

# The Political Economy of U.S. Military Strategy

Submitted by Kit David Waterman to the University of Exeter as a thesis for the degree of Doctor of Philosophy in Politics, September 2018.

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## **Abstract**

Rapid economic growth in emerging economies since the end of the Cold War has driven debate on American 'relative decline'; the relative diminution of US material capabilities with respect to other states. Such relative decline poses potential constraints on US power and has thus manifested itself in arguments over the economic merits of the United States' expansive military commitments. Contributing to this literature, my thesis answers the following question: does American military strategy generate economic benefits? I argue that there is significant evidence to suggest that US military strategy has influenced international economic relationships in ways beneficial to US national interests. Principally, my analysis shows American military strategy acts as a 'underwriter' for the extant international economic system. I explore two logics associated with this. Firstly, a general 'status quo' logic which sees military power as both a guarantor and promoter of specific structural configurations of the international political economy. And secondly, a more specific 'utility' logic operating on other states either bilaterally or multilaterally. This pathway assumes that US military strategy, particularly its security guarantees, may alter the utility of other states decisions in America's favour.

This thesis also shows that specific results often prove far more tentative and circumstantial than commonly articulated by scholars in the literature. Nearly all specific and 'utility' pathways through which the United States is hypothesized to derive economic benefit suffer from foundational generalisability issues, irrespective of methodology. This suggests that specific avenues and instances of US military strategy influencing international economic relationships are not likely to be a reliable or prudent source of future policy making. Rather, the principal political-economic influence to consider is the role US military power plays in underwriting the contemporary American centred international order, which is the prerequisite for other specific pathways to emerge.

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# Introduction

Since the end of the Cold War rapid and sustained growth in a number of non-western economies has driven debate over American relative decline. For many scholars, the first order approximation for a state's aggregate power are material capabilities and potentials, often expressed as indices such as Gross Domestic Product (GDP). Given this, large changes in the relative global distribution of such capabilities are potentially indicative of growing constraints on a previously leading state's power. Indeed, the 2008 financial crisis, protracted US involvement in a number of counter-terrorism campaigns, and the growing military activity of Russia and China has only sought to underline these potential constraints. In turn, debate over perceived American relative decline has manifested itself in a wide number of interconnecting, albeit distinct research avenues. Among which is a burgeoning debate over US grand strategy and its attendant national military strategy.

National military strategy "describes how we [the United States] will employ our military forces to protect and advance our national interests."<sup>1</sup> That is, it describes the approach a state will take to achieve its given strategic objectives, themselves formulated from policy. Military strategy therefore provides the link between military power and policy driven objectives. However, states make a broad range of strategies, which in many cases form a hierarchy. For foreign policy purposes 'grand strategy' is chief among these. As a matter of fact, it is the given objectives and approach of grand strategy which frame the parameters for military strategy. With this being so, grand strategy is rather abstract and broad in its description of approach and objectives. What could be considered "a set of ideas for deploying a nation's resources to achieve its interests over the long run."<sup>2</sup> That is, grand strategy may be considered a theory for guiding the allocation of

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<sup>1</sup> "The National Military Strategy of the United States of America 2015" Joint Chiefs of Staff, June 2015. p.i. [http://www.jcs.mil/Portals/36/Documents/Publications/2015\\_National\\_Military\\_Strategy.pdf](http://www.jcs.mil/Portals/36/Documents/Publications/2015_National_Military_Strategy.pdf)

<sup>2</sup> Stephen Brooks *et al.* "Don't Come Home, America: The Case Against Restraint" *International Security* 37:3 (2012/13) p,11

national resources to the achievement of defined national interests, defined along economic, political, and military dimensions.<sup>3</sup>

In response to continuing shifts in the international distribution of power, many scholars and policymakers are now calling for a profound change in such strategy.<sup>4</sup> Although in the main part this is directed at the military strategy contemporary grand strategy demands. They argue for a retrenchment of America's security presences so as to shed the burden of its foreign deployments in order to help mitigate the possibility of being drawn into a regional war, reduce incentives for 'liberal-democratic' interventions, and either curtail or reallocate military spending. To do so, it is suggested that American national interests should instead be far more narrowly defined to privilege "sovereignty, territorial integrity, and safety."<sup>5</sup> In sum, they believe that both the objectives and approach underlying the military component of contemporary grand strategy need to be fundamentally revised.

This debate has in turn prompted discussion over the financial and fiscal implications of specific national military strategies, particularly the notion that contemporary strategies geared toward achieving military primacy over potential competitors may in itself generate financial and economic benefits that help to justify and/or offset the fiscal costs associated with generating such military capabilities. A growing literature has thus emerged debating the potential economic consequences of the pursuit of specific military strategies, focusing not only on the hypothesised benefits but in some cases seeking to investigate if there may be potentially de-stabilizing macroeconomic effects associated with debt-financed military build-ups. With the purpose of such research often aiming to contribute evidence for and against a recalibration in the military

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<sup>3</sup> Posen use this definition in *Restraint: A New Foundation for U.S. Grand Strategy* (Ithaca: Cornell University Press, 2014) p,1

<sup>4</sup> John J. Mearsheimer, 'America Unhinged', *The National Interest*, January 2, 2014; Paul K. MacDonald and Joseph M. Parent, "Graceful Decline? The Surprising Success of Great Power Retrenchment," *International Security*, Vol. 35, No.4, 2011; Stephen Walt, *Taming American Power: The Global Response to US Primacy* (New York: W.W. Norton and Sons, 2005); Christopher A. Preble, *The Power Problem: How American Military Dominance Makes Us Less Safe, Less Prosperous, and Less Free* (Cornell: Cornell University Press, 2009); David Calleo, *Follies of Power: America's Unipolar Fantasy* (Cambridge: Cambridge University Press, 2009)

<sup>5</sup> Posen, *Restraint*, xii

approach of contemporary grand strategy, what is often described as ‘deep engagement’. A strategy which entails,

“...managing the external environment to reduce near- and long-term threats to U.S. national security; promoting a liberal economic order to expand the global economy and maximize domestic prosperity; and creating, sustaining, and revising the global institutional order to secure necessary interstate cooperation on terms favorable to U.S. interests.”<sup>6</sup>

In turn, it is in order to achieve these objectives that the United States chooses to maintain security commitments to partners and allies in Europe, East Asia, and the Middle East.

The literature on the economic effects of the military strategy of deep engagement may be demarcated both methodologically and conceptually. The methodological cleavage runs between quantitative and qualitative lines, whereas the conceptual differences relate to how US military power and/or strategy influences economic processes and relationships. To an approximation, the quantitative literature focuses directly on attempting to detect and measure statistical relationships between economic variables (such as financial inflows and GDP) and strategic considerations. On the other hand, the qualitative literature has tended to explore the logics of economic relationships