

# Geopolitics of Finance

Modelling the role of states in the international financial  
system

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# Abstract

The thesis explores the interaction between finance and the state, how the conditions of that interaction has changed and how that may affect the international financial system. It combines an evolutionary approach to geopolitical theorizing and complexity theory to suggest a basic model for the system-level analysis of the interaction between states in the contemporary international financial system. This model is then simulated using an agent-based modelling approach. The results suggest that even though international cooperation is a better option in the long run, states may get locked in uncooperative stalemates. Various processes are creating a situation where financial weight and cyber capabilities can be used to harm the financial situation of other states in a way that was not previously possible. Yet the more this is done, it risks undermining the key element of international financial cooperation – trust. As trust deteriorates it may create a hostile system that prevents cooperation, and which the states cannot break out of. This is termed a *Mercantilist Trap*.

Keywords: geopolitics, geoeconomics, geofinance international finance, international cooperation, political finance, complexity theory, agent-based modelling

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# Acronyms

ABM – Actor Based Modelling

AD – Anno Domini

AI – Artificial Intelligence

AML – Anti-Money Laundering

ASEAN – Association of Southeast Asian Nations

DNA – Deoxyribonucleic Acid

DPRK – Democratic People's Republic of Korea

EBRD – European Bank for Reconstruction and Development

EU – European Union

GDP – Gross Domestic Product

GFC – Great Financial Crisis

IFS – International Financial System

IMF – International Monetary Fund

IR – International Relations

IT – Information Technology

QE – Quantitative Easing

RMB – Renminbi

UN – United Nations

USA/US – United States of America

USD – United States Dollar

USSR – Union of Soviet Socialist Republics

WTO – World Trade Organisation

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# 1. Introduction

Finance, wars, and geopolitics have all been intrinsically linked throughout history (Kennedy, 2017). Financial markets are probably still needed to wage great power conflict. There is no reason to suspect that such a struggle would be significantly less costly today than during World War II as war materiel etc. have become increasingly expensive. Importantly, this suggests that, just as during the past 500 years, damaging a hostile power's access to funding will seriously hurt that power's geostrategic capabilities.

Yet contemporary IR-theories, and in particular geopolitical theory, seldom include serious analysis of financial aspects or in accounting for financial factors. As will be discussed later (see 3.1), the historic analysis of the implications of, and intersection between finance on one hand, and state affairs and power on the other is considerably more well-researched. It is the contemporary system that seems to be understudied, and part of this probably stems from a lack of proper theoretical tools for analysing and understanding it. This thesis aims to be part in bridging this gap.

The international financial market consists of several submarkets but taken together they are the 'place where financial wealth is exchanged among individuals, organizations, and countries' (Vander Straeten, 2018, p. 131). The international financial system (IFS) will herein be defined as the system of infrastructure, institutions etc that enable these markets.

Thus, the financial system enables financial transactions and financial services, including lending, borrowing, investments, savings, and speculation. Consequentially, the broader economy is dependent on the financial system, not least states as it determines their fiscal capacity ( more details under 3.2; for a good presentation see chapter 5 in Lim, 2014).

The contemporary IFS is rather different from the 20<sup>th</sup> century version for several reasons, which make it relevant to reconceptualize the politics of the international financial system (IFS). These changes are essentially two-fold; firstly, there are the continuous changes in finance itself on areas such as money, credit, and regulation. Secondly, new technologies have changed the functioning of financial markets and consequentially made the contemporary financial system dependent on cyberspace for its functionality, perhaps even to the extent that it forms a subpart thereof – a new cyberspace which states now have to navigate. The internet and cybercommunications are new, but serious government involvement even more so.

Governmental involvement in cyberspace and cyber diplomacy are new features to the age-old practice of international politics. For example, it was not until 2017 that the council of the EU agreed on the need for a 'cyber diplomatic toolbox' to enable a joint response to malicious cyber activity (European Commission, 2013;

EU Council, 2015). Despite its novelty, the cyber sphere is now very much a part of the world of high diplomacy and therefore needs to be addressed by IR theory. This thesis aims to be an attempt at starting to fill this gap in understanding of the international arena.

The scientific problem here is thus the lack of understanding of the contemporary international financial system's interaction with geopolitics. This thesis will charge the void head-on by formulating a rudimentary theoretical framework, based on adaptations of previous theorizing, and more contemporary sources. Geopolitical theory and complexity theory are used as analytical tools, as well as game theory to explore the motivations of individual actors. This results in a model which is further explored through a simulation.

Thus, the purpose is *to create a model for system-level analysis of state interaction in the contemporary international financial system.*

In other words, the focus of the investigation lies on the system-level, but on the more political side of international finance. To investigate the financial interaction between states, the thesis looks to works in geopolitics that have worked toward financial aspects. Secondly, it is necessary to look at the contemporary financial system, and in particular properties of potential relevance because they concern state-action (the presumed main actors) and have changed since previous theories were suggested.

This chapter explains the basic concepts and ambition of this thesis. In the next chapter the methodology will be laid out in more detail. Chapter 3 explores the contemporary IFS, as well as the interaction of financial and geopolitical factors. Firstly, an established model of geopolitics and resources – suggested by Kennedy (2017) – is introduced, and then updated to the circumstances of the contemporary IFS. In chapter 4, the new model is presented and then simulated, leading to chapter 5 in which the results and their implications are discussed.

## 1.1 Geopolitics, geoeconomics and geofinance

Geopolitics will in this thesis be applied as an evolutionary understanding of the international system where political entities interact with each other and their environment to produce an outcome. It is this interaction of strategies, especially geostrategies that forms the (international) system (Dussouy, 2010). The evolutionary approach entails that the political entities will adapt to their context and especially to their inputs.

The field has often been closely associated with the realist school of thought in IR and classical geopoliticians focused significantly on the geographic context for determining state preferences in their strategies that were in turn primarily military in nature. As the international political environment has changed, however, so has there been developments in the field of geopolitics to account for those changes. Of



note to this thesis is geoeconomics – the application of economic statecraft for political ends. Baru (2012, pp. 48–49) attributes the development of geoeconomics to three main authors: Huntington, Luttwak, and Kennedy. Previously, politics had been driving geopolitics, but the end of the Cold War meant the beginning of a new era of economic, rather than military, rivalry (Luttwak, 1990, pp. 17–21; Baru, 2012, pp. 48–53).

The authors were reacting against the liberal tradition’s dominance in economics. Liberal economics is founded in classical economics and holds that openness and integration will lead to a more efficient allocation of capital and labour, increasing global production, resulting in a wealthier and therefore better world. This assumes that only absolute gains matter, and thus disregard the power aspect of economic capacity in international politics (Luttwak, 1990; Huntington, 1993, pp. 69–71).

*”Economists are blind to the fact that economic activity is a source of power, as well as well being. It is, indeed, probably the most important source of power and in a world in which military conflict between major states is unlikely economic power will be increasingly important in determining the primacy or subordination of states”* (Huntington, 1993, p. 72)

Bengtsson (2021) describes geoeconomics as based primarily on realist theory and adopts many of its arguments such as the importance of gains in relative (in relation to other), rather than absolute, terms. He goes on to add that geoeconomics includes both the geopolitical consequences of economic phenomena and the economic consequences of geopolitical changes. There is thus a mutually constitutive relation between the economical and the geopolitical according to geoeconomic theory (Bengtsson, 2021, p. 131).

Of the traditions in international political economy, geoeconomics appears most closely associated with the mercantilist tradition that promotes the national interest and national enrichment. States are expected to play a more active role in this tradition, to promote wealth accumulation and protect strategically important industries. (Lim, 2014, pp. 34–35). The tradition is less accepted than liberalism, but its practices endure (Baru, 2012, p. 47,49).

There is an inherent contradiction between relative and absolute gains, as well as between liberal and mercantilist reasoning. It is in much a matter of which logic the actors adhere to. To the system this matters in that how do the actors behave. The assumption underpinning this thesis is that the system does not predate the actors, but rather that the actors create the system through their interactions. However, there are some constraints on the interactions as they do not take place in a vacuum. Rather there is a pre-existing world with set preconditions, and especially ones that the states cannot directly affect themselves such as geography and technology. Technology matters because it is the main avenue through which geography affects us (Gilpin, 1981).

The synthesis that this thesis then suggests is that states might try to pursue both absolute and relative gains, but that they do this in a condition where their actions are determined by their surroundings, the emerging system within which their

actions take place. Here complexity theory offers a way to reconcile the opposing views.

More recent work in geoeconomics often concerns itself primarily with economic infrastructure and the productive capacity of nations rather than finance (for example Khanna, 2016), or focus on the geoeconomic strategies of specific states (for example Lew and Nephew, 2018). The concern with traditional geographic factors is understandable but considering the importance of finance to the functionality of contemporary political units, not the least Western states, means that geopolitics ought to give greater attention to financial factors. Although few, some have called for such increased attention to finance, sometimes suggesting to do so under a new concept – *geofinance* (see for example Parenti and Rosati, 2018 and Vander Straeten, 2018).

*Geofinance* received more attention after a speech by then deputy governor Woods of the bank of England. He was pointing to the need for geofinancial considerations on the part of the British state in light of the pending Brexit (Woods, 2017). The usage of the term by Woods and others suggest that the concept refers to both the role of finance in geopolitics and geopolitical factors in finance, just as the relation between economics and geopolitics in geoeconomics. One may interpret this as though they may not be meaningfully distinguished. If finance has a role in geopolitics, then by consequence geopolitics must also play a role in finance, because geopolitical considerations take primacy to the extent that they will always influence behaviour in any other fields that are somehow related to the “traditional realm” of geopolitics itself.

Vander Straeten (2018) calls for a new theory of geofinance. His book discusses many aspects and suggests some useful concepts but falls short of organizing these into a set and clear enough structure to be considered a theory and certainly not a model. Rosati and Parenti (2018) are more academically strict but limit their investigation to use some concepts and models of relevance. However, they do not formulate a model for the interstate politics within geofinance. The same can be said for Grandi et al. (2019), who focus more exclusively on geographic aspects of geofinance. Thus, this thesis may contribute to the field by suggesting such a model.

## 1.2 Complexity theory

Complexity theory is seldom used in IR, and even less in geopolitics and geoeconomics, but seems promising (Earnest and Rosenau, 2006, pp. 143–5). One exception, Jervis (1998), explores the potential of studying international politics as a system, drawing much on systemic theories from other fields. Another is Cederman (2002) who uses complexity theory and simulations to model geopolitics as search pattern for optimal distributions of power and control in a geographic space. The approach of this thesis is thus rather novel. Over the coming pages, complexity theory will be deployed to reconcile the contradictions of other theories.

Complexity theory studies that which does not fit neatly into traditional scientific approaches, with a focus on systems that behave in perplexing ways.

Complex is, however, not the same as complicated. A machine can be complicated, but it can be taken apart and reassembled to work in the same, predictable way as before. In other words, it can ‘be described by a mathematical system founded on linearity’, whereas a complex system cannot (Byrne and Callaghan, 2014, p. 4). Instead, complexity applies to systems that are deterministic, nonlinear and dynamic, although complexity is usually a matter of degree rather than a complexity—non-complexity binary (Ferreira *et al.*, 2014, p. 94). A core idea is that reductionism is insufficient as an analytical approach for understanding the totality of a complex system.

A few more concepts need to be introduced here to understand complexity theory. *Sensitivity to initial conditions* is a source of complexity and means that small differences in the initial state can have considerable, non-linear impact on the development of a system. Complex systems tend not to have one set future but rather a range of possible future states. Yet the range is restricted by the initial conditions – that is, it is not completely beyond prediction or proportion because while it is nonlinear it is still deterministic. Often, the system might be in a state where it is relatively stable; it does not rest in an equilibrium but the variation in states is rather small, and usually centred upon an attractor. However at certain points radical change can be observed where the overall state of the system changes to a new one – a so-called *phase transition*. (Byrne and Callaghan, 2014, pp. 157, 174–5).

The dynamism of the system might lead complexity to develop out of even rather simple conditions. The interaction between different parts makes them interdependent, generating the complexity as a result of their mutually constituting procedures (Byrne and Callaghan, 2014, pp. 41–2, 44–8). In other words, the complexity is endogenously generated, and thus appears out of the interaction of the parts, resulting in the *emergence* of a complex system.

### 1.2.1 Assumptions and complexity

Complexity is of relevance to this thesis because of two assumptions regarding the complexity of the financial system and international politics, respectively. Firstly, the IFS already demonstrates a considerable degree of complexity. Furthermore, this thesis argues that the system is undergoing a *phase transition* due to developments in primarily technology. This means that the conditions are ripe for suspecting considerable degrees of complexity in the state interaction in the contemporary financial system (see chapters 3 and 4).

Secondly, international politics is assumed to also be rather complex. This thesis has a state-centric approach, even though that risks excluding some of the intricacy and complexity of international politics. This is a simplification as states are obviously not the only actors in international politics. For example, cooperation and conflict can take place at many levels – often simultaneously – and in ways that appear more complex than in the case of individuals. At the same time, states remain probably the single most important actors in international politics in practice and

certainly in much of international relations theory. This has perhaps been particularly true of geopolitical theories and system level-analyses, especially when structured into actual theories or models, beyond mere taxonomies (see for example Howard, 2001; Mearsheimer, 2014; Kennedy, 2017).

This approach can further be criticised for reducing states – in themselves complex systems – into unitary actors with intentions or strategies. To best reflect reality, it appears necessary to recognize that states are both actors and complex systems in themselves, a result of several internal complex processes. This does not preclude understanding international politics in terms of interstate relations and actions, but casts doubt on analysing states as actors akin to the *homo economicus*.

