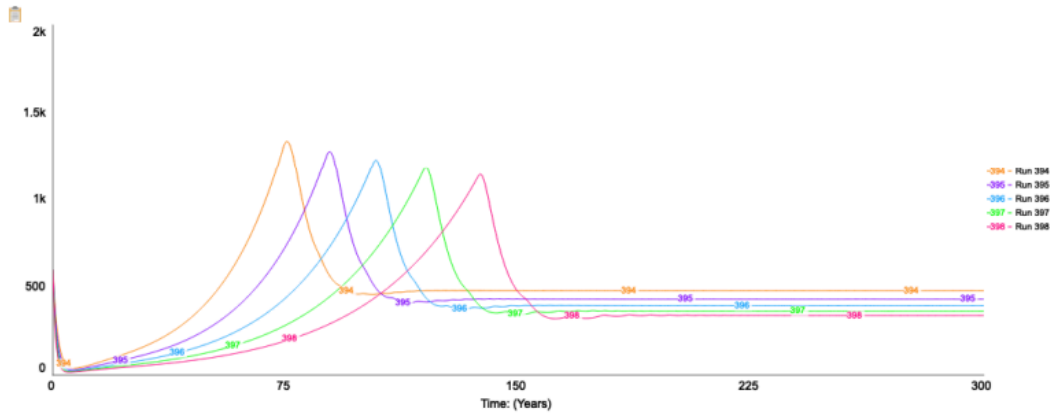


Figure 7: Juvenile population responding to changes in juvenile mortality rate.

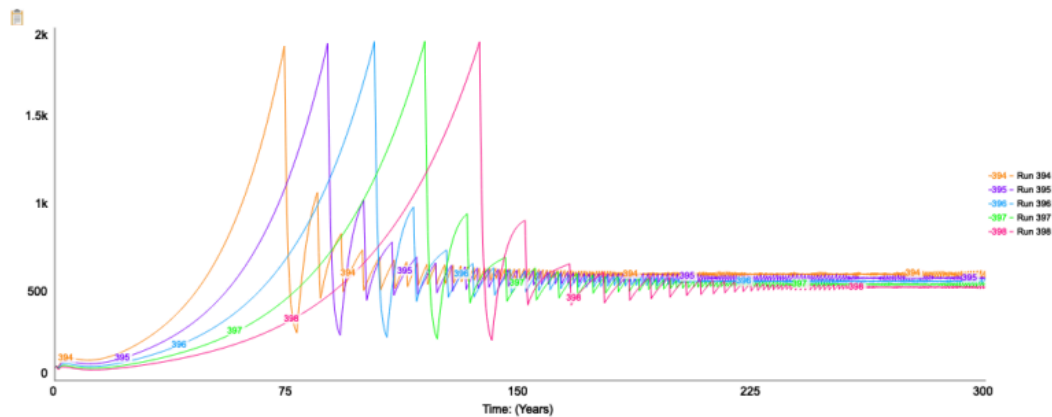


Figure 8: Adolescent population responding to changes in juvenile mortality rate.

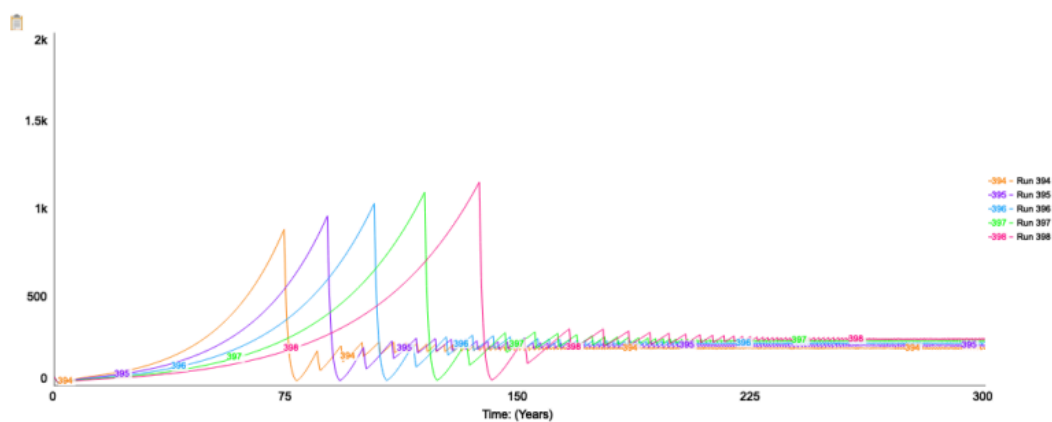


Figure 9: Adult population responding to changes in juvenile mortality rate.

The adult population, in every case, is inversely related to the juvenile population. More juveniles corresponds to more adolescents, who compete with the adults for food, decreasing

the adult final population. This result is mirrored when the adolescent mortality rate is changed.

Test 4a Results and Discussion:

As the rate of mortality increases, we see an decrease in the juvenile population as we would expect (fig. 7). The adult population, however, increases as the juvenile mortality rate increases (fig. 9). This is primarily due to the decreased adolescent population (fig. 8) that corresponds to the decrease in juveniles. With fewer adolescents in the model, the adult population is allowed to expand because of the extra seagrass available. An interesting further study would be to find the mortality rate that maximizes the adult population. As this test showed, to a certain extent, an increasing juvenile mortality rate translates to a higher adult population but if this rate continues to increase, eventually the effect on the adult stock will become negative. This threshold could tell us what, ecologically, the mortality rate most likely is, given that the maximum adult population would be favorably selected for in nature.

Test 4b Results and Discussion:

Once the turtles cross into deeper water they feed on algae and small crustaceans for the first few years of life (Boyle et al 2008, Fuentes et al 2006). After this phase, they begin to spend time in shallow water again, and at this stage they are about 35-40 cm in curved carapace length (Limpus et al 1980). At this size, they are considered adolescents and very few predators are capable of taking them, which translates into a very low mortality rate. This test is designed to show the effects of slight changes in this mortality rate. Five model runs were used, one each with an adolescent mortality rate of 0, .025, .05, .075, and .1 (due to the similarity to the juvenile

test above, the figures were not repeated). As this rate increased, the number of adolescents decreased, the number of juveniles increased and the number of adults increased. The decrease in adolescents was expected and led to the increase in adults as discussed above (see test 4a discussion). This increase in adults led to an increase in eggs which led to an increase in juveniles. The other impact of this changing rate was the point where the oscillations began. The lower adolescent death rate corresponded to more adolescents which caused more seagrass to be eaten early in the model run. This caused seagrass to drop below the implemented threshold sooner and thus start the oscillating process sooner.

Test 4c Results and Discussion:

Much like the adolescent population, the adult population has a very low predation rate due to the lack of predators that can take a one meter long, 150 kilogram green sea turtle. Tiger sharks are the only predator on the reef that can take an adult, and even they normally only feed on dead turtles; in fact only about 1/1000 green sea turtles were recorded to have recent tiger shark attack marks on them (Limpus et al. 2003). This test is designed to show the effects of variations in the adult mortality rate, up to an order of magnitude. When the rate increased, it negatively affected every turtle stock in the model. There were about one percent fewer eggs, one percent fewer juveniles, less than one percent fewer adolescents and two percent fewer adults than when the adult mortality was at its base rate.

Test 5: Nest Temperature

As described previously, nest temperature determines the sex of sea turtle hatchlings. The nest temperature component in the model implements this ecological phenomenon, and, specifi-

cally, allows for the effects of high, neutral, and low nest temperature on eggs, juveniles, adolescents, and adults to be tested. In particular, the intent was to explore how increases or decreases

in nest temperature affect the sex ratios and the final value of the various populations (Figures 10, 11, and 12).

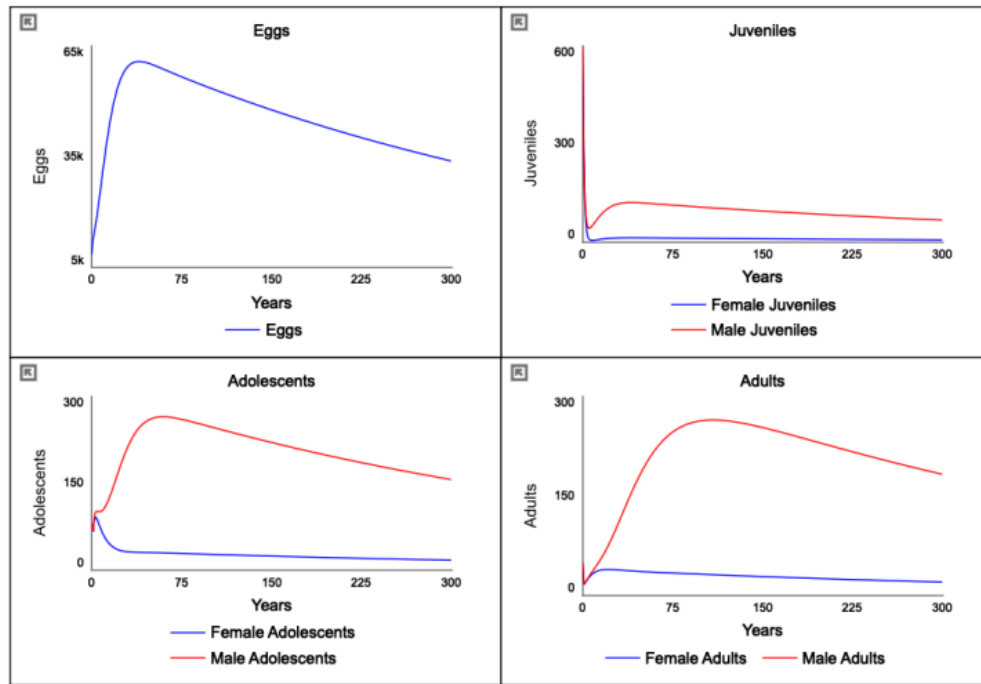


Figure 10: Effects of low nest temperature on green sea turtle population.

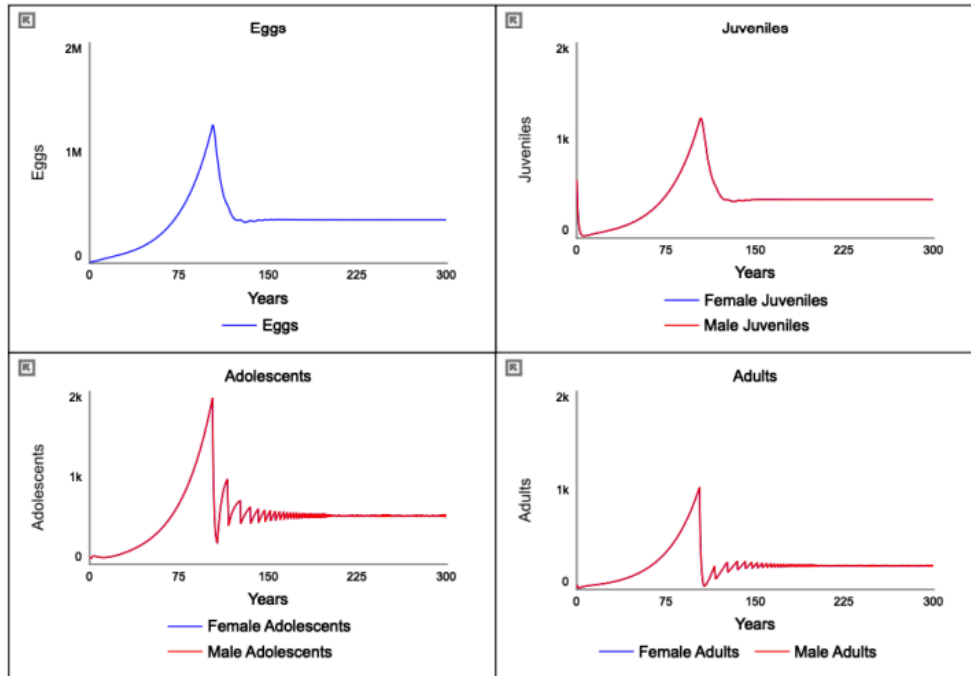


Figure 11: Effects of neutral nest temperature on green sea turtle population.

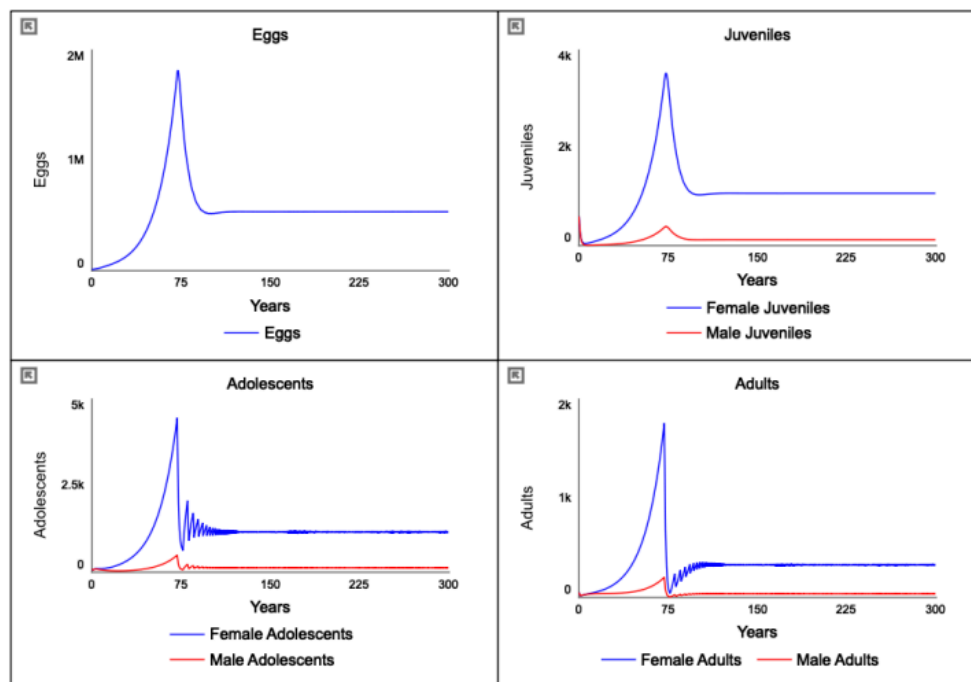


Figure 12: Effects of high nest temperature on green sea turtle population.

Test 5 Results and Discussion:

Figure 10 shows unique population behavior in response to low nest temperature. This con-

dition causes a decrease in female nests and an increase in male nests. With substantially fewer females, the entire turtle population is

much lower and in a longer model run eventually reaches 0. The neutral nest temperature shows both males and females at the same value, like all of the other tests which were done at the neutral nest temperature. High nest temperature led to higher female populations at each life stage outnumbering males by about 10 to 1. Each population in this case, however, stabilized like the neutral values. The lack of males did not affect the breeding success overall and in fact led to a healthier overall population. If global warming continues to affect the planet, these disproportionate populations may become a reality.

Test 6: Seagrass Reliance Threshold

This test was designed to show the effects of adjusting the threshold at which the amount of seagrass begins to affect the adolescent and adult populations. Seagrass is the main source of food for both adolescent and adult turtles making them vulnerable to changing environmental conditions that may influence seagrass growth. This test may give us insight into how, if these animals were able to reduce their reliance on seagrass, the population may respond to changes in seagrass availability.

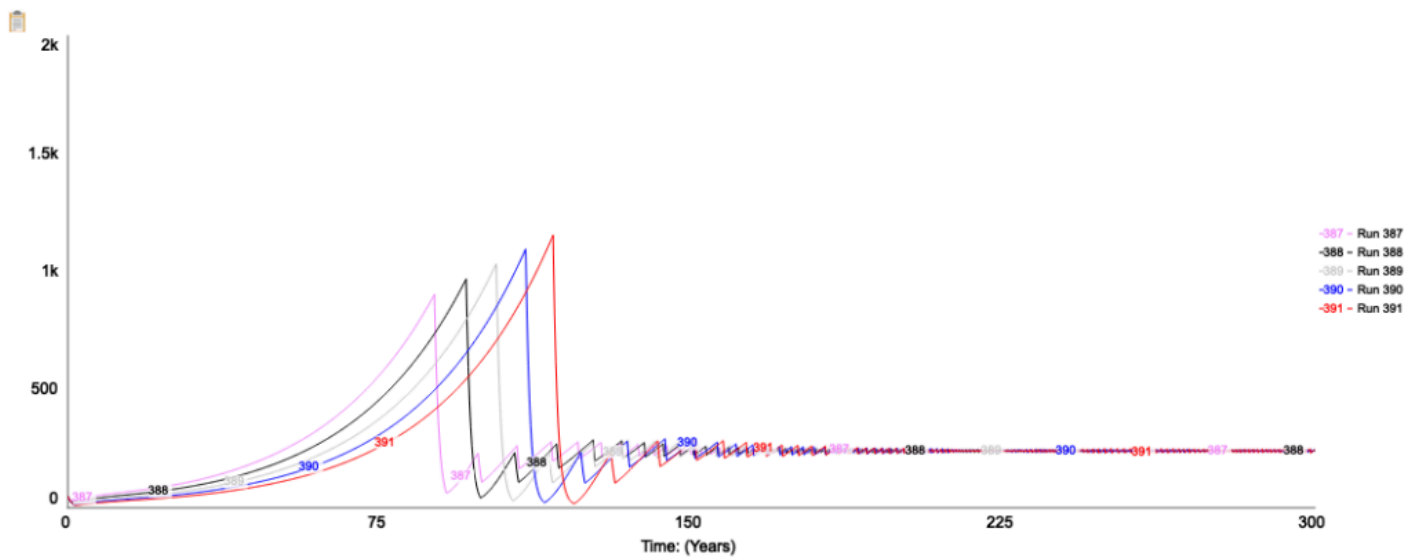


Figure 13: Effects of variable seagrass threshold on the adult population.

Test 6 Results and Discussion:

Figure 13 shows the effects of varying the seagrass threshold on the adult turtle population. As the threshold increases, the oscillations are delayed due to the longer period of uninterrupted population growth which is observed before seagrass drops below the threshold. The population peak before the oscillations begin increases as the threshold increases; this is also due to the extended period of near exponential growth.

Conclusions

Models are often used to replace or complement physical experiments, especially for experiments that are logistically difficult such as large scale population surveys. Constructed using as much known information as possible, models can simulate unknown parameters and be used to study the populations or systems they represent. The modeling software package STELLA Architect was used to create a population model to represent the breeding population of Green Sea Turtles on the Great Barrier Reef. Once completed, the model was used to explore the impacts of various biological and ecological perturbations on population values and behavior over multiple generations. The study evaluated the effects of variables such as initial seagrass levels, seagrass threshold, mortality rates, nest temperature, light, and nutrients on the Great Barrier Reef population of Green Sea Turtles.

Models are, of course, only as good as the data upon which they are constructed and the use of those data in robust and logical mathematical constructs. It is thus important in evaluating model runs that the data generated by the model does not violate basic and intuitive results. An example that the current model produces logical

results was in the varying light and nutrient level tests. As both variables increased, the seagrass growth rate increased which led to an increase in the adult turtle population, as would be expected with more food resources available.

This model was built using the best data available but obviously can be improved with more recent or more complete data. For example, more recent predation rates, more accurate light and nutrients measurements, etc. Even so, several of the model tests show ecologically logical, though not explicitly programmed, impacts on the population. One example was in the juvenile mortality rate test. As the rate increased, the adult population actually decreased. This happens because as the juvenile mortality rate increases, the juvenile population decreases which leads to a lower adolescent population. A lower adolescent population decreases competition for seagrass which allows the adult population to stabilize at a higher value. Behavior like this indicates that the model adequately represents the relationships between the stocks and thus is an ecologically functional model.

Population models such as this one have the ability to give us important insights into the current population and its potential future states. The ability to manipulate a specific variable and observe not only its direct, predictable, effects, but its nuanced, multilayered effects that we as scientists may not immediately think of. That ability can be valuable to conservation efforts, population restoration, and other types of environmental care.

Acknowledgements

The author thanks Mr. Robert Gotwals for assistance with this work. The author thanks Dr. Matthew Godfrey (NC state wildlife services sea turtle biologist) for assistance and advice with

this work. Appreciation is also extended to the creators of the software packages STELLA architect and Mathematica.

References

- [1] Arthur, Karen E., Michelle C. Boyle, and Colin J. Limpus. "Ontogenetic changes in diet and habitat use in green sea turtle (*Chelonia mydas*) life history." *Marine Ecology Progress Series* 362 (2008): 303-311.
- [2] Booth David T. Astill Katherine (2001) Temperature variation within and between nests of the green sea turtle, *Chelonia mydas* (*Chelonia: Cheloniidae*) on Heron Island, Great Barrier Reef. *Australian Journal of Zoology* 49, 71-84.
- [3] Booth, David T., and Candida Freeman. "Sand and nest temperatures and an estimate of hatchling sex ratio from the Heron Island green turtle (*Chelonia mydas*) rookery, Southern Great Barrier Reef." *Coral reefs* 25.4 (2006): 629-633.
- [4] Clua, Eric, et al. "Pattern of movements within a home reef in the Chesterfield Islands (Coral Sea) by the endangered Giant Grouper, *Epinephelus lanceolatus*." *Aquatic Living Resources* 28.1 (2015): 53-58.
- [5] Fitzpatrick, Richard, et al. "A comparison of the seasonal movements of tiger sharks and green turtles provides insight into their predator-prey relationship." *PLoS One* 7.12 (2012): e51927.
- [6] Godfrey, Matthew personal communication, December 2019, North Carolina State Sea turtle biologist, consulted in the creation of this model.
- [7] Gyuris, E. "The rate of predation by fishes on hatchlings of the green turtle (*Chelonia mydas*)." *Coral Reefs* 13.3 (1994): 137-144.
- [8] Heithaus, Michael R., et al. "Seagrasses in the age of sea turtle conservation and shark overfishing." *Frontiers in Marine Science* 1 (2014): 28.
- [9] Ischer, Tahia, Katarina Ireland, and David Terrington Booth. "Locomotion performance of green turtle hatchlings from the Heron Island Rookery, Great Barrier Reef." *Marine Biology* 156.7 (2009): 1399-1409.
- [10] Limpus, Colin, and Milani Chaloupka. "Nonparametric regression modelling of green sea turtle growth rates (southern Great Barrier Reef)." *Marine Ecology Progress Series* 149 (1997): 23-34.
- [11] Limpus, COLIN J., et al. "The green turtle, *Chelonia mydas*, population of Raine Island and the northern Great Barrier Reef: 1843-2001." *Memoirs-Queensland Museum* 49.1 (2003): 349-440.
- [12] Lutz, Peter L., John A. Musick, and Jeanette Wyneken. *The Biology of Sea Turtles*, Volume II. CRC press, 2002.
- [13] Renton, Michael et al. "Modelling seagrass growth and development to evaluate transplanting strategies for restoration." *Annals of botany* vol. 108,6 (2011): 1213-23. doi:10.1093/aob/mcr131
- [14] Richmond, Barry, 1985, isee systems, Inc., STELLA Architect, Version 1.9.4 (2020).
- [15] Weijerman, Mariska et al. "An Integrated Coral Reef Ecosystem Model

to Support Resource Management under a Changing Climate." PloS one vol. 10,12 e0144165. 16 Dec. 2015, doi:10.1371/journal.pone.0144165

Grouper, *Promicrops lanceolatus* (Pisces; Serranidae) in the Kingdom of Tonga, South Pacific." *Bulletin of Marine Science* 31.4 (1981): 935-936.

[16] Witzell, W. N. "Predation on Juvenile Green Sea Turtles, *Chelonia mydas*, by a

[17] Wolfram Research, Inc., *Mathematica*, Version 12.0, Champaign, IL (2020).

```
res = Import["/Users/jacknowacek/Documents/NCSSM/ComputationalScience/
FinalPaper/LightNutrientsTestData"]
```

```
res1 = {{1, 1, 27.9}, {1, 2, 56}, {1, 3, 83.4}, {1, 4, 111},
{1, 5, 140}, {2, 1, 56}, {2, 2, 111}, {2, 3, 167}, {2, 4, 224}, {2, 5, 279},
{3, 1, 83.4}, {3, 2, 167}, {3, 3, 252}, {3, 4, 334}, {3, 5, 418},
{4, 1, 56}, {4, 2, 111}, {4, 3, 167}, {4, 4, 224}, {4, 5, 279},
{5, 1, 70}, {5, 2, 140}, {5, 3, 210}, {5, 4, 279}, {5, 5, 350}}
```

```
ListPlot3D[res1, PlotLabel -> "Impacts of Light and Nutrients on Adult
Green Sea Turtles", AxesLabel -> {"Nutrients", "Light", "Adult
Turtles"}]
```


Relations of and between Family Business and Private Enterprise

Michael Cao



Article Synopsis

Family businesses dominate the U.S. economy. However, less is known of their members who confront key and competing socioeconomic processes, such as free-market capitalism and government regulation, in their everyday working experiences. Because of this, Cao demonstrates how the beliefs held by family business members can address questions of economic ideology normally too abstract to investigate. Specifically, family business member beliefs can be used to assess the efficacy of private enterprise and its potential to solve pressing economic problems in the U.S.



Graphic by Erin Heyeck

Relations of and between Family Business and Private Enterprise

Michael Cao

Department of Sociology, Duke University

<https://doi.org/10.55894/dv2.13>

ABSTRACT

In this paper, I draw from economic and organizational sociology to study a psychosocial dimension of modern entrepreneurial dynamics. Namely, I employ a mixed-methods approach to the study of family business members in the U.S and their corresponding economic attitudes about private enterprise as a superlative solution to economic problems. I incorporate quantitative crosstabulation analyses of multivariate relationships derived from data provided by the 2021 General Social Survey (GSS), as well as original qualitative interview data collected from family business members. Based on my findings, I argue role involvement in family business has a significant bearing towards generally positive views of private enterprise ideology. However, the relationship between family business involvement and belief in private enterprise is specified along lines of social class. I further argue how private enterprise belief is differentially associated with the lower and upper class of family business members, an important finding given the systematic impact family businesses can have on the economic fabric of American society.

INTRODUCTION

Within market societies, the institution of the family business or firm (used interchangeably) is a sociologically distinct economic archetype that intersects kinship with enterprise. The distinctness of a family business is generally agreed to derive from family involvement (Miller and Rice 1967 as cited in Chua, Chrisman, and Sahara 1999). This concept of family involvement typically constitutes business ownership and management (Handler 1989 as cited in Chua et al. 1999). Family members own or control the firm, hold voting stock, exert major influence over business strategy and policy, and have a vested interest in retaining the business in the family (Astrachan and Shanker 2003). Family involvement, further, may mean the founder(s) of the family business run the company on a daily basis, and where family members of extended generations have significant managerial responsibilities (Holland and Boulton 1984). Chua et al. (1999) also argued a family business is essentialized by a shared vision, of which family business members

enhance and pursue across generations.

Family businesses organized around these criteria have since populated the economy and greater organizational composition of the United States, emerging from the Industrial Revolution of the late 1800s (Colli 2002). Astrachan and Shanker (2003) estimated family business, broadly defined, accounted for upwards of 92 percent of all U.S. businesses, and 60 percent of business partnerships and private corporations. Family businesses were also economically productive, accounting for 50 percent of the U.S. GDP in 2003, and employing nearly 60 percent of the American workforce (Astrachan and Shanker 2003).

The distinct constitutions and profound economic contributions of family businesses and their operators are keen areas of study within economic and organizational sociology. More must be said, however, of the larger structural framework implicating all business activities, including that of

family businesses. This is the socioeconomic system of private enterprise, by which “economic activity is undertaken by independent individuals or firms, rather than under central direction” (Black, Hashimzade, and Myles 2009). A system of private enterprise encourages individuals and firms to own capital and property, and to accumulate profits and wealth, with minimal or no state interference (Law 2009). The proliferation of family businesses in the U.S. is thereby connected to the development of private enterprise, which occurs through privatization. Privatization is the transfer of ownership, property, and the distribution of public goods and services from government into the control of private citizens and managers (Holzner 2007). Privatized economies encourage autonomy, independence, secrecy, and the profit-motive among businesses, leading to endorsement of free market principles, while devaluing the economic role of government and related economic interventionism (Holzner 2007).