However, for a model to be clarifying one needs to strive to distil it into something comprehensible. Hence, simplifications are warranted. Complexity theory and quantum states might be a way to address the shortcomings of analysing states as unitary actors as well as to understand the international system as more than just the sum of individual states.

Wendt (2005) suggests understanding the international system as well as states through *quantum consciousness*. The core idea is that consciousness is the ability of certain compositions of material (organisms) to sustain some quantum traits from the particle level up on a ‘macro-level’. He suggests that as states consists of quantum conscious beings (humans), states also have a consciousness of sorts, although different from that of humans – a state consciousness. (Wendt, 2005, pp. 197–204). Whether states have a “state consciousness” will be left for others to explore. However, Wendt’s case seems convincing enough to support an assumption that states will behave *as if* conscious. Thusly, it is assumed that even though states are complex actors, they may be assigned some predictable behaviours.

Furthermore, these states are assumed to be acting rationally in pursuit of certain goals which enables game theoretic analysis. However, they also interact with, adapt to, and learn from their environment – thus allowing relations to influence their strategies. Moreover, the social relations are mutually constitutive, meaning that they are subject to complex dynamics. Systems of political relations are typical examples of systems that are expected to demonstrate considerable degrees of complexity (Kitt, 2014, pp. 53–60).

In summary, this thesis excludes some of the complicatedness of the IFS and focuses on the complexity of state interaction within this context. This does take out some of the expected accuracy of the model suggested below, in favour of understandability and clarity regarding causality.

### 1.2.2 Game theory in complexity

Complexity theory in the social sciences often draws on game theory for its explorations of the evolutionary processes that form the systems under study. Micro-level interactions need to be described as simple as possible to facilitate the analysis of the macro-level complexity that they result in. What factors to include, and how best to model such evolution is hotly contested as it depends on what other

theory one draws on (Byrne and Callaghan, 2014, pp. 106–107). It thus seems as though complexity theory, while methodologically useful, still needs other social theories for its adaptation to the social sciences.

Axelrod (1984) famously investigated superior strategies in the prisoner's dilemma by arranging a tournament of strategies in repeated rounds. Part of the issue lies in getting the other party to cooperate and the superior strategy turned out to be a tit-for-tat strategy. This was only in a rather simple setting with straightforward interaction, yet despite that, his work has had considerable impact.

Lindgren (1992) simulated biological evolution by adding the possibility of such strategies being able to change. This illustrated an evolutionary process with new strategies appearing spontaneously. These strategies were more adaptable than Axelrod's as they had a longer "memory". That is, they could adapt better, further back in time. Yet, the strategies were locked-in, determined by the actors' DNA. Interestingly, no single superior strategy emerged. Instead, different strategies were dominant at different times showing that some strategies work best in relation to others, in symbiotic or parasitic relationships. Thus, the system that emerged was clearly complex, with only temporary equilibria.

The same conditions do not apply in the context of international politics. There can be an evolving set of strategies, but as states rarely die there cannot be an evolution in the traditional sense. Instead, states have incredibly long memories, that exist as their history and culture, and dynamic relations that evolve as a result of their past, and especially the behaviour of others. In other words, states are assumed to be in part constituted by their context.

This is what this thesis will attempt to model. The states interact in simple games but with the context influencing their strategies. Games should be kept simple to not cloud the interesting results of the model. The aim is not to perfectly imitate the IFS, but to isolate the studied effects in as simple a model as possible that still manages to explain state interaction within contemporary IFS-context.

## 2. Methodology

In chapter 3 an established model of geopolitics and resources – suggested by Kennedy (2017) – is introduced and explored in some depth. This model then needs to be updated to fit the circumstances of the contemporary IFS. To achieve this, the IFS is explored with input from both previous research and a series of interviews conducted for the purpose of this thesis. This part draws on the methodological approach of *Grounded Theory* to generate theory from this qualitative data, by reiterating over the literature and interviews to identify the relevant core concepts. Grounded theory has the advantage of being well-established and allowing for a wide range of sources including both interviews and literature such as in this thesis (Birks and Mills, 2015, pp. 22, 68–69). By identifying the relevant aspects, Kennedy’s model can then be adapted to be applicable to the contemporary IFS.

This process provides an abstract model, but the model requires evaluation. To fully explore the model, it will be simulated. The application of complexity theory opens for a host of associated methods of analysis of complex systems, but also makes part of the work more difficult. Cederman explains the necessity of formalizing theories of complexity:

*“Paradoxically, the high degree of endogeneity makes formal tools, which help guarantee internal consistency and conceptual clarity, even more needed than in the simpler settings studied by essentialist theories. With few exceptions, however, scholars relying on sociational principles have refrained from formalizing their theories.”* (Cederman, 2002, p. 7296)

Formalizing theories does provide several benefits, not the least great parsimony. Furthermore, it allows for simulations of theoretical propositions, making use of a computer’s superior computing skills to investigate the model. A simulation can be run in several iterations which allows for comparisons against itself, and with many variables at once in a much shorter timespan than if done by hand, as well as with a lower risk of miscalculations. Complexity theorists therefore often explicitly formalize their models.

Hence, the analysis in chapter 3 will lead to an adapted model in chapter 4, which will in turn be simulated to explore its expected complex properties. This model is meant to be general, as general as it can be by disregarding specifics of any actors and instead only address the system at large. As the object of study is the international system, it might on the one hand be a rather specific system (in the range of possible international systems), but it is the grandest system of which there can be only one. Consequently, aiming to generalize beyond that would be irrelevant as it already covers the entire possible population. It is also high

impossible to seriously investigate what the system might alternatively look like had it not been for the specifics of the earlier stages of this system that lead to its current form.

The model is, as suggested, based on the assumptions of the states as actors aiming to pursue rational goals, yet in an environment that complicates their pursuit by serving as their feedback, forming their options and success. This should lead to the emergence of a system that cannot be easily envisioned beforehand. The exact conditions of their interaction are also restricted by the environment – that is the range of options available to the states are determined by the nature of the contemporary IFS. Therefore, it is necessary to explore that system at some length first. To serve as input for this analysis the sources more readily available are complemented by interviews with practitioners with relevant expertise.

## 2.1 Interviews

The financial part of cyberspace is continuously and rapidly evolving. This necessitates the use of as up-to-date sources as possible to find the most important novel aspects of the contemporary financial system. Professionals working in this field serve this purpose. Thusly, they inform the analysis about the current state of the financial sector, as well as provide some insight into the near future.

The interviews were conducted with practitioners working in or around the financial sector. These practitioners are also experts – that is they are experts on working on these issues in the field. Primary sources furthermore contribute by informing on current trends and how they are perceived in the financial sector. Lastly, the interviews are meant to address the lack of sources on this specific topic – the intersection between cyber security, financial markets, and geopolitics – in the academic literature.

The interviewees were selected by area of expertise and availability due to restrictions in time and resources. It would have been preferable with a more spread selection which should be kept in mind when making inferences from the interviews. Nevertheless, they still provide valuable input.

More specifically, 9 interviews were conducted with 8 interviewees. They have experience from several European countries and different aspects of the financial sector including investment banking, compliance, anti-financial crime, and international financial institutions (see Appendix 1).

The interviews were conducted in a ‘personal’ style that is meant to generate high levels of trust. This approach best suited the purpose of these interviews, as it is advantageous when the object is ‘technical and process knowledge’, with the added bonus of potential access to confidential information (Bogner and Menz, 2009, p. 69). The interviews were longer, in-depth, and interactive, rather than a more questionnaire-like style. This is because what was needed were in-depth answers that investigated a broad range of interrelated issues, something that a questionnaire could not cover. This interactive approach served to get the

interviewees engaged in the conversation and to verify that they had been correctly understood. (Bogner and Menz, 2009).

The interviewees were provided with the topic and three broad questions beforehand to set the focus and to allow the interviewees to prepare. The questions were not too specific so as not to induce the interviewee to think in a (all too) predetermined way. The topics were cybersecurity, finance, and geopolitics, with a focus on the relation between them. During the interview, the interviewees would first share their thoughts on their areas of expertise (finance, or cyber solutions in finance), followed by increasingly detailed questions on particular issues. Thereafter geopolitics would be introduced (assumed to be slightly outside the professional focus of the interviewees) and finally, the basic suggestions of this paper, to allow them to present any criticism thereof. This design was intended to allow for the collection of both the untainted ideas of the interviewees, as well as their input on specific topics.

## 2.2 Simulation

The model that is to be suggested in chapter 4 will also be investigated through a simulation. The chosen approach is Agent Based Modelling (ABM), which is a popular methodological approach in complexity research. Some have even argued that complexity theory needs ABM to be useful, otherwise it resorts to being a paradigm rather than a theory. The challenge of applying complexity and ABM to IR is to model the emergence of not ‘merely dynamics but the emergence of actors’ identities and political authority itself’ (Earnest and Rosenau, 2006, p. 145).

The idea is to simulate the complex systems that arise out of potentially rather simple actors when they interact in a way that produces non-linear results. Complex systems generally include multiple feedback-loops which amplify certain aspects of the system in non-linear ways and complicates the distinction between cause and effect. Agent Based Modelling sets up simplified ‘micro-worlds’ with manipulatable variables which makes it ‘particularly useful in deriving an understanding of cause and effect within complex systems ... and [to] identify possible latent causes of system behavior’ (McCaskill, 2014, p. 106).

This simulation can strengthen the internal validity of the model, yet the results may also be compared to reality as a way to see if the model holds up in producing reasonable results. As part of the predictions of the model concern the future, rather than the past, it means that these parts cannot be tested against reality. The formalizing of the model and the simulation is therefore meant to be clarifying, not to test the model against the reality.

Byrne and Callaghan (2014, pp. 153–162) argue that ABM is somewhat overrated. They claim that whereas it has its merits it is currently being used too broadly, in ways that does not actually add any scientific value unless derived from data and the results are compared against reality somehow, preferably through data.



McCaskill (2014, p. 111), amongst others, seems to disagree, however, and argues that ABM is a ‘powerful tool’ that deserves its popularity in the study of social complexity. According to the logic of Byrne and Callaghan, one can hardly make predictions of the future if it needs to be evaluated against reality. However, excluding any topics relating to the future from investigation – simply because the results (predictions) will be less certain – would considerably limit the value of research to society. Rather, research should concern itself with anticipation to contribute to society.

Byrne and Callaghan (2014, p. 257) are correct in that ABM does not work on its own. The simulation is however only a part that complements the theoretical proposals of the thesis by allowing for a more thorough investigation. In the case of this thesis the value added from ABM is that it makes a formal model clearer, thus increasing the parsimony of the work. It is however based primarily on theoretical assumptions, that are in turn based on a combination of previous theory and empirical input. Additionally, ABM allows for ‘observation of not only the outcomes, but the evolution of the outcomes.’ (McCaskill, 2014, p. 106).

The model used in the simulation was built explicitly for this thesis and made in NetLogo (Wilensky, 2019), which is a widely used ABM software. It was designed with simplicity in mind, thus excluding unnecessary complications in favour of clarity and to reduce the room for undetected errors due to insufficient knowledge. It should be noted that while it is very much the construction of the author, some design inspiration came from Lindgren’s (1992) model of strategy evolution and Wilensky’s predator-prey model (1997). Furthermore, the simulation is analysed both by inspecting the developments in individual runs of the simulation, and quantitatively by compiling a dataset of 100 iterations. The iterations in the dataset were run with 200 states for 4000 rounds.

## 3. Theory

### 3.1 International politics and finance in history

Unlike the lack of theory on the IFS's role in contemporary geopolitics, the historical connection between international politics, the waging of war and the financial system appears more well-studied. This provides some basis for a further investigation of the contemporary interaction between these. Some evidence suggests that financial issues and considerations have played an important role in domestic as well as international politics since ancient times (Zarate, 2013, p. 3).

Mahan famously argued for the supremacy of sea power, partially on the basis of the significance of maritime trade and the importance of naval power for states to be able to harness the potential of that trade (Kennedy, 2017, pp. 124–5). Adding to Mahan's argument Kennedy argues for the historical centrality of finance to the power of states in geopolitics (Kennedy, 2017, pp. 98–111, 130–182).

To exemplify the role of trade and finance in historical statecraft, one can consider the struggle between the European powers for the intercontinental trade flows from the colonies in the 16th and 17th centuries. Trade routes were plundered, and trade posts seized to redirect the flows through one's own ports. A clarifying example hereof would be the Dutch war of independence from Spain (known as the 80 years' war). In 1580, Portugal was added to the Spanish Empire and at about the same time the Dutch started sending expeditions to first compete with, and eventually also forcefully conquer, the Portuguese trading empire. The Dutch proved remarkably successful in this endeavour, which provided them with funds to contend with the persistent threat from the Spanish Crown. The Dutch, although seemingly weaker, were thus able to acquire new sources of income, while the Spanish were spending the income from their colonial empire on several fronts. This enabled the Dutch to contend with the much bigger Spanish Empire. (Howard, 2001, pp. 41–46).

Additionally, the Dutch trading empire enabled the development of a nascent financial sector which made Amsterdam Europe's foremost financial hub. Spain's colonies also generated considerable wealth but no financial developments along the lines of the Dutch. Spain therefore had a harder time raising capital beyond what was brought in in hard currency. Amsterdam, on the other hand, could instead raise funding from its embryonic financial sector in times of need relatively speedily, which proved very useful in a time when warfare was still dependent on mercenaries. The Dutch thus had a financial advantage. (Kennedy, 2017, pp. 64–70, 86–9, 99–102).

Another example is the multicentennial struggle between France and England. The French, while at one point an arguably richer and more capable nation, were constantly divided in their efforts between the competition against their neighbours on the continent and their competitors on the seas, whereas the English could more exclusively focus their efforts navally, which would lead to the triumph of Great Britain when the control of the seas and overseas assets would eventually prove more profitable. Additionally, London had better access to credit and could take on more debt precisely because of its greater merchant capability that had provided London with a more developed financial sector. These two advantages, one geostrategic and one financial, enabled the English to thwart the continental ambitions of the French – most notably under Louis XIV and Napoleon – and then go on to build one of the largest empires in history. (Kennedy, 2017, pp. 102–180).

### 3.1.1 Kennedy on geopolitics

Kennedy's *The Rise and Fall of the Great Powers* (2017) is a reading of history (since 1500 AD) as a geopolitical struggle between states that has in much been determined by warfare and how the states financed these wars. The ones that were better at extracting resources from the world around them, and then efficiently translated these resources into fighting capacity, would triumph over the ones less able. This would, of course, also be modified by the geopolitical, primarily geographic, situation of the country. So far that is in much a classic geopolitical reading of history, consider for example classics such as McKinder (1904) or more recent works such as Mearsheimer (2014). Kennedy does however include the financing itself as one of the important factors and explains at length how finance has played a crucial role as a means in power politics (Kennedy, 2017, pp. 98–111, 130–182).

The exploration of the nexus between finance, war, and geography over several hundred years enables one to discern the factors Kennedy envisions as consistent forces and how they interact, meaning that one can see his framework of analysis bordering on a theory or model of the driving forces of geopolitical history.

Kennedy regrettably never formalized his ideas into an explicit model. His writing would have been much improved by such a model to complement the qualitative analysis. This thesis suggests that such a formalization of Kennedy's implicit model could look as follows:

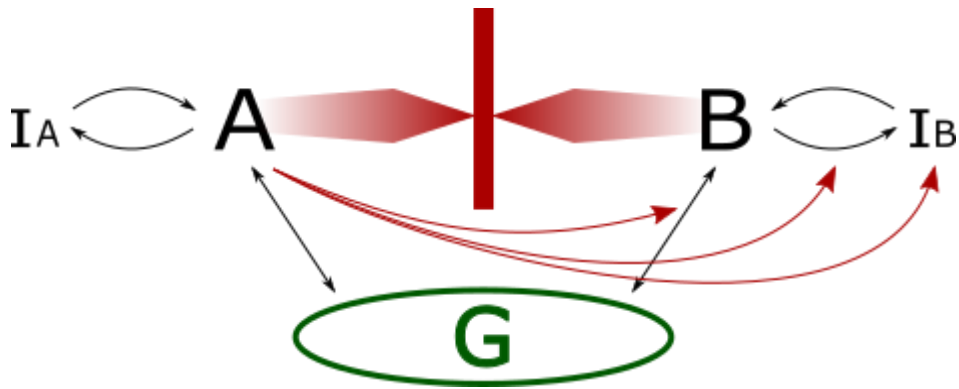


Figure 1: Formalization of Kennedy's model of geopolitics. Two states,  $A$  and  $B$ , are pushing against each other. Their strength is derived from their respective sources of income,  $I$ , and from a common one,  $G$ .  $A$  has three vectors of attack against  $B$ 's resource base:  $B$ 's connection with  $G$ ,  $B$ 's connection with  $I_B$  and  $I_B$  itself.

This model consists of only two parties ( $A$  and  $B$ ) for the sake of simplicity, although that would of course rarely be the case in a real-world scenario. Each party has a set of sources of income ( $I_A$ ,  $I_B$ ) that they draw from to maintain themselves (their fiscal capacity) which includes pushing against the other party to prevent encroachment. The actors, or states, are thus modelled as systems that use resources as input to produce a push-effect as their output. The push-effect is essentially a representation of their ability to project power militarily, politically, and otherwise.

If the push-effects are equally strong, they will hold steady and the dividing line between them will not change. However, if one would for whatever reason be greater, then the other would be pushed back and the dividing line would move. However, the push-effect weakens as the distance from the actor's centre of power increases. That is, the further away from the centre of power, the harder it is to project power. This means that an imbalance in push-effect will not mean complete triumph for one party but rather that the dividing line will move closer to the weaker actor, thus gradually weakening the push-effect of the stronger actor until a new equilibrium is reached.

*Common resources* combine several real-world phenomena in one element. It is modelled as a common resource pool ( $G$ ) from which both actors may extract income. This includes all sources of income that are not exclusive to either party, such as trade with or credit from third parties not included in the model. In the case of the Dutch versus the Spaniards, this could for example be the lucrative markets in the East that the Dutch were tapping into more efficiently than the Portuguese (under Spain).

Additional elements can be added to this basic version of the model, such as how efficient an actor is at converting input into output, or the efficiency of their resource extraction. Analysing the Cold War using this model, the dividing line would be the iron curtain, and the actors would be Moscow and Washington. As the resource extraction capacity of the USSR started to falter due to its failed economic policies (exogenous to the model), the push-effect of the USSR weakened as well. The USSR was gradually getting worse at converting resources into push-

effect, relative to its Western adversary. This would then lead to the stronger Western push-effect pushing the dividing line from the Iron curtain towards Moscow (the collapse of first the Warsaw Pact and then the USSR). Moscow's power projection was not strong enough to maintain the Eastern bloc.

It is necessary to add *time* to fully explain the advantage of a more developed financial system. Returning to the cases above of the Netherlands—Spain and England—France, the former in each pair was generating less income at any one point in time but thanks to being able to take on debt they could use future income already today. This meant that London and Amsterdam could generate greater push-effects at the critical moment when the struggle was more intense. It seems reasonable to assume that an actor must pay back, meaning that over time the push-effect must correspond to the generated income over time, but credit enables one to invest in push-effect today so that one can obtain new sources of income, and pay back tomorrow.

Analysed using the model, the French then originally had access to greater funding but were also being pushed by other states on more fronts than the English. Over time the English could use this to acquire and develop new and better sources of income to eventually triumph over the French. Credit provided was thus a great advantage for countries like the Netherlands over Spain and England over France.

As wars were steadily becoming more expensive through the early modern, and modern eras, being able to leverage credit became essential to waging great power wars. The increasing costs of armies and weaponry was amplified by wars increasingly becoming a matter of attrition. As a consequence the ability to leverage credit to finance the continued war effort came to be one of the most important determining factors in wars such as the First World War. (Kennedy, 2017).

In summation then the most important components of the Kennedy-model are how political entities project power, how they finance their power projection, and the environment that restricts or enables their power projection. This is then what will be explored on the coming pages in relation to the contemporary IFS. It should be clarified that the model is based on a geoeconomic logic and is a tool for macro-level analysis of the struggle between for example states.

## 3.2 The contemporary financial system

The financial system has changed significantly since the formulation of Kennedy's ideas (originally published in the 80s). He was writing shortly after the fall of the Bretton-Woods system and during the deregulation of the financial markets during the Reagan-Thatcher era, but before the exponential growth that it would eventually generate had fully manifested itself. The further changes that have taken place because of the explosion in size and sophistication of the financial markets are remarkable.

Firstly, some of the more recent developments in both technology and the financial system will be described in more detail, followed by a description of the contemporary financial system, before turning to how this can be incorporated with geoeconomics.

The contemporary IFS is characterized by its internationalization, a process driven by both technological innovation and political processes (Dymski and Kaltenbrunner, 2016; Parenti and Rosati, 2018, pp. 13–15, 23). The aggregated size of the financial markets is up for debate as it depends on definitions, and methodology of the calculations. As examples the financial services market is expected to amount to 26.5 trillion USD by 2022. Already in 2018 the total assets of the banking industry was estimated at 124 trillion USD while global GDP was approximately 86 trillion USD. (Investopedia, 2020). In short, the aggregated size of the financial markets is enormous.

The USA has a special, and prominent, role in the IFS. Firstly, there is the dominance of the USD in contemporary finance. It is often considered the world's reserve currency, meaning that most of the world's trade takes place in USD, including the important oil trade (Zarate, 2013, pp. 150–151). As the central bank, the US Federal Reserve issues the USD, thus controlling the money supply of the world's reserve currency. New York is also a central node in the international banking system through which many international transactions pass, and together with London ranks as the top two in the various versions of the Global Financial Centres Index. According to that same measurement, the US hosts half of the ten most significant international financial centres. (Parenti, 2018, pp. 49–52). Taken together this provides the USA with considerable leverage-

However, the rise of China has also taken place in the financial sphere, and although the RMB is far from an alternative to the USD, Beijing has successfully promoted it as the currency in which to trade in its bilateral trade relations and in local trade arrangements. Additionally, the Euro is also growing in importance and might also provide competition to the USD as world reserve currency. (Parenti and Rosati, 2018, pp. 134, 140).

There are a few institutions that attempt to govern the IFS. Most prominent are the IMF and World Bank, but there are many more in a patch-work style system, ranging from various degrees of actorhood to mere forums for states to discuss common issues. Consistently, states play a key role in these institutions as the members of these institutions, and some argue that they primarily serve as a vehicle for states to promote their particular interests, rather than working for solutions for the common good. (Parenti and Rosati, 2018, pp. 42–44; Previdelli and Simões de Souza, 2018, pp. 50–57).

### 3.2.1 Regulation

Financial crashes –both global and regional– have plagued the IFS over the past few decades. The most notable is the Great Financial Crisis (GFC) of 2008, which originated in the USA but soon spread and was amplified through local conditions – such as the sovereign debt crisis of the Eurozone – to have devastating effects

around the world (Parenti and Grandi, 2018, pp. 33–34). It was the result of excessive risk-taking, enabled through unregulated financial markets (Battisti, 2019, pp. 50–4). It seems to have altered the perception of finance, and the neoliberal idea of the benefit of a free market, has now had to share the limelight with calls and efforts for regulation to combat the volatility of the financial markets.

Regulation, and government intervention in general, are much-debated topics in economics. As this thesis focuses on system-level state interaction, the nuances of this debate are of limited relevance. Rather, what matters is the effectiveness of regulations in achieving political goals, the degree, and the nature of regulations in practice. Schmukler (2010) argues that economists have increasingly come to favour some degree of government intervention in the financial system. These economists argue that there are various inefficiencies in the financial markets, which the state should defend its wider economy from. However, those who disagree instead consider government intervention to be the main cause of the financial crises that have accompanied international financial integration. (Schmukler, 2010, pp. 327–328).

Regulatory frameworks do also seem to have grown significantly since the GFC. Dymski and Kaltenbrunner (2016, pp. 363, 366) argue that there is reason to be sceptical of their effectiveness in controlling harmful behaviour in the financial sector. The combination of efficient lobbying from the financial industry and the more general design of the banking (in particular the shadow-banking) sector means that the tendency towards dysfunctionality is unlikely to have resided.

### 3.2.2 Cyber

The contemporary IFS has become completely dependent on modern information technology for its functioning. This process of *cyberfication* has made the world of finance part of cyberspace – a financial cyber space as a subunit of the larger cyberspace – and is feeding the separation of finance from the productive economy. This process has increased the speed of trades in the financial markets to the extent that trade may now take place in fractions of a second – so-called high frequency trading – as well as made trading at different stock exchanges around the world more available. Traditional international banking has also become considerably faster, cheaper, and easier due to new technical solutions. This process has thus enabled the internationalisation and potentially also the volatility of the financial system. Hence there is a need for new solutions between the old and new parts of the financial system (Sloboda and Demianyk, 2020).

While *cyberfication* has the benefits of increased speed and efficiency, it also makes the financial world vulnerable to the cyber threat landscape. Both states and private actors can now pose threats to financial institutions in a way that was not previously possible. New technologies create new threats, and thanks to the interconnected world, such threats can spread in previously unseen ways, quickly making a global issue out of a local disturbance. (Lacy and Prince, 2018, p. 106). This increased volatility is, arguably, what stabilizing regulation has, at least in part, been expanded to counter.

Cyberspace is an abstract, dynamic landscape that is only partially subject to state governance, and where the potential for power projection is not yet well-explored. It may be understood in different ways, and there is considerable variation around the globe in terms of cyber threats and governance (Lacy and Prince, 2018). Steps have been taken toward global rules for cyber governance under the UN, but that progress has been grinding to a halt in recent years as states are finding it hard to agree on core issues. There are both common interests, such as limiting illicit activities, but also issues where interests and opinions differ. (Kello, 2018, pp. 536–7; UNODA, 2020).

This is increasingly leaving tackling the issues to individual states and bilateralism. As the threats remain, states are expanding their cyber capabilities across the board. This is probably further reinforced by the potential power in cyber weapons which means that many countries are getting engaged in what increasingly looks like an arms-race simply to not be left behind. One state does not want to be left at the mercy of another. (Kello, 2018, pp. 530–7; Lacy and Prince, 2018). Such cyber capabilities can also be leveraged against financial targets (see 3.3.2).

### 3.2.3 Empirical results

All the professionals interviewed for this thesis seem to agree that much has changed since the GFC, not the least the practical efforts to regulate from both governments and from within financial companies themselves (Greif, 2020b; Harsten, 2020; Holmqvist, 2020; Interviewee A, 2020; Interviewee B, 2020; Maneri, 2020; Otto, 2020; Rampin, 2020; interviews). Opinions differ on the willingness of the financial sector to adopt such measures, with some arguing that it has been forced upon it (Rampin, 2020, interview) while others suggest that it has also been propelled by demand from within the sector (Greif, 2020a, interview).

The regulations restrict the short-term profitability of financial institutions, but primarily regarding riskier deals, such as trade in excessively risky financial products that played a part in the GFC. Thus, it should increase the stability of the markets overall (Harsten, 2020; Rampin, 2020; interviews). That the banks have not (yet) needed bailouts during the recession caused by the Covid-pandemic can be taken as evidence of the increased robustness of the financial system according to Rampin (2020, interview). This point of view differs from the scepticism of Dymski and Kaltenbrunner.