The validity of private enterprise and the privatization it legitimates may be nebulous. In one regard, private enterprise may benefit societies if the goods and services generated by businesses directly meet the needs of the public, as privatized enterprise could be more efficient and productive than centrally planned business sectors and industries (Holzner 2007). Despite this, a system of private enterprise does not prohibit individuals and businesses from prioritizing self-gain, nor does it guarantee all individuals the right to own private assets, or to profit off these assets, resulting in ownership and wealth inequality (Holt 2015). This lends itself to a Marxist theory and critique of private enterprise, whereby exclusive ownership of business and property allows for the exploitation of workers (Holt 2015). Nonowners of capital and property are forced to work for the owners (the capitalist class), resulting in alienation from the production process, and exploitation via surplus value, where workers produce more value than they are paid (Foley 1986). As workers are exploited without being given the means to become a part of the capitalist class themselves, private enterprise (née capitalism) can result in class oppression (Foley 1986).

To this point, this paper has attempted to establish the family business as a distinct, important socioeconomic organization that is both populous

and economically productive. It has also discussed family business as being systematically within private enterprise, and the consequences of private enterprise as an economic strategy. Importantly, it has associated private enterprise with a capacity for potential good and for potential harm. The ambiguity of private enterprise as an effective system, further, suggests individuals of various social and economic positions may have different attitudinal beliefs about its efficacy. Because family business operation is closely related to private enterprise (and more so vitally dependent on it), the relationship between individuals' experience with family business and their subsequent beliefs about private enterprise becomes an important subject of study, as these individuals may offer, relative to the general public, a more careful, nuanced analysis of private enterprise and its viability. The research question of this paper therefore asks, “Does having work experience in a family business affect an individual's belief in private enterprise as the best way to solve economic problems in the U.S.?” Thus, it is to a discussion of existing literature, specifically in the direction of literature examining the interplay of family business dimensions, private enterprise, and class, that this paper now turns.

REVIEW OF THE LITERATURE

Family, Family Business, and Values

As described earlier, Holzner (2007) attributed certain values to private enterprise, such as autonomy, independence, secrecy, and an emphasis on profit. In a similar regard, a body of complementary literature has assessed the values of family and family business. Creed (2000) analyzed the value of a family, arguing the concept of the family was organized around personal, social, and political objectives. The idea of the family, and the subsequent value of belonging to one, was thought to be deeply interwoven with theories of capitalism, nationalism, and everyday economic activity (Creed 2000). Family utility could thus be interpreted as a means of accomplishing domestic economic objectives (Creed 2000).

Haugh and McKee (2003) then expanded on family value theory by incorporating family businesses. The authors conducted a qualitative study of the organizational culture, operating environment,

and shared value systems of family firms in Scotland (Haugh and McKee 2003). They argued the firms they studied shared value systems consisting of belongingness, honesty, loyalty, trust, and respect, which was hyperlocal to inner family management but excluded peripheral employees (Haugh and McKee 2003).

Fairclough and Micelotta (2013) seemed to corroborate Haugh and McKee (2003) when they analyzed family firms in the Italian legal sector, finding a pervasive family institutional logic centered around the importance of loyalty, altruism, and reciprocity. This family institutional logic dominated organizational decision-making, despite competing nonfamilial logics, and resulted in family firms resisting corporate mergers and internationalization, electing to stay small (Fairclough and Micelotta 2013).

Critically, the establishment of the family as a valuable economic unit (Creed 2000) seems to be validated by the direct emergence of the fundamental family business, which as Haugh and McKee (2003) and Fairclough and Micelotta (2013) demonstrated, can incorporate common social values. The literature indicates these values are highly relational, mutualistic, and intimate despite the family business being more detached than the traditional family itself, and that these values may guide organizational philosophy. It is possible, then, that the shared values of family and family business may align with positive beliefs about private enterprise, although family business values such as honesty, trust, and altruism may very well undermine favorable opinion. Nonetheless, literature discussing theories of value within family business suggests family business members consolidate certain beliefs based on shared values, which may include directed beliefs toward private enterprise.

Family Business and General Organizational Behavior

As Fairclough and Micelotta (2013) illustrated, values within a family firm could lead to certain behavioral outcomes. The next component of literature elaborates this point, discussing in greater depth what family business behavior may entail. In describing the operational behaviors of family firms in Germany (which dominate the economy and private sector, and some of which are part of a group of enduring businesses known as the German Mittelstand), Lehrer and Celso

(2016) argued family firms maintain deep economic ties with the nonfamily sector while at the same time remaining institutionally distinct, supporting earlier ideas found in Chua et al. (1999). German family firms were assessed to be distinct as forms of patient capital, meaning family firms were characterized by nonfamily sector behavior that emphasized continuity and insularity, such as the familial blockholding of firm shares and ownership behaviors that protected the family firm from outside pressure (e.g., mergers and internationalization) in a way that is similar to Fairclough and Micelotta (2013) and their findings on firm behavior (Lehrer and Celso 2016).

Additionally, family firm behavior may entail selective risk engagement. Colli (2013) argued a family business must navigate five critical stages: financing the business; organizing the business; generating entrepreneurial opportunities; establishing internal governance; and maintaining growth. At each stage, the family firm attempts to minimize business risks and uncertainties, but because of the kinship ties reinforcing the family business, a family firm can tolerate greater risk and uncertainty, both within the business organization and its relationship with the external market (Colli 2013). The findings concerning risk tolerance of Colli (2013) may thus be one way to understand why Fairclough and Micelotta (2013) and Lehrer and Celso (2016) found family firms were more resistant to market pressure, perhaps because they could entertain greater risk staying as private family firms.

The topic of risk avoidance and tolerance as a family business organizational behavior was alluded to by Ernst, Gerken, Hack, and Hülsbeck (2022), with regards to corporate sustainability (CS) practices. The authors examined the conditions in which private family firms in Germany, Austria, and Switzerland engaged in prosocial CS practices, hypothesizing that firms' desire for socioemotional wealth (which may be noneconomic objectives such as forming strong ties with employees or local communities) positively related to the motivation to adopt CS practices (Ernst et al. 2022). The authors demonstrated family owners of firms were likely to be driven by socioemotional considerations when deciding to adopt CS initiatives, but were also concurrently risk-averse towards the same initiatives, as firm owners also had to bear the

risks of their management decisions (Ernst et al. 2022). The fact that family firm owners actively considered socioemotional wealth (that is social capital rather than economic capital) in pursuit of CS initiatives may be an example of the family value logic proposed by Haugh and McKee (2003) and Fairclough and Micelotta (2013) in effect, as well as another example to as why the family business is different from the nonfamily sector as discussed by Lehrer and Celo (2016).

While Lehrer and Celo (2016), Colli (2013), and Ernst et al. (2022) discussed family business organizational behaviors that distinguished family firms, Lee and Marshall (2013) supplemented the discussion by presenting organizational behaviors that made family businesses successful. Hypothesizing that goal orientation (such as prioritizing growth and developing a positive reputation) had a positive effect on the variable performance (profit) of family firms in the U.S., the authors found owner goal orientation played a positive and important role in the long-term business performance and activities of family firms (Lee and Marshall 2013).

The literature in this section has suggested the organizational behaviors of family businesses do not necessarily parallel other nonfamily sectors. This does not indicate, however, family firm behavior is incongruous with notions of private enterprise; resistance to ownership takeover (Fairclough and Micelotta 2013; Lehrer and Celo 2016), risk calculation (Colli 2013; Ernst et al. 2022), and goal orientation (Lee and Marshall 2013) may all be behavioral attributes that may support favorable beliefs in private enterprise. At the same time, as evidenced by the discussion in the previous section, there is contradiction. While family firms may be motivated by the normative market goals of private enterprise such as generating profit, there are also noneconomic, socioemotional goals that family firms evaluate. Even superficially market-driven goals, such as developing a positive reputation (Lee and Marshall 2013), may be approached differently by family firm owners, who must not only engage with the nonfamily sector (Lehrer and Celo 2016), but also likely with other family members, employees, and local communities and environments (Ernst et al. 2022).

Family Business Performance

Lee and Marshall (2013) evoked an idea of family business performance—namely, how

well do family businesses perform (under private enterprise)? It follows that family business values and behaviors, as discussed, should contribute to some type of performance. To this point, Anderson and Reeb (2003) examined firms from the S&P 500 stock market index, initially hypothesizing nonfamily firms outperformed family firms, as shareholders were assumed to be adversely affected by family ownerships that maximized personal gain over the long-term wellbeing of the firm. However, not only were family firms prevalent amid the S&P 500 (constituting 35 percent of all firms), which may support the findings of Astrachan and Shanker (2003), family firms also consistently outperformed nonfamily firms along the variable return on assets (ROA), in the long-term (Anderson and Reeb 2003). Their results indicate family ownership of a business may be an effective and profitable organizational arrangement (Anderson and Reeb 2003).

This conclusion was reinforced by Carney and Nason (2018), who examined the wealth of the top 1 percent of American households. They found the top 1 percent of households derived a significant portion of their wealth from unincorporated, family-owned, small-to-medium-sized enterprises (SMEs) (Carney and Nason 2018). The authors concluded the top 1 percent, though a heterogeneous social class, generate wealth from family businesses, which then confers social advantage across generations (Carney and Nason 2018).

These two studies alone demonstrated the economic utility family businesses can provide, and that relative to the market and nonfamily competitors, family businesses manage to perform well. Because family businesses can be economically prosperous endeavors, those who benefit from family business may be more inclined to endorse the system of private enterprise that allows them to own their firms and retain profits. However, Anderson and Reeb (2003) and Carney and Nason (2018) studied the tail-end of the family business distribution; it should be expected that not all family firms perform well or outperform competition, nor that all family businesses are engines of wealth, especially among family business owners who are working poor or middle class. The top 1 percent, as Carney and Nason (2018) argued, may also be heterogeneous, such that not every family business

owner or member who is wealthy may conform to private enterprise favoritism.

Family Business and Private Enterprise

The findings of Anderson and Reeb (2003) have suggested family businesses can benefit financially under private enterprise, which brings this paper to the direct examination of the interaction between family business and private enterprise itself. Jones and Rose (1993) have argued the development of the family has played a vital role in shaping modern capitalism. In accordance with Astrachan and Shanker (2003), Colli (2002), and Anderson and Reeb (2003), the authors argued, following the Industrial Revolution, the family business became a predominant modern business organization in the U.S., as well as in Europe (as documented in part by Lehrer and Celo (2016)) and parts of Asia (Jones and Rose 1993). However, in the U.S. the advent of managerial capitalism has challenged the viability of family capitalism as a productive and effective enterprise (Jones and Rose 1993).

Elsewhere, Luo and Junkunc (2008) analyzed the interactions between firms and private enterprise across emerging economies (defined as countries under significant economic transformation), specifically when the institution of private enterprise was challenged by the government. The authors argued government bureaucracy (operationalized as enhanced administrative barriers to business) was a routine detriment to economic goals of private firms, hypothesizing that political behavior among firms would increase in response to increases in government bureaucracy. They concluded private firms did increase their political behavior via engagement with government bureaucrats and influence over bureaucracy-related policymaking, but that family firms undertook less political behavior in response to heightened bureaucracy (Luo and Junkunc 2008). While nonfamily firms saw increased bureaucracy as limiting their ability to enterprise, and thus took political measures to negotiate with bureaucracy, family firms did not react the same way, with a possible explanation being bureaucratic regulations were less strictly enforced against family firms in emerging economies due to preexisting relationships between family firm members and government officials (Luo and Junkunc 2008). This contingency would appear logical in context of Ernest et al. (2022), whereby

family firms may pursue meaningful relationships to build socioemotional wealth.

Thus, a key recurrent observation is that while family firms often operate in tandem with nonfamily firms, family capitalism cannot be equated with managerial capitalism. Family firms often deviate from the so-called script of private enterprise (as suggested by Ernst et al. (2022) and Luo and Junkunc (2008)), leading to a criticism that family business is backwards and conservative (Jones and Rose 1993). But again, deviation from managerial, nonfamily, and normative ideals of private enterprise among family firms is not the same as disavowal—rather, it is a reorientation. Within private enterprise and other systems of economy, family firms may tout atypical capitalistic behaviors; they may be more receptive of government as Luo and Junkunc (2008) demonstrated, and they may be more socially aware (Ernst et al. 2022). In other words, it cannot be assumed that the attitudes family firm members have towards private enterprise will completely adhere to the normative responses expected of individuals who take advantage of it.

Class as a Control Variable

Although this paper has used Anderson and Reeb (2003) and Carney and Nason (2018) to treat historic family business wealth as an indication that family firm members will generally favor private enterprise, the same (or opposite) could be said of an individual's social class. It could be an individual's class that better explains their confidence in private enterprise, independent of any family business involvement. In the U.S., the likelihood of Republican Party affiliation increases with income (Pew Research Center 2014). Party affiliation is meaningful as free market, deregulated private enterprise has been a core Republican value, at least since the Reagan Era of the 1980s (Holzner 2007).

Guillaud (2013) conducted additional analyses relating class to preference for state intervention, defined as support for wealth redistribution. Testing multiple hypotheses across a subset of democracies, the author found individual labor market position and family income best explained preferences towards wealth redistribution; the poorer an individual was, the more likely they were to support redistributive social policy (Guillaud 2013). State supported social policies

like redistribution can be antithetical within a system of private enterprise that prioritizes private ownership of capital and property, as well as profit (Law 2009), and so the finding that economic status affects beliefs in state intervention (which is opposed by private enterprise) implicates class with possible explanatory power.

Together, these findings support a prevalent theory within social science that material circumstance plays a vital role in shaping political attitude (Lipset 1960). It is for this reason that class was selected as a control variable, as a respondent's class status could also affect their belief in the efficacy of private enterprise in a way that may be potentially more significant than family firm work experience.

Summary of Literature

Economic ideology contributes to the construction of social reality. Questions of wealth distribution, welfare, labor, and class are all structuralized by economic systems, but within individual pockets of social life, the manifold signatures of ideology may be rendered invisible; consumers, producers, owners, and laborers of economies are not asked frequently, beyond their immediate lives, to think about economy at a societal level. Thus, one may continue to labor under an economic system, and perhaps individually prosper, even though such a system may be ineffective or unjust in toto.

Using the work of Black et al. (2009), Law (2009), Holt (2015), and Foley (1986), private enterprise has been identified as one economic system that may be pervasive but not necessarily intelligible, or beneficial, to all. But at the same time, relying primarily on Chua et al. (1999) and Astrachan and Shanker (2003), family business members as a population may be equipped to evaluate the nature and efficacy of private enterprise analytically, revealing an implicit and explicit interactionism between family business and private enterprise.

This interactionism is initiated by mechanisms of value. The work of Creed (2000), Haugh and McKee (2003), and Fairclough and Micelotta (2013) demonstrated the family business may endorse relational values (such as belongingness, loyalty, trust, reciprocity, and altruism) when interrogating the economy both as a business and as a family unit. These values may then shape perceptions of private enterprise

as being conducive to or antagonistic towards vital family business values.

Family businesses also exhibit notable and distinct behaviors. The work of Lehrer and Celo (2016), Colli (2013), Ernst et al. (2022), and Lee and Marshall (2013) demonstrated how family businesses can behave conservatively relative to markets that encourage mergers, global expansion, and ownership transference, including when they analyze risk. Yet risk for family firms can transcend market logic; here, family firms may be more amenable to risks when they attempt to build social capital with other sectors, and when they try to operate responsibly. These behaviors, subsequently, can also influence beliefs in a system private enterprise that codifies, or perhaps discourages, the variety of behavior patterns observed in some family firms.

Specifically, this research has also incorporated literature to pronounce more visibly the interaction between family business and private enterprise, and whether this interaction is positive or negative. The work of Anderson and Reeb (2003), Carney and Nason (2018), and Jones and Rose (1993) demonstrated family firms intersect with capitalism, that they can benefit under capitalistic settings, and that there are firms, as well as households, that utilize family business to generate wealth. This suggests, transitively, a positive view of private enterprise, but as Luo and Junkunc posit (2008), there are some instances where family businesses may counterintuitively reconcile with anti-enterprise, such as government bureaucracy (regulation).

Lastly, Guillaud (2013) and Lipset (1960) discussed how variables tied to class position (as opposed to family business work involvement) were related to beliefs in private enterprise. The literature therefore suggests social class can possibly influence political attitude, of which orientations for or against private enterprise are contained.

Existing Problems and Gaps

In review of the literature, several problems surface. First is a lack of generalizability. Research done by Creed (2000), Colli (2013), and Jones and Rose (1993), for example, were syntheses (a combination of content analysis and literature review) that did not involve data manipulation, sampling, or direct interactions with family businesses themselves. The

historical and theoretical background these sources provided, while useful, function more as tertiary analyses than involved methodologies. Qualitative studies included, such as the works of Fairclough and Micelotta (2013) and Haugh and McKee (2003), originate from highly interpretivist groundings that lack generalizability in exterior contexts—the meanings and attitudes of one select sample of family businesses cannot be inferred to apply everywhere. Furthermore, a major problem concerning the generalizability and reliability of much of the literature was sampling location. Fairclough and Micelotta (2013), Haugh and McKee (2003), and Lehrer and Celso (2016) studied family firms in Europe (Italy, Scotland, and Germany), where there is variation in economy, laws, and organizational dynamics compared to the U.S. The quantitative studies considered in this review, whose findings have the potential to be generalizable and reliable due to large representative random sampling and statistical testing, are also confounded by this problem. Ernst et al. (2022) focused exclusively on select European countries (Germany, Austria, and Switzerland) while Luo and Junkunc (2008) focused on transition economies in developing countries. For the quantitative studies that did examine family firms or households in the U.S., including Anderson and Reeb (2003), and Carney and Nason (2018), there are sampling concerns where samples were skewed towards financially successful firms and families. Of course, these were populations the authors intended to study, but their findings cannot be generalized beyond the sampling parameters.

Secondly, there are other issues with validity. For most of the literature, with possible exception to Haugh and McKee (2003) and Ernst et al. (2022), the unit of analysis was the family firm as an entity, as opposed to individuals within the firm. And for the majority of the literature, additionally, attitudes and beliefs of individuals were not scrutinized, nor were they scrutinized in regard to private enterprise. One example is Lee and Marshall (2013). While the study involved a representative sample of family firms located in the U.S. (which other studies did not replicate), its main variables were firm goal orientation and profit. While there may be an association between these variables and private enterprise, the authors do not confront private enterprise directly. There is also

another issue of time relevancy. The most recent study was by Ernst et al. (2022); all other studies predate that and may have failed to capture significant cultural, economic, or cultural shifts since, such as businesses relying more on government support during the 2020 COVID-19 pandemic, that may have changed how organizations behave.

The problems discussed, however, are not necessarily problems per se, but rather reveal gaps in literature that may be filled by new research. Of literature studying family business in socioeconomic contexts, there is in general a lack of qualitative research, perhaps because most information involving family firms is sensibly quantitative. However, quantitative research is sometimes difficult to execute or highly specialized to accommodate the constraints imposed by pre-existing surveys or datasets, making this area of research limited as well. Though family business literature is generally Eurocentric, there is a notable gap in U.S.-based literature discussing American family firm attributes, and more importantly, there is a specific gap in the literature addressing family firms (from across the distribution, not just the top firms) in direct relation to private enterprise. This may be a consequence of another gap, which is a lack of research studying beliefs in private enterprise among certain individuals as units of analysis. These gaps demonstrate that, while there may be a surplus of literature implicating private enterprise or other fixtures of capitalism, the literature does not confront the people who are implicated by these systems. Simply, there is no current literature that confronts family business members and their beliefs in private enterprise.

Thus, the research of this paper seeks to address existing gaps in economic and organizational literature. Primarily, it aims to make structure visible, namely that of private enterprise as a functional (or dysfunctional) economic system. In doing so, this research incorporates a novel, but potentially significant, population of study—individuals with work experience in their family business, in the U.S.—novel because this population is not commonly sampled, and potentially significant due to the distinct interactions family firm members have with economic systems. The economic system in question, here, is private enterprise in the U.S., and by directly studying

the attitudes family firm members have regarding private enterprise in the U.S. as an economic solution to problems (as prescribed by the research question), this paper hopes to impart a contemporary understanding of how a historically productive, enduring population in the U.S. construes the equally productive and enduring ideology of private enterprise.

RESEARCH OBJECTIVES

To accomplish this, research will employ a mixed-methods approach. It will begin with a quantitative analysis of a bivariate and multivariate relationship between family business work experience and belief in private enterprise in the U.S. Then through a qualitative method, research will subsequently seek to understand inductively the meanings and motivations individuals in the U.S. construct in response to their family business and private enterprise. This mixed-methods approach can be recognized as another contribution among topical literature that chooses one method or the other.

QUANTITATIVE METHODS

Hypotheses

Based on available research, this study can make two hypotheses predicting the relationship between family business work experience and belief in private enterprise as an economic solution in the U.S.

The first hypothesis is thus:

H₀: There is no relationship between family business work experience and belief in private enterprise as the best solution to economic problems in the U.S.

This hypothesis is guided by an understanding that family business involvement will have no bearing on belief in private enterprise. It is also possible that a control variable such as class moderates the relationship between the independent and dependent variables.

The alternate hypothesis is thus:

H_A: There is a relationship between family business work experience and belief in private enterprise as the best solution to economic problems in the U.S.

This hypothesis assumes that there exists a relationship between family business involvement and

belief in private enterprise, but importantly, it does not specify direction. As the literature has shown, though family business and private enterprise are implicated together, several factors can contribute to family firm members having positive or negative beliefs in private enterprise as an economic solution.

Data

Data were extracted from the General Social Survey (GSS), a nationally representative survey of adults in the United States, begun in 1972, and conducted biennially since 1994 (NORC at the University of Chicago 2021). The GSS collects data about trends in contemporary American society through a survey instrument consisting of demographic, behavioral, and attitudinal questions, plus topics of special interest (NORC at the University of Chicago 2021). Included in the GSS are survey questions covering family, business, and the economy, making the GSS an ideal data source for the research aims of this paper.

Univariate analyses of variables were based on the actual number of respondents who answered questionnaire items. For multivariate analyses (bivariate and trivariate analysis), the number of valid cases (N) were weighted to maintain representative samples.

Sample Selection

Both the main variables *privent* (belief in private enterprise as the best way to solve America's economic problems) and *wrkslffam* (family business work experience) are irregularly surveyed by the GSS. The survey question related to *privent* was first asked in 1993, and the survey question related to *wrkslffam* was first asked in 2018. The survey question related to the control variable (*class*) is asked every GSS year. Recently, the 2021 survey year was the only year in which *privent* and *wrkslffam* were included in the GSS together. Therefore, a selection filter was applied to select data only from the year 2021.

Measures

The univariate statistics and variable descriptions for each of the recoded variables are presented in Table 2.

Dependent Variable

The dependent variable used for following analyses was the variable *privent* included in the 2021 GSS. It was created by a questionnaire item where respondents were asked to rate their agreeableness

Table 2. Variable Descriptions, Metrics, and Descriptive Statistics for Key Variables

Variable Name	Description	Metric	Modes
<i>Dependent Variable</i>			
privent	Respondent belief towards the statement: Private enterprise is the best way to solve America’s economic problems.	1=Agree 2=Disagree	1.000
<i>Independent Variable</i>			
wrkslffam	Does/did respondent work in their family business or farm.	1=Yes 2=No	2.000
<i>Control Variable</i>			
class	Subjective respondent class identification.	1=Lower/Working Class 2=Middle/Upper Class	2.000

on a 5-item Likert scale (1 being “Strongly Agree”; 2 being “Agree”; 3 being “Neither Agree nor Disagree”; 4 being “Disagree”; and 5 being “Strongly Disagree”) to the following statement: “Private enterprise is the best way to solve America’s economic problems.” The original variable was then recoded. The categories “1: Strongly Agree” and “2: Agree” were collapsed into the “1=Agree” category; the categories “4: Disagree” and “5: Strongly Disagree” were collapsed into the “2=Disagree” category; and the category “3: Neither Agree nor Disagree” was removed to exclude respondent neutrality. Invalid cases were also removed. Final recoding thus yielded a dichotomous variable with an unweighted N=1,024.

Independent Variable

The independent variable used for following analyses was the variable wrkslffam included in the 2021 GSS. It was created by a questionnaire item where respondents were asked: “Do/did you work in your own family business or farm?” Responses were coded as “1: Yes” or “2: No”. The variable was maintained as a dichotomous variable, but recoding removed any invalid cases. Final recoding thus yielded an unweighted N=440.

Control Variable

The control variable used for the following

analyses was the variable class included in the 2021 GSS. It was created by a questionnaire item where respondents were asked: “If you were asked to use one of four names for your social class, which would you say you belong in: the lower class, the working class, the middle class, or the upper class?” Respondents then selected either “1: Lower Class”; “2: Working Class”; “3: Middle Class”; or “4: Upper Class”. In the interest of reducing small cell counts and populating robust-enough categories, “1: Lower Class” and “2: Working Class” were collapsed into the “1=Lower/Working Class” category; and the categories “3: Middle Class” and “4: Upper Class” were collapsed into the “2=Middle/Upper Class” category. Although collapsing class categories removed some nuance, the recoding still yielded useful comparisons between high- and lower-class individuals. Invalid cases were also removed, producing a final unweighted N=4,018.

Analytic Plan

After relevant variables were identified and recoded to yield three univariate analyses (see Table 2), the Survey Documentation and Analysis (SDA) program maintained by the University of California, Berkeley for GSS datasets was used to perform several multivariate crosstabulation analyses to examine relationships between and among study variables.

Table 3. Bivariate Crosstabulation Analysis for Belief in Private Enterprise by Family Business Work Experience

Belief in Private Enterprise	Family Business Work Experience	
	Yes	No
Agree	85.45% (45)	66.71% (39)
Disagree	14.55% (11)	33.29% (25)
	100% (56)	100% (64)
Chi-Square (Rao-Scott-LR, <i>df</i> 1, 39)=4.561		p=0.039

All crosstabulation analyses were performed for the 2021 GSS year, using weighted N. Additionally, for each table output, a chi-square test statistic was used to measure the statistical significance of association at $\alpha=0.05$.

First, a bivariate crosstabulation analysis of the dependent variable (privent) by the independent variable (wrkslffam) was performed (see Table 3). Afterwards, two intermediate bivariate crosstabulation analyses, one of the control variable (class) by the independent variable (wrkslffam), and another of the dependent variable (privent) by the control (class) were performed (see Appendix). Though these analyses were not included in the results section, they were performed to better comprehend relationships between variables.

Finally, a trivariate crosstabulation analysis was performed of the dependent variable (privent) by the independent variable (wrkslffam) by the control variable (class), producing two partial tables for interpretation (see Table 4).

QUANTITATIVE RESULTS AND ANALYSIS

The bivariate crosstabulation of belief in private enterprise (the dependent variable) by family business work experience (the independent variable) indicates there is a higher percentage (85.45 percent) of respondents with work experience in their family b

usiness who tend to agree that private enterprise is the best solution to economic problems in the U.S., compared with the 66.71 percent respondents with no experience working in their family business who agree that private enterprise is the best solution to economic problems in the U.S. Based on the results, it seems that there exists a relationship between the dependent and independent variables, and this relationship is formally described by a chi-square statistic of 4.561 with $p=0.039$. The bivariate analysis thus indicates a statistically significant relationship between belief in private enterprise and family business work experience, and that having work experience in a family business may positively affect one’s agreeableness with private enterprise as the best solution to economic problems in the U.S.

Table 4. Trivariate Crosstabulation Analysis for Belief in Private Enterprise by Family Business Work Experience, Controlling for Class

Belief in Private Enterprise	Class			
	Lower/Working Class		Middle/Upper Class	
	Family Business Work Experience		Family Business Work Experience	
	Yes	No	Yes	No
Agree	71.94% (9)	67.44% (17)	90.36% (36)	67.29% (22)
Disagree	28.06% (5)	32.56% (9)	9.64% (6)	32.71% (15)
	100% (14)	100% (26)	100% (42)	100% (37)
Chi-Square (Rao-Scott-LR, <i>df</i> 1, 39)=0.055				p=0.816
Chi-Square (Rao-Scott-LR, <i>df</i> 1, 39)=6.970				p=0.012

The trivariate crosstabulation of belief in private enterprise (the dependent variable) by family business work experience (the independent variable) by class (the control variable) produces two partial tables that specify the original relationship between the dependent and independent variables while controlling for various levels of social class. For lower or working class respondents, the likelihood of an individual with family business work experience also reporting agreeableness with private enterprise decreases (71.94 percent) in comparison to the original percentage (85.45 percent) of respondents reported in Table 3. In Table 4, the partial column of lower or working class respondents with family business work experience appears to vary less with the partial column of respondents without family business work experience (71.94 percent compared to 67.44 percent for “Agree”; 28.06 percent compared to 32.56 percent for “Disagree”), suggesting a non-relationship between belief in private enterprise and family business work experience for lower or working class respondents. A chi-square statistic of 0.055 with p=0.816 at the 0.05 significance level formally demonstrates a non-statistically significant association.

However, controlling for respondent class does not completely explain away the original relationship between the dependent and independent variables. Analyzing the second partial table of middle or upper class respondents indicates a possibly stronger relationship between belief in private enterprise and family business work experience. For middle or upper class respondents, the likelihood of an individual with family business work experience also reporting agreeableness with private enterprise increases (90.36 percent) in comparison to the original percentage (85.45 percent) of respondents reported in Table 3. In Table 4, there is a strong contrast between the partial column of middle or upper class respondents with family business work experience and the partial column of respondents without family business work experience (90.36 percent compared to 67.29 percent for “Agree”), suggesting a relationship remains between belief in private enterprise and family business work experience for middle or upper class respondents. A chi-square statistic of 6.970 with p=0.012 at the 0.05 significance level further demonstrates a statistically significant association remains.

Thus, the introduction of class as a control

variable elaborates the original model between belief in private enterprise and family business work experience. The elaboration model produces two partial relationships that differ significantly from each other, indicating a situation of specification. Intermediate bivariate crosstabulation analysis (see Appendix) of belief in private enterprise by class indicated a statistically significant relationship ($p=0.039$ at the 0.05 significance level), and this association seems to mediate the observation that belonging to a lower or working class reduces belief in private enterprise, such that the original two-variable relationship between belief in private enterprise and family business work experience disappears, but only for those in the lower and working classes.

However, intermediate bivariate crosstabulation analysis of class by family business work experience indicated a non-statistically significant relation ($p=0.430$ at the 0.05 significance level); class as a control variable may explain the dependent variable belief in private enterprise, but it does not fully explain the independent variable of family business work experience. Therefore, there still exists a relationship between belief in private enterprise and family business work experience, and the second partial relationship reported in Table 4, is in effect stronger, for middle or upper class respondents, than the original two-variable relationship found in Table 3. Considering class as a control variable thus helps specify the conditions in which belief in private enterprise is related to family business work experience, where lower or working class identification reduces the original bivariate relationship and middle or upper class identification enhances it.

DISCUSSION OF QUANTITATIVE RESULTS

The bivariate and trivariate crosstabulation analyses together clarify the final validity of the proposed research hypotheses. This paper rejects the null hypothesis (H_0) that there is no relationship between family business work experience and belief in private enterprise as the best solution to economic problems in the U.S., in support of the alternative hypothesis (H_A) that there exists a statistically significant relationship between family business work experience and belief in private enterprise as the best solution to economic

problems in the U.S. Importantly, however, the relationship between family business work experience and belief in private enterprise is specified according to individual class. For lower-class individuals, there is no statistically significant relationship between their family business involvement and belief in private enterprise, whereas for higher-class individuals, their family business involvement remains (fairly robustly) associated with favorable belief in private enterprise as a superior economic system in the U.S. Possible explanations for this specification may be consistent with existing literature, as well as previously discussed qualitative findings. Per Anderson and Reeb (2003) and Carney and Nason (2018), the distribution of family firms in the U.S. is stratified such that while family businesses can be profitable ventures and are competitive in markets, the population of family firms in the U.S. is large and economically diverse (Astrachan and Shanker 2003). Members of family businesses that do not see significant gross profits or family income (Guillaud 2013) may devalue their family business involvement when consolidating political and economic attitudes that challenge the normativity of private enterprise. This is opposed to members of highly profitable or conventionally successful businesses, who may see their individual work experience in their economically successful family business as contributing to the overall success of the firm and subsequent favorable belief in private enterprise as a beneficial economic system. In addition, consideration of the findings of Haugh and McKee (2003), Fairclough and Micelotta (2013), and Ernst et al. (2022) also suggest that within some family firms, non-market values such as building a family business culture or social capital may share equal importance with the prioritization of profit. The specification indicated by multivariate analysis is further supported by earlier qualitative findings. While both were involved in their family business, Respondent 1 had self-identified as working class, whereas Respondent 2 had self-identified as upper class. Their subsequent beliefs in private enterprise were also different, as Respondent 2 expressed much greater agreeableness with the overall efficacy of private enterprise. This key qualitative finding similarly demonstrates that between lower- and higher-class individuals, family business involvement may be perceived differently, as is private

enterprise.

Though class was considered as the main control variable that captures socioeconomic position, the interrelationships of and between family business involvement and belief in private enterprise may be importantly moderated by other variables such as gender, age, race, and immigration status, of which this research did not include in crosstabulation analyses. Future research should consider how these variables, reflective of other master statuses, relate to and shape belief in private enterprise. Research aims were also condensed to family business members in the U.S. who responded to the General Social Survey; future research may seek to replicate findings across other geographic locations and in developed, emergent, mixed, and non-mixed economies.

QUALITATIVE METHODS

Data Collection and Method

Qualitative data were collected through a small convenience sample of semistructured interviews with two members of family businesses. The members ranged in age from 21 to 27 and in social class, from working to upper class. One respondent was a member of an American East Coast family farm and had three years of working experience, and the other respondent was a member of an American East Coast pharmacy that had eight years of working experience. All names and identifying details have been changed to ensure confidentiality (see Table 1).

Interviews were conducted during the fall of 2022. Interviews took place in-person and via teleconference. Interviews lasted on average 40 minutes and were recorded and transcribed. Interview questions primarily focused on respondents’ thoughts, beliefs, and feelings on their family business and

private enterprise. Questions addressed general characteristics of respondents’ family businesses and their economic performance, and respondent work history experience. Respondents discussed the relationship between their family business and private enterprise, and their beliefs in private enterprise as an economic system overall. Interview bias did not appear to affect data quality, although business characteristics (such as firm performance) respondents were asked to discuss were self-reported.

LIMITATIONS

Because the sample size was constrained to two respondents, the content of their interview responses cannot readily be generalized to the experiences of other family business-involved members in the U.S, nor can their responses, on their own, be used to establish a conclusion about whether a significant relationship does exist between family business involvement and belief in private enterprise. However, respondent interview data is valuable as an interpretivist contextualization of the main findings presented in the quantitative methods section. Respondent data functions to introduce the subjective orientations some specific individuals hold towards family business and private enterprise, thereby supplying insight into not if individuals with family business work experience believe in private enterprise but how, and why.

DISCUSSION OF QUALITATIVE RESULTS

Family Business Involvement

For the respondents, family involvement was crucial to the founding and daily operation of their businesses. Parental family involvement was particularly important, as both respondents reported their parents (fathers) had founded their respective

Table 1. Respondents

Name	Age	Class	Family Business	Years of Working Experience
Respondent 1	21	Working	Farm/Beekeeping	3
Respondent 2	27	Upper	Pharmacy	8

businesses and assumed major managerial duties, even if their individual experiences varied. Respondent 1, describing her father, a beekeeper, noted:

And so now I think he's managing just under two hundred hives all by himself. He hasn't hired anybody outside of the family, and we just help out but mostly it's just him. And then, after a few years of that [beekeeping], he decided to start selling the honey.

Respondents' mothers, siblings, and extended family also incurred significant business responsibility, which at times required the sacrifice of other commitments. Respondent 1 further noted, describing the role of her mother:

And the truth is, the money that we make during the farmers' market is not really that much compared to her day job, but she still is so committed to the family business. She just spends hours on it on the weekend, where she could be resting.

Respondents themselves also did not work full-time, describing other responsibilities such as being a student, or having a day job. However, like other family members, active and voluntary involvement in their family businesses was still pursued, even when the work respondents did was uncompensated. As Respondent 2 noted, when asked why they continued to be involved despite lack of financial remuneration:

I never took any money. It was a purely voluntary basis. For me, it's more about helping my parents out. That in of itself provides me joy.

Family Business Values

Describing their family business operational culture, respondents placed emphasis on the innate values of hard work, transparency, and contributing both to the economy and their local communities. As small, private, and relatively new businesses embedded in their local communities, it was important for their family businesses to build trust as reputable firms that helped people and served local community needs. This was particularly relevant for Respondent 2, whose family operates a pharmacy in a low-income neighborhood, as they discussed, for example:

Most of the people who are our customer base are from a low-income community. A lot of

people only speak Spanish. So, one of the major things I wanted to learn was Spanish, but never got a chance to do so. As a result, you know, we have to hire someone who speaks Spanish at any given time around the business.

Preserving business authenticity was important, as were managing nonmaterial capital such as relationships with community members and local vendors. Respondent 1 noted:

We have very good relationships with all the vendors at the farmers' markets. Through our family business we have made a lot of friends. We're very close with the organizers of the Sunday market. Actually, I learned to drive from one of them.

Profit Desirability and Success

When asked about family business performance, respondent reaction was mixed. For Respondent 1, their family business had not reached a comfortable level of profitability, with their business earning an estimated 400 dollars per week. Asked about the importance of profit, Respondent 1 noted:

[Towards profit] Honestly, not really. I guess we haven't been making much profit, because my dad invested so much in starting up the company. So I'm very sure we haven't been able to equal out the cost of the land, the cost of the materials.

By contrast, profit within the family business of Respondent 2 was more visible. Their business reported yearly profits of more than half a million dollars. The financial success of their family business contributed to their evaluation that their business was successful, yet their understanding of success was also motivated by prosociality, such as saving the lives of their patients. Likewise, Respondent 1, whose business earned far less, also believed their firm to be successful for non-financial reasons, noting:

Yeah, we don't really make money. But I'm really proud of the business. I think it is successful because we met so many new people, and we also have partnerships with some of the other stalls at the farmers' market.

However, individually, both respondents recognized the value of financial success within their own lives as they sought to establish livelihoods outside of family business involvement.

Orientation Towards Private Enterprise

As interviews progressed, it became clear that the respondents held generally positive views towards private enterprise. When asked about the intersection of private enterprise and their family business, Respondent 1 noted their business had benefited from a system of private enterprise. And when asked to think about their receptibility to tighter government regulation or oversight, their responses were negative, noting:

I understand the need or the justification for government to intervene when you have monopolies. I understand how it's appropriate for government to step in. But I think the application of this to family business is very different...I don't see the value...what I like about our family business is that we're in charge and all of our decisions don't have to be dictated by any constraints by the government.

Respondent 1 further agreed that private enterprise was a prevalent economic system in the U.S., and that overall, it was also beneficial, noting:

I think it [private enterprise] works pretty well. I guess there's kind of the debate between capitalism and socialism or communism. But just from my own experience, I feel like private enterprise has been working pretty well.

Respondent 2 strongly reiterated the same favorable sentiments towards private enterprise as Respondent 1. The notion of U.S. private enterprise was especially fundamental towards the perceived success of their family business, as they noted not many immigrant families (like their own) had opportunities to start businesses in their home countries. They believed their family business had also benefited from private enterprise, noting:

It has given an opportunity to better our financial conditions, and to provide opportunity for others as well in terms of employment.

Respondent 2 also had similar, negative views of government interference. The key divergence between Respondent 1 and 2, however, was the issue of private enterprise as the best solution, not just for their family business, but for general economic problems in the U.S. Respondent 1 felt ambivalent towards the general efficacy of private enterprise, noting:

I think a lot of these problems are actually

created by it [private enterprise]. Now that I think about it, private enterprise definitely opens the door to these problems arising in a society. So yeah, I guess it's not the best way to solve them, although, it's working well for my family.

Meanwhile, Respondent 2 had expressed high agreeableness towards the superlative understanding that private enterprise was the best economic system in the U.S. for small businesses and solving economic problems, noting:

Yes, absolutely. I think 75-80% of the employment is created through private enterprise. This is the greatest country where private enterprise provides. That's the reason I feel the U.S. has the biggest economy in the world.

Overall, while respondent agreeableness towards private enterprise fluctuated, it appeared their own family business involvement had shaped their orientation towards private enterprise, which together trended towards a favorable perception.

CONCLUSION

Crucial to understanding the economic landscape of countries and markets involves studying the members of family businesses. They, along with the firms they represent, are not only a major population but possess the capacity to exert significant influence over the economic fabric of a society. What is considered effective or successful economic ideology, therefore, may often reflect the contemporary attitudes and beliefs members of family businesses share. To this point, in lieu of ongoing discussions about the often contentious premise of private enterprise and capitalism in the U.S. and at large, this paper has sought to contribute a relevant ideological analysis, derived from a highly relevant population that is not frequently studied in current scholarship. By utilizing a novel mixed methods approach, this research has demonstrated how individual economic belief is critically implicated with the institution of family business, as well as class. And through the individual and aggregate analysis of respondent belief, it has attempted to structuralize ideological assumptions about the economy that are often too nebulous to discern.

APPENDIX

Table 5. Class by Family Business Work Experience

Class	Family Business Work Experience	
	Yes	No
Lower/Working Class	46.12% (74)	51.06% (107)
Middle/Upper Class	53.88% (119)	48.94% (138)
	100% (193)	100% (245)
Chi-Square (Rao-Scott-LR, <i>df</i> 1, 39)=0.637		p=0.430

Table 6. Belief in Private Enterprise by Class

Belief in Private Enterprise	Class	
	Lower/Working Class	Middle/Upper Class
Lower/Working Class	50.41% (185)	60.47% (405)
Middle/Upper Class	49.59% (170)	39.53% (259)
	100% (355)	100% (664)
Chi-Square (Rao-Scott-LR, <i>df</i> 1, 39)=4.548		p=0.039

**Table 7. (Supplemental Analysis)
Logistic Coefficients for Family Business Work Experience on the Odds of Belief in Private Enterprise**

	Belief in Private Enterprise			
	(1)	odds	(2)	odds
<i>Independent Variable</i>				
Family Business Work Experience	1.076*	2.932	0.963*	2.620
	(0.469)		(0.481)	
<i>Control</i>				
Class			-0.373	0.689
			(0.446)	
Constant	-2.846***		-2.097	

Note: Numbers in parentheses are standard errors.

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

REGRESSION RESULTS

Table 7 presents the findings for the logistic regression analysis of family business work experience on the odds of belief in private enterprise. In Model 1 (the baseline model) the relationship between family business involvement and belief (agreement) in private enterprise is positive (b=1.076) and significant. Specifically, respondents with family business work experience have 2.932 higher odds of agreeing with private enterprise than respondents without family business work experience.

Model 2 examines the relationship between family business work experience and belief in private enterprise, controlling for class. The relationship between family business work experience and belief in private enterprise remains positive (0.963) and significant, though there is a slight reduction in the odds of agreeing with private enterprise. Specifically,

respondents with family business work experience have 2.620 higher odds of agreeing with private enterprise than respondents without family business work experience. The addition of the control variable, class, into the model did not produce statistically significant results.

REFERENCES

1. Anderson, Ronald C., and David M. Reeb. 2003. “Founding-Family Ownership and Firm Performance: Evidence from the S&P 500.” *Journal of Finance* 58(3):1301–28. doi: 10.1111/1540-6261.00567.
2. Astrachan, Joseph H., and Melissa Carey Shanker. 2003. “Family Businesses’ Contribution to the U.S. Economy: A Closer Look.” *Family Business Review* 16(3):211–19. doi: 10.1177/08944865030160030601.

3. Black, John, Nigar Hashimzade, and Gareth Myles. 2009. "Private Enterprise." in *A Dictionary of Economics*. Oxford University Press. Retrieved October 16, 2022 (<https://www.oxfordreference.com/view/10.1093/acref/9780199237043.001.0001/acref-9780199237043>).
4. Carney, Michael, and Robert S. Nason. 2018. "Family Business and the 1%." *Business & Society* 57(6):1191–1215. doi: 10.1177/0007650316661165.
5. Colli, Andrea. 2002. *The History of Family Business, 1850–2000*. 1st ed. Cambridge, UK: Cambridge University Press. Retrieved October 16, 2022 (<https://www.cambridge.org/core/product/identifier/9780511615009/type/book>).
6. Colli, Andrea. 2013. "Family Firms between Risks and Opportunities: A Literature Review." *Socio-Economic Review* 11(3):577–99. doi: 10.1093/ser/mwt010.
7. Creed, Gerald W. 2000. "'Family Values' and Domestic Economies." *Annual Review of Anthropology* 29:329–55.
8. Ernst, Robin-Alexander, Maike Gerken, Andreas Hack, and Marcel Hülsbeck. 2022. "Family Firms as Agents of Sustainable Development: A Normative Perspective." *Technological Forecasting and Social Change* 174:121135. doi: 10.1016/j.techfore.2021.121135.
9. Fairclough, Samantha, and Evelyn R. Micelotta. 2013. "Beyond the Family Firm: Reasserting the Influence of the Family Institutional Logic Across Organizations." *Research in the Sociology of Organizations* 39 Part B:63–98. doi: 10.1108/S0733-558X(2013)0039A&B016.
10. Foley, Duncan K. 1986. *Understanding Capital: Marx's Economic Theory*. Cambridge, MA: Harvard University Press. Retrieved October 16, 2022 (<https://ebookcentral.proquest.com/lib/duke/detail.action?docID=3300455>).
11. Guillaud, Elvire. 2013. "Preferences for Redistribution: An Empirical Analysis over 33 Countries." *The Journal of Economic Inequality* 11(1):57–78. doi: 10.1007/s10888-011-9205-0.
12. Haugh, Helen M., and Lorna McKee. 2003. "'It's Just Like a Family' -- Shared Values in the Family Firm." *Community, Work & Family* 6(2):141–58.
13. Holland, Phyllis G., and William R. Boulton. 1984. "Balancing the 'Family' and the 'Business' in Family Business." *Business Horizons* 27(2):16–21.
14. Holt, Justin P. 2015. *The Social Thought of Karl Marx*. New York, NY: SAGE Publications. Retrieved October 16, 2022 (<https://sk.sagepub.com/books/the-social-thought-of-karl-marx>).
15. Holzner, Burkart. 2007. "Privatization." Pp. 3647–48 in *The Blackwell Encyclopedia of Sociology*, edited by George Ritzer. Malden, MA: Blackwell Publishing. Retrieved October 16, 2022 (http://philosociology.com/UPLOADS/_PHILOSOCIOLOGY.ir_Blackwell%20Encyclopedia%20of%20Sociology_George%20Ritzer.pdf).
16. Jones, Geoffrey, and Mary B. Rose. 1993. "Family Capitalism." *Business History* 35(4):1–16.
17. Law, Jonathan. 2009. "Private Enterprise." in *A Dictionary of Business and Management*. Oxford University Press. Retrieved October 16, 2022 (<https://www.oxfordreference.com/view/10.1093/acref/9780199234899.001.0001/acref-9780199234899-e-5011>).
18. Lee, Yoon G., and Maria I. Marshall. 2013. "Goal Orientation and Performance of Family Businesses." *Journal of Family and Economic Issues* 34(3):265–74. doi: 10.1007/s10834-012-9329-9.
19. Lehrer, Mark, and Sokol Celso. 2016. "German Family Capitalism in the 21st Century: Patient Capital between Bifurcation and Symbiosis." *Socio-Economic Review* 14(4):729–50. doi: 10.1093/ser/mww023.
20. Lipset, Seymour Martin. 1960. *Political Man; the Social Bases of Politics*. Garden City, N.Y.: Doubleday. Retrieved October 16, 2022 (<https://catalog.hathitrust.org/Record/001433542>).
21. Luo, Yadong, and Marc Junkunc. 2008. "How Private Enterprises Respond to Government Bureaucracy in Emerging Economies: The Effects of Entrepreneurial Type and Governance." *Strategic Entrepreneurship Journal* 2(2):133–53. doi: 10.1002/sej.46.
22. NORC at the University of Chicago. 2021. "About the GSS." Retrieved Nov. 22, 2022 (<https://gss.norc.org/About-The-GSS>).
23. Pew Research Center. 2014. "Religious Landscape

Study.” *Pew Research Center's Religion & Public Life Project*. Retrieved October 17, 2022 (<https://www.pewresearch.org/religion/religious-landscape-study/compare/party-affiliation/by/income-distribution/>).

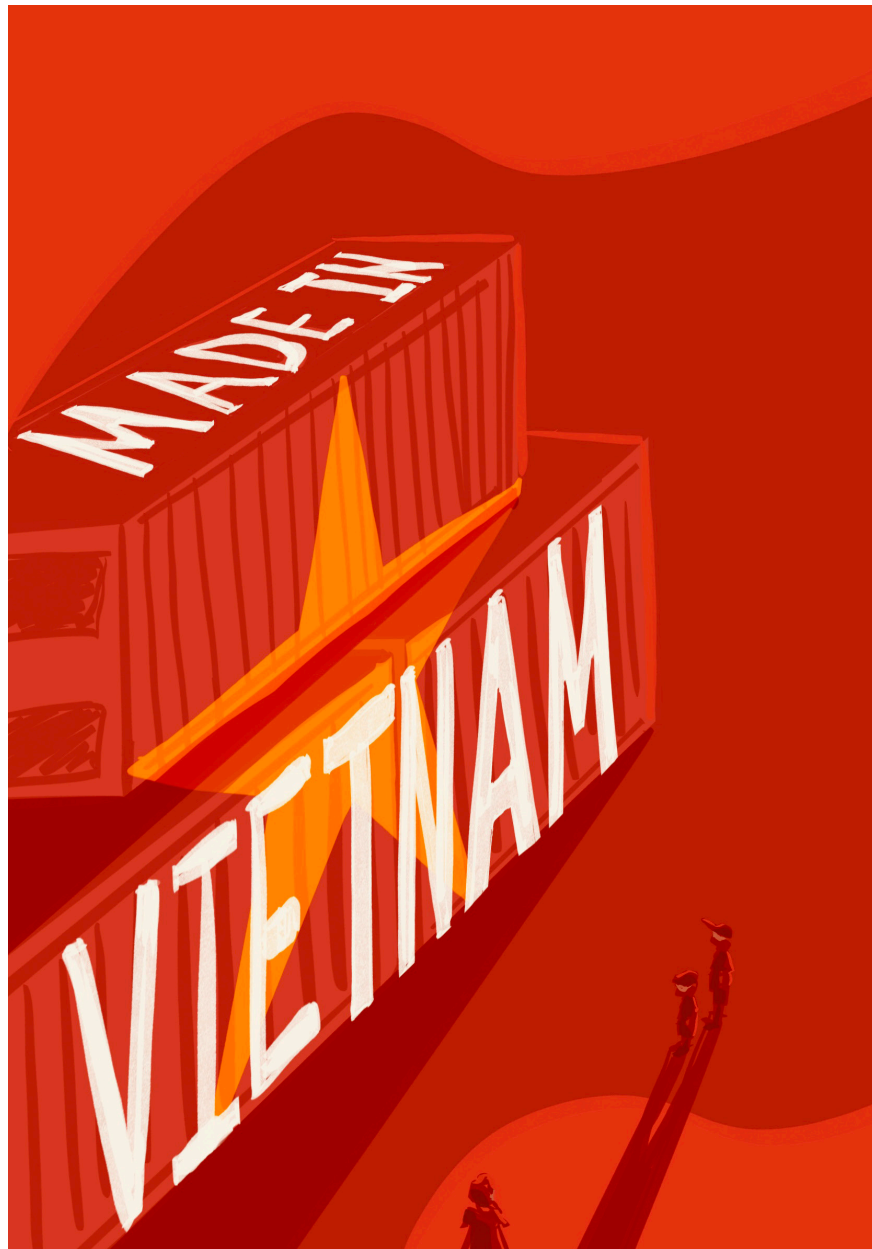
**The Birth of a New China: How the U.S. - China Trade War Affected
the Economy and Foreign Policies of Vietnam in 2016 – 2020**

Tri Truong, Dr. Edmund Malesky, PhD



Article Synopsis

The paper examined how the U.S. - China Trade War affected Vietnam's economy and political system. The results indicate that the Trade War had a partial effect on Vietnam's trade economy and, in turn, influenced how the Vietnamese government will shape its foreign policy in the future. These findings provided future policymakers with quantitative and qualitative evidence on the impact of the Trade War on Vietnam and recommended appropriate policies for maintaining the stability of Vietnam within the larger U.S. - China conflict.



Graphic by Cindy Ju

The Birth of a New China: How the U.S. - China Trade War Affected the Economy and Foreign Policies of Vietnam in 2016 – 2020

Tri Truong, Dr. Edmund Malesky, PhD

The Sanford School of Public Policy, Duke University
<https://doi.org/10.55894/dv2.14>

Abstract

Following the U.S. – China Trade War, Vietnam has been recognized as one of the biggest economic beneficiaries, showing significant economic increases from 2018 – 2020. However, the empirical causal extent of the Trade War's impact on Vietnam's economy has largely been ignored, as well as how Vietnam will craft its foreign policies regarding the U.S. – China conflict. Using the difference-in-difference regression approach, this paper attempts to verify the causal impact of the Trade War on Vietnam, focusing on the Vietnam – U.S. export and the Vietnam – China import datasets. The paper also explores Vietnam's foreign policy strategy for the Trade War and the U.S. – China conflict by conducting traditional qualitative analysis on six qualitative interviews. This paper confirmed that the Trade War had a positive causal effect on Vietnam's export to America at the country level and Vietnam's import from China at the tariff level. However, it could not confirm whether the Trade War had such an effect on Vietnam's import from China at the country level and Vietnam's export to America at the tariff level. Along with quotes and anecdotes collected from policy experts, this paper suggested that Hanoi must maintain its political neutrality in international affairs while continuing to capitalize on Vietnam's economic success and enhance its trade relationship with the U.S. and China.

ACKNOWLEDGEMENT

I am eternally grateful to my thesis advisor, Edmund Malesky, and my thesis professor, Mallory SoRelle, for their support and guidance. I especially want to thank Dr. Malesky for allowing me to understand the economic impact of the U.S. – China Trade War on Vietnam. I know this thesis would not have been possible had it not been for his support. Throughout this thesis, I have begun the process of critical thinking about how other countries' policies can affect Vietnam's well-being, and I hope that this thesis highlights Vietnam's potential on the international stage.

I also want to thank my friends for proofreading my thesis countless times, my family for their forever encouragement, and the larger community of Vietnamese students studying abroad. I chose to write this thesis because young Vietnamese hold power to change our country, for better or worse. I hope this thesis recognizes Vietnam's economic improvements in the last decades and encourages young Vietnamese professionals to return to the motherland and dedicate their talents to making Vietnam a better place.

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION	71
1) Research Question	71
CHAPTER 2: BACKGROUND INFORMATION	71
1) An Introduction to the U.S. – China Trade War	71
2) An Overview of Vietnam's Economic Policies and Political Institution	72
CHAPTER 3: THEORETICAL FRAMEWORK/LITERATURE REVIEW	73
1) Overview of Vietnam's role within the context of the U.S. – China Trade War	73
2) An overview of Vietnam's relationships with the U.S. and China	73
3) Positive impact of Trade War on Vietnam	74
4) Negative impact of the Trade War on Vietnam	74
5) Vietnam's foreign strategy within the U.S. – China conflict	74
6) Literature Gap of the Research on Vietnam's role within the context of the U.S. - China Trade War	75
CHAPTER 4: HYPOTHESES AND OBSERVABLE IMPLICATIONS	75
CHAPTER 5: METHODOLOGY	76
1) Method Overview	76
2) Data Collection Plan	76
a) Quantitative Data Collection	76
b) Qualitative Data Collection	77
3) Research Design	77
a) Quantitative Research Design	77
b) Qualitative Research Design	78
CHAPTER 6: RESULTS	79
1) Method Overview	79
2) Quantitative Findings	79
a) Discussion of Methodology	79
b) Country-level Findings	81
c) Tariff-level Findings	85
3) Qualitative Findings	87
a) Result Summary	87
b) Theme 1: Vietnam's recent economic growth	88
c) Theme 2: Vietnam-U.S. trade relationship and ideological differences	89
d) Theme 3: Vietnam-China trade relationship and illegal tariff-dodging trans shipment	90
e) Theme 4: Vietnam's future foreign policies and its political neutrality	93
CHAPTER 7: CONCLUSION	94
1) Principle Findings	94
a) Vietnam – U.S. quantitative results and explanation	95
b) Vietnam – China quantitative results and explanation	95
c) Qualitative results and explanation	95
2) Limitations and potential research	96
3) Conclusion and recommendations	96
CHAPTER 8: REFERENCES	96
1) Appendix	100
a) English interview guide	100

b) Vietnamese interview guide	101
c) Interview coding guide	102
2) List of Additional Figures and Tables	103

CHAPTER 1: INTRODUCTION

When U.S. President Donald Trump got elected in 2016, he vowed to take a tougher stance against China's alleged unfair trade policies (SCMP Reporters, 2019). His campaign promises materialized in January 2018, when the U.S. began its campaign to set import taxes, or tariffs, on Chinese goods, forcing China to rectify its unfair practices and admit to intellectual property theft. China retaliated by imposing tariffs on American goods, leading to what is now known as the U.S. – China Trade War (SCMP Reporters, 2019).

Existing scholarship on the role of Vietnam within the context of the U.S. - China Trade War indicates that the country has been the most significant economic beneficiary compared to other countries (Ho et al., 2019; Lam & Nguyen, 2019; Subbaraman, 2019). However, these analyses often ignored whether Vietnam's current economic trends influenced the country's recent successes. In this sense, they attributed Vietnam's increase in exports and imports to the effects of the Trade War without further empirical evidence of whether it had such an effect.

Furthermore, Vietnam's growing dependence on the importation of Chinese goods has created more opportunities for Chinese firms to flood their goods into the Vietnamese market or use the country as an intermediate exporter to America (Ho et al., 2019; Lam & Nguyen, 2019). Such practices, called tariff-dodging transshipment, could have unintended political and economic consequences between Vietnam, the U.S., and China (Soboleva, 2021).

Additionally, the impact of the Trade War on Vietnam's foreign relations regarding the tension between the U.S. and China has also often been neglected by current research. As the Trade War is an economic manifestation of tensions between the U.S. and China, Vietnam's strategic role in the Trade War deserves more attention. Thus, these gaps in the research literature call for an empirical study of the economic effects of the Trade War on Vietnam and experts' testimonies regarding Vietnam's future diplomacy strategy regarding its economic relationship with both the U.S. and China.

This paper examines the relationships between Vietnam with China and the U.S. as the result of the Trade War, which, in turn, creates a policy feedback

loop that puts pressure on Vietnam's economic policies and diplomacy. Specifically, the paper analyzes Vietnam's export-import relations with the U.S. and China to understand how the Trade War has affected the Vietnamese market. To this end, the paper discovers that, at the country level, the Trade War had a positive causal effect on Vietnam's exportation of tariff-affected goods to the American market but had no effect on Vietnam's importation of Chinese goods. At the tariff level, the Trade War also had a positive causal effect on Vietnam's importation of tariff-affected products from China. However, the paper failed to establish the same positive causal effect for Vietnam's exportation of tariff-affected products to America. The paper also attempts to understand the impact of the Trade War on future economic relationships that Vietnam will have with the U.S. and China through testimonies given by Vietnamese political experts. These qualitative interviews revealed Vietnam's strategy to capitalize on the benefits of the U.S. – China Trade War while continuing to promote policies that worked for the country in the past and maintaining its political neutrality within the larger U.S. – China conflict.

These results reveal the extent to which the Trade War transformed Vietnam's economic politics and diplomatic relationships with China and America. Understanding the nuances of such impacts on Vietnam, the paper seeks to provide recommendations for how Vietnam can maximize its economic and political benefits while maintaining a good relationship with America and China.

1) Research Question

With Vietnam's increasingly important role on the international stage, this paper seeks to quantify and understand the impact of the Trade War on both Vietnam's economy and diplomatic strategy. The central questions that this research paper poses are:

- Did Vietnam economically benefit from the Trade War, both in importing Chinese goods into Vietnam and exporting Vietnamese goods to the American market?
- Will Vietnam seek to strengthen its economic and political relationship with the U.S. and China?

CHAPTER 2: BACKGROUND INFORMATION**1) An Introduction to the U.S. – China Trade War**

The U.S. - China Trade War, defined by a series of tariffs set by U.S. and China against the other, is an economic struggle between two superpower nations which negatively affected the global economy as a whole (Hass & Denmark, 2022). This paper focuses on President Trump's Trade War with China, which started in January 2018 when the Trump administration set high tariff rates on Chinese goods (Swanson, 2018). The Trump administration had accused China of intellectual property theft, alleging that Beijing has illegally transferred American technologies to its mainland and China's plan to weaken the U.S. economy and international standing, particularly among European nations (Liu & Woo, 2018). These policies prompted retaliation from the Chinese government, which imposed similar high tariffs on U.S. goods and accused America of employing nationalist protectionism in foreign affairs (Bradsher, 2019). Studies have concluded that the Trade War did not result in President Trump's intended outcome but gave rise to numerous unintended consequences (Liu & Woo, 2018; Zhang, 2018). These economic ramifications include the U.S. imposing import taxes on \$36 billion worth of Chinese goods and China responding with tariffs on more than \$110 billion worth of American products (SCMP Reporters, 2019). Although the Trade War between the U.S. and China hurt both countries' economies, the entire global community has benefited from a negative U.S. - China trade flow (Fajgelbaum et al., 2022). While America and China decreased export to each other, they reallocated their export destinations to other countries, driving up global trading. Specifically, the U.S. export rate to China fell by 26.3%, and China's export rate to the U.S. fell by 8.5% (Fajgelbaum et al., 2022). Meanwhile, U.S. export to other countries increased by 2.2%, and China's export to other countries increased by 5.5% (Fajgelbaum et al., 2022). Furthermore, the Trade War between these two economic giants has encouraged more trade opportunities for bystander countries in the products targeted by the Trade War's tariff, resulting in a 3% increase in global trade (Fajgelbaum et al., 2022).

Nevertheless, the relationship between the U.S. and China prompted the world to reconsider the global supply chain (Huang & Smith, 2020). For the U.S., a high tariff against China led to a decrease in goods imported from and goods exported to China, forcing

Washington to diversify its trading partners. Notable replacements for China include Vietnam, Europe, and Mexico, whose exports to America dramatically rose by \$17.5 billion, \$31.2 billion, and \$11.6 billion, respectively (Huang & Smith, 2020). For China, unsurprisingly, exports to and imports from the U.S. both decreased significantly. However, Beijing quickly increased exports to nearby Southeast Asian countries--thanks to its relationship with the Association of Southeast Asian Nations (ASEAN)--and sub-Saharan Africa, mainly due to its Belt and Road Initiative (Huang & Smith, 2020). For these reasons, manufacturing countries will continue to divert their trading practice, scale production at less politically sensitive countries, and search for different tariff-dodging practices to cope with the Trade War (Huang & Smith, 2020). However, the uncertainty in the relationship between the U.S. and China will increase economic opportunities for the global community.

2) An Overview of Vietnam's Economic Policies and Political Institution

In understanding the impact of the Trade War on Vietnam, it is crucial to keep in mind the political structure and economical approach that Vietnam has adopted since the Vietnam War ended. After 1975, the Socialist Republic of Vietnam was founded as a law-governed and single-party state, with the Communist Party of Vietnam (CPV) working to ensure the interests of the Vietnamese working class (Embassy of Vietnam in the U.S., n.d.). The Vietnamese Constitution is currently the fundamental legal document that institutionalizes the viewpoints of the CPV and endows its citizens with equal rights in political, economic, and social affairs (Embassy of Vietnam in the U.S., n.d.).

Vietnam's successful effort to recover from the revolution against the U.S. was primarily influenced by a socialist approach to the market economy, with the process of democratization being increasingly valued (Soboleva, 2021). This approach is best described through Vietnam's "Đổi Mới" economic reform policies in 1986. These policies represented the government's recognition of the private sector as an essential economic actor. The communist government was committed to work hand-in-hand with private firms in a market-focused economy to grow the national GDP (Beresford, 2008). From one of the poorest countries in the world after 1975, Vietnam has

since witnessed massive growth in its national GDP, especially in its manufacturing industry, using “Đổi Mới” as its guiding principle for economic changes. Hence, Vietnam’s economic success can be attributed to three main factors: its willingness to embrace trade deals, its capacity to implement domestic reform policies that can complement these trade deals, and its investments in Vietnamese citizens and infrastructure (Eckardt et al., 2022). The country’s exports make up most of Vietnam’s GDP, and its annual economic growths are comparable to that of major developed countries such as China (Vanham, 2018).

Currently, the country is pursuing policies that attract more foreign investors while maintaining strong trade relations with major economies like the U.S. and China (Beresford, 2008). It is important to note that Vietnam has embraced the China Plus One Strategy, which encourages foreign nations to diversify their investments and avoid only investing in China. This strategy was popularized when the U.S. – China tension began to accelerate, leading investors to invest in other Southeast Asian countries, not just China (Kumar, 2022). Moreover, this economic trend can also be attributed to China’s labor cost, driving other investors to seek cheap labor in neighboring countries, including Vietnam (Daugherty, 2018). Thus, in working with foreign investors, Vietnam has emphasized its economic opportunities and open attitudes, making it a promising candidate for the China Plus One Strategy (Source of Asia, 2022). Furthermore, when trading with foreign countries, Vietnam prioritizes importing raw materials and machinery equipment for its industrialization process while exporting textile and agricultural goods. Its emphasis on trade and foreign investments has made Vietnam one of the potential beneficiaries of the Trade War (Soboleva, 2021).

CHAPTER 3: THEORETICAL FRAMEWORK/ LITERATURE REVIEW

1) Overview of Vietnam’s role within the context of the U.S. – China Trade War

Research scholarships on Vietnam have often ignored the causal relationship between the U.S. – China Trade War and Vietnam’s recent economic prosperity (Ho et al., 2019; Lam & Nguyen, 2019). The research literature agreed that Vietnam had been the largest

beneficiary of the Trade War, with Vietnam seeing an increase in textile, apparel, and electronic exports to the American market (Kwon, 2022). Vietnam has also been shown to be the largest beneficiary thanks to the U.S. – China trade diversion, with a report from Dezan Shira & Associates crediting Vietnam’s high GDP in 2018 and 2019 to the effects of the Trade War (Samuel, 2020).

Vietnam’s current socialist economic policies, along with its historical ties with China and the U.S., suggest that the country would face long-term political and economic consequences, especially challenges in balancing the political tension between the U.S. and China (Soboleva, 2021). This section will provide some basic information regarding what existing literature is saying about the historical relationship of Vietnam with the U.S. and China. The section will also outline some short-term and potential long-term impacts of the Trade War on the country. Understanding this information will be crucial to approach the effects of the Trade War from Vietnam’s economic and foreign policy perspectives.

2) An overview of Vietnam’s relationships with the U.S. and China

In examining how the Trade War has impacted Vietnam’s economy, this paper heavily relies on the relationships between Vietnam with the U.S. and China, respectively. Emerging from the Vietnam War, Washington and Hanoi have improved their relationship significantly in the last four decades. After President Bill Clinton normalized the relationship between the two countries in 1994 by lifting the trade embargo, the U.S. became the most prominent nation of foreign direct investment in Vietnam and the largest market for Vietnam’s export (Soboleva, 2021). As Vietnam and the U.S. are joint members of various international organizations, including the United Nations, World Bank, and World Trade Organization, the two nations have every incentive to improve their economies mutually (Bellacqua, 2012). Most importantly, both countries share concerns about China. Given Beijing’s economic strength, military power, and provocation in the South China sea, Vietnam and the U.S. seek to improve their relationship to rebuff China’s advances (Bellacqua, 2012). The U.S. has been working with Vietnam to respond to China’s controversial “nine-dash line” through the Lower Mekong Initiative, which helps

enhance the relationship between countries impacted by China's policies (Bellacqua, 2012). Nevertheless, concerns over Vietnam's human rights abuses have often made the U.S. hesitant in the trade relationship (Soboleva, 2021). Through the Trade War with China, the U.S. has hoped to strengthen its relationship with Vietnam, something both countries wish to maintain in the long run.

Understanding the relationship between Vietnam and its geopolitical ally China is also essential. The bilateral relationship between the two countries has been unsteady following the end of the Vietnam War, with the Third Indochina War of 1979 putting Vietnam and China in direct conflict (Soboleva, 2021). After both countries revised their foreign and economic policies, their relationship recovered, and China and Vietnam established a stable political and trade relationship (Le, 2020). However, Beijing often made geopolitical advances on Vietnam's land and marine territorial claims, most notoriously China's "nine-dash line" (Le, 2020). The "nine-dash line" is China's territorial argument for its possession of the South China Sea, and China has relied on such claims to put militarized pressure on Vietnam's presence and operations in the region, resulting in financial losses for Vietnam (Le, 2020). This stumbling block has often put the two countries at odds despite their strong economic ties, and as the practice of tariff-dodging intensifies, China's and Vietnam's relationship remains fragile.

3) Positive impact of Trade War on Vietnam

The Trade War has primarily produced positive results for Vietnam. The conflict between two economic superpowers has shifted the global supply chain, with Vietnam's geopolitical advantages poising the country as the most significant potential beneficiary. After the Trade War started in 2018, Vietnam saw its imports of Chinese goods increase dramatically, from \$69.7 billion in 2017 to \$77.3 billion in 2018 and \$91.2 billion in 2019 (OEC, n.d.). Vietnam has also been the largest beneficiary of the U.S. – China trade diversion, with Vietnam capturing more than 60% of the Chinese market's loss in textiles and apparel and electronic exports to America (Kwon, 2022). Moreover, over the last decade, the U.S. has remained Vietnam's largest export market, and China has been Vietnam's largest import market (Lam & Nguyen, 2019). As the Trade

War escalated, these trends accelerated. During the first half of 2019, Vietnam increased its U.S. exports by 27.3 percent (Lam & Nguyen, 2019). The country also saw a significant trade surplus with the U.S., nearly \$34 billion in 2018, and a large trade deficit with China, nearly \$24 billion in 2018 (Lam & Nguyen, 2019). Given the U.S.'s recognition of Vietnam's crucial role during the Trade War, Vietnam's economy has also seen a shift in rhetoric, with the U.S. posing Vietnam as the new "China." For China, its strong relationship with Vietnam means that China will increase its importation toward the latter, thereby increasing Vietnam's GDP in the short run (Liu & Woo, 2018).

4) Negative impact of the Trade War on Vietnam

Although Vietnam has seen beneficial effects from the Trade War, the country could potentially suffer three unintended consequences (Lam & Nguyen, 2019). Firstly, China could use Vietnam as a "backyard" market, flushing the Vietnamese market with outdated Chinese products. Such a large amount of import into the Vietnamese economy will produce a large trade deficit for Vietnam and create a competitive market for Vietnamese goods. Vietnam also suffers from Chinese illegal tariff-dodging transshipment, a practice that allows companies to ship their products to nearby countries, relabel, and transport those goods to America without suffering the hefty tax from the Trade War (Reuters, 2019). This tactic works because the place of origin of products is being disguised, creating difficulties for the U.S. to distinguish between "real" and "fake" Vietnamese goods (Barton, 2018). With the U.S. being the largest market to which Vietnam exports its goods, tariff-dodging transshipment poses a legal and logistics problem to the American government (Zumbrun & Stech Ferek, 2022). Finally, Vietnam's current political model could cost the nation to fail to capitalize on the Trade War benefits (Kwon, 2022; Lam & Nguyen, 2019). Currently, the country's supply chain is only comparable to China's years ago, and large corporations are increasingly complaining that Vietnam's socialist economic approach limits opportunities for expansion and growth. If Vietnam cannot ease its regulation for businesses during this time, it may fail to capitalize on the opportunities that the Trade War provides (Lam & Nguyen, 2019).

5) Vietnam's foreign strategy within the U.S. – China conflict

While Vietnam has historically maintained its political neutrality amidst the U.S. – China conflict, recent events including the Ukraine-Russia conflict and, most prominently, the Trade War have challenged this traditional (Nguyen, 2022). Notably, U.S. Ambassador to Vietnam Marc Knapper called for a Vietnam – U.S. relationship upgrade from a comprehensive partnership to a strategic partnership (Eyler, 2022). Such an upgrade would mean that the U.S. could provide Vietnam with more defensive equipment and weaponry in the case of a Chinese invasion. However, the proposal is losing momentum over Hanoi's concerns about the China – Taiwan conflict (Tran, 2022). Within the Vietnamese government, officials are torn about siding with one superpower over the other (Eyler, 2022). On the one hand, those who advocated for a China alignment claimed that shared ideology and culture would enable Vietnam to utilize its geopolitical situation and effectively capitalize on the Trade War. On the other hand, a stronger U.S. – Vietnam relationship can solidify Vietnam's position as a significant power on the international stage and help Hanoi combat China's aggressive Southeast Asian Sea strategy (Tran, 2022). It is remained to be seen whether Vietnam would align itself with one superpower or continue to walk a tightrope between China and America.

6) Literature Gap of the Research on Vietnam's role within the context of the U.S. - China Trade War

Despite the ample research focusing on the correlation between the Trade War and Vietnam's economic development, few studies have established there existed a causal relationship. Verifying the actual causal effect of the Trade War on Vietnam can shed light on the country's political landscape, especially policies that can encourage further economic development. This paper predicts that Vietnam's increased economic prosperity in the 2018 – 2019 period is due to the effects of the U.S.-China Trade War. While Vietnam's policies have been heading in the right direction, the Trade War actively accelerate this upward economic trend.

In addition, research scholarship has yet to indicate whether Vietnam wants to strengthen its economic and political relations with the U.S. and China or prioritize one over the other. Given Vietnam's commitment to be neutral in international political affairs while simultaneously promoting

national economic interests, this paper predicts that the Vietnamese will try to strengthen its economic bonds with the U.S. and Chinese governments and maintain its politically neutral status. Thus, in studying what experts think about the Vietnam – China and Vietnam – U.S. relationships, this paper can reveal the extent of the impact of the Trade War on Vietnam's diplomacy.

CHAPTER 4: HYPOTHESES AND OBSERVABLE IMPLICATIONS

This paper identifies two main hypotheses:

1. The economic hypothesis (EH): During the period of 2016 – 2020, the Trade War has caused Vietnam to export more tariff-affected products to America and import more tariff-affected products from China at both the country level and the tariff level.
 - EH1: The U.S. – China Trade War had a positive causal effect on Vietnam's exportation of tariff-affected products to America at the country level.
 - Observable Implication: Vietnam – U.S. export trade value positively correlated to the time:treated, which is dummy variable measuring the effect of the Trade War on Vietnam within the difference-in-difference regression model at the country level.
 - EH2: The U.S. – China Trade War had a positive causal effect on Vietnam's importation of tariff-affected products from China at the country level.
 - Observable Implication: Vietnam – China import trade value positively correlated to the time:treated, which is dummy variable measuring the effect of the Trade War on Vietnam within the difference-in-difference regression model at the country level.
 - EH3: The U.S. – China Trade War has a positive causal effect on Vietnam's export rate of tariff-affected products to America at the tariff level.
 - Observable Implication: Vietnam – U.S. export trade value positively correlated to the time:treated, which is dummy variable measuring the effect of the Trade War on Vietnam within the difference-in-difference regression model at the tariff level.
 - EH4: The U.S. – China Trade War has a positive

causal effect on Vietnam's import rate of tariff-affected products from China at the tariff level.

- **Observable Implication:** Vietnam – China import trade value positively correlated to the time:treated, which is dummy variable measuring the effect of the Trade War on Vietnam within the difference-in-difference regression model at the tariff level.
2. The diplomatic hypothesis (DH): Vietnam will continue to improve its trade relations with both China and America while remain politically neutral within the U.S. – China conflict.

The economic hypothesis suggests that Vietnam's economy benefited from the Trade War during the 2016 – 2020 period. To empirically verify Vietnam's increased economic welfare, this paper will use quantitative analysis to test if the recent developments in key economic indicators are due to the effect of the Trade War. Since the country did not go through any other drastic political or economic changes, any effects that these quantitative indicators find can be explained by the U.S. – China Trade War.

The diplomatic hypothesis predicts that Vietnam will remain neutral and impartial regarding the tension between the U.S. and China and promote trading relations with these countries. While the economic hypothesis seems to answer the diplomatic hypothesis, it is essential to understand the socioeconomic pressure Vietnam faces in a U.S.-China conflict. Given its geopolitical relationship with China, Vietnam might face challenges in strengthening its relationship with America (Le, 2020). Despite Hanoi's effort to establish a strong trade relationship with Washington, the U.S. has expressed concerns over Vietnam's political ideology and human rights issues (Tran, 2022). These topics suggest that the answer to the diplomatic hypothesis might not be straightforward and deserving examination.

CHAPTER 5: METHODOLOGY

1) Method Overview

To investigate how the U.S. – China Trade War impacted Vietnam's economy and foreign policy during the 2016 – 2020 period, this paper employs quantitative and qualitative data analyses. More specifically, this paper uses the difference-in-difference (DiD)

regression approach to analyze Vietnam's exportation to America and importation from China to determine the causal relationship between the Trade War and Vietnam's trade developments. This paper also uses the traditional qualitative analysis and interview political and economic experts to understand underlying themes within the U.S. – China conflict.

2) Data Collection Plan

a) Quantitative Data Collection

This paper relies on the data from the Observatory of Economic Complexity (OEC) website, an online data visualization platform that publishes international trade data between different countries (OEC, n.d.). Created by the MIT Collective Learning group, OEC combines different datasets from multiple government sources and publishes viewable trade datasets between any two nations. Specifically, I extract Vietnam - U.S. export data and Vietnam - China import data. These datasets include the trade value associated with different Vietnamese industries and products. Since the emphasis would be placed on President Donald Trump's policies and their potential political implications, this thesis only considers the data from 2016 - 2020, before President Joe Biden was in office. Therefore, I only focus on the data available from the beginning of the 2016 fiscal year to the end of the 2020 fiscal year.

Within these datasets, I will categorize individual products into two groups: tariff-affected and non-tariff-affected. To determine what products are tariff-affected, I rely on the Harmonized System (HS) codes provided by the lists of tariffs proposed by President Trump per Section 301 of the Trade Act of 1974 and Section 323 of the Trade Expansion Act of 1962 (Lee & Varas, 2022). Administered by the World Customs Organization, the HS code systematized the export process for countries worldwide (International Trade Administration, n.d.). These tariff-affected products heavily come from the machinery textile, plastics and rubber, footwear and headwear, and metal industries. Non-tariff-affected products are primarily from the agriculture, chemical, and food industries. The Vietnam - U.S. export and Vietnam - China import datasets contain a system of 6-digit HS codes, providing me with enough data to examine what products are tariff-affected. The tariff-affected HS codes are those that begin with "16," which denotes the machinery industry, "11," which denotes the textile

industry, "07," which denotes the plastics and rubber industry, "15," which denotes the metal industry, "12," which denotes the footwear and headwear industry, as well as other HS Codes listed by President Trump's tariff lists. Products that are not tariff-affected will be denoted as non-tariff-affected.

Finally, to visualize Vietnam's recent economic development, I use the data from the General Statistics Office of Vietnam (GSO) for information regarding GDP. This agency works with the Ministry of Planning and Investment of Vietnam to advise the Ministry on social and economic statistics and any statistical state management project (GSO, n.d.).

b) Qualitative Data Collection

Besides conducting quantitative data analysis, I conduct qualitative analysis through six interviews with governmental officials and research experts who can offer insights into the economic and diplomatic impact of the Trade War on Vietnam. These interviewees are based in Vietnam, Singapore, and America and come from various political backgrounds and fields, including the public sector, private sector, and academia.

Relying on the physical locations where these seven interviewees are based, I categorized them into three groups: Vietnam-based, Singapore-based, and America-based. The interviewees were also categorized based on their occupations as an academic source, a research source, or a government source (see the appendix for the complete coding).

Although the questions will be drawn from an interview guide developed beforehand, I plan to keep the discussions as open as possible. Interviewees are welcome to add any relevant information about the research. To ensure anonymity, the research paper only identified the interview participants through their occupations and locations, as these indicators are crucial in understanding the justifications for their answers. I will primarily focus on identifying the difference between their answers and conducting a traditional qualitative analysis of the interviews. Three interviews were conducted on Zoom, recorded, and transcribed for further analysis, which comprised of drawing themes and meaningful quotes. Because of concerns for political sensitivity, the other three interviews were conducted via email, translated, and analyzed.

3) Research Design

a) Quantitative Research Design

After my quantitative data collection, I used the DiD regression approach on both the Vietnam – U.S. export and the Vietnam – China import data. DiD is a statistical technique that determines the causal effect of a specific intervention by using the control group to obtain the counterfactual outcome. This method compares the changes in the treatment group over time to the changes in the control group, thereby removing any biases in the comparison between the control and treatment group post-intervention (Lechner, 2011). In my regression analysis, I created dummy variables for the time period and the treatment group. These variables are the $[time]$ and $[treated]$ variables, with $[time]$ denoting the pre- and post-Trade War period and $[treated]$ denoting the control and treatment group. The $[time:treated]$ is also a dummy variable denoting whether the outcome is in the post-Trade War era and is the treatment group. For this paper, I used the Ordinary Least Squares (OLS) linear regression model, which is the following:

$$\gamma = \beta_0 + \beta_1*[time] + \beta_2*[treated] + \beta_3*[time:treated] + \beta_4*[covariates] + e$$

In the model above, my dependent variable is the trade value of a specific products, and I did not include any other covariates. Hence, I employ the following OLS regression model:

$$trade\ value = \beta_0 + \beta_1*[time] + \beta_2*[treated] + \beta_3*[time:treated]$$

To effectively examine Vietnam's trade value, I conducted DiD at the country and tariff levels. On the country level, I chose comparable countries in terms of total trade value for the control group. Specifically, for the Vietnam-U.S. export data, I chose Japan, India, South Korea, and Germany, all of which contributed a comparable trade percentage to America's GDP, as the members of the control group. Similarly, for the Vietnam-China import data, I chose Japan, Germany, South Korea, and the Netherlands as control group members. Conducted at the country level, DiD reveals the causal effect the Trade War had on Vietnam with other comparable countries as the control group: Is Vietnam's export-import rate statistically significant,

assuming that Vietnam exchanges at the same rate as other countries in the control group?

On the tariff level, I relied on the non-tariff-affected trend as the control group and used it to visualize the counterfactual value of the treatment group. At the tariff level, DiD reveals the causal effect the Trade War had on Vietnam with non-tariff-affected product rate of exchange as the control group: Is Vietnam's export-import rate of tariff-affected products statistically significant assuming that Vietnam exchanges both tariff-affected and non-tariff-affected products at the same rate? Using DiD at these two levels, the quantitative findings revealed the extent of the Trade War's impact on Vietnam's economy.

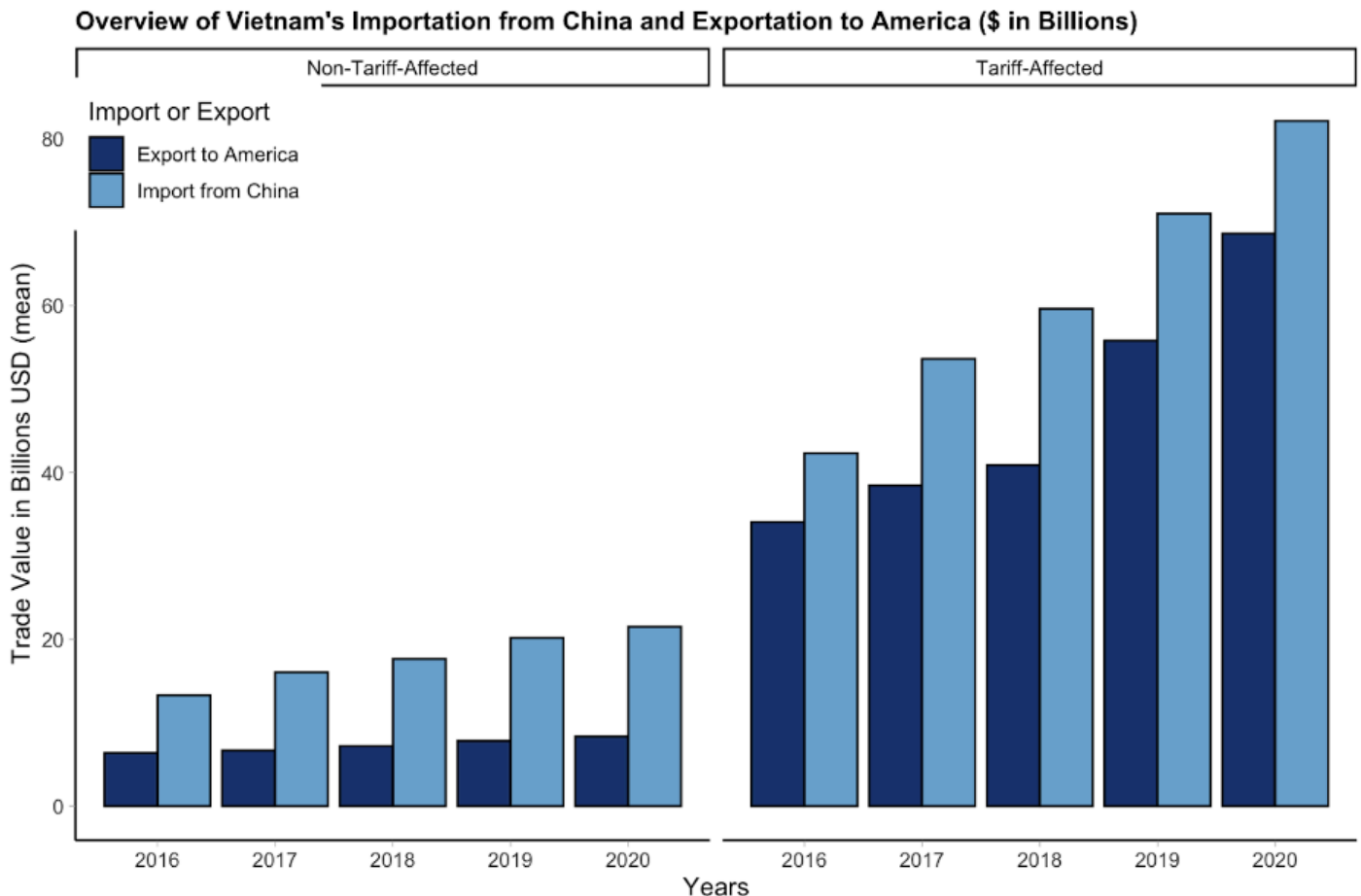
There are three critical assumptions for causal inference: exchangeability, positivity, and Stable Unit Treatment Value Assumption (SUTVA) (Angrist & Pischke, 2013). Moreover, DiD requires the satisfaction of an additional assumption: the parallel assumption. This assumption states that the control group's outcome

reasonably estimates the counterfactual treatment group's outcome. Had the intervention not happened, the difference between the control and treatment groups remained stable over time (Lechner, 2011).

b) Qualitative Research Design

I also plan to examine the information gathered from the experts' interviews to complement the quantitative data. After conducting the interviews, I used traditional qualitative analysis to identify emergent themes. This process included creating a summary template for each interview, integrating each template into a centralized matrix, and using the transcripts, recordings, and answers to pull meaningful quotes from interviewees that spoke particularly well to a given question or theme. I then used the matrix to compare summary notes and began pulling out underlying themes, ideas, concerns, experiences, and more. I will compare the answers the participants gave to the findings in the literature review. If these findings differ from the experts' testimonies, I will attempt to

Figure 1



explain why.

CHAPTER 6: RESULTS

1) Method Overview

After cleaning the data and determining whether a specific product is tariff-affected, I conduct a preliminary data visualization on the Vietnam-U.S. export dataset and the Vietnam-China import dataset. The following figure presents some interesting observations.

As shown in Figure 1, Vietnam increasingly exported more goods to America and imported more from China. These increases happened for tariff-affected and non-tariff-affect products, and we can see that Vietnam is importing more goods from China than exporting goods to the U.S. market. However, it is essential to note that the gap between Vietnam’s import value from China and export value from the U.S. has

been increasingly narrowed with regard to tariff-affected products.

We can also see that Vietnam’s GDP continues to rise following the Trade War. From having a GDP of \$257.1 billion in 2016, Vietnam has seen a considerable GDP increase in 2020 with \$343.24 billion. Figure 2 below displays the GDP trend of the country during the 2016 – 2020 period.

Together, these figures present a preliminary outlook of Vietnam’s economy during the 2016 – 2020 period. As expected, Vietnam has a positive outlook following the Trade War. However, to determine the causal effect of the Trade War, I conducted DiD on the country and tariff levels.

2) Quantitative Findings

a) Discussion of Methodology

Before examining the OLS regression model, it is crucial to visualize DiD for both the Vietnam-U.S. export and the Vietnam-China import datasets. The

Figure 2

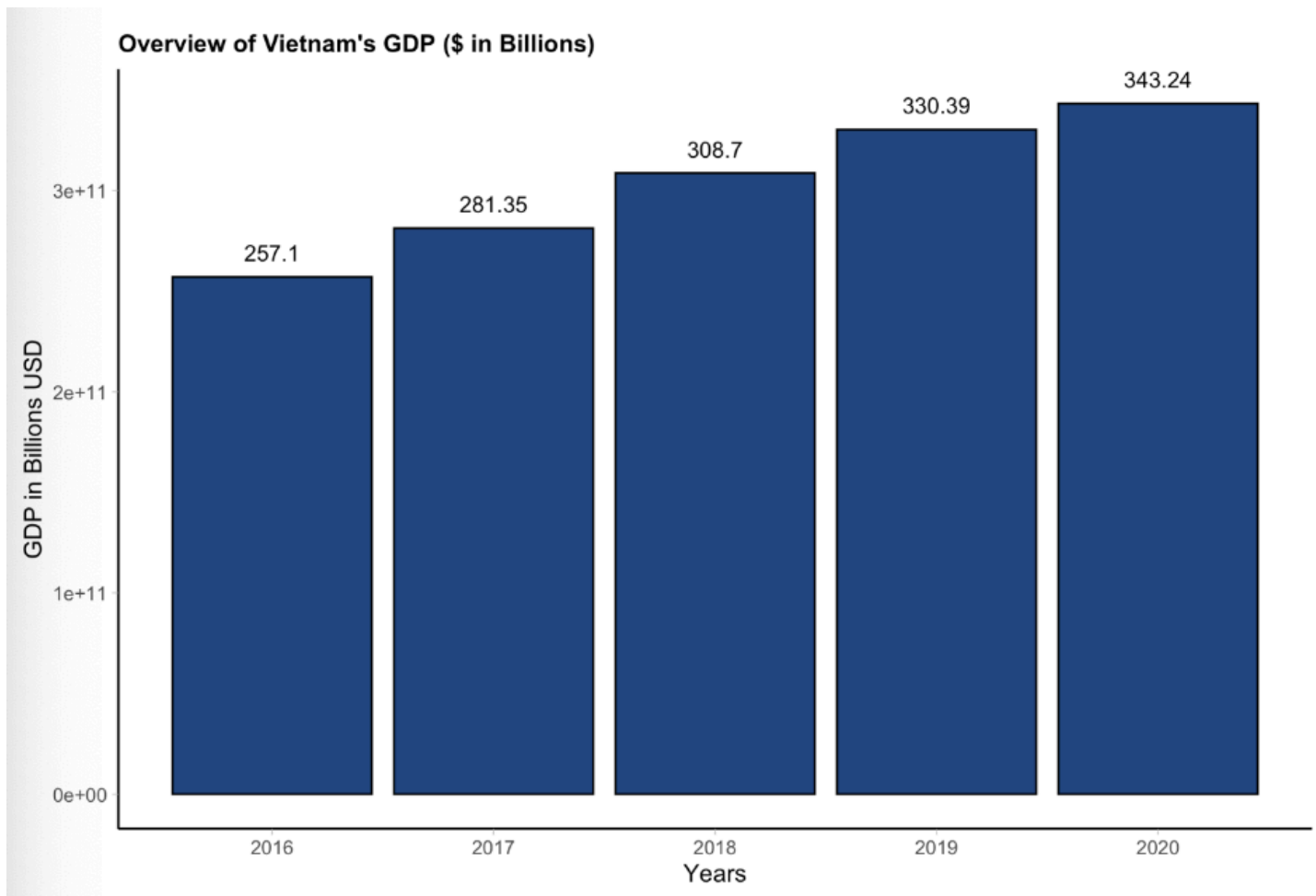


Figure 3

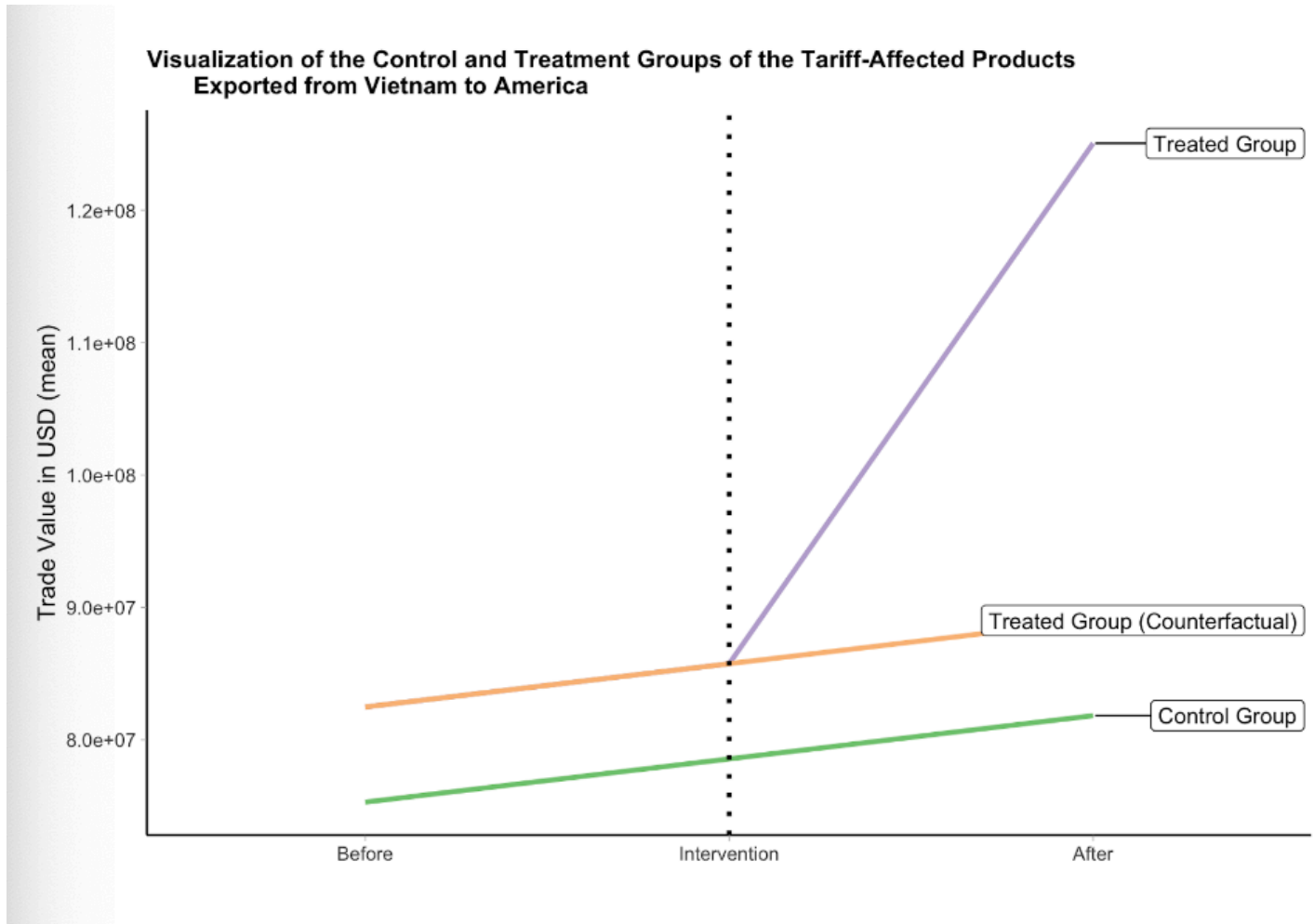


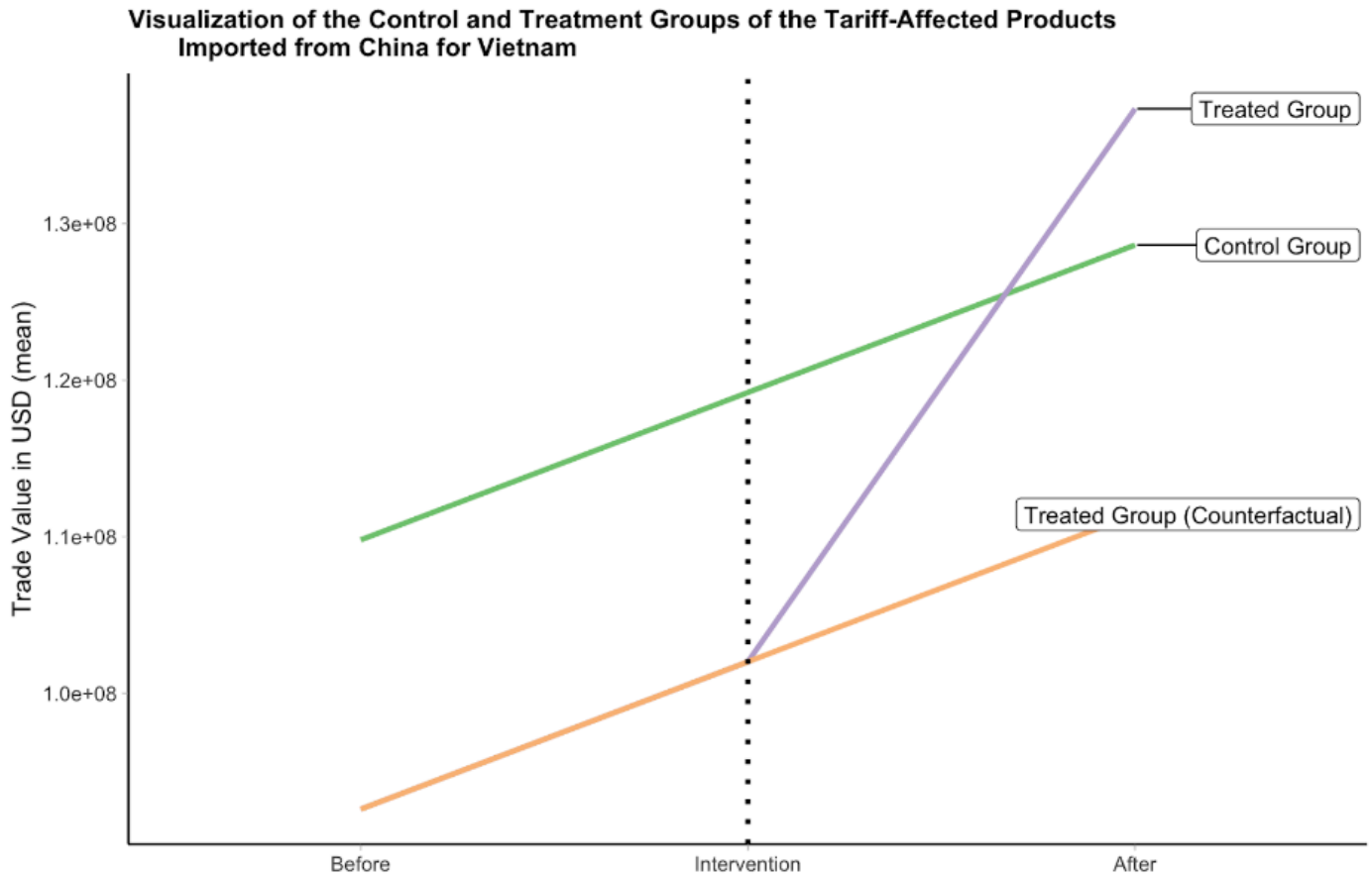
figure below compares Vietnam-U.S. export value with that of Japan, South Korea, India, and Germany. I also presented the counterfactual trends for Vietnam, meaning the exporting trends for Vietnam had the Trade War not happened. Here, I only discuss the DiD graph of the tariff-exported products to illustrate the method effectively and concisely. Regarding the non-tariff-products, the procedure is the same.

In the pre-Trade War era, I assumed that the treatment and control groups exported at the same rate. It is crucial to note that the treatment group exported more than the control group. However, after the intervention, when the Trade War took effect, the

treatment group exported at a higher rate while the control group continued to produce at the old rate. I also presented the counterfactual treatment group, which assumes that the treatment group would have produced at the same rate as the control group exported had the Trade War did not happen. Thus, DiD allows for calculating the causal effect by comparing the treatment group to the control group.

Similarly, the figure below compares Vietnam-China import value with that of the Netherlands, South Korea, India, and Germany. The figure displays the tariff-affected products. Regarding the non-tariff-products, the procedure is the same.

Figure 4



I employed the same DiD technique and calculated the causal effect of the Trade War by comparing the treatment group to the control group. Thus, these figures help visualize how to apply DiD in both datasets. I will apply the technique on two levels: the country level and the tariff level.

b) Country-level Findings

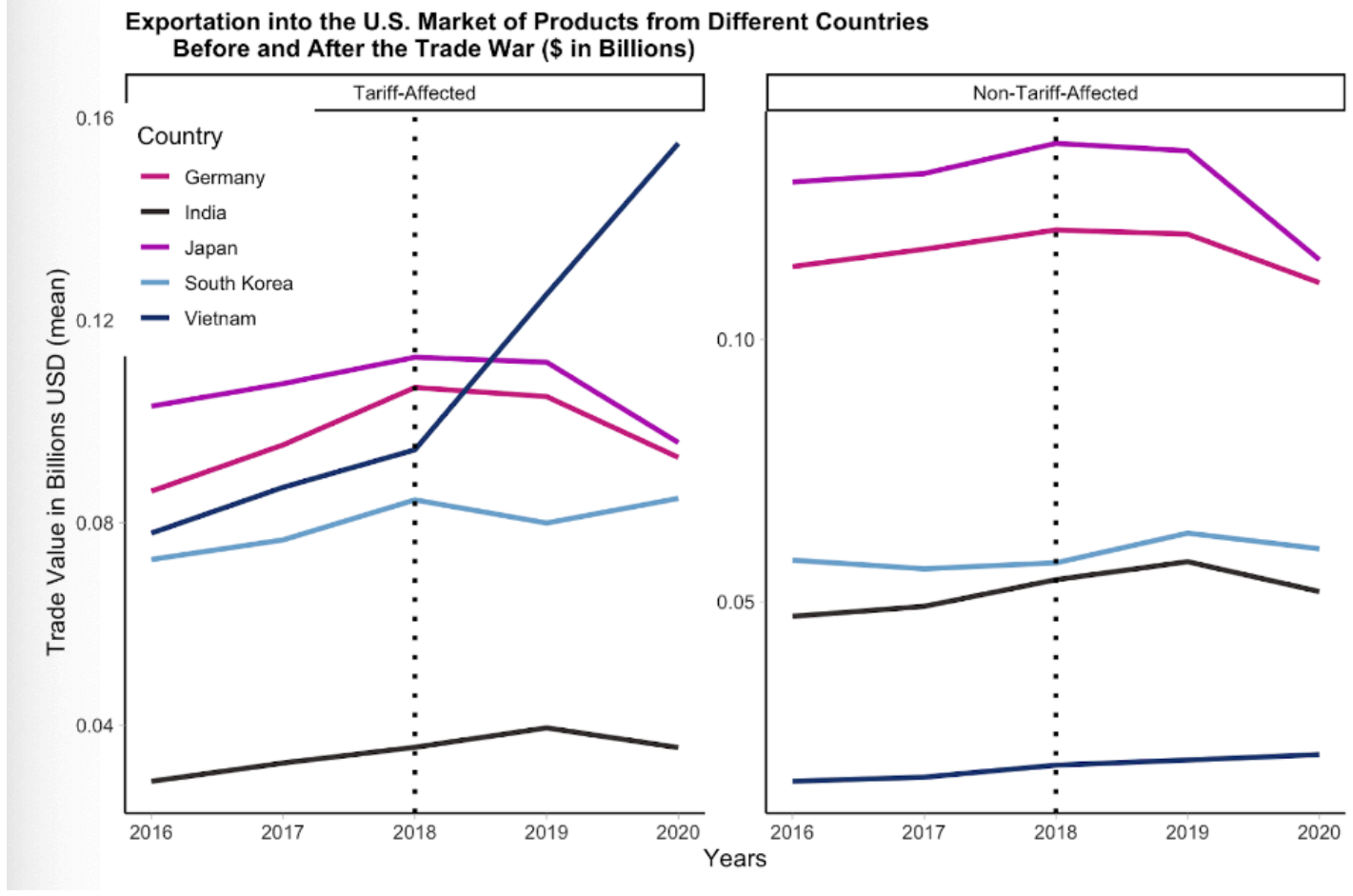
i. Vietnam-U.S. export data

I first measured Vietnam’s export value to that of other comparable countries to determine whether, at the country level, the Trade War had a causal effect on Vietnam’s exportation to America. Overall, regarding exporting tariff-affected products to the American market, Vietnam experienced a similar upward parallel trend to Japan’s, South Korea’s, India’s, and Germany’s during the 2016 – 2018 period. After 2018, while the trends for Japan, South Korea, India, and Germany

fluctuated, Vietnam’s trend saw a sharp increase. This parallel trend between the countries is the empirical evidence I needed to suggest that applying DiD would yield a meaningful result.

Regarding the non-tariff-affected products, Vietnam saw some similarities with the control countries during the pre-Trade War era. The exporting economic trends for these countries mostly stayed flat from 2016 – 2020, with some decrease in exporting to the American market from India and Germany. Vietnam sees a slight increase in exporting non-tariff-affected products. The figure below displays the trend of both tariff-affected and non-tariff-affected products that Vietnam exported to America during the 2016 – 2020 period. Again, here, the pre-Trade War trends of these countries suggested that the DiD method would produce a meaningful result.

Figure 5



Hence, these two graphs satisfied the parallel trend assumption. In choosing Germany, India, Japan, and South Korea, I assumed that these countries would provide a good counterfactual for Vietnam’s exportation to America. I then used DiD to evaluate whether the

increase in the exportation from the treatment group was statistically significant for both the tariff-affected and the non-tariff-affected products. The following table summarizes the results of the regression models.

Table 1

Exportation from Vietnam to the American Market

Dependent variable:

	trade_value	
	Tariff-Affected Model (1)	Non-Tariff-Affected Model (2)
time	6,535,804.000 p = 0.344	2,466,787.000 p = 0.893
treated	7,187,044.000 p = 0.571	-71,862,760.000 p = 0.052*
time:treated	36,032,098.000 p = 0.028**	1,234,041.000 p = 0.980
Constant	75,296,458.000 p = 0.000***	87,988,951.000 p = 0.000***
Observations	12,365	13,751
R ²	0.002	0.001
Adjusted R ²	0.002	0.0004
Residual Std. Error	340,829,362.000 (df = 12361)	970,204,506.000 (df = 13747)
F Statistic	7.361*** (df = 3; 12361)	3.055** (df = 3; 13747)

Note: *p<0.1; **p<0.05; ***p<0.01

Here, I used the following models:

Tariff-Affected Model:

$$trade\ value = 75,296,458 + 6,535,804*[time] + 7,187,044*[treated] + 36,032,098*[time:treated]$$

Non-Tariff-Affected Model:

$$trade\ value = 87,988,951 + 2,466,787*[time] - 71,862,760*[treated] + 1,234,041*[time:treated]$$

The trade value of the tariff-affected model increases by 6,535,804 for each additional unit of [time] and 7,187,044 for each additional unit of [treated]. Similarly, the trade value of the non-tariff-affected model increases by 2,466,787 for each additional unit of [time] and decreases by 71,862,760 for each additional unit of [treated].

As we can see, for the tariff-affected-model, we have p=0.028**, while for the non-tariff-affected model, we have p=0.98. Thus, we can conclude that the tariff-affected-model has a statistically significant result, while the non-tariff-affected model does not.

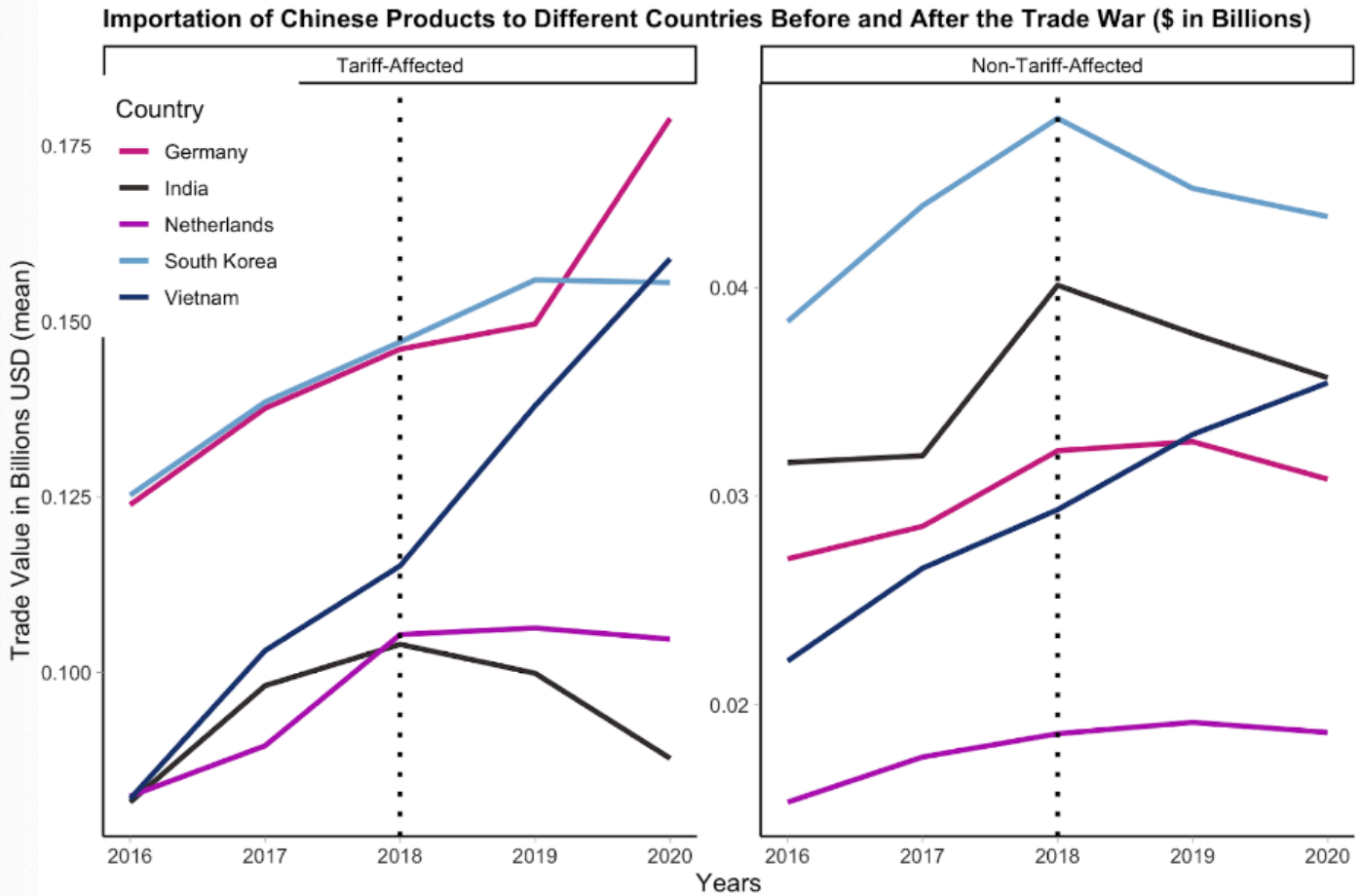
The regression method included 12,365 and 13,751 observations for the tariff-affected and non-tariff-affected models, respectively.

Based on the results of DiD, I concluded that, at the country level, the U.S. – China Trade War had a statistically significant effect on the increase in exportation of Vietnamese tariff-affected products to the American market. However, based on the non-tariff-affected model, I cannot whether the U.S. – China Trade War had a statistically significant effect on the increase in exportation of Vietnamese non-tariff-affected products to the American market at the country level.

ii. Vietnam-China import data

Like the method employed in the last section, I compare Vietnam’s import value to that of other comparable countries to determine whether, at the country level, the Trade War had a causal effect on Vietnam’s importation from China. The following figure displays the trends of Vietnam and other countries when importing tariff-affected and non-tariff-affected products from China.

Figure 6



In importing Chinese tariff-affected products, Vietnam experienced a similar upward parallel trend to Netherlands’, South Korea’s, India’s, and Germany’s during the 2016 – 2018 period. After 2018, the trends for the Netherlands, South Korea, India, and Germany fluctuated, with only Germany seeing an increase in importation from Chinese firms, while Vietnam’s trend saw a sharp increase. Interestingly, in importing non-tariff-affected products, unlike America, Vietnam also saw a somewhat upward trend, parallel to Netherlands’, South Korea’s, India’s, and Germany’s during the

2016 – 2018 period. The importing economic trends for these countries fluctuated from 2016 – 2020. Thus, these pre-Trade War parallel trends suggested it is appropriate to apply DiD, and the regression models would produce meaningful results.

When conducting DiD on the tariff-affected and non-tariff-affected models for the Vietnam-China import data, I could not discover a similar causal effect that the Trade War had on Vietnam’s exportation to America. The table below displays the regression results.

Table 2

Exportation from China to the Vietnamese Market

	<i>Dependent variable:</i>	
	trade_value	
	Tariff-Affected Model (1)	Non-Tariff-Affected Model (2)
time	18,837,274.000 p = 0.091*	4,170,122.000 p = 0.029**
treated	-17,205,150.000 p = 0.372	-5,191,923.000 p = 0.114
time:treated	25,911,493.000 p = 0.298	4,097,401.000 p = 0.334
Constant	109,797,500.000 p = 0.000***	29,515,882.000 p = 0.000***
Observations	12,956	14,982
R ²	0.001	0.001
Adjusted R ²	0.0003	0.001
Residual Std. Error	554,723,310.000 (df = 12952)	101,879,211.000 (df = 14978)
F Statistic	2.310* (df = 3; 12952)	3.770** (df = 3; 14978)

Note: *p<0.1; **p<0.05; ***p<0.01

In this dataset, I used the following regression equations:

Tariff-Affected Model:

$$trade\ value = 109,797,500 + 18,837,274*[time] - 17,205,150*[treated] + 25,911,493*[time:treated]$$

Non-Tariff-Affected Model:

$$trade\ value = 29,515,882 + 4,170,122*[time] - 5,191,923*[treated] + 4,097,401*[time:treated]$$

Here, the trade value of the tariff-affected model increases by 18,837,274 for each additional unit of time and decreases by 17,205,150 for each additional unit of treated. Similarly, the trade value of the non-tariff-affected model increases by 4,170,122 for each additional unit of time and decreases by 5,191,923 for each additional unit of treated.

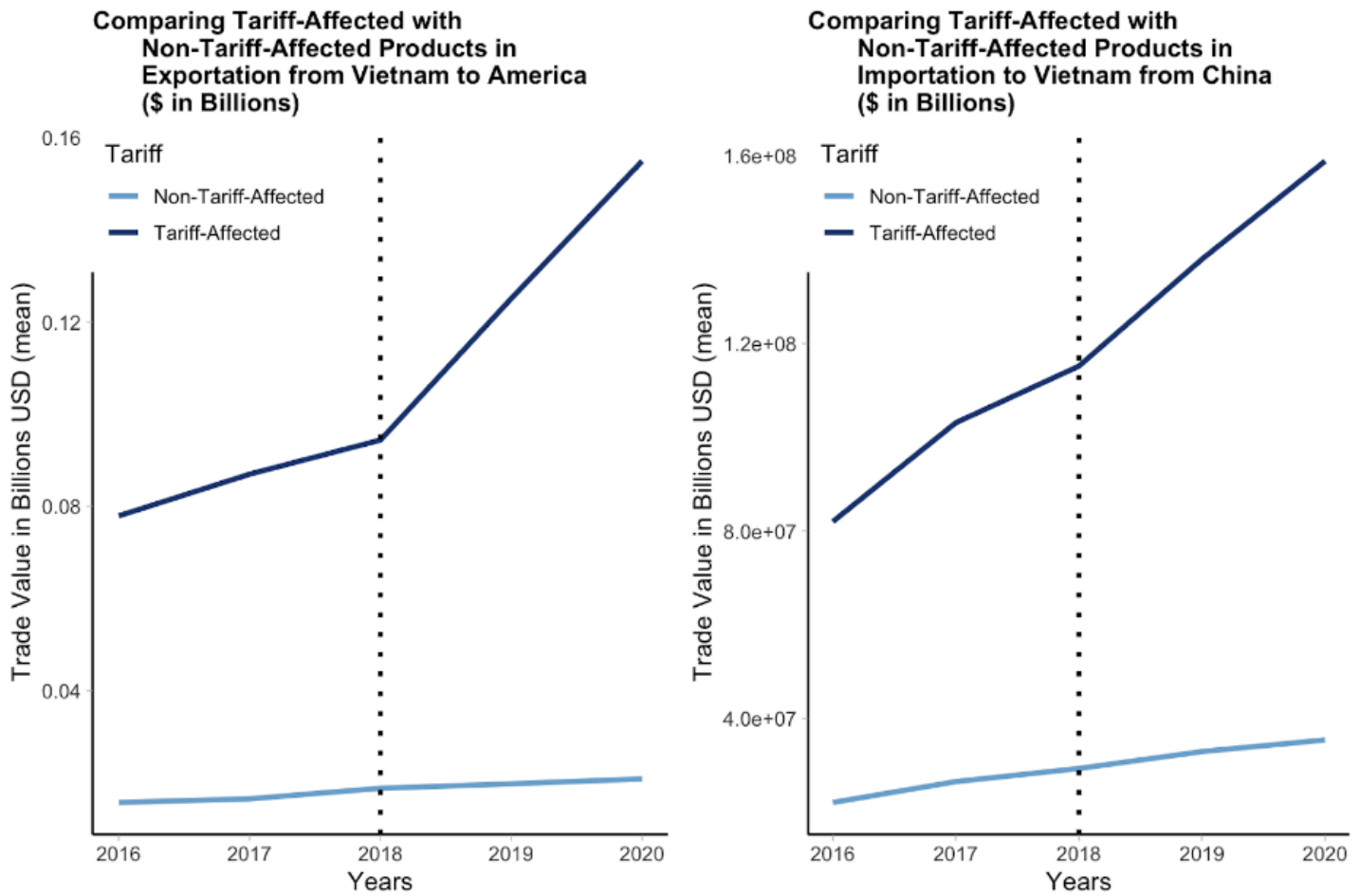
We see that the p-value for both models indicate that there are no statistically significant results. The regression method included 12,965 and 14,982 observations for the tariff-affected and non-tariff-affected models, respectively.

Based on the results of DiD, I cannot confirm whether, at the country level, the U.S. – China Trade War had a statistically significant effect on the increase in importation from both the Chinese tariff-affected industries and Chinese non-tariff-affected industries to the Vietnamese market.

c) Tariff-level Findings

After presenting results on the country level, I proceeded to the tariff level. Overall, Vietnam has been importing from China and exporting to America more tariff-affected products than non-tariff-affected products. The figure below showcases the export-import trend.

Figure 7



A crucial assumption in Figure 7 is that the non-tariff-affected trend will provide a good estimate for the tariff-affected trend. Thus, while the model did not indicate a pre-Trade War parallel trend for the tariff-affected and non-tariff-affected trade, I will

assume that the latter produces a good counterfactual for the former. I will assume the tariff-affected and non-tariff-affected trends are satisfied in both datasets. Thus, I conduct the DiD approach. The table below summarizes the results.

Table 3

Differences-in-Difference for tariff-affected and non-tariff-affected products on two models

	<i>Dependent variable:</i>	
	trade_value	
	U.S. Model (1)	China Model (2)
time	3,700,828.000 p = 0.843	8,267,523.000 p = 0.507
treated	66,357,311.000 p = 0.001***	68,268,391.000 p = 0.00001***
time:treated	38,867,074.000 p = 0.130	36,481,244.000 p = 0.047**
Constant	16,126,191.000 p = 0.260	24,323,959.000 p = 0.012**
Observations	4,188	5,612
R ²	0.013	0.020
Adjusted R ²	0.013	0.019
Residual Std. Error	406,629,909.000 (df = 4184)	335,025,021.000 (df = 5608)
F Statistic	18.891*** (df = 3; 4184)	37.470*** (df = 3; 5608)
<i>Note:</i>	* p<0.1; ** p<0.05; *** p<0.01	

The following models are being used:

U.S. Model:

$$trade\ value = 16,126,191 + 3,700,828*[time] + 66,357,311*[treated] + 38,867,074*[time:treated]$$

China Model:

$$trade\ value = 24,323,959 + 8,267,523*[time] + 68,268,391*[treated] + 36,481,244*[time:treated]$$

Here, the trade value of the U.S. model increases by 3,700,828 for each additional unit of time and 66,357,311 for each additional unit of treated. Similarly, the trade value of the non-tariff-affected model increases by 8,267,523 for each additional unit of time and 68,268,391 for each additional unit of treated.

We see that the p-value for the U.S. model is p=0.13 while the p-value for the China model is p=0.012**. Thus, the China model indicates there exists a causal effect while the U.S. model does not. The regression method included 4,188 and 5,612 observations for the U.S. and China models, respectively.

Based on the results of DiD, I concluded, at the tariff level, the Trade War caused Vietnam to import more tariff-affected products from China but did not have the same causal effect for Vietnam’s exportation of tariff-affected products to America.

3) Qualitative Findings

a) Result Summary

Focusing on the impacts of the Trade War on the Vietnam – U.S. and Vietnam - China relationships, I identified several underlying themes regarding the

benefits, obstacles, and predictions. I characterized the answers into four sections that illustrate the common ideas across the interviews. The following sections will contain a table of notable quotes highlighting each section's theme.

b) Theme 1: Vietnam's recent economic growth

The first theme the interviewees discussed is an acknowledgment of the Trade War's positive impact on Vietnam's economy. Throughout the interviews, participants often emphasized the economic growth in export rate and GDP that Vietnam saw during the Trade War period. Interestingly, participants who are government official sources regularly offered concrete data to back up their claims. While they did not offer any specific data justification, research and academic sources often pointed to the reconfiguration of the global supply chain as a reason for Vietnam's development. Below are some comments that these experts had on Vietnam's economic growth.

“Vietnam's economy achieved a high growth rate in 2019 (7.2%) and positive growth in 2020 (2.9%) and 2021 (2.56%), thanks to FDI (capital) registered USD 38.9 billion in 2021, up 25.2% over the same period) and exports increased (in 2021 exports increased by 19.5% over the same period). The increase in FDI and exports is caused by the shift of investment from China to Vietnam due to the U.S. – China Trade War.”

– Vietnam-based Government Official Source 2.¹

“The global supply chain will reconfigure, which will lead the economies of the two countries [the U.S. and China] to gradually adapt. The U.S. - China Trade War deficit will gradually decrease but will shift to intermediate countries, such as Vietnam.

For example, the U.S. trade deficit will increase with China's neighbors such as ASEAN and especially Vietnam. With an important geopolitical position, according to many assessments, Vietnam will be the biggest beneficiary of the U.S. - China Trade War.”

– Vietnam-based Academic Source 1.

As seen in these quotes, these sources suggested a correlated relationship between the U.S. – China Trade War and Vietnam's economic development. These answers were further confirmed by the literature review and elaborated by the quantitative results. As discussed in the quantitative section, the Trade War had a partial, not complete, effect on Vietnam's export-import rate.

Interestingly, the interviewees differed from the literature review in addressing whether the Trade War has been the sole cause of the economic growth Vietnam experienced. Government official and research sources often discussed the China Plus One Strategy that both the Vietnamese government and foreign investors are embracing, suggesting that some of Vietnam's recent economic beneficiaries might have been the results of Vietnam's past policies and commitment to attracting foreign investors.

“However, these [economic growth during the Trade War] followed the trend that Vietnam had sustained in the years before. Investors had adopted Thailand+1 and China+1 strategy for almost a decade. Therefore, this improvement could hardly be attributed to the US-China trade war alone, as there were other factors affecting Vietnam's economic performance in 2018-2019.”

– Vietnam-based Government Official Source 1.²

¹ Original quote: “Kinh tế Việt Nam đạt tốc độ tăng trưởng cao trong năm 2019 (7,2%) và tăng trưởng dương trong năm 2020 (2,9%) và 2021 (2,56%), nhờ vào nguồn vốn đầu tư FDI (vốn đăng ký năm 2021 38,9 tỷ USD, tăng 25,2% so với cùng kỳ) và xuất khẩu tăng (năm 2021 xuất khẩu tăng 19,5% so với cùng kỳ). Sự gia tăng vốn đầu tư FDI và xuất khẩu có nguyên nhân đến từ sự dịch chuyển đầu tư từ Trung Quốc sang Việt Nam do chiến tranh thương mại Hoa Kỳ - Trung Quốc.”

² Original quote: “Chuỗi cung ứng toàn cầu được cấu hình lại, dẫn đến nền kinh tế 2 nước dần thích nghi. Thâm hụt thương mại Mỹ-Trung giảm dần nhưng lại chuyển sang các nước trung gian. Chẳng hạn thâm hụt Mỹ tăng lên với các nước láng giềng Trung Quốc như ASEAN và nhất là Việt Nam. Với vị trí địa chính trị quan trọng, theo nhiều đánh giá Việt Nam sẽ là kẻ hưởng lợi lớn nhất trong thương chiến Mỹ-Trung.”

“So, Vietnam is a very convenient, or among the best, choice for Chinese companies to set up their manufacturing facilities in the country and to export their products to the US from Vietnam, to go around the tariff barrier. So, I think one of the main impacts [of the Trade War on Vietnam] is Vietnam’s ability to attract more investment from both Chinese companies and from other international companies who have already invested in China, but now they want to diversify away from China to go around the barriers as well.”

– Singapore-based Research Source 1.

These answers gave a more nuanced picture of Vietnam’s economy. While research sources did not specify whether the recent economic diversifying trends that Vietnam has seen were due to the Trade War, government official sources claimed that the Trade War sustained, but not initiated, these trends. As the quantitative results have shown, this paper could not confirm whether the Trade War had a causal effect on Vietnam’s export of tariff-affected products to America at the tariff level. While the positive impact of the Trade War on Vietnam’s economy is indisputable, it is less clear whether Vietnam’s economic growth during the 2018 - 2019 period can be solely attributed to the Trade War. With the global supply chain shifting, Vietnam may have seen increased exports to America and imports from China before the Trade War.

c) Theme 2: Vietnam-U.S. trade relationship and ideological differences

The second common theme across the interviews is the improved relationship between the American government and Vietnam. Government official sources tended to be more conservative in their answers, confirming that both the U.S. and Vietnam actively seek to strengthen their relationship. Below are the comments coming from government official sources.

“Vietnam and the United States have become comprehensive partners since 2014. The United States have always supported Vietnam’s socio-economic development, prosperity, and responsible membership of international organizations.”

– Vietnam-based Government Official Source 2.³

These interview sources often differed in whether America has been posing too many constraints on Vietnam’s economy. Notably, while one source praised Hanoi’s and Washington’s willingness to settle their differences, another criticized the U.S. for using economic tools to enforce American ideology.

“When the U.S. concluded that Vietnam was a currency manipulator, Vietnam persisted in dialogue and resolved America’s concerns about the currency and exchange rate issues. The U.S. Department of Finance has concluded that Vietnam is not a currency manipulator and put Vietnam on a monitoring list.”

– Vietnam-based Government Official Source 2.⁴

“However, during the Trade War time, the Trump Administration tends to use a stick-and-carrot approach in promoting trade relations with Vietnam. On the one hand, it provided more technical assistance to Vietnam’s reform of economic governance, customs, etc. On the other hand, it sent out different requests for trade-related policies in Vietnam, such as the reduction of MFN tariff rates on US agricultural products to the levels applied for CPTPP partners, relaxation of regulations under Cybersecurity Law related to cross-border data flows, relaxation of regulations against foreign ownership limits in different sectors, etc.”

– Vietnam-based Government Official Source 1.

³ Original quote: “Việt Nam và Hoa Kỳ trở thành đối tác toàn diện từ năm 2014. Hoa Kỳ luôn ủng hộ Việt Nam phát triển kinh tế xã hội, thịnh vượng, trở thành thành viên có trách nhiệm của các tổ chức quốc tế.”

⁴ Original quote: “Khi Hoa Kỳ kết luận Việt Nam thao túng tỉền tệ, Việt Nam đã kiên trì đối thoại và giải quyết các quan ngại của Hoa Kỳ về vấn đề tỉền tệ tỷ giá. Bộ Tài chính Hoa Kỳ đã kết luận Việt Nam không thao túng tỉền tệ và đưa Việt Nam vào danh sách giám sát.”

In 2019, President Trump accused Vietnam of being a “trade abuser” and a currency manipulator (Hui, 2019). While both countries have resolved their misunderstandings, the issue highlights some obstacles within the trade relationship between Hanoi and Washington. Offering his insights on the issue, a research source mentioned the presidential rhetoric affecting the trade relationship between the U.S. and Vietnam.

“So, my general understanding of this issue [Trump’s accusation of Vietnam being a currency manipulator] because this, mostly because of the Trump administration and his protectionist tendency, and I guess he looked at the surplus, the trade surplus between Vietnam and the United States and he thought that Vietnam was doing something, maybe that Vietnam was manipulating his currency. So, he labeled Vietnam as a trade abuser. And even worse than China. So, I actually that was partially due to the Trade War because I do think that the trade surplus was linked to the Trade War in a way that I guess Vietnam’s exports to the U.S. had been increasing up to that point.”

– Singapore-based Research Source 2.

This testimony illustrates some challenges for both Vietnam and the U.S. to overcome. With Vietnam poised to replace China as a manufacturing hub, the American government’s view on the trade surplus would determine how many products Vietnam can export. When asked to clarify, the source pointed to President Trump’s protectionist ideology as a possible contributor.

“I do think that is, is due to the Trump’s administration.

Well, there’s still some disagreements in general between Vietnam and the United States when it comes to trade, and I think any president would think that just surplus is an issue. But I guess for Trump is a very big issue because his rhetoric is about, you know, America first and he looks at that kind of issue and thought that you know, America is a disadvantage, and other countries are engaging in unfair trade.”

– Singapore-based Research Source 2.

Together, these answers portrayed a complex relationship between Vietnam and America. Especially, the testimonies added to the literature review by suggesting that Vietnam’s economy in general, and its trade relations in specific, can be influenced by the rhetoric of an American administration. While Vietnam has enjoyed the economic benefits of the Trade War, its relationship with Washington can be tested by the American government using economic tools, forcing Vietnam to conform to the U.S. agenda.

d) Theme 3: Vietnam-China trade relationship and illegal tariff-dodging transshipment

The third theme experts mentioned was the trade relationship between Vietnam and China. Due to the contested relationship between Hanoi and Beijing and the political sensitivity of this topic, government official sources often discussed China in favorable terms. Emphasizing the collaborative nature of their relationship, these government official sources talked about the cultural, historical, economic, and ideological similarities between China and Vietnam. Below are some of the quotes that spoke to the Vietnam-China relationship.

“China advocated various economic cooperation

⁵ Original quote: “Về chính trị, quan hệ giữa hai đảng, hai nhà nước và nhân dân Trung Quốc và Việt Nam, luôn càng mật thiết, cả trong hệ tư tưởng và các hoạt động. Hai nước có chung biên giới trên bộ và trên biển, hai nước có chung thể chế chính trị và có quá trình gắn bó tương tác sâu sắc về văn hóa và lịch sử, là cơ sở để nhiều hoạt động kinh tế giữa hai bên đã diễn ra.”

framework involving Vietnam. these include the Regional Comprehensive Economic Partnership, ASEAN-Hong Kong FTA, etc.”

– Vietnam-based Government Official Source 1.

“Politically, the relationship between the two parties, the two states and the people of China and Vietnam has always been more and more intimate, both in ideology and activities. The two countries share a land and sea border; the two countries share the same political system and have a long history of deep cultural and historical interaction, which is the basis for many economic activities between the two sides to take place.”

– Vietnam-based Government Official Source 2.⁵

The interview participants differed on whether or not the illegal tariff-dodging transshipment took place in Vietnam. One government source denied such a practice ever taking place, while the other did not address the question. The unwillingness to address the problem of illegal tariff-dodging transshipment of these sources signifies the government's hesitance to engage with the issue.

“Despite asserted claims, there has been no concrete evidence of tariff-dodging. The cases of fabricating product origins (i.e. rebranding Made in China products as Made in Vietnam products) were only found to work in the domestic market, such as Khai Silk selling those products in Vietnam only. There has been no concrete reported case of products imported from China, rebranded as Made-in-Vietnam for the purpose of tariff dodging.”

– Vietnam-based Government Official Source 1.

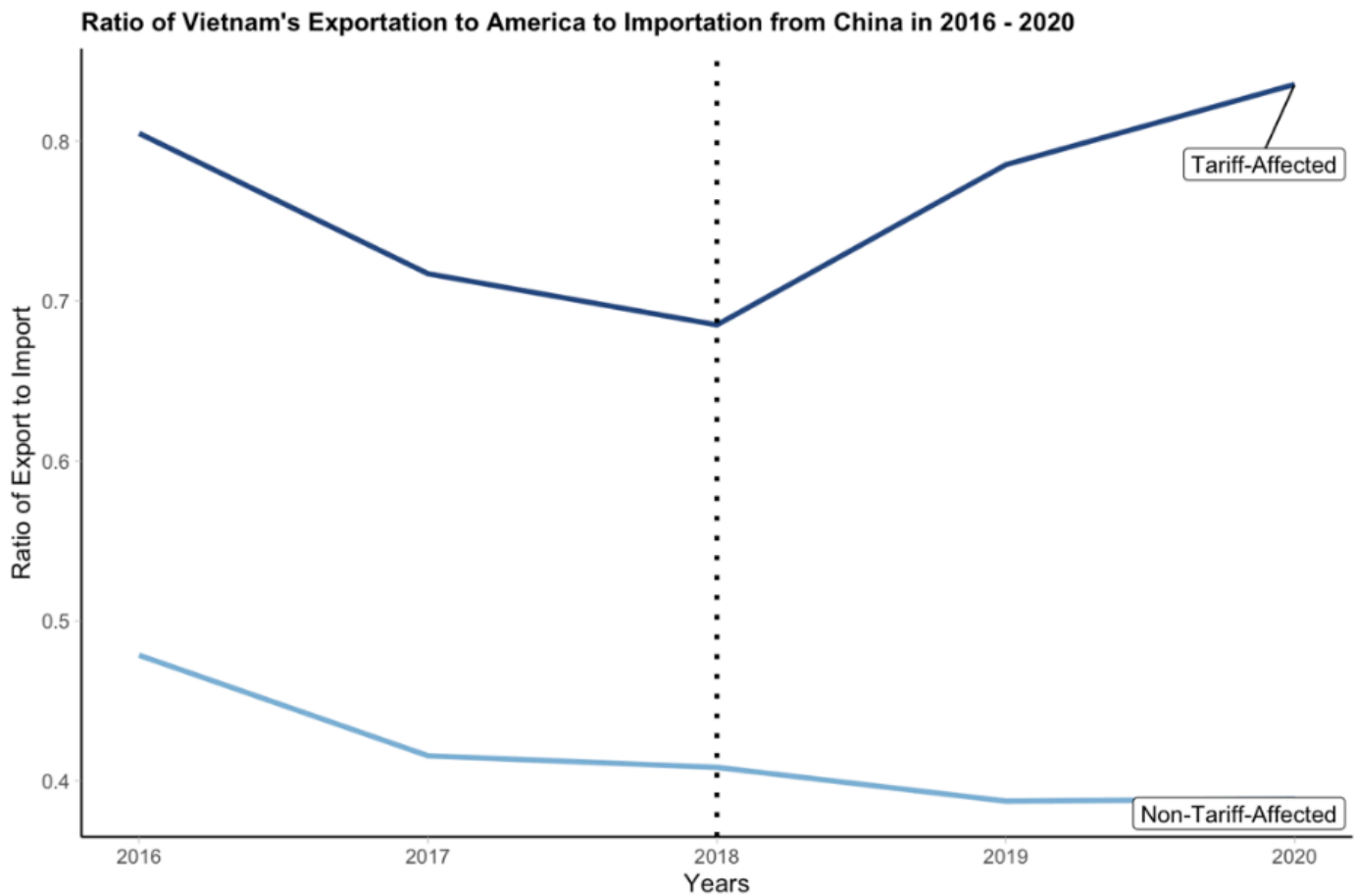
Research sources acknowledged the existence of illegal tariff-dodging transshipment in Vietnam. One source talked about how the Chinese government sees this practice as positive and even views Vietnam as a partner in helping Chinese firms “dodge” the U.S. tariff barrier. Thus, according to this source, Vietnam can enhance its relationship with China by letting this practice continue. While the Vietnamese government has continuously worked with the U.S. to identify illegal, it is hard to identify all ongoing cases with limited resources (Reuters Staff, 2019).

“So, I think the Chinese government is aware of this, but I don't think they have any objection to this practice because in the end, Chinese companies may still benefit from this, you know, they can continue their production and then continue their exports to the U.S. even though they have to go through Vietnam. So basically, it's still better for them than either to stop their business or to face declining revenues in the U.S. market. So, I think in that way, in that respect, Vietnam is kind of like a partner for China to go around the tariff barriers imposed by the US. So, I think from the perspective of the Chinese government, they are okay with that. And I think they may even appreciate the role of Vietnam in helping China to go around the tariff barriers.”

– Singapore-based Research Source 1.

While the data did not reveal any degree of illegal tariff-dodging transshipment, it is important to note that Vietnam's tariff-affected product ratio of export to America to import from China has increased following the Trade War. Below is a figure outlining the export to America – import from China ratio.

Figure 8



Before the Trade War had taken place, the export to America – import from China ratio gradually declined, with Vietnam imported more Chinese tariff-affect products than exported to those to America. However, while that trend continues for the non-tariff-affected products, Vietnam saw an uptick in the tariff-affected ratio.

Another source highlights the potential for a strained Vietnam-U.S. relationship and Vietnam’s dependence on China’s economy. This source discussed the possibility of Vietnam having to choose a side within the Trade War and that China could influence Vietnam’s economy through economic means. Below are some of his quotes concerning the potential challenges within the Vietnam-China trade relationship.

“Vietnam can become a transit for Chinese goods, to be shipped to the U.S. as a means for China to

circumvent U.S. tariffs. And I think that it has the potential to lead to tension between Vietnam and the United States.”

– Singapore-based Research Source 2.

“The second one is that when China boosts its exports to Vietnam, they will result in an increase in Vietnam trade deficit with China, or in other words, you will see more dependence, Vietnam’s dependence on China will increase. And, in a way, this makes Vietnam more vulnerable to Chinese economic coercion, and China has used economic coercion coalition against several countries that refuse to accommodate China.”

– Singapore-based Research Source 2.

These answers complemented the literature review by presenting some obstacles to a strong Vietnam-China relationship. For Vietnam to enhance

its trade relationship with China, it must navigate the U.S. – China conflict and beware of Chinese influences within the Vietnamese economy. Moreover, illegal tariff-dodging transshipment can also add to the quantitative result of this paper. Although the paper confirmed a causal effect of the Trade War on Vietnam's export to America at the country level, there might be cases of tariff-dodging within the exportation.

e) Theme 4: Vietnam's future foreign policies and its political neutrality

The final theme that the interview participants mentioned was Vietnam's diplomatic strategy for the U.S. – China conflict. As the Trade War has gradually become a "Cold War" between America and China, it is important to understand Vietnam's role within this contested struggle for power (Huang, 2021).

"No country is closer to China than Vietnam. I don't mean geography, I mean political system, you know, one party system, the use of state capitalism, censoring media and critics, and at the same time, you know, strong GDP, strong export economy, so forth and so forth. And so, and so, in that sense, you know, they're similar and, and obviously, they have a sort of same post-communist experience. And at the same time, you know, Vietnam has really good relationship with the U.S. I'm sure you know that you can look at all the indicators, even things like, you know, Vietnam is ranked sixth in terms of sending students to United States. And that wouldn't be possible if the two didn't have a good relationship."

– America-based Academic Source 2.

Experts acknowledged that Vietnam has maintained a good relationship with both superpowers thus far. The quote above outlined the background in Vietnam's relationship with China and America. For Vietnam, the strategy forward is to maintain its neutrality while promoting the country's economic interests. According to the experts, given the sharp

increase in exporting goods to the U.S. and importing goods from China, Vietnam will promote policies that maintain the current trend. Sources agreed that Vietnam needs to walk a tightrope between two superpowers, at least for the foreseeable future. Below are some of the quotes discussing Vietnam's diplomatic strategy.

"Vietnam has no other choice in the all-out war between the U.S. and China but to strengthen its own internal strength, especially in economic terms while gradually increasing its defense power. At the same time, Vietnam should strengthen the promotion of soft power in culture, history, diplomacy, and economy with all countries in the world."

– Vietnam-based Academic Source 1.⁶

"They [the Vietnamese governments] will continue what they have been doing so far, that is try trying to maximize the benefits, you know, from the Trade War. But, at the same time, [they should be] trying to be prudent and pay attention to reactions from both China and the US. So, they don't want to harm the relationship with either power. Both of them are major partners of Vietnam."

– Singapore-based Research Source 1.

Being politically neutral within the U.S. – China conflict does not mean that Vietnam cannot trade with either of the two countries. According to an academic source, trading with both the U.S. and China has brought and will continue to bring major economic benefits for Vietnam. Below are some of the quotes that he mentioned.

"Vietnam rise economically depends on both those countries that you can't, you know, for many Southeast Asian countries, that's just the reality is that they want to be able to trade with both countries.... From an international business perspective, you trade better when you have

⁶ Original quote: "Việt Nam không có lựa chọn nào khác trong cuộc chiến toàn diện Mỹ Trung là phải tự củng cố nội lực, nhất là về kinh tế trong khi từng bước tăng cường sức mạnh quốc phòng. Đồng thời tăng cường quảng bá sức mạnh mềm về văn hoá, lịch sử, ngoại giao và kinh tế với tất cả các nước trên thế giới."

more markets to trade with, particularly the large markets.”

– America-based Academic Source 2

“From an international business perspective, you want your government to have policy friendly as much [as possible] with the rising two powers [the U.S. and China]. You don’t want to, why would you want to pick one over the other? I mean, there could be other political aspects that could, you know, come into play but economically, you know.”

– America-based Academic Source 2.

The interviewees also called for Vietnam to enhance its relationship with other major countries on the international stage. It is also important for Vietnam to develop its own economy in terms of manufacturing, tourism, and service so that the country is economically independent from other nations.

“To do this [be politically neutral while still trading with both the U.S. and China], Vietnam needs to continuously participate in bilateral and multilateral trade agreements. There is absolutely no concept of choosing sides in an all-out U.S. – China War for the Vietnamese government. ‘Working together and fighting at the same time’ is the principle for China. Meanwhile, because the history of the ‘Vietnam War’ is still in the memory of most Vietnamese, for the U.S., the strategy will be ‘Cooperating, healing and fighting at the same time.’ Good healing, in turn, will reinforce the effectiveness of the principles of dealing with the United States.”

– Vietnam-based Academic Source 1.⁷

Interestingly, the experts do not think that Vietnam will face any challenges following its neutral stance. They stressed the importance of Vietnam in the current economic relationships with the U.S. and

China and maintained that if Vietnam continues to promote its national interests, the country will not face any difficulties coming from China or America.

“These issues [Vietnam’s not siding with either the U.S. or China] are not serious enough for them to sanction Vietnam. And secondly, they still need Vietnam for the benefits, their own benefits, either economic or strategic benefits. So, I think they still value Vietnam’s role in the foreign policy. I don’t think they will impose sanctions on Vietnam anytime soon. Unless Vietnam take sides and side with one power against the other then the other will have reasons to impose sanction on Vietnam, but if Vietnam maintains a neutral position and walks a fine line between the major powers, there will be no reason for them to sanction Vietnam.”

– Singapore-based Research Source 1.

Thus, it is important for Vietnam to continue its trade relations with both the U.S. and China. At the same time, Vietnam needs to understand its role within the larger U.S. – China conflict and walk the tightrope between the two countries.

CHAPTER 7: CONCLUSION

1) Principle Findings

This research quantifies the impact of the U.S. – China Trade War on Vietnam’s economy. Previous studies suggested a correlation existed between economic increases in Vietnam’s export to America and import from China and the Trade War (Lam & Nguyen, 2019). In this study, I was able to reveal some causal effects that the Trade War had on Vietnam at both the country and tariff levels. Thus, I was able to confirm the Economic Hypothesis partially. Moreover, in the qualitative section, I helped contribute meaningfully to Vietnam’s trade policy scholarship by presenting a complex relationship between Vietnam, the U.S., and China. The Diplomatic Hypothesis was confirmed,

⁷ Để làm được đi ầu này, Việt Nam cần phải liên tục tham gia các hiệp định thương mại song phương và đa phương. Hoàn toàn không có khái niệm chọn phe trong cuộc chiến toàn diện Mỹ-Trung đối với người Việt. “Vừa hợp tác, vừa đấu tranh” là nguyên tắc đối với Trung Quốc. Trong khi đó, do lịch sử của cuộc “chiến

and, using these results, I recommended a foreign policy strategy for the Vietnamese government.

a) Vietnam – U.S. quantitative results and explanation

Regarding the relationship with the U.S., the quantitative result suggested that the Trade War had a causal effect on Vietnam's export to America at the country level. Thus, the study confirmed sub-hypothesis EH1, meaning that when assuming Vietnam is exporting at the same rate as other economically comparable countries, Vietnam's increased export of tariff-affected products to the U.S. was caused by the Trade War. The Trade War's causal effect on Vietnam's export only affected the country's exportation of tariff-affected products.

One explanation that this quantitative result suggested is the possibility that, following the Trade War, the U.S. imported less from China or countries that appeared to be associated with China. Thus, the American market relied on Vietnam and its manufacturing hub for products it could traditionally get elsewhere. Given the need to fulfill the demand of the American people, Vietnam has been benefiting from the trade diversion effect of the Trade War (Kwon, 2022). In this sense, the result confirms the literature review findings and indicates that Vietnam is poised to replace China in specific manufacturing industries such as machinery or textile.

However, when assuming that Vietnam's export rate of tariff-affected products is similar to that of non-tariff-affected products, this paper failed to reveal any statistically significant effect, meaning that the quantitative results failed to confirm EH3. This finding can be explained by Vietnam's increased export to the U.S. in recent years (Roberts, 2022). With some of Vietnam's top export industries being machinery, textile, and agriculture, the Trade War accelerated Vietnam's export rate but did not have a causal effect on the country's trade pattern at the tariff level. The result added to the literature review by suggesting that, although Vietnam's export to America increased recently after 2018, the country's economic development trend also played a significant role in the economy, not just the Trade War.

b) Vietnam – China quantitative results and explanation

Interestingly, Vietnam's import relationship with China suggested a reverse trend. At the country level, that is, when assuming that Vietnam is importing

Chinese products at a similar rate as other economically comparable countries, the Trade War did not have a causal effect on Vietnam's importation of both tariff-affected and non-tariff-affected products from China. The paper failed to confirm EH2.

The findings can be explained by the literature review, which suggested that, after 2018, China has not only outsourced its exportation to Vietnam but other countries, including Southeast Asian nations and sub-Saharan Africa as well (Huang & Smith, 2020). Thus, these quantitative results confirm that Vietnam is not the only country that has increased its importation from China following the Trade War, and its increased import rate is not statistically significant to that of other countries.

The paper established a causal effect when assuming that Vietnam's import rate of Chinese tariff-affected products is similar to that of Chinese non-tariff-affected products. The finding confirmed EH4 and suggested that Vietnam is experiencing more importing tariff-affected products due to the Trade War. These results are consistent with the literature review, which suggested that the Trade War caused China to diversify its exportation of tariff-affected products to other countries (Huang & Smith, 2020). Thus, in the case of Vietnam, the country has seen a statistically significant increase in its importation of Chinese tariff-affected products.

c) Qualitative results and explanation

The qualitative section complemented the quantitative results and added to the literature review by commenting on Vietnam's future foreign policy strategy from the perspective of key informants. The interviewees' testimonies acknowledged Vietnam's economic growth but suggested that Hanoi's economic development policy also contributed positively to the economy. This answer was confirmed by the quantitative section's inability to show a statistically significant effect of the Trade War on Vietnam's export to America at the tariff level. This means that, when assuming that Vietnam's tariff-affected export rate is similar to that of the non-tariff-affected, the paper could not establish a causal effect that the Trade War had on Vietnam's export to the U.S., thus indicating Vietnam has already been benefiting from past economic policies prior to the Trade War. The experts regularly mentioned the China Plus One Strategy. As

the global supply chain continues to shift, Vietnam's economic development will continue to benefit.

While Vietnam has seen substantial economic advantages in a strong relationship with the U.S., the interview participants often warned the Vietnamese government to consider the U.S. ideological stance. According to the interviewees, Vietnam must adapt to the American presidency to continue its Trade War benefits. Hanoi must also be skillful in its relationship with Washington, as the U.S. government often employs economic tools to coerce Vietnam to conform to its agenda.

Vietnam's relationship with China proved to be politically sensitive, as government officials were unwilling to comment in great detail. However, there existed evidence of illegal tariff-dodging transshipment in Vietnam. In Hanoi's effort to deal with the issue, the government must also consider the country's trade relationships with the U.S. and China. While China is outsourcing its products to other countries in Southeast Asia and Africa, Vietnam appears to be one of the economic beneficiaries of the Trade War. Thus, the country must understand its role in the more significant U.S. – China conflict and walk the tightrope between the two countries.

Finally, the experts agreed that Vietnam must navigate the U.S. – China conflict and beware of Chinese influences within the Vietnamese economy. While the government official sources did not advocate for a particular policy direction, the academic and research sources suggested Vietnam be politically neutral while maintaining its trading with both superpowers. Doing so would ensure that Vietnam can trade with two of the large markets in the world while preventing Hanoi from being pressured into the U.S. – China struggle for power. Hence, this paper significantly added to the literature review by providing the perspective of what policy experts think regarding Vietnam's political approach to the U.S. – China conflict. While it is not certain that Vietnam would follow this recommendation, this research can serve as a guideline for Vietnamese government officials in crafting their foreign policies.

2) Limitations and potential research

The study has several limitations. First, there exists a selection bias within the qualitative methodology. The interviews were conducted with

Vietnamese government officials and academic sources, thus glossing over the perspectives of both the American and Chinese government officials. It is also essential to note that there is self-censorship within the Vietnamese government, therefore creating an ideological bias within the answers of some Vietnamese government officials. Future research can explore the differences between answers given by the Vietnamese government and research institutes to understand further how trade policies are perceived by the public and implemented by the government.

Moreover, difficulties in determining which goods are being affected by the U.S. – China Trade War tariff made the conclusion in the paper not comprehensive. That is, it is possible that this paper did not include products affected by the Trade War tariff or included products not affected by the tariffs. Thus, future research projects can utilize this statistical technique and a more comprehensive and rigorous data categorization to improve the robustness of this thesis. The paper assumes that any causal relationship discovered in the regression model can be attributed to the Trade War. Therefore, as the Trade War has persisted, future research can rely on this paper to measure the economic impact on Vietnam. Since this paper did not account for any statistical confounders, a causal relationship in the trading patterns between Vietnam, China, and America might exist when appropriate confounders are considered. Vietnam is increasingly becoming a significant player on the international stage. Without further research on Vietnam's role in the Trade War, no foreign nationals can foster a collaborative relationship and promote mutually beneficial policies.

3) Conclusion and recommendations

After the Trade War had started, Vietnam saw enormous economic improvements from trading with the U.S. and China. This project establishes the empirical evidence for a positive causal relationship between Vietnam's economic development and the Trade War. At the country level, the Trade War had a positive causal effect on Vietnam's increase in exportation to the U.S.; at the tariff level, the Trade War had a positive causal effect on Vietnam's increase in importation from China. Such an understanding meaningfully contributed to the literature review, which only revealed a correlated relationship. To this

end, this research paper advocates for several policy implementations the Vietnamese government can carry out. First, Vietnam should embrace the U.S. – China Trade War as an opportunity for economic development and further strengthen its trade relationships with the U.S. and China. Moreover, Hanoi must be careful in dealing with both superpower nations as the Trade War is a manifestation of the larger U.S. – China conflict. Thus, Vietnam must be politically neutral regarding the U.S. – China conflict since siding with either country will cause Vietnam's economic opportunities.

Lastly, with experts establishing that Vietnam's current economic infrastructure is inadequate to replace China as the world manufacturing hub, Vietnam has to rise to the occasion, meaning that the country needs to improve its economic policies and infrastructure to continue benefiting from the Trade War. Within a new "Cold War," Vietnam's role as a neutral political and economic power can be a decisive factor in the country's effort to establish its international footprint.

CHAPTER 8: REFERENCES

1. Angrist, J. D., & Pischke, J.S. (2008). *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton University Press.
2. Barton, A. (2018, October 24). *The Tariff Dodging Game*. Manufacturing Business Technology. Retrieved April 22, 2022, from <https://www.mbtmag.com/global/article/13247087/the-tariff-dodging-game>
3. Bellacqua, J. (2012). *The China Factor in U.S.-Vietnam Relations* (Report No. DRM-2012-U-000184-Final). Center for Naval Analyses China Studies. https://www.cna.org/cna_files/pdf/DRM-2012-U-000184-FINAL.pdf
4. Beresford, M. (2008). *Doi Moi in review: The challenges of building market socialism in Vietnam*. *Journal of Contemporary Asia*, 38(2), 221-243, <https://doi.org/10.1080/00472330701822314>
5. Bradsher, K. (2019, May 13). *With higher tariffs, China retaliates against the U.S.* *The New York Times*. Retrieved February 28, 2022, from <https://www.nytimes.com/2019/05/13/business/trump-trade-china.html>
6. Daugherty, D. (2018, September 5). *How to implement a "china plus One" strategy*. Asia Briefing. Retrieved December 9, 2022, from <https://www.asiabriefing.com/events/details/how-to-implement-a-china-plus-one-strategy-7230.html>
7. Eckardt, S., Mishra, D., & Dinh, V. T. (2022, March 9). *Vietnam's manufacturing miracle: Lessons for developing countries*. Brookings Institute. Retrieved September 18, 2022, from <https://www.brookings.edu/blog/future-development/2018/04/17/vietnams-manufacturing-miracle-lessons-for-developing-countries/>
8. Embassy of Vietnam in the U.S. (n.d.) *Constitution and Political System*. Retrieved September 18, 2022, from <https://vietnamembassy-usa.org/vietnam/politics>
9. Evans, O. (2019). *The Effects of the US-China Trade War and Trumponomics*. *Forum Scientiae Oeconomia*, 7(1), 47-55, <https://www.cceol.com/search/article-detail?id=786199>
10. Eyler, B. (2022, May 9). *Vietnam Relations Are a Quiet U.S. Victory Already*. *Foreign Policy*. Retrieved November 26, 2022, from <https://foreignpolicy.com/2022/05/09/united-states-vietnam-relations-quiet-victory-trade-war-legacies/>
11. Fajgelbaum, P., Goldberg, P., Kennedy, P., Khandelwal, A., Taglioni, D. (2022, January). *The US-China Trade War and Global Reallocations*. World Bank. Retrieved September 14, 2022, from <https://openknowledge.worldbank.org/handle/10986/36815>
12. General Statistics Office of Vietnam (GSO). (n.d.). *Statistical Data*. General Statistics Office of Vietnam. Retrieved March 4, 2022, from <https://www.gso.gov.vn/en/statistical-data/>
13. General Statistics Office of Vietnam. (2021, August 16). *Statistical Data*. General Statistics Office of Vietnam. Retrieved March 4, 2022, from <https://www.gso.gov.vn/en/statistical-data/>
14. Gorman, L. (2022, April 4). *How the US-china trade war affected the rest of the world*. NBER. Retrieved September 14, 2022, from <https://www.nber.org/digest/202204/how-us-china-trade-war-affected-rest-world>
15. Ha, L. (2019, November 7). *Vietnam on high alert to origin fraud*. VietNamNet News. Retrieved September 19, 2022, from <https://vietnamnet.vn/>

- en/vietnam-on-high-alert-to-origin-fraud-585685.html
16. Hass, R., & Denmark, A. (2022, March 9). More pain than gain: How the US-China trade war hurt America. Brookings. Retrieved April 19, 2022, from <https://www.brookings.edu/blog/order-from-chaos/2020/08/07/more-pain-than-gain-how-the-us-china-trade-war-hurt-america/>
17. Ho, T., Nguyen, T. T. N., & Tran, T. N. (2019, January 30). How will Vietnam cope with the impact of the US-china trade war? Think Asia. Retrieved February 28, 2022, from <https://www.think-asia.org/handle/11540/9404>
18. Huang, Y. (2021, September 16). The U.S.-China Trade War has become a Cold War. Carnegie Endowment for International Peace. Retrieved February 28, 2022, from <https://carnegieendowment.org/2021/09/16/u.s.-china-trade-war-has-become-cold-war-pub-85352>
19. Huang, Y. (2021, September 16). The U.S.-China Trade War has become a Cold War. Carnegie Endowment for International Peace. Retrieved November 28, 2022, from <https://carnegieendowment.org/2021/09/16/u.s.-china-trade-war-has-become-cold-war-pub-85352>
20. Huang, Y., & Smith, J. (2020, June 24). In U.S. - China trade war, new supply chains rattle markets. Carnegie Endowment for International Peace. Retrieved September 18, 2022, from <https://carnegieendowment.org/2020/06/24/in-u.s.-china-trade-war-new-supply-chains-rattle-markets-pub-82145>
21. Hui, M. (2019, June 27). Vietnam might be Donald Trump's next Trade War Target. Quartz. Retrieved November 28, 2022, from https://qz.com/1653958/vietnam-might-be-donald-trumps-next-trade-war-target?utm_source=facebook&utm_medium=qz-organic&fbclid=IwAR1LbmEc6GAK5acheK6zUk62HanjH1VQH_IzAvOTzlwmXQmiXZcTXblnmuY
22. International Trade Administration. (n.d.). Understanding HS Codes and the Schedule B. International Trade Administration. Retrieved December 1, 2022, from <https://www.trade.gov/harmonized-system-hs-codes>
23. Kumar, B. (2022, July 26). What is the China-plus-one strategy? Business Standard News. Retrieved December 9, 2022, from https://www.business-standard.com/podcast/international/what-is-the-china-plus-one-strategy-122072600052_1.html
24. Kwon, E. (2022, August 1). The U.S. - China Trade War: Vietnam emerges as the greatest winner. Air University (AU). Retrieved September 19, 2022, from <https://www.airuniversity.af.edu/JIPA/Display/Article/3111127/the-uschina-trade-war-vietnam-emerges-as-the-greatest-winner/>
25. Lam, T. H., & Nguyen, D. P. (2019, December 6). The US-China Trade War: Impact on Vietnam. Think Asia. Retrieved February 28, 2022, from <https://www.think-asia.org/handle/11540/11697>
26. Le, T. H. (2020, September 30). Rough waters ahead for Vietnam-China relations. Carnegie Endowment for International Peace. Retrieved February 28, 2022, from <https://carnegieendowment.org/2020/09/30/rough-waters-ahead-for-vietnam-china-relations-pub-82826>
27. Lechner, M. (2011). The Estimation of Causal Effects by Difference-in-Difference Methods. *Foundations and Trends in Econometrics*, 4(3), 165-224. <http://dx.doi.org/10.1561/08000000014>
28. Lee, T., & Varas, J. (2022, May 10). The total cost of U.S. tariffs. American Action Forum. Retrieved November 26, 2022, from <https://www.americanactionforum.org/research/the-total-cost-of-tariffs/>
29. Liu, T. & Woo, W. T. (2018). Understanding the U.S.-China Trade War. *China Economic Journal*, 11(3), 319-340, <https://doi.org/10.1080/17538963.2018.1516256>
30. Michael Lechner (2011), "The Estimation of Causal Effects by Difference-in-Difference Methods", *Foundations and Trends® in Econometrics: Vol. 4: No. 3*, pp 165-224. <http://dx.doi.org/10.1561/08000000014>
31. Mohamed, T. (2019, June 27). Companies are dodging Trump's tariffs by sneaking Chinese goods through Vietnam, but their strategy could backfire. Business Insider. Retrieved April 21, 2022, from <https://markets.businessinsider.com/news/stocks/companies-dodge-trump-tariffs-sneak-chinese-goods-through-vietnam-2019-6-1028312952>
32. Nguyen, H. (2020, February 5). Vietnam Introduces Resolution to Deal with Origin Fraud and Transshipment. Vietnam Briefing News. Retrieved

- April 22, 2022, from <https://www.vietnam-briefing.com/news/vietnam-introduces-resolution-origin-fraud-transshipment.html/>
33. Nguyen, N. M. (2022, May 6). Vietnam: Registered FDI Capital 2021. Statista. Retrieved September 19, 2022, from <https://www.statista.com/statistics/1011555/vietnam-registered-fdi-capital/>
34. Nguyen, Q. H. (2019). Vietnam-China Trade Relations and the Effects of the US-China Trade War. *Business and Economic Research*, Macrothink Institute, 9(4), 1-11, <https://doi.org/10.5296/ber.v9i4.15201>
35. Nguyen, Q. T. T. (2022, September 20). The problems with Vietnam's 'bamboo diplomacy'. *The Diplomat*. Retrieved December 9, 2022, from <https://thediplomat.com/2022/09/the-problems-with-vietnams-bamboo-diplomacy/>
36. Nguyen, T. Q. T. (2022, September 20). The problems with Vietnam's 'bamboo diplomacy'. *The Diplomat*. Retrieved September 19, 2022, from <https://thediplomat.com/2022/09/the-problems-with-vietnams-bamboo-diplomacy/>
37. Observatory of Economic Complexity (OEC). (n.d.). About the site. Observatory of Economic Complexity. Retrieved October 14, 2022, from <https://oec.world/en/resources/about>
38. Observatory of Economic Complexity (OEC). (n.d.). About the site. Observatory of Economic Complexity. Retrieved October 14, 2022, from <https://oec.world/en/resources/about>
39. Observatory of Economic Complexity (OEC). (n.d.). Vietnam (VNM) and China (CHN) Trade. Observatory of Economic Complexity. Retrieved September 19, 2022, from <https://oec.world/en/profile/bilateral-country/vnm/partner/chn?dynamicBilateralTradeSelector=year2018#economic-complexity>
40. Pham, D. X., & To, S. M. (2022, July 22). What's behind Vietnam's 'bamboo diplomacy' discourse? *FULCRUM*. Retrieved September 14, 2022, from <https://fulcrum.sg/whats-behind-vietnams-bamboo-diplomacy-discourse/>
41. Reed, J. (2019, June 22). US-china trade war gives Vietnam a winning streak. *Financial Times*. Retrieved February 28, 2022, from <https://www.ft.com/content/4bce1f3c-8dda-11e9-a1c1-51bf8f989972>
42. Reuters Staff. (2019, June 10). Vietnam to crack down on Chinese goods relabeled to beat U.S. tariffs. *Reuters*. Retrieved November 28, 2022, from <https://www.reuters.com/article/us-usa-trade-china-vietnam/vietnam-to-crack-down-on-chinese-goods-relabeled-to-beat-u-s-tariffs-idUSKCN1TB0I3>
43. Reuters. (2019, June 10). Vietnam to crack down on Chinese goods relabeled to beat U.S. tariffs. *Reuters*. Retrieved September 19, 2022, from <https://www.reuters.com/article/us-usa-trade-china-vietnam/vietnam-to-crack-down-on-chinese-goods-relabeled-to-beat-u-s-tariffs-idUSKCN1TB0I3>
44. Roberts, K. (2022, April 4). Vietnam, For Once, Was Not America's Fastest-Growing Trade Partner. *Forbes*. Retrieved November 29, 2022, from <https://www.forbes.com/sites/kenroberts/2022/03/31/vietnam-for-once-was-not-americas-fastest-growing-trade-partner/?sh=719066403d75>
45. Samuel, P. (2020, February 13). US - China Trade War inspires Vietnam growth. *Vietnam Briefing News*. Retrieved September 19, 2022, from <https://www.vietnam-briefing.com/news/us-china-trade-war-inspires-vietnam-growth.html/>
46. SCMP Reporters. (2021, May 28). What is the US-china trade war? *South China Morning Post*. Retrieved March 16, 2022, from <https://www.scmp.com/economy/china-economy/article/3078745/what-us-china-trade-war-how-it-started-and-what-inside-phase>
47. Soboleva, K. (2021, June). The impact of the trade war between the United States of America and the People's Republic of China on the economy of the Socialist Republic of Vietnam. Saint Petersburg State University. Retrieved February 28, 2022, from https://dspace.spbu.ru/bitstream/11701/31198/1/Soboleva_thesis_The_impact_of_the_trade_war_on_Vietnam.pdf
48. Source of Asia. (2022, October 27). Vietnam: A promising option in light of the "China Plus One" strategy. *Source of Asia*. Retrieved December 9, 2022, from <https://www.sourceofasia.com/vietnam-in-the-china-plus-one-strategy-option-in-light-of-the-china-plus-one-strategy/>
49. Strangio, S. (2021, July 20). Vietnam, US reach accord on alleged currency manipulation. *The*

- Diplomat. Retrieved April 22, 2022, from <https://thediplomat.com/2021/07/vietnam-us-reach-accord-on-alleged-currency-manipulation/>
50. Subbaraman, R., Varma, S., & Loo, M. (2019, June). US-China Trade Diversion: Who benefits? Nomura. Retrieved February 28, 2022, from <https://www.nomuraconnects.com/focused-thinking-posts/us-china-trade-diversion-who-benefits/>
 51. Swanson, A. (2018, July 5). Trump's trade war with China is officially underway. The New York Times. Retrieved February 28, 2022, from <https://www.nytimes.com/2018/07/05/business/china-us-trade-war-trump-tariffs.html>
 52. The World Bank. (n.d.). Foreign direct investment, net inflows (BOP, current US\$) - Vietnam. Retrieved September 19, 2022, from <https://data.worldbank.org/indicator/BX.KLT.DINV.CD.WD?locations=VN>
 53. Tran, B. T. (2022, May 12). Losing Momentum and Passing Opportunities in the U.S.-Vietnam Relationship. Center for Strategic and International Studies. Retrieved November 26, 2022, from <https://www.csis.org/analysis/losing-momentum-and-passing-opportunities-us-vietnam-relationship>
 54. Tran, B. T. (2022, September 8). No Trade-Off: Biden Can Both Deepen U.S.-Vietnam Ties and Promote Human Rights. Center for Strategic and International Studies. Retrieved October 30, 2022, from <https://www.csis.org/analysis/no-trade-biden-can-both-deepen-us-vietnam-ties-and-promote-human-rights>
 55. U.S. Agency for International Development. (2021, August 20). USAID assists Vietnam customs in preventing illegal transshipment and origin fraud. U.S. Agency for International Development. Retrieved April 22, 2022, from <https://www.usaid.gov/vietnam/program-updates/aug-2021-usaid-assists-vietnam-customs-preventing-illegal-transshipment-and-origin>
 56. U.S. Department of State. (2021, April 9). U.S. Relations With Vietnam. <https://www.state.gov/u-s-relations-with-vietnam/>
 57. Vanham, P. (2018, September 11). The story behind Viet Nam's miracle growth. World Economic Forum. Retrieved September 18, 2022, from <https://www.weforum.org/agenda/2018/09/how-vietnam-became-an-economic-miracle/>
 58. Vietnam News Agency. (2021, December 14). Party chief highlights resolve to develop modern diplomacy with "Vietnamese bamboo" characters. VietnamPlus. Retrieved September 18, 2022, from <https://en.vietnamplus.vn/party-chief-highlights-resolve-to-develop-modern-diplomacy-with-vietnamese-bamboo-characters/218133.vnp>
 59. Vu, K. (2022, September 14). China's Wedge Strategy Towards the US-Vietnam Partnership. The Diplomat. Retrieved November 26, 2022, from <https://thediplomat.com/2021/08/chinas-wedge-strategy-towards-the-u-s-vietnam-partnership/>
 60. Wikimedia Foundation. (2021, May 23). General Statistics Office of Vietnam. Wikipedia. Retrieved March 4, 2022, from https://en.wikipedia.org/wiki/General_Statistics_Office_of_Vietnam
 61. Xia, M., & Chen, D. (2021, May 21). China and the US: Who has more influence in Vietnam? The Diplomat. Retrieved April 22, 2022, from <https://thediplomat.com/2021/05/china-and-the-us-who-has-more-influence-in-vietnam/>
 62. Zhang, Y. (2018). The US-China Trade War: A Political and Economic Analysis. *Indian Journal of Asian Affairs*, 31(2), 53-74, <https://www.jstor.org/stable/26608823>
 63. Zumbun, J., & Leary, A. (2022, February 4). Biden extends Trump's solar tariffs, but allows more solar cells to enter duty-free. The Wall Street Journal. Retrieved April 22, 2022, from https://www.wsj.com/articles/biden-administration-to-extend-trumps-solar-tariffs-for-four-years-11643981863?mod=article_inline
 64. Zumbun, J., & Stech Ferek, K. (2022, March 29). U.S. to probe tariff-dodging claim against Chinese manufacturers. The Wall Street Journal. Retrieved April 22, 2022, from <https://www.wsj.com/articles/u-s-to-probe-tariff-dodging-claim-against-chinese-manufacturers-11648500996>

1) Appendix

a) English interview guide

My name is Tri, and I am a student at Duke University majoring in Public Policy. Thank you once again for agreeing to answer some of the questions I have about the role of Vietnam within the U.S. – China Trade War.

The aim of the project is to understand the

economic effect that the Trade War had on Vietnam's economy during the Trump administration. I am reaching out to experts like you to gain a better understanding of how Vietnam's relationships with both of these countries would be affected in the coming years. Ideally, the interview will be audio-recorded to ensure accuracy. If you are not comfortable of being recorded, we can conduct an email interview, where I will email you a list of questions and you can get back to me whenever you are comfortable. I will report your name, your occupation, and some of your quotes for my own analysis. This data will be handled carefully and safely.

Your participation in this research project is completely voluntary. If you would like to take a break, decline to answer a question, or end the interview at any time let me know. Do you have any questions for me before we get started?

1. Has Vietnam's economy improved following the U.S. – China Trade War? If yes, what sectors have been benefiting the most? Did Vietnam's FDI and GDP increase during 2018 and 2019 following the Trade War?
2. Does Vietnam see an increase in sectors that Chinese firms traditionally export to America? How about sectors that Chinese firms traditionally export to Vietnam? Does this increase affect foreign firms' competition with Vietnamese firms?
3. Do you foresee any economic limitations and disadvantages that Vietnam will experience because of the Trade War?
4. The U.S. has accused Vietnam of manipulating its currency because of the increase in exportation from Vietnam to America. Was this incident caused by the Trade War? How should Vietnam facilitate economic growth without the U.S. constraint?
5. Do these economic improvements reflect the relationship Vietnam has with the U.S. and China? Specifically, will China direct more foreign investment and increase export into Vietnamese market?
6. What has China done to promote its trade and political relation with Vietnam? Does China foresee that the Southeast Asian Sea tension will be a challenge in enhancing its relationship with Vietnam? How about illegal tariff-dodging transshipment from Chinese firms? Does this

practice affect the relationship between China and Vietnam?

7. What has the U.S. done to promote its trade and political relation with Vietnam? How has the Trade War impacted America's stance?
8. Is there anything else that you think would contribute to the research project? What questions should I have asked?

b) Vietnamese interview guide

Xin chào ông/bà, cháu tên là Trí, là sinh viên Đại học Duke chuyên ngành Chính sách công. Một lần nữa xin cảm ơn ông/bà đã đồng ý trả lời một số câu hỏi của cháu về vai trò của Việt Nam trong Chiến tranh Thương mại Hoa Kỳ - Trung Quốc.

Mục đích của dự án là tìm hiểu tác động kinh tế mà Chiến tranh Thương mại đã gây ra đối với nền kinh tế Việt Nam dưới thời chính quyền Trump. Cháu đang liên hệ với các chuyên gia như ông/bà để hiểu rõ hơn về mối quan hệ của Việt Nam với cả hai quốc gia này sẽ bị ảnh hưởng như thế nào trong thời gian tới. Cuộc phỏng vấn sẽ được ghi âm để đảm bảo độ chính xác. Nếu ông/bà không cảm thấy thoải mái vì bất cứ lý do gì, chúng ta có thể tiến hành một cuộc phỏng vấn qua email. Cháu sẽ gửi email cho ông/bà một danh sách các câu hỏi và ông/bà có thể liên hệ lại với cháu bất cứ khi nào bạn cảm thấy thoải mái. Cháu sẽ ghi nhận và công khai tên, nghề nghiệp của ông/bà và một số lời trích dẫn để phân tích. Dữ liệu này sẽ được xử lý cẩn thận và an toàn.

Việc ông/bà tham gia vào dự án nghiên cứu này là hoàn toàn tự nguyện. Nếu ông/bà muốn tạm nghỉ, từ chối trả lời câu hỏi hoặc kết thúc cuộc phỏng vấn bất cứ lúc nào, hãy cho cháu biết. Ông/Bà có câu hỏi nào cho cháu trước khi chúng ta bắt đầu không?

1. Nền kinh tế Việt Nam đã được cải thiện như thế nào sau Chiến tranh Thương mại Hoa Kỳ - Trung Quốc? Nếu có, những ngành nào được hưởng lợi nhiều nhất? FDI của Việt Nam có tăng trong năm 2018 và 2019 so với những năm trước Chiến tranh Thương mại không?
2. Việt Nam có thấy sự gia tăng trong các lĩnh vực mà các công ty Trung Quốc thường xuất khẩu sang Mỹ không? Các lĩnh vực mà các công ty Trung Quốc có truy cập thống xuất khẩu sang Việt Nam thì như thế nào? Sự gia tăng này có ảnh hưởng đến sự cạnh tranh của các doanh nghiệp nước ngoài với các doanh nghiệp Việt Nam không?

3. Ông/Bà có thấy trước những hạn chế và bất lợi về kinh tế mà Việt Nam sẽ gặp phải do Chiến tranh Thương mại không?
4. Hoa Kỳ cáo buộc Việt Nam thao túng tiền tệ của mình vì sự gia tăng xuất khẩu từ Việt Nam sang Mỹ. Sự cố này có phải do Chiến tranh Thương mại gây ra? Làm thế nào để Việt Nam thúc đẩy tăng trưởng kinh tế mà không có sự ràng buộc của Hoa Kỳ?
5. Những cải thiện kinh tế này có phản ánh mối quan hệ mà Việt Nam có với Hoa Kỳ và Trung Quốc không? Cụ thể, Trung Quốc có hướng đầu tư nước ngoài vào thị trường Việt Nam nhiều hơn hay không?
6. Trung Quốc đã làm gì để thúc đẩy quan hệ thương mại và chính trị với Việt Nam? Liệu Trung Quốc có thấy trước rằng căng thẳng Biển Đông Nam Á

- sẽ là một thách thức trong việc tăng cường mối quan hệ với Việt Nam? Việc các tập đoàn Trung Quốc né tránh thuế quan Hoa Kỳ có ảnh hưởng gì đến Việt Nam hay không?
7. Hoa Kỳ đã làm gì để thúc đẩy quan hệ thương mại và chính trị với Việt Nam? Chiến tranh Thương mại đã tác động đến lập trường của Mỹ như thế nào?
 8. Có điểu gì khác mà ông/bà nghĩ sẽ đóng góp cho dự án nghiên cứu không? Cháu nên hỏi những câu hỏi nào?

c) Interview coding guide

Interview	Occupation	Location	Final Coding
Interview #1	Government Official	Vietnam	Vietnam-based Government Official Source 1
Interview #2	Academic	Vietnam	Vietnam-based Academic Source 1
Interview #3	Government Official	Vietnam	Vietnam-based Government Official Source 2
Interview #4	Research	Singapore	Singapore-based Research Source 1
Interview #5	Research	Singapore	Singapore-based Research Source 2
Interview #6	Academic	America	America-based Academic Source 2

2) List of Additional Figures and Tables

Figure 9

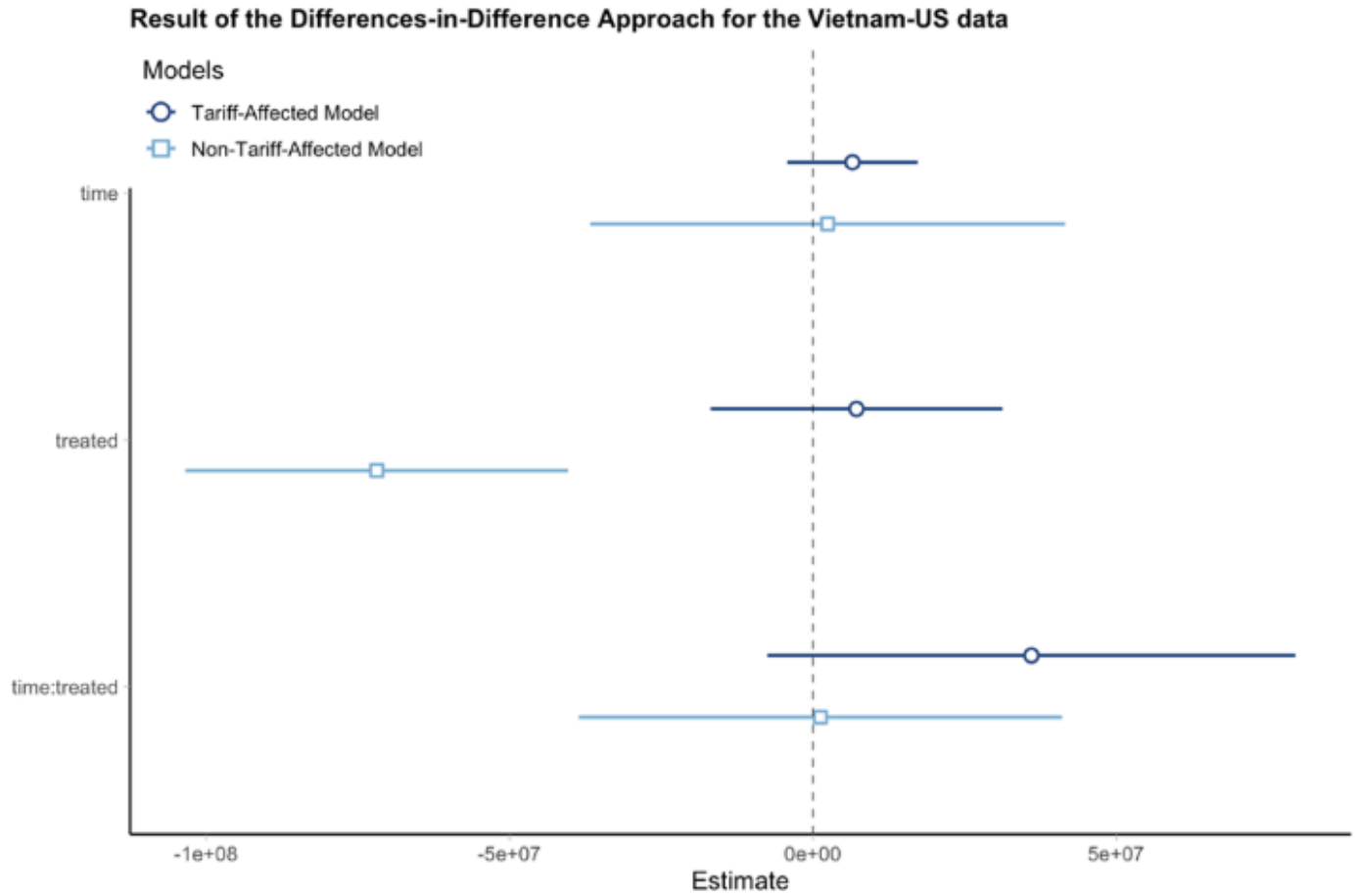


Figure 10

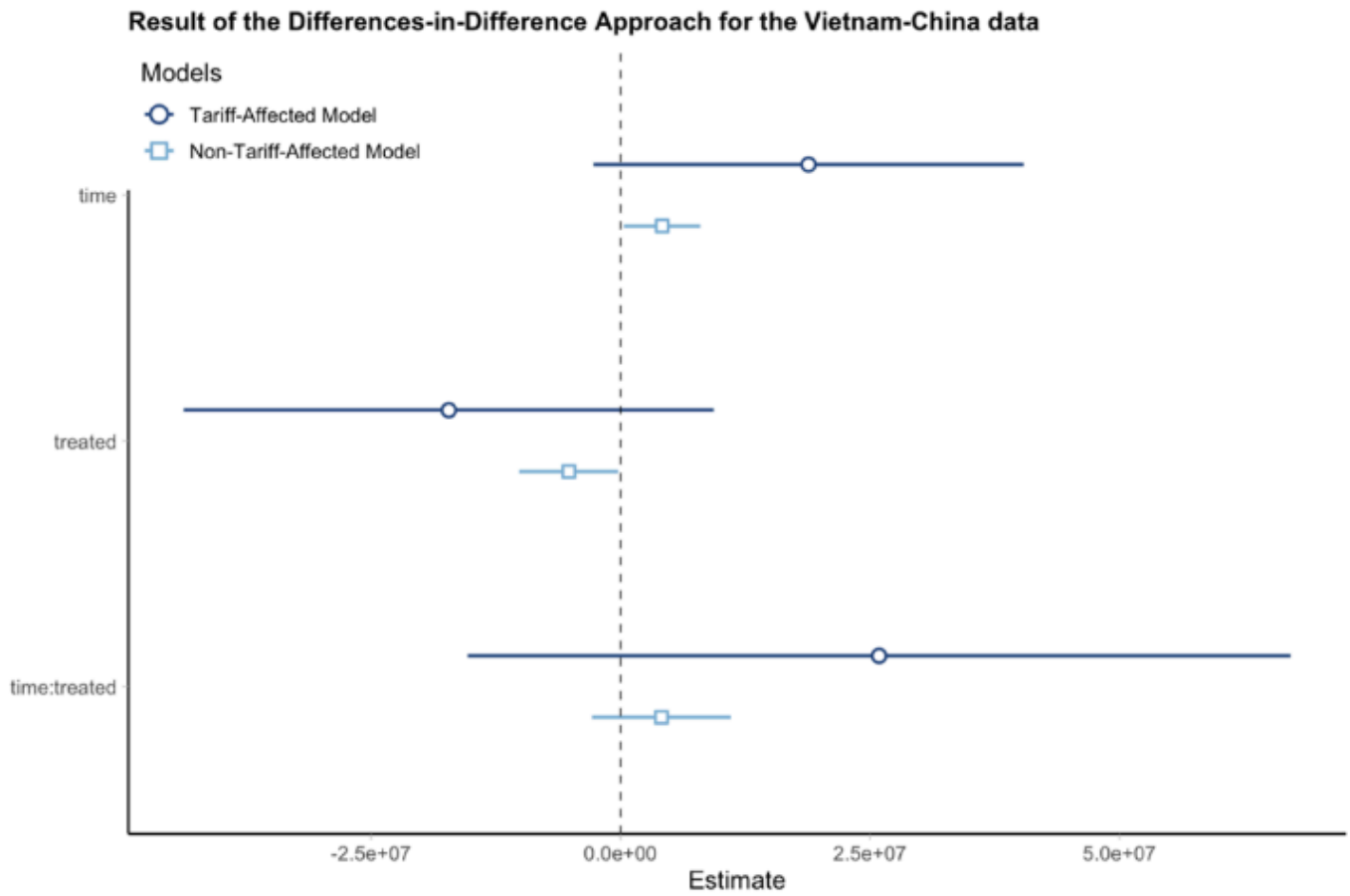
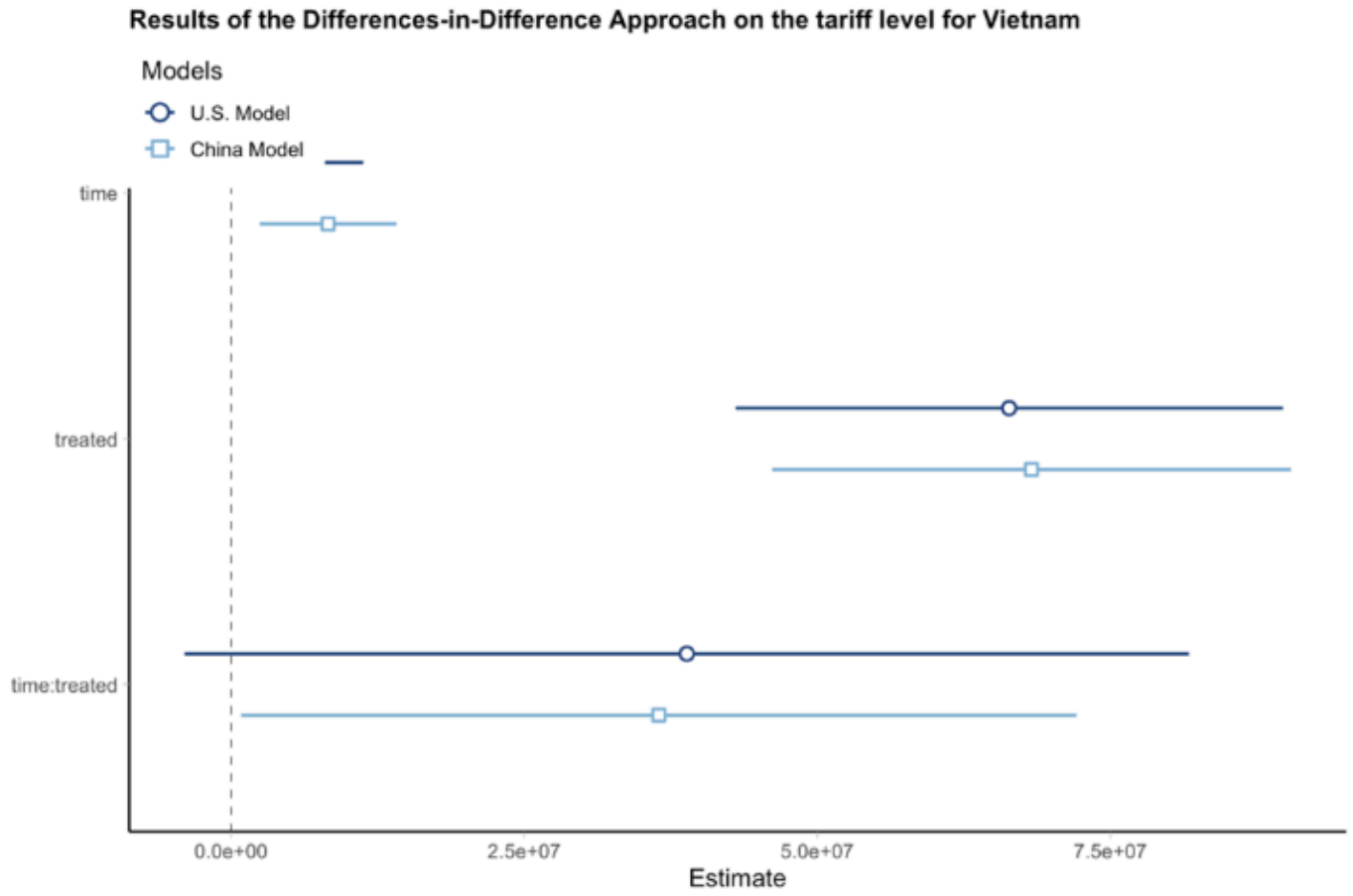


Figure 11



Meet Our Editing Team

EDITORIAL BOARD

Julia Davis,
President & Editor-in-Chief



Julia Davis is a junior majoring in Neuroscience and pursuing a certificate in Science and Society from Boston, MA. She is also the Editor-in-Chief of Vertices' Academic Research Journal, and she has been involved with Vertices since her freshman year. Upon graduation, Julia hopes to go to medical school with the intention of becoming a Family Medicine doctor. Julia also dances in Duke's ballet Company (Devils en Pointe) and loves to play 70s and 80s blues songs on the electric guitar.

Sasha Bacot,
Senior Editor



Sasha (Trinity '25) is from South Carolina and is a double major in Biology and Computer Science. She loves being a Vertices peer reviewer because it allows her to delve deeper into what she's most passionate about: scientific research! Outside of her work with Vertices, Sasha loves to figure skate, listen to music, and try out all the cool restaurants in Durham (especially for boba)!

Kaeden Hill,
Senior Editor



Kaeden (Trinity '25) is a Vertices Senior Editor from Atlanta, Georgia, double majoring in biology with a concentration in molecular and cell biology, and evolutionary anthropology with a minor in chemistry. After graduating, he plans to pursue a Ph.D. and a career in research. He is specifically interested in DNA tumor viruses and how their "cellular hijacking" can drive cells towards cancer, and he is a member of the Luftig Lab, studying Epstein-Barr virus and the cancers that it causes. Outside of academics, he loves to hike, travel, ski, scuba dive, collect minerals, and make jewelry.

PEER REVIEW TEAM

Miran Bhima



Miran Bhima is an undergraduate from Charlotte, NC interested in exploring the intersectionality of biomedical research. His past research involvements have included clinical and cheminformatics research with a focus on drug development and discovery. In his free time, Miran enjoys playing golf, listening to music, and spending time outdoors.

Colby Cheshire



Colby is a senior studying Biology and French. He has previously worked with the Alberts Lab at Duke, the Speliotes Lab at the University of Michigan, and the Turnbaugh Lab at UCSF. Outside of lab and class, Colby enjoys volunteering with Crisis Text Line, reading books, and discovering new coffee shops in Durham.

Chiara Federico



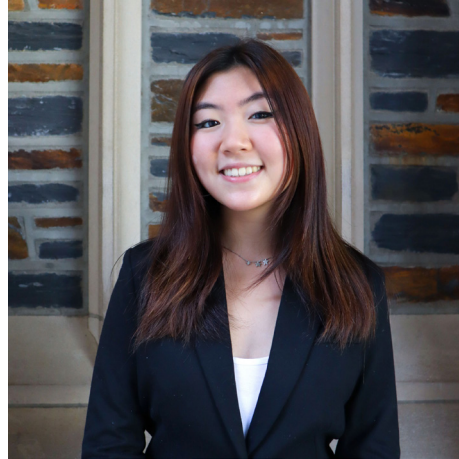
Chiara Federico (Trinity '26) is an international student planning to major in biology, with minors in chemistry and music. She is passionate about science communication and enjoys peer reviewing undergraduate articles for Vertices. Aside from uncovering the metabolic profiles of HER-2 breast cancer cells in Dr Ramanujan's lab, Chiara enjoys singing with her A capella group 'Deja Blue', playing tennis, and eating JuiceKeys!

Abby Hjelmstad



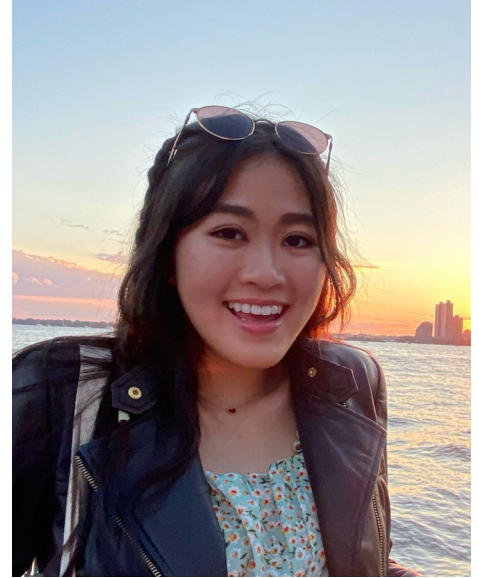
Abby (Trinity '25) is a chemistry major with a concentration in biochemistry from Marin, CA. She is a member of the Haas lab, where she studies copper binding to amyloid beta peptides. Abby is also a member of Duke's astronomy club, Stargazing Devils, and dances with Devils en Pointe.

Arielle Kim



Arielle Kim is an undergraduate student at Duke University, intending to major in biology with a concentration in ecology! She is particularly drawn to the intersection of microbiology and ecology, and she is currently exploring the symbiotic systems involving fungi and their photobionts as a member of the Lutzoni Lab.

Katie Lam



I am an Evolutionary Anthropology major with a minor in Visual Media Studies and a certificate in Science and Society on the pre-medical track. I am passionate about research and increasing accessibility to science through journals and scientific papers.

Arnav Singh



Arnav is a second-year undergraduate student in the Department of Biomedical Engineering. His professional and research experiences include medical device startups, PK/PD models for quantitative pharmacology, and the use of AI/ML models in patient diagnostics and predictive analytics. Outside of Vertices, he serves as the President of Wannamaker Quad and is a member of the Men's Club Soccer team.

Meet Our Design Team

**AJ Kochuba,
Artistic Director**



AJ (Trinity '25) is a sophomore from Cary, North Carolina, studying neuroscience, psychology, and visual arts on the pre-med track. AJ is particularly interested in humanities-based approaches to medical practice and research and hopes to enrich the symbiotic relationship between the fields of science and arts. Outside of Vertices, AJ can be found hosting arts- and identity-focused events, competing on the pickleball courts, and performing in dance showcases.

Erin Heyeck



Erin (Trinity '24) is a Junior from Princeton, New Jersey, studying biology and computational biology. She is passionate about the intersections of science and art. Outside of academics, Erin can be found on the water with Duke Women's Rowing and exploring new restaurants in the Triangle.

Cindy Ju



Cindy is a freshman from South Carolina planning to major in economics. She enjoys arts and crafts, walking in the Duke Gardens, and trying out different boba shops around Durham.

Acknowledgements

VERTICES EXECUTIVE BOARD

Editor in Chief

Julia Davis

Senior Editors

Sasha Bacot

Kaeden Hill

Artistic Director

AJ Kochuba

PEER REVIEW TEAM

Miran Bhima

Julian Burbano

Colby Cheshire

Chiara Federico

Eliza Goldstein

Josh Guthrie

Selena Halabi

Abby Hjelmstad

Achintya Inumarty

Arielle Kim

Katie Lam

Eric Lee

Katherine Long

Anyia Milberg

Aditya Raj

Ava Rothrock

Arnav Singh

Asher Wallen

Dennis Wu

Cathy Xiang

DESIGN

Spring 2023 Issue & Layout Design

AJ Kochuba

Cover & Article Graphics

Erin Heyeck

Cindy Ju

Website Design

Sage Cooley

FACULTY/EXPERT REVIEWERS

Arona Bender | Ph.D. Student - Duke Nicholas School of the Environment

Natalie Kerr, Ph.D. | Assistant Research Professor of Biology

Jie “Daniel” Luo, Ph.D. | Postdoctoral Researcher – Duke School of Medicine

Phuong Pham | Ph.D. Student – Duke Department of Political Science

Shanice Webster, Ph.D. | Postdoctoral Researcher - Duke Department of Biology

Sung-Ju Wu | Ph.D. Student – Duke Department of Economics

A special thank you to:

Reviewers from Georgetown’s Scientific Research Journal