Some also argue that sound, ethical business practices will prove more profitable long term (Harsten, 2020, interview; Interviewee A, 2020). Regardless, the increased stability, if successful in preventing further financial crises, will increase the long-term gains of finance, especially to society as it will prevent such crises from triggering recessions, thus making regulations a profitable endeavour for states.

Perhaps the most problematic legacy of the GFC for the financial sector has been the general loss of trust in it (Greif, 2020b, interview). Banking, as well as related services and arguably even currencies, are ultimately based on trust. The



loss of trust thus undermines the entire system and makes the conducting of financial business more difficult. Regulation, if successful in restoring trust, could therefore prove beneficial for the financial industry.

Another reason for the increase in government interference in the financial markets is to prevent harmful activities such as money laundering and tax avoidance. Awareness of their harmful impact on society seems to have increased, and in turn propelled governments to take action. (Interviewee A, 2020). AML (anti-money laundering) requires regulation though, as participating in money laundering is often profitable for banks while the costs are carried by society and the state (Holmqvist, 2020, interview). This development has thus both increased state involvement and legitimized it. Harsten (2020, interview) argues that regulations seem to be effective in achieving government goals and are therefore likely to expand in the future to include more areas, such as environmental goals.

The problematic aspect of regulations is of course their restrictive nature and given the rapid evolution and intricacies of overlapping frameworks it has become easy to break them by accident (Rampin, 2020, interview). Furthermore, while banks are relatively slow to adapt to changes, criminals can often adapt more quickly and exploit weaknesses in the banks' AML-systems, thus necessitating even more regulations. Regulations will therefore likely continue to expand to prevent this, and banks are likely to continue to occasionally fail to comply with the ever-expanding morass of regulations. (Interviewee A, 2020). Otto and Interviewee B (2020; 2020; interviews) both confirm the troubles of trying to comply with regulations, especially keeping up with international sanctions. Sanctions are a special and often more political form of regulation (see 3.3.1). These negative costs are carried by the private sector and while they might increase the private sector's resistance to further regulations it can also benefit from government intervention.

Another legacy of the GFC are quantitative easing policies (QE). They were instigated during the GFC as injectors to the national economies but have often continued since in some form. This has created a new normal under which maintaining QE-policies is necessary to keep up the day-to-day functioning of the economy. QE-policies thus constitute continuous state intervention in the financial system, and seems to make the whole system more dependent on the state. (Greif, 2020b; Rampin, 2020; interviews).

Recent technological developments are quietly revolutionizing the financial sector according to Greif and Maneri (2020a; 2020; interviews). They argue that fintech innovation is undermining the oligopolist structure of traditional banking, and thus seem to be in agreement with Sloboda and Demianyk (2020). These changes are, by transforming the financial sector, creating opportunities for new financial hubs to emerge. The race between states for fintech innovation and to establish their own cities as regional financial hubs, has already begun in Asia, according to Maneri (2020, interview).

Maneri (2020, interview) further argues that establishing such a hub first provides a "first mover" advantage, although that advantage is temporary as the allocation of financial centres should move towards a more optimal distribution over time. Furthermore, excessively self-interested policies risk undermining the trust needed for international financial integration. Hence, there is a balancing act

for states between, on the one hand, self-interested policies that promote their own financial hubs and commercial interests, and on the other, the international integration that is needed to generate the benefits of international finance and commerce.

Maneri, Otto and Greif (2020a; 2020; 2020; interviews) all agree that as integration is the optimal solution for the system, the balancing act will tip sufficiently in favour of further integration. Interviewee B (2020) considers the balancing between these interests less given and sees challenges to the current system. It should be noted that none of the interviewees see the system falling apart because of more geopolitical competition between states.

### 3.2.4 Summary of changes

To summarize, the contemporary financial system is different because it is more international and larger than previously. States are also more dependent on the IFS, yet to some extent the functioning of the system also depends on the states' policies etc. Furthermore, the cyberfication has enabled new efficiencies and problems that necessitate new solutions. An important and somewhat controversial trend has been the increased government involvement in the financial sector that stems from several sources. There is both increased regulation, increased interference with financial tools and lastly government involvement in the cyber sphere. Although not all governments engage in all of these, and there is debate on the benefits and harm of such activities, it remains clear that opportunities for such engagement are much more plentiful today both in terms of capability and acceptance.

Government intervention is by definition political as the decisions have to be made politically. Additionally, while private banks etc. strive for profit, states and governments can reasonably be expected to pursue other goals. Amongst other things, they strive for power in the competition against their rivals. Furthermore, as the governments get involved, it also creates the opportunity to implement regulation to distort the market in their own favour.

### 3.2.5 Geofinance and the evolution of the state-system

Gilpin (1981) argued that there are different types of changes to the international political system. Technological or economic changes are of a more fundamental nature that forces change upon the international system by destabilizing the existing order. In pre-industrialized societies, 'when agriculture was the basis of wealth and power' (Gilpin, 1981, p. 112), the primary way in which a group could increase its wealth, power and security was territorial expansion. Industrialization would replace that with economic growth through increased productivity (Gilpin, 1981, pp. 23, 123–125). Simultaneously, the financial sector was growing in importance.

In Kennedy's model, the states had found new sources of income to extract resources from. The states then gradually expanded their power projection-

capabilities in response to the need to defend their inputs from other states, leading to the formation of the modern *state* (Tilly, 1985). In other words, political entities adapt to their economic base, or input, in pursuit of power and that then in turn determines their interaction that creates the international system.

Turning to trade and industry as inputs created different needs in the functioning of political entities, and created the financial enterprises that enabled the economic expansion of the states and provided an advantage for the trade-dependent financial nations over others (Gilpin, 1981, pp. 125–127). The transition to geoeconomic competition after the Cold War would then be but the next step in states adapting to their inputs for their own historical progress as political entities.

This evolutionary view of geopolitical history, with its proponents in Kennedy, Gilpin and Tilly, is compatible with the international community as an emergent complex system – a system which can be backtracked with the blessing of hindsight, but which's current form could hardly be predicted from the vantagepoint of its previous incarnations.

Over the last few decades, the nature of that IFS has changed, as discussed above. The system is now grander and with the state playing an increasingly interventionist role. Rosati and Parenti (2018, pp. 59–60) argues that, economics and finance has strayed into the political sphere and to some extent subdued it; 'politics adjusts itself to the choices and change of the economic system' (Parenti and Rosati, 2018, p. 59).

However, looking at this from the perspective of evolutionary geopolitics changes this conclusion. A geoeconomic logic prescribes a policy of promoting economic growth, as economics is the primary base for power (Huntington, 1993, p. 72). Thus, it makes sense to adapt according to the economic logic. Furthermore, finance is where the money is, and especially the way in which to extract wealth from the productive economy.

Hence it follows that states will promote their financial systems and prioritize financial concerns. This does, however, not mean that states lack the ability to act. On the contrary, the trend seems to be more state intervention on account of economic reasoning. Yet, the more politics enters the fray it risks leading to competition between states over limited resources. Therefore, this thesis will look to the possibilities of cooperative and competitive behaviour under these new conditions.

### 3.2.6 Geofinance, the contemporary system and abstraction

Vander Straeten mentions the importance of IT to contemporary finance but does not draw this to the conclusion of the cyber realm having direct bearing on the world of finance, such as through the issue of hacking. He instead emphasizes how bound the cyber realm still is to the physical. There are chokepoints in and physical constraints on the IT-infrastructure that is the foundation of the cyber realm (Vander Straeten, 2018, pp. 181–4).

Geoeconomics is often concerned with the physical infrastructure. Consider for example Khanna (2016) who argues that trade flows will shape the future and that, consequently, the control of certain physical networks will grant control of economic flows and in turn the world of the future. This idea is essentially a logical extension of Mahan's analysis of naval power. The same should apply in a financial context. As Vander Straeten (2018, p. 181) points out, the physical infrastructure creates chokepoints. Farrell and Newman (2019) demonstrate how networks may in fact empower some central actors that can leverage their privileged position against others. Consequently, economic flows need not lead to cooperation but can also be weaponized. The panopticon effect is the informational advantage that arises out of controlling certain hubs, whereas the chokepoint effect refers to the coercive power that comes from controlling hubs that others can only circumvent at great cost, if at all. (Farrell and Newman, 2019, pp. 54–56).

However, financial flows are increasingly taking place in an abstract realm, where capital can be transferred between countries without crossing physical borders. Modern money and financial assets can be completely abstract, which makes ownership abstract as it does not require direct possession of an asset. It can be located elsewhere in the world with no intention of being physically transferred to the alleged owner or even used other than as a preserver of value. This demonstrates an increasing detachment of the financial from the physical to the extent that it can be conceptualized as its own *financial realm*.

There are many ways to envision this, depending on which aspect is of interest. It is a multifaceted, complex construction that is hard to reduce into any of its subparts to understand the overall system (Sigl-Glöckner, 2018). A key constituent is, however, the transactions. As transactions are momentary, the space is a dynamic system made up of interaction between different nodes. Yet under the constraints of existing infrastructure, it is likely to demonstrate considerable degrees of complexity.

However, the changes are not random but rather depend on certain factors such as interest rates or regulations. The determinants of these factors then appear to be the equivalents of the chokepoints or nodes of Mahan and Khanna (hereinafter nodes). By the same geopolitical logic, these nodes should be central to influence the *financial realm* for the benefit of oneself. Additionally, as these nodes are naturally limited in number, control over them constitutes a zero-sum game, which should lead to competition. It should be clarified that some of these nodes are physical infrastructure nodes, while other are of a more abstract nature.

Some nodes, such as most central banks, are national and thus outside the reach of international competition, while others – outside the immediate “territory” of any one state – should see competition between different states. This competition should be more noticeable over nodes that exert more influence over the financial realm, such as IMF.

First, it should be clarified that the purpose, and usefulness of finance, from the point of view of states, comes from economic growth, strictly monetary gains (through taxation) and the ability to raise funds through loans etc. Kennedy's model uses strategic resources as the input but in a financial context, the only value that exists is money. Other resources are physical and hence do not actually exist in the

financial markets. Rather their abstract value is being traded – de facto removed from the actual asset – in various financial forms that can all, ultimately be translated into money. Therefore, the only strategic resource that can be extracted in the adaptation of the model, is money.

Nevertheless, money and finance are different to conventional strategic resources like oil. While the latter is limited by productive capacities, and ultimately a finite resource, money is not subjected to those restrictions, especially in the case of modern fiat money which often only exists as information stored at some institution. Its value is, thus, derived from trust in the currency or derivative, and in the institution. This puts a cap on the money as it must be managed in a way to maintain that trust, otherwise the value is eroded.

### 3.3 International politics in the contemporary financial system

Economics can be a tool of statecraft, and historically finance as well. There is no obvious reason why this would not still be the case. Just as states tend to work for international regulation to be in their favour, they should work for their own financial gain, or to restrict that of their opponents.

A geopolitical logic is thus introduced to the financial realm. Nowadays, states have capacities to influence finance in a way they previously could not, and an extensive, common, financial landscape that allows for this geopolitical, or rather geofinancial, logic. Earlier, states might have wanted to nurture their own financial sectors to be able to raise capital in times of need. In the contemporary IFS, states can raise capital internationally much easier, but this means others might try to restrict the access to this capital and want to shape the distribution of this international capital to suit their own purposes.

#### 3.3.1 Sanctions and financial warfare

Already in 1999, Wang and Qiao of the People's Liberation Army, suggested that the era of financial war had begun and envisioned financial warfare as part of the postmodern 'unrestricted' form of warfare. They used a rather narrow definition and wrote primarily about speculation against for example a currency, used as a destructive tool, and argued that the 1997 Asian financial crisis was, in fact, a case of such financial warfare caused by currency speculation with malicious intent. (Qiao and Wang, 1999, pp. 51–53). They considered this unrestricted warfare an unavoidable and necessary development because of new technologies and the high insurmountable US dominance in conventional warfare. This supremacy requires others to challenge the USA in new arenas by seeking out asymmetric opportunities to save themselves from being dominated by Washington.

*“Today ... financial war has become a ‘hyperstrategic’ weapon that is attracting the attention of the world. This is because financial war is easily manipulated and allows for concealed actions, and is also highly destructive.” (Qiao and Wang, 1999, p. 53)*

Over a decade later, Zarate (2013), writing from a US point of view, argued that Washington had been weaponizing its financial leverage during the early 2000s, yet by 2013 other countries were starting to catch up and developing financial capabilities of their own. This would likely enable an era of financial warfare in the following decades of the 21<sup>st</sup>. (Zarate, 2013, pp. 384–9). He described financial warfare as:

*“warfare defined by the use of financial tools, pressure, and market forces to leverage the banking sector, private-sector interests, and foreign partners in order to isolate rogue actors from the international financial and commercial systems and eliminate their funding sources.” (Zarate, 2013, p. xi)*

The Patriot Act had enabled the deployment of financial power in a new way and thus seems to have spurred on the weaponization of finance (Zarate, 2013, p. 151). The most important was a new kind of targeted sanctions against specific countries or institutions even if they were located abroad. ‘No bank wanted to run the risk of being cut off from the US banking system’ (Zarate, 2013, p. 147). That risk was enough for most companies, but by branding them as international money laundering concerns, Washington could make almost any institution into a financial pariah. This would essentially cut them off from the IFS. It was also highly effective in forcing states to comply with US demands (Zarate, 2013, pp. 9–13, 151–153).

The US Treasury Department would go on to wage its financial warfare against targets such as Iran, Hezbollah and DPRK (Democratic People’s Republic of Korea), mostly with considerable success (Zarate, 2013). As with any new weapon, some tools were misunderstood leading to an at times inefficient or even counterproductive use, such as in the case of the sanctions against DPRK assets (Zarate, 2013, pp. 251–3).

Sanctions have been used for a long time. The important aspect of the US sanctions in the 2000s is rather the introduction of targeted sanctions and how the campaign amplified a nascent trend of increased government involvement in international finance. In this way it was part of shaping the contemporary IFS. Zarate (2013, pp. 385–8) was also worried that others had learned from the USA and were starting to develop tools of their own with potentially destabilizing effects. This appears to have been the case, as more and more countries are deploying new sanctions, thus changing the world of international finance, and making it more complex.

Sanctions are a mixing of finance and politics as it is often used to punish states and people for political transgressions, but also against politically undesirable sectors such as oil. The US and EU have a huge number of sanctions against both states and individuals (Otto, 2020, interview). The destructive potential of sanctions should not be underestimated, nor their capacity for pressuring others into complying with one’s demands. This makes them effective tools for political as well as financial, reasons.

Sanctions towards banks are also driving the increased focus on AML and adaptation of the banks to this. These new sanctions are granting regulators in the EU and USA more power than before to punish banks by enabling larger fines. Sanctions target transactions and assets, but also a bank’s reputation with potential customers. (Interviewee A, 2020).

### 3.3.2 Cyberthreats in the financial system

Due to the *cyberfication*, cyber can also be a vector of attack against and within the financial system. In terms of asymmetric costs, it might in fact be superior to the financial warfare envisioned by Qiao and Wang. Using a game theoretic approach one can analyse the deployment of cyber-attacks as a form of financial warfare. Their effectiveness can be measured in monetary terms.

Biddle (2004, p. 22) and others, measures kinetic warfare in terms of a loss exchange ratio, defined as attacker's losses divided by defender's losses. In the financial realm losses can be measured in money rather than military personnel. For an attacker, the cost of the attack should preferably be proportional to the damage done. From an economic perspective, war is about the destruction (or threat of destruction) of an opponent's assets, at least on the tactical and operational level. "Normal" kinetic warfare usually leads to casualties, or loss of assets, on both sides, and thus what one strives for is asymmetry in costs, where success means that the opponent's costs should exceed one's own. In financial warfare, the costs arise from the assets lost in the engagement and from negative indirect effects the attack might have on the attacker. The fact that such attacks carry costs for the attacker should not in itself be sufficient to prevent them, just as the expected cost of kinetic attacks are not enough to prevent such attacks. Rather, it seems more reasonable to expect hostile parties to attack targets that maximize damage to the opponent, at the lowest cost to oneself.

There are many ways to approach the issue of cyber threats, and the academic community seems to not yet have agreed on the level of these threats (Lacy and Prince, 2018). There are cyberthreat-taxonomies (for example Harry and Gallagher, 2018) but not for cyberthreats against financial targets. Greif (2020a, interview) argues that there are many types of such threats, but no super threat against the entire system, because no single bank or piece of infrastructure is big enough to be a systemic risk by itself.

The threats are what technology allows them to be and new solutions can open for new problems as well as old threats (Greif, 2020a, interview). This creates a race between perpetrators and defenders. For example, AI solutions have become common in AML and are quite good at identifying certain suspicious behaviour, but primarily work by identifying patterns. Thus, the AI can be fooled and other ways of penetrating the defences remain, not the least through the human domain. (Interviewee A, 2020). Hadnagy (2018, pp. 1–2) claims that in fact most successful cyber breaches have a human element, but vigilant employees can also be the strongest line of defence. Technology only provides the tools but the people behind it can be a great weakness if they fail at their tasks, yet only humans can properly identify methods designed to trick computer systems.

Greif (2020a, interview) argues that cyber-attacks are a problem for individual banks and firms, which, by extension, makes them an issue for society. There are various ways to protect against these threats for individual companies. Governments can help – especially through information – but cannot do much actively against specific attacks. Much of the financial infrastructure is in private hands, leading to a fragmentation of defensive efforts between public and private



actors which limits states' ability to organize cyber defences (Kello, 2018, p. 535). Additionally, state intelligence services are falling behind despite their considerable budgets because they lack the necessary economic incentives to stay up to date. Money is not enough in cyber-defence. This is also why banks can fail at cyber-defence despite their considerable wealth and often significant security budgets. Rather it requires awareness, adaptability, and a smart design of the organization. (Greif, 2020a, interview).

On a national level, states may arguably do more. Deterrence in cyberspace requires a counter-strike ability, and the credible ability to detect threats (Alperovitch, 2011). Defence thus requires one to also pursue offensive capabilities. Furthermore, states may not have a monopoly on such capabilities, but they have the advantage of being able to bankroll offensive capabilities. Few, if any, other actors can match states in their ability to invest in offensive cyber capabilities without the prospect of a return on their investment (Lacy and Prince, 2018, p. 108).

However, one cannot expect a terror balance in financial confrontation along the lines of that between the USSR and the USA during the Cold War. The inherent difficulty in attributing cyber-attacks complicates this further by decreasing the risk of retribution. As mentioned above there is a lack of international convention on how to deal with cyber threats and attacks. Furthermore, there is not yet a cyberweapon with enough destructive potential to discourage attacks, in the way that the nuclear bomb has. Taken together this encourages rather than discourages cyber-attacks. Kello (2018, p. 530) therefore suggests that the world is only 'at the early stages of the era of cyber conflict' and is still learning how to deal with these new threats.

There is a lack of examples and theory on large scale attacks against others state's financial targets, but relevant threats should follow the vectors of attack in the model above (figure 1) and target one of the following: the ability to raise international funding, the domestic economy, or the ability to extract wealth from the domestic economy by, for example, targeting the tax system. Attacking the domestic economy would disrupt a much larger part of the country. The constant attacks on the private sector discussed above disrupt the everyday business and raise the costs of their victim, thus negatively impacting the wider economy. A more coordinated large-scale campaign could cause temporary chaos by shutting down computer system etc. An example would be the 2017 NotPetya attack in Ukraine that came at great costs to Ukrainian society (Greenberg, 2018).

The ability to raise funding internationally could be targeted by making the targeted state seem riskier, thus increasing the risk premium the state would have to pay. This could be a side effect of disrupting the domestic economy but could be achieved more directly. For example, attacks against major assets such as large government corporations could devalue them on the international markets.

The USA is accusing the DPRK of stealing money from banks through cyberattacks (Department of Justice, 2018). The most notable was the theft of 81 million USD from the Bank of Bangladesh (United States District Court for the Southern District of New York, 2019, pp. 2–13). In other words, the cyberfication has enabled states to steal from each other – a very direct attack against the assets

of a foreign power. This constitutes a different form of attack directly against the assets themselves.

## 3.4 Future of international politics of finance – conflict and cooperation

### 3.4.1 Conflict

There are also *weapons* of a purely financial nature. Qiao and Wang mentioned that speculation against a currency could be deployed to exert pressure or for destructive purposes. Another version of speculative attack could be to decrease the value of a particular asset. Zarate gives an example of a hypothetical such attack. During the GFC, Moscow allegedly suggested to Beijing that it should sell its US obligations to dump the market price of US debt, thus making it harder for Washington to fund its policies for dealing with the crisis. This would have been purely destructive and was never carried out (Zarate, 2013, pp. 383–4).

Such attacks might have considerable impact on their targets but would be costly to conduct. Beijing would be making huge losses not only on the bonds sold, but also in terms of the decrease in value of its reserves that primarily consisted of US bonds and currency. Furthermore, such attacks would have massive disruptive effects on the IFS, which could have negative secondary effects on the attacker as well, assuming that states benefit from stability in the IFS. Thus, such speculative attacks would require considerable asymmetry in expected losses to be worth it.

Cyberattacks are much cheaper, at least once the offensive cyber capabilities have been acquired. The first cost would be the operational costs, part of which can be discounted as the running maintenance of the offensive capability. This could potentially lead to reasoning along the lines of ‘if we have the tools, we might as well use them’. The more cybersecurity measures the target has, the more the cost of an attack increases as it requires more resources. Certain defensive measures, such as surveillance of systems, also decrease the likelihood of success in the mission (Alperovitch, 2011).

The other cost to take into consideration is the cost of retaliation. If the target has considerable offensive capabilities, then the target may retaliate, raising the cost of the original attack. Thus, offensive weapons, and good cyber intelligence to find the origin of potential attacks, should have a deterring effect as suggested by Alperovitch (2011). These two ways of deterring attacks by increasing their expected cost are based on one’s cyber-capabilities, which creates the incentives for a cyber arms race.

Another kind of financial “weapon” is sanctions. As mentioned, sanctions have become a useful tool in international politics and are based on the leveraging of the instigator’s financial weight. Hence sanctions are also dependent on asymmetric losses in favour of the instigator.

A state's push-capability in finance will then be reliant on financial weight and on both offensive and defensive cyber capabilities. These attacks can be categorized by their target. They target either *Assets*, the enemy's *Access to funding* or the wealth extraction from the *Domestic economy*. Attacks on assets should generally be difficult to conduct on a large enough scale to inflict serious damage on a state. Even in the case of the US targeted sanctions against the DPRK, the concern of Pyongyang was not the actual funds but the indirect effect of becoming even more cut off from the IFS (Zarate, 2013, pp. 239–245). Attacks on assets will therefore be disregarded in the modelling in the next section.

Restricting access to funding or disrupting the domestic economy can be more effective. This was exactly what Pyongyang was afraid of in the example above, or why states were so eager to comply with US-demands when faced with the threat of sanctions (Zarate, 2013, pp. 155–6, 244–247). Disrupting the domestic economy is essentially also restricting the access to funding, but from within the state through taxation, instead of from the international financial markets. Furthermore, the distinction between domestic and international financial markets in the contemporary, integrated financial system is somewhat arbitrary. Rather, a more relevant distinction is between the productive economy and the financial sector. Restricting the modelling ambitions to the financial sector exclusively, one might then note that much of the extraction of wealth from the productive economy is in fact made through the financial infrastructure. This is quite natural as the extraction is made in money, rather than products. Thus, all wealth extraction can be lumped together into going through the financial system.

### 3.4.2 Cooperation

Finance is generally considered a positive-sum game. The gains of integration favour cooperation, as does the common interest in global GDP growth. As stability favours GDP-growth, it is in everyone's interest. As Zarate (2013) points out, most countries have a shared interest in the exclusion of malicious elements and in combating tax avoidance.

These cooperative incentives apply as long as the wealth accumulation of another does not affect oneself negatively. However, if there is competition over something that is by nature restricted, then this changes. If the wealth accumulation of *B* is translated into push-effect against *A* then the latter is incentivised to prevent the wealth accumulation of the former. Thus, there are two incentive structures working against each other, depending in turn on the goals of the individual actor. This in turn, gives rise to two broad types of approaches in financial strategies that states can adopt – *liberal* and *mercantilist*.

### 3.4.3 Liberalism

A *liberal* approach is herein defined as one that favours cooperation, openness, and cooperation, in the belief that it will generate economic growth. The state is concerned with wealth generation because it seeks to maximize its absolute wealth. Individual factions or states might stand to lose from liberalism but overall, the situation will improve for the vast majority as efficiency improves. What stands in the way of this process of liberalism is then primarily (and of course simplified) the interest of certain countries or within-state factions that benefit from regulation that protects their interests.

The cooperation is based on trust, as the state trusts others to behave similarly, for the betterment of all, but does not preclude punishing illiberal behaviour that undermines the liberal order. If *A* opens up its markets, and *B* exploits this to reap the benefits by distorting markets, *A* might not receive the gains of liberalism. Such behaviour risks undermining trust in multilateral liberal policies and institutions (Interviewee B, 2020). Some for example (Navarro, 2012, pp. 27–31; Vander Straeten, 2018, pp. 56–7, 248–9) are accusing China of such behaviour, devaluing its currency to promote exports within the WTO-regime, which is counter to the intentions of the WTO, thus undermining the institution. Whether or not China is actually doing that is less interesting than the fact that it is perceived that way, as it implies the possibility of interpreting behaviour as illiberal and exploitative of liberal regimes.

### 3.4.4 Mercantilism

A *mercantilist* approach is herein defined as one that prioritizes one's own interests, by trying to twist policies in one's own favour, and short-term optimizing rather than trusting in the long-term gain of reciprocity. Arguably, it could be considered naïve to claim that states will act for the benefit of all when they can act selfishly instead to generate greater profit. The approach is characterized by less trust in others, and concern for one's wealth relative to that of others', aiming to maximize one's income, preferably at the expense of others.

There are two possible motivations for such an approach. If states are more concerned with political standing than wealth – and defining political standing as something that is inherently defined relative to others – then they would be more concerned with maximizing relative wealth accumulation. Secondly, if *A* fears that *B* might use its wealth to project its push-effect on *A*, then *A* would be incentivised to ensure that its own wealth accumulation would exceed that of *B*. Being generally unable to trust the intentions of others should thus lead to competitive behaviour where one needs to optimize immediate relative income as one cannot risk falling behind in the race even temporarily. Competition thus means one cannot allow others to accumulate wealth.

Then it is about maximizing wealth, in relative rather than absolute terms. This leads to competitive rather than cooperative behaviour as well as the desire to control as many assets as possible and to exclude others from accessing as many

parts of the financial realm as possible. This would look different than the competition over physical territory but the basic logic and driving forces would remain the same.

Thus, a system of mercantilists would be one of competition for control of assets, nodes, and the directing of flows as every state tries to ensure its access to extraction and to prevent the access of others. This might lead to the financial common being gradually divided up as states try to ensure their extraction of resources and prevent others, in particular opponents, from having access to it. Mercantilism could thus undermine the IFS in its current form.

Control of a node or asset requires that others can be prevented from using it for their purposes. It could be made directly inaccessible, for example by cutting it off from the rest of the system – i.e., manipulation of the landscape itself. An example might be a gold reserve, which can be stored away from the rest of the world, which effectively excludes it from the IFS. Such exclusion will however usually be undesirable. Nodes, such as a bank, are valuable only because they are part of the IFS. In that case it has to be made indirectly inaccessible, by declaring it one's own and punishing any transgressions severely enough to prevent them. An example hereof could be the US sanctions described above – the probable cost of transgression simply has to be higher than the probable gain of transgression. These punishment capabilities would then constitute the push capabilities of the model.

While the ability to punish or prevent transgressions is a prerequisite for competition it does not obviously lead to it. Cooperation is perfectly plausible, given the expected mutual gains. It is thus unclear what states will choose, as liberal economists prescribe liberalism while geoeconomists are more sceptical. The theoretical reasoning laid out above suggests that it depends on the states' context and input.

## 4. Modelling the geopolitics of the contemporary financial system

Hereafter follows an explicit suggestion for how to formulate a model for contemporary geofinance, following the analysis of the previous pages. It is based on the interpretation of Kennedy's model above but has been modified to account for the radically different conditions of the contemporary financial landscape and to accommodate recent developments in complexity theory. The fundamental components of the model are still included: the actors are states, the process is interaction in a world of resources and power competition (because of self-interested actors) but without a pre-existing international community or exogenous norms.

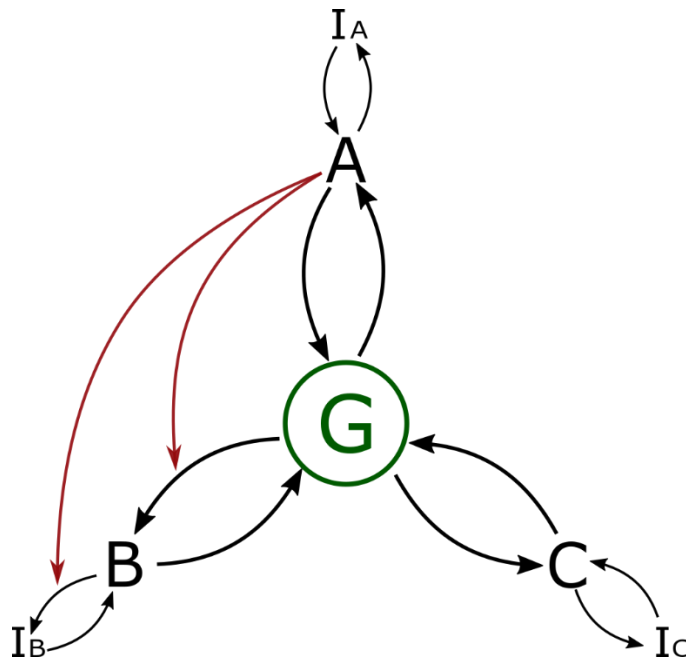


Figure 2: Adapted model displaying the geopolitics of the financial realm. Three states, A, B and C are interacting with and extracting wealth from their respective own sources of income  $I$  – their domestic economies – and from the financial common, G. A has two vectors of attack against B through which to deny B access to resources. These vectors are B's access to either of its sources of income.

The world is completely abstract. Its geography is made up of the connections between actors (the infrastructure that enable financial transactions) and the interactions through these connections. The only resource available in this model is money. Different derivatives, stocks, currencies etc are all simplified into one common denomination as they are all tradeable as money anyway. The money is found in the *pools* that are separate from the actors. The *pools* can be either domestic sources of income (national markets etc that are under control of one state) or a

common source of income (the international financial market that no state can regulate alone).

The states interact with the *pools* and each other. They extract wealth (money) that they turn into a push-effect against others. This push-effect is the ability to exert power, that in the financial realm can only be exerted by legitimacy or threats. Threats need to be upheld by an ability to punish transgressive behaviour. Such push-effect cannot be projected across a geographical area, but rather against connections or directly at sources of income.

The various parts are interdependent, not the least in that their strategies are dependent on the strategies of the others. This suggests that the interaction between the various actors will produce an emergent system.

## 4.1 Simulation

Firstly, the purpose of the simulation is to assist in the analysis of the suggested model to help explore the struggle between liberalism and mercantilism, the consequences of this for the politics of the IFS and the possible implications for the international political balance more generally.

The simulation is carried out through a formal model, but before turning to the specifics some further simplifications are in place. Above, the push-effect was categorized into acts against *Access to funding* or against the *Domestic Economy*. Both go through the financial infrastructure and essentially have the same effect – decreasing wealth extraction – and are hence only distinguished by what they target in the model (*Figure 2*). The two may therefore be simplified into one push capability in the simulation, as the interesting aspect is the harmful actions against another actor, and its effects, not exactly how it is carried out. This allows for the removal of the distinction between domestic and common sources of income into one resource pool (*G*). This represents the entire financial economy, apart from the governments.

For the sake of simplicity, it also excludes any other forms of abilities to punish transgressions than the ones that take place in a financial context. In other words, it is assumed that states will respond to each other in kind, if A makes a financial transgression against B, then B will respond by a financial push-back. This limits the realism, but without such a restriction it would quickly expand to include the entire range of diplomatic tools – from expression of concern to military campaigns.

There are elements of chance in the model, that are meant to represent the exogenous inputs that can affect the opportunities etc. of states in the IFS. This represents incidents that give rise to political issues that the state must address and might lead to interaction with another state such as an opportunity for a new trade deal.

Furthermore, the world is set up at random and changes for each iteration of the simulation. Each iteration has 200 states, each being connected to at least ten other states. States may interact with their *neighbours* (states with which they share a

connection). All states can try to extract wealth from the financial common (G) once per round. All states attempt to extract the same amount every round, but they can block each other from being successful in their extraction.

The interaction between the states has thus been reduced to three types of interaction:

**Cooperative** – This will generate 1 wealth with the target. This reflects the wealth increase generated in cooperation but is one-sided to simulate the fact that cooperation is only beneficial if mutual. Therefore, cooperating is only a beneficial action if it gives rise to reciprocity.

**Neutral** – This does nothing and is meant to simulate normal interaction.

**Harming** – This blocks the target from extracting wealth from G in this round. This is the representation of attack along either of the vectors of attack in *Figure 2*.

In other words, interactions with others determine wealth accumulation. The choice of action also affects the relationship between the parties. Cooperation improves relations while blocking makes them worse, and this will then affect future choices of interaction. This should add a degree of complexity. For more details, see Appendix 2.

#### 4.1.1 Strategy and adaptation

The model includes a representation of the social aspects of international politics. The actors' relations are meant to be representing their memory, and thus inform their "choices" of actions. They have different approaches or strategies (endogenously generated in the model) that provide them with a "choice" of actions against their neighbouring actors. Their choice of action may then generate a response from others which will determine the success of the strategy. The actions are thus interdependent in a game theory style design. This should introduce a dynamic aspect to the simulations.

Relations and the interdependency of success in strategies seems like a highly realistic assumption as the interaction of states can hardly be considered to be taking place in a vacuum, but rather in relation to other states that will react to each other's behaviour. This complexity is modelled by introducing the context dependent aspects of strategy development. All actors start with the same identity but learn from their interactions with others. This creates a spectrum of inclination ranging from cooperative to hostile, rather than a predetermined liberal-mercantilist dichotomy. The actors that find others to cooperate with learn that cooperation pays off, thus reinforcing their inclination for cooperative behaviour. States whose attempts at cooperation are not met by mutual cooperation instead learn not to trust others and develop a more mercantilist approach of harming all but their closest allies.



More specifically, they interact with each other at random, but the likelihood to choose an action is dependent on the relation with the other state and on the inclination of the actor. Both relations and inclinations are determined by past interaction but in different ways. Relations are the result of how a specific state has behaved towards the actor in the past. For example, if *A* cooperates with *B*, then *B*'s relation with *A* will improve, thus also increasing the likelihood of *B* reciprocating in a future interaction and vice-versa for harmful actions. A state's inclination is instead formed by their overall experience of interaction with others. The more any other state harms *A*, the more inclined *A* will be to harm *B* regardless of their relationship. More specifically, *A* will choose an action dependent on its general inclination and then look at the strength of its relations with *B*.

Put differently, states are presented with an opportunity to act. This is meant to simulate the external developments that present opportunities for interaction with other states. The states then interpret this opportunity depending on their general inclination and understanding of the world. This agenda then affects how they choose to behave, the approach they choose in the interaction. For example, if it is an international negotiation state *A* may choose to either pursue a mutually beneficial agreement or try to lobby for its own interests in a more mercantilist manner. Relations fill the role of making sure that states, regardless of their approach, do not choose to help their bitter enemies or harm their closest allies. This seems like a reasonable assumption, but the downside would be that it reinforces patterns of relations as it prevents relations from improving once they have gotten too bad.

In other words, the states are playing a game of trust. They can try to cooperate with others, hoping that they will reciprocate but there are no guarantees. It is, however, not a prisoner's dilemma game because harming is not an optimal strategy, nor does it prevent a worse outcome. In the classic prisoner's dilemma, there is an optimal strategy for the individual player that leads to a suboptimal outcome overall (if both players choose the optimal strategy). In this simulation, the actors are instead trying to optimize wealth but do not know the optimal strategy because the payoff is generated by the behaviour of others in a much longer chain of causality. Like in the Prisoner's Dilemma there is a problem of coordination that amplifies the trust issue.

If everyone cooperates then everyone gets richer, but this is not necessarily how things end up because they cannot agree beforehand. Mercantilism on the other hand only has the effect of preventing others from becoming richer, thus potentially improving one's own standing relative to the other. Such behaviour might however lead to a reciprocating action from the other in the future, thus hampering future income.

In other words, there is a time aspect where actors are, unintentionally, trading in present and future income in trying to keep up with their neighbours in the pursuit of wealth. It is unintentional because the actors cannot take account of what will happen. They measure the success of their strategies by comparing them to their neighbours, and if they are falling behind too much, they will try to change their behaviour. For example, if they have developed a mercantilist approach but notice

that they have accumulated less than their neighbours, then they will adopt a liberal, cooperative approach instead from now on. The success of the strategy change depends on the reaction of the neighbours.

#### 4.1.2 Expected results

There are several interdependent factors in this model that should combine to add a degree of complexity. The result should be an emergent system that can be characterized by one of the following:

**Liberal** – All states adopt a liberal approach, creating a system of cooperation which makes everyone richer, even if the wealth distribution between states may be uneven.

**Mercantilist** – All states end up on the mercantilist end of the spectrum, making it a stable system where wealth accumulation is slow as the states constantly hinder each other's progress.

**Fractured** – Some groups establish a “culture” of mutual cooperation, while others end up in a mercantilist system. States in liberal groups should become richer than the ones that have developed a mercantilist approach which should lead to a very uneven wealth distribution.

**Chaotic** – States keep moving around on the liberal-mercantilist spectrum; thus, no stable pattern emerges even in parts of the system. Wealth distribution seems hard to predict.

Liberal or fractured outcomes with a majority liberal states seems like the most likely outcomes because mutual cooperation is the optimal strategy in wealth accumulation. That is, states that do not block each other and are the targets of cooperation should earn the most (1 wealth extraction and an additional 1 for every incoming cooperative action) in the long run. For the individual state in the short run the optimal strategy would however be to block all others while also being the target of cooperation, thus earning income while preventing others from doing the same. However, such parasitic behaviour will increase the likelihood of neighbours responding in kind, thus decreasing the income of the short-term optimizer in the long run.

The model can thus be imagined as modelling the political financial process as a search pattern for optimal results, in terms similar to those of Cederman (2002). Best practices should spread, but only to a limited extent. If the states were to only copy the strategy of the wealthiest state, then all would simply copy the accidentally richest. This would miss two important factors that should be incorporated. Firstly, it might take time to adapt the approach of another state. There is considerable variation in the world in terms of approaches on several issues, including finance. If one could simply identify and copy the best practice that would hardly be the case. This also touches on the second reason, that the optimal strategy is context dependent. The best choice depends on the specific circumstances. This is simulated

by the actors' pay-off being dependent on the attitudes of their neighbours, which requires each state to try to find its own optimal strategy in a simplified environment where approaches are situated along a spectrum from absolute mercantilism to absolute liberalism.

There is a positive feedback loop where better relations lead to more cooperation, leading to more income and even better relations and vice-versa. This should lead to a propensity for relations to move towards the extremes.

All the outcomes listed above are possible within the model. If one desired a specific outcome, then one could of course tamper with the model in favour of that outcome. To deal with this problem, the model therefore needs to be based on reasonable assumptions. The assumptions underpinning the model therefore deserve some extra attention.

Firstly, the model assumes that financial integration generates wealth, making both states and society richer. The positive effects must exceed any negative side effects. While this seems reasonable now, it may not hold up forever. At some point, integration may start generating diminishing returns and could reach a point where further integration would be more harmful than helpful, by introducing more volatility and unnecessary exposure to risk.

Another key assumption is that states can inflict damage on each other in the financial realm. This too seems reasonable considering targeted sanctions and recent developments in cyber capabilities as has been discussed above.

### 4.1.3 Results

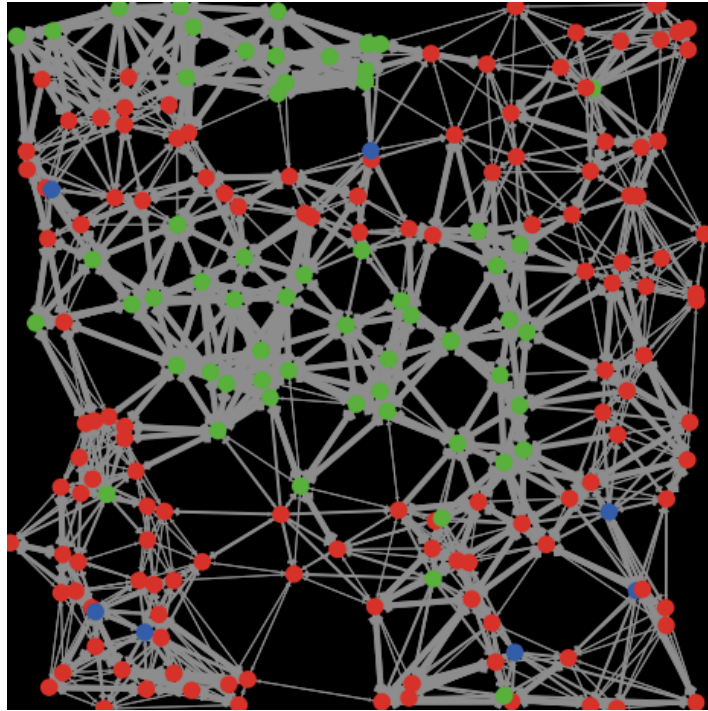


Figure 3: Example run at round 4000, showing a rather ordinary result. Red states have become mercantilist, green are liberal and blue have recently changed their approach. There is also a G (common pool of resources). Its location is irrelevant and has therefore been hidden in this figure to avoid confusion.

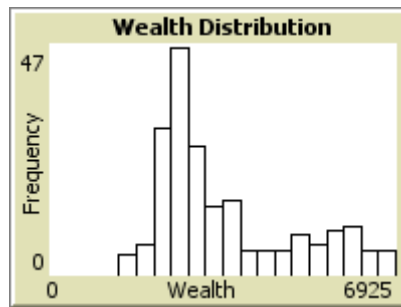


Figure 4: The wealth distribution of an example run at round 4000. The distribution is rather representative of the normal outcomes of the simulation. The x-axis represents the accumulated wealth while the y-axis represents the number of states with a particular amount of wealth. The gap between the wealthiest and poorest is quite wide with the most states being in the lower end. These are primarily the mercantilists that have prevented each other from earning income, while the richer liberals are forming a skewed tail to the distribution.

|  |        |
|--|--------|
| <b>Average wealth of liberals</b>                  | 4912.5 |
| <b>Average wealth of mercantilists</b>             | 2574.5 |
| <b>Average number of liberals at tic 4000</b>      | 49.2   |
| <b>Average number of mercantilists at tic 4000</b> | 147.1  |

Table 1: Averages from a dataset based on 100 iterations of the simulation. Each iteration had 200 actors with at least ten neighbours and ran for 4000 rounds.

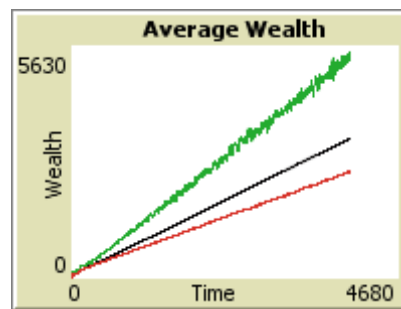


Figure 5: The average wealth from setup to round 4000 in an example run. The x-axis shows the average wealth of a state while the y-axis shows time (rounds). Green shows the average wealth of liberal states, red shows the same for mercantilist states and black is the average of all states.

As expected, qualitative analysis suggests that the result of the simulation is emergent as it is hard to predict beforehand what the system will look like. Seemingly, small differences in the randomized initial set-up of the world are amplified by the sensitivity to initial conditions of the model to result in different outcomes for every run. There are some patterns, however. A rather stable system emerges and is usually solidified after a few thousand rounds. The hypothesis of a chaotic system can therefore be rejected. The emergent system is typically dominated by one approach, with spread-out clusters of the other approach (Figure 3), which means that the most common system is fractured, although liberal or mercantilist systems can occasionally occur. Notably, the fractured systems are most often dominated by mercantilism, with some clusters of liberal states and a few scattered states that are trying to break out of their relative poverty but seem to constantly fail and thus be caught in a cycle of constantly changing strategies. The dominance of mercantilism is clear in the 100 iterations in the dataset. Only 6 iterations had 50% or more liberals after 4000 rounds and the average number of mercantilists was considerably higher than the average number of liberals (Table 1). For more details, see Appendix 2.

Predicting where clusters will form is essentially impossible due to the system's sensitivity to initial conditions. Some areas will be cooperating and move towards ever more integration, whereas other areas are instead dominated by mercantilist behaviour. As expected, states in the liberal areas do on average accumulate more wealth, and that pattern only becomes clearer as time progresses (Figure 4, Table

1, Figure 5). The states that notice that their neighbours are earning more than they are but seem to be unable to break out of the spiral of mercantilist behaviour. Even if the occasional state tries to change approach the efforts are soon thwarted by its untrusting neighbours. The relations and trust in the region have simply been too undermined, leading to a situation where attempting to cooperate does not pay off.

This *Mercantilist Trap* thus means that states are locked in a suboptimal solution despite the knowledge of a better option. The central issue appears to be the difficulty in coordination. If a larger area could reset to become more cooperative all at the same time, by copying a neighbouring liberal cluster, it might be able to break out of the trap. That would however require large-scale coordination between the states, and that they trust each other to abide by the coordination instead of breaking out for short term gain.

Inflation plays a role. More money is consistently being created in the simulation, which inflates the monetary base. Furthermore, the investigation of the success of the states is measured in their accumulated, relative wealth. A larger initial wealth is not worth much in the long run if one cannot keep up a sufficiently large income. As time progresses the wealth disparity is only reinforced and liberals, by cooperating, are speeding up this process. Hence the results displayed in *Figure 4*.

Interestingly, liberally dominated systems occur only occasionally, in contrast to what was hypothesized. It seems the socio-cultural factor has been modelled as considerably stronger than the desire for absolute wealth accumulation.

These outcomes suggest that the system is not a search pattern for optimal solutions but rather for stable systems. Initial conditions and coincidences are reinforced until the system is mostly locked in place. This suggests that the system is somewhat less complex than expected. It also means that the model cannot account for drastic changes, but it was never meant to either. It is limited in scope and by design does not include all possible factors. It provides the states with the possibility to change behaviour based on their perceived interests. It could also be interpreted as internal changes in approach generated by the country falling behind in the race for wealth accumulation.

## 5. Discussion

The model and simulation gave interesting results for further analysis. Contrary to the expectation, the mercantilist approach dominated in the simulations. The model and simulation both have their limitations but are early steps in developing more advanced methods. Nonetheless, it is still possible to draw some conclusions for the real world. Importantly, it is also possible to evaluate the model and theory behind it, and then discuss that in relation to real world phenomena. There are too many elements missing to say that what happens in this simulation will happen in the real world as well, rather it can serve to inform on the boundaries of possible future scenarios.

According to the results, a fractured system is possible even with positive feedback loops in absolute gains. This casts doubt on an ultimate triumph of liberalism, rather than make a strong case for a future of financial mercantilism. The success of mercantilism in the simulation suggests that it is very possible for states to get locked in a financial struggle even though cooperation would yield more benefits – what above was termed a *Mercantilist trap*.

An argument cited by many in the research community as well as the interviewees for why financial issues will not be too plagued by political conflict is that ultimately financial integration is more beneficial than any alternatives. These results suggest that there might be more cause for concern. Even with cooperation as the optimal option for absolute wealth generation, it still might not become the preferred practice by all parties. Mercantilism can evolve into a widespread practice if the potential to harm each other and the involvement of political aims of relative gains become too prominent. This assumes that political goals and competition over limited resources can be prioritized at the expense of absolute wealth accumulation. This seems reasonable, not the least in cases where such political goals and the access to such limited resources are believed to affect the absolute wealth accumulation.

New regulations, sanctions and cyber capabilities are enabling the practice of power politics in finance in a way it previously was not. The financial markets were already valuable sources of income for states. The introduction of new tools to directly target each other's access to funding intensifies the competition and enables a dynamic more closely resembling classic geopolitics. Understanding financial integration as an element of geopolitical considerations leads to a rather different analysis of the contemporary IFS. Due to this logic, conflicts from politics may enter finance. US sanctions on Iran would be an example hereof.

However, the analysis above suggests that the reverse may also happen. Conflicts could emerge in the financial realm, or political conflicts could be amplified by developments in the financial realm. The simulation shows how small hostile actions can start undermining trust, leading to a negative spiral of hostility.

In much the same way, cooperation can be reinforced by the positive feedback loop of mutual benefit and improved trust. This dynamic leads to the prediction of uneven integration. Not all areas of the world will be able to raise the amount of trust needed for financial integration when the potential to harm each other becomes too great. Some regions will get caught in the mercantilist trap, where trust too undermined, leading to a situation where attempting to cooperate does not pay off.

Additionally, the results suggest that there might be more struggle between approaches. Some will perceive integration and liberalism to generate the best outcome but others, less fortunate, perhaps by pure chance, may reject such notions. This results in a struggle between the actors in how to proceed in international cooperation on such matters. Some areas will integrate faster than others. Groups of cooperating countries like the EU may want to protect their integrated financial markets from third parties with a mercantilist inclination that would otherwise exploit the cooperative atmosphere and undermine the trust that underpins it.

The need to promote one's own interest in this struggle means that the sanctions regime will likely continue to grow, as will the cyber-attacks to undermine and punish each other. The ultimate result could be that some groups of states will integrate internally (within each respective group), but with little or no integration between these groups due to political struggles, resulting in parallel subsystems of the IFS. For example, a continued financial integration between countries that have been targeted by US sanctions does not seem unlikely. Iran, continuing to be excluded from the US financial markets, can integrate more with China and Russia that have also been the targets of some sanctions by Washington as of late. More countries can be added to create an expanded regional financial network, perhaps trading in RMB rather than USD and with new financial hubs. Such a scenario is enabled in much because of the massive amount of assets that China has accumulated.

This model seems, despite its simplicity, to be able to decently explain the current state of the IFS. Some areas are seeing increasing integration, such as the EU or ASEAN. The USA, perceiving itself as being targeted by China in currency manipulation, has turned more protectionist on various areas (not just finance), but this also spills over to the relations with others. Russia was integrating until it was (from a financial perspective) randomly targeted with sanctions. This has then turned this area away from integration. Thus, self-interested financial action could potentially describe a significant portion of recent international political developments. Looking ahead, this means that as states are increasingly making their way into the financial realm, the competition between them will lead to a struggle to demarcate the boundaries of states in the world of international finance.

The model has herein been deployed for system-level analysis; however, it might potentially also be useful in specific interactions like Kennedy's model. The important factors for analysis are the cyber and financial capabilities that can be used against opponents. This describes a state's ability. Furthermore, depending on how states extract wealth from the financial system, they have different vulnerabilities. Consider *Figure 2*, if  $B$  does not have a well-developed domestic financial sector, then access to credit will primarily come from the IFS,  $G$ .  $B$  is thus much more vulnerable to be cut off from  $G$  than a state that can leverage sufficient



funding from its domestic sector. The capabilities (options) and vulnerabilities of states allows for geopolitical analysis of their optimal strategies and the power balance between these actors.

For example, China has considerable financial reserves and can raise funding from the IFS, but the US has stronger domestic sector, as well as good ability to extract finance from *G*. Hence, if comparing the two then even when ignoring the special standing of the US (discussed above), Washington seems to be in a better geofinancial position than Beijing, and can try to restrict Beijing's access to international funding to put pressure on the Chinese. Chinese countersanctions would however not have as much potential to pressure Washington.

To summarize, although the simulation results in the dominance of mercantilism that ought not be considered a prediction of the model. It likely depends in part on the specific design of the simulation. Rather, it can be taken to predict that mercantilism, and the threat of a *Mercantilist Trap*, constitute actual possibilities. The rapid developments in the world of finance are creating the new opportunities for states to promote their own interests in the IFS, at times at the expense of others that may perceive such practices as exploitative and mercantilist. The financial realm can thus both aggravate existing conflicts as well as create new ones. Meanwhile, areas of high trust and financial integration are reaping the benefits of their situation, which may promote such liberal approaches more widely.

Hence states will try to balance between these approaches, resulting in a struggle between liberalism and mercantilism in the international system. While this thesis cannot predict the proportions of that balancing act, mercantilist behaviour does seem to have become more possible, and this will likely result in more such behaviour from states, which will in turn undermine the trust needed for further integration. Consequently – to the extent that states have a say in the process of financial globalization – it will likely lead to a slow-down of that ongoing integration.

If interpreting the results in the context of evolutionary geopolitics, then less integration and more struggle in the IFS will make it a worse input for states. Some states may therefore turn increasingly to other sources of income. Yet the states that manage to thrive in the IFS by reaping the benefits and excluding their opponents, will instead benefit more by having an extra source of income vis-à-vis states that have been more excluded. Finance should thus continue to provide an advantage for certain states just as it previously has.

## 5.1 Shortcomings and future research

Some shortcomings have already been discussed but some deserve more attention. Firstly, the reductionism needed for the model creates the risk of oversimplification of several concepts. However, this risk was deemed necessary to cover such a sizeable topic and this risk has been accounted for as far as possible.

Another issue is that the model can be considered somewhat vague in its predictions. The elements of randomness means that it cannot make any exact

predictions, thus limiting its value in terms of certain predictions, but perhaps increasing its accuracy by accounting for random elements instead of finding false causal links.

Several shortcomings are things that could be addressed in future research. The representation of the financial system is very simple and ignores several prominent features such as the special standing of the USA and the USD. How would the model change if a financial superpower is introduced? Additionally, if trying to account for the USD, then it might be worth considering the role of currencies more generally.

Furthermore, financial weight should have a considerable impact on the ability to project power in the IFS. This could be added to the model by adding it as a variable dependent on the accumulated wealth of a state. This could prove an interesting development of the simulation.

One could also experiment with the specifics of the simulation, such as the dynamic for changing strategies. It would make sense if there was a degree of spread of best practices. If the states were to only copy the strategy of the wealthiest state after a couple of rounds, then the system would by chance soon find itself dominated by liberalism. That would however fail to account for the political considerations of states and not add much to existing economic theories that already predict such behaviour but fails to explain cases like the sanctions on Iran. A balance needs to be struck between these and the simulation above is but one way. A more advanced simulation could probably capture more of the nuances in these considerations. One should also bear in mind to not add too much, as it risks making things overly complex.

The model could also have wider applications than this topic. Rather than investigating financial trade exclusively it might prove applicable to trade in general. Alternatively, the simulation could possibly be generalized from the specific case of financial politics to the broader topic of international cooperation, and perhaps even cooperation in general for any context. This would of course require some changes to the specifics of the model but more generally speaking it could prove a useful basis for future investigation.

## 5.2 Conclusion

A central argument of this thesis is that geopolitics should take financial factors into account. Geopolitical conflicts can be exacerbated by financial dynamics, and as was discussed already in the introduction, finance enables or restricts the range of possible actions in the geopolitical realm. The current neglect weakens the field of geopolitical analysis. The purpose of this thesis was to suggest a model for state interaction in the contemporary IFS to enable such analyses. That model has been presented and explored above and will hopefully generate more academic attention to the interplay of geopolitics and the IFS.

This thesis further suggests that states may both cooperate and push back against each other in the financial realm. Cooperation means integration that grants greater

access to funding and enables their financial systems to become more efficient, which may in turn generate economic growth for the concerned states.

A state may also harm another by restricting its access to funding. This can be done through different vectors of attack. Which vector is more efficient depends on the financial situation of the targeted state. Financial weight and cyber capabilities can be leveraged against opponents but the more such tools are put to use it risks undermining a key element of the IFS – trust. As trust deteriorates it prevents the integration that would otherwise generate more wealth. Even though some of the concerned states might want to work towards a more financially sound solution they might be unable to break out of the Mercantilist Trap. Rather all such attempts are met by mercantilist attempts to obtain one-sided benefits at the expense of the other involved parties.

The increased regulation of financial markets to promote better practices and decrease risk is also giving states more influence over the financial realm. This is further strengthened by the process of cyberfication which is providing states with a new arsenal of weapons to deploy against the finances of their enemies. As the IFS is increasingly becoming subject to state intervention, the risk of a mercantilist trap emerging increases. It remains to be seen if states are able to restrict the deployment of these new tools enough to not undermine the IFS.

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# Appendix 1

A brief presentation of the interviewees and their areas of expertise in alphabetical order.

## **Greif, Ö.**

Director and Techtalker at Kloudwerk, a UK-based firm specialising in fintech security. He has previously worked with investment at major banks in the UK and abroad.

## **Harsten, A.**

Head of compliance department at a Swedish bank office, with many years of experience in compliance. She has also worked in lobbying the EU on behalf of the community of Swedish savings banks.

## **Holmqvist, L.**

Entrepreneur, with experience in funding and credit for SMEs as well as for a major multinational corporation. He has also worked as a senior advisor on the leadership side of cyber security for a major company.

## **Interviewee A**

Expert in AML who has worked both in the private sector and for the anti-financial crime unit in a Nordic country.

## **Interviewee B**

Currently holds a prominent position at the EBRD, with previous experience from both the EU and national level of a European country (government and parliament). Interviewee B has also been a lecturer at a university.

## **Maneri, N.**

Currently working in cloud solutions for the financial industry with previous experience in banking from BNP Paribas. He has experience from the financial hubs of both London and Singapore.

## **Otto, C.**

Director of Donor Co-financing at the EBRD, with previous experience of financing in relation to international aid at both the EU and UN.

## **Rampin, M.**

Investment banker with expertise in real-estate. He has worked at leading positions in several prominent banks and related firms in London and other parts of Europe, including BNP Paribas, CBRE and Tristan Capital Partners.

# Appendix 2

This appendix explains the simulation in more detail.

NetLogo vocabulary:

Turtles – agents in a simulation

Tic – round

Link – a connection between two turtles

Two types of turtles:

Grass – It has a considerable wealth but does not do anything

States – The main actors

States have:

Wealth

Threshold for cooperation (thC)

Threshold for harm (thH)

Relations with every neighbour (turtle with which they have a link)

Relations are capped at a maximum of 10 and minimum of 0.

Inclinations can take any value in the range 0-1.

## *Setup*

The states are created in a random distribution across the world. They then create a link with a set number of the closest states so that a system is created where every state has at least the set number of neighbours. The number of states and number of neighbours with whom to form a connection is set by the person running the model and can thus change between iterations. Relations start at a neutral 5.

Every state gets a random starting wealth between 0-100.

The original thresholds are set at thC = 0.7, thH = 0.3

## *Tics*

Every tic every state will do the following if it can: Action, Extract wealth, Change strategy

## *Action*

Each tic each state randomly chooses one other state (target) to interact with from its neighbours. The action depends on the relations between the two states, and on the inclination of the acting state to behave in certain ways. This inclination is regulated through the threshold values of the individual state. The actions are chosen by generating a random float between 0 and 1, and then comparing that value to the threshold values of the acting state. If the value is above the threshold for cooperation, then the state will cooperate. If the value is instead lower than the value for harmful behaviour, the acting state will harm its target. If the value is in between the threshold values, the state will make a neutral action.

The actions are:

**Cooperation** – Generates 1 wealth with the target and increases the target's opinion of the actor by 1. Additionally, it decreases the target's thresholds for cooperation and harming by

0.01 each, thus making the target more likely to cooperate and less likely to harm others in the future.

**Neutral** – Does nothing

**Harm** – This blocks the target from extracting wealth that round. It also lowers the target's opinion of the actor by 1 as well as increases the target's thresholds for cooperation and harming by 0.01 each. This makes the target less likely to cooperate with others and increases the probability to harm others.

The action chain may be described as follows:

Opportunity for action → inclination (how the state interprets the situation) → relation (making sure to not harm friends or help enemies) → action

### ***Extract wealth***

If the state has been blocked it does nothing. If a state is not blocked, then it will extract 1 wealth from the Grass.

### ***Change strategy***

Actors change strategies when they discover that they have accumulated less wealth than their neighbours. More specifically, if their accumulated wealth multiplied by a factor of 1.2 is less than the average wealth of their neighbours. This means that they tolerate having slightly less than their neighbours but not too much. This can be described as follows:

$$x * 1.2 < \frac{(wealth\ of\ neighbours)}{(number\ of\ neighbours)}$$

If the above is satisfied, that is if a state falls behind too much it will try to improve by radically changing its approach. This is done by resetting the thresholds of the state so that if it has been mercantilist, it will now be more liberal and vice-versa according to the following:

If  $thC < 0.3$  then they will be set to  $thC = 0.9$  &  $thH = 0.5$

If  $thH > 0.7$  then they will be set to  $thC = 0.5$  &  $thH = 0.1$

In either case all of its outgoing relations will be reset to neutral (5). However, as the state cannot directly change how others perceive it, the incoming relations remain the same. The state trying to change its approach must therefore try to change the perception of others toward itself by means of its new behaviour.

### ***Results***

100 runs of the simulation with the settings:

at least 10 neighbours per state

200 states

Each simulation ran for 4000 tics

Definitions:

Liberals: states with  $thC < 0.65$

Mercantilists: states with  $thC > 0.75$

Only 6 of the 100 iterations had 50% or more liberal states. The average number of liberals was instead just over 49 out of 200 while the average number of mercantilists was 147 of 200. In other words, most systems were clearly dominated by mercantilist states.

The average wealth of the liberals was however much higher than that of the states with a mercantilist inclination. More precisely, the liberals were approximately 1.9 times wealthier than the mercantilist states, on average.

|  |        |
|--|--------|
| Average wealth of liberals                   | 4912.5 |
| Average wealth of mercantilists              | 2574.5 |
| Average wealth of states                     | 3231   |
| Average number of blocked states at tic 4000 | 70.5   |
| Average number of liberals at tic 4000       | 49.2   |
| Average number of mercantilists at tic 4000  | 147.1  |

The difference between the average numbers of mercantilists and liberals was highly significant when tested using a paired t-test ( $p < 0.001$ ,  $t = -16.372$ ,  $df = 99$ ).

The difference between the average wealth of mercantilists and liberals was also highly significant when tested using a paired t-test ( $p < 0.001$ ,  $t = 26.205$ ,  $df = 99$ ).

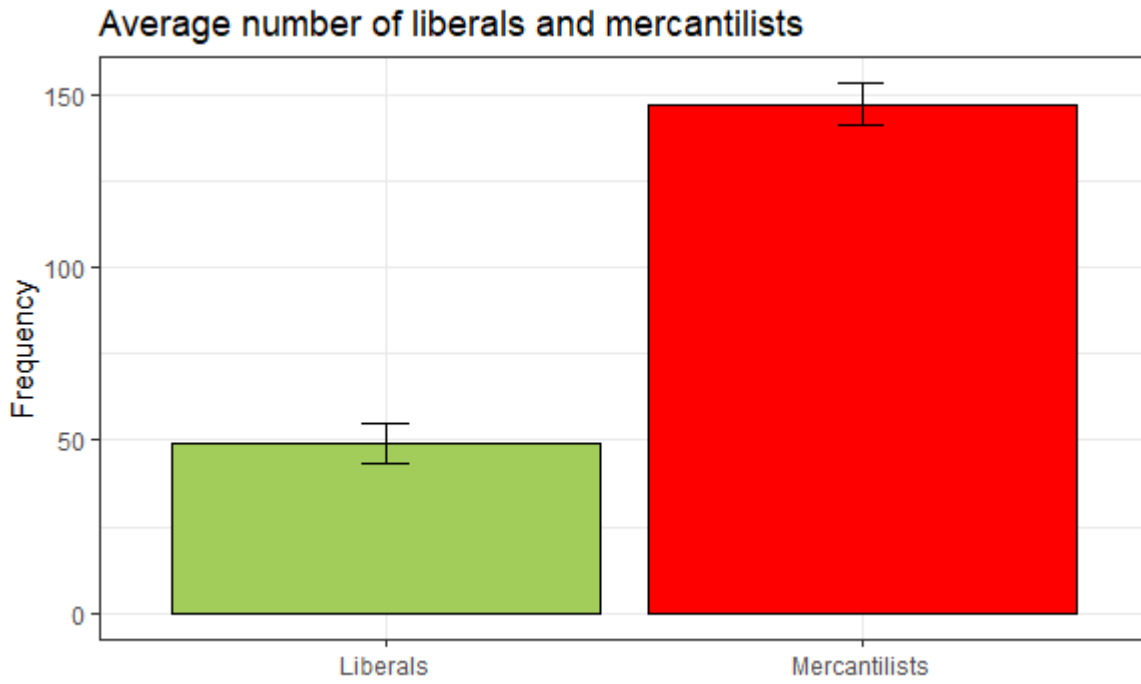


Figure 6: The numbers of liberals and mercantilists in the dataset. The difference is clearly significant.

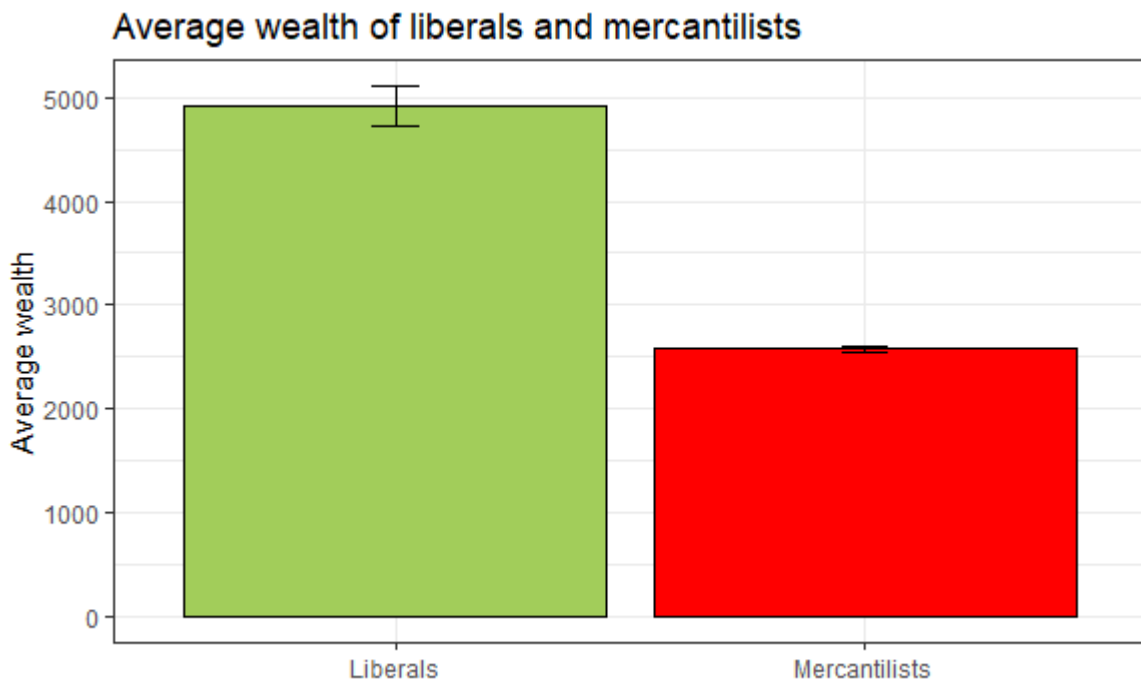


Figure 7: The average amounts of wealth of liberals and mercantilists in the dataset. The difference is clearly significant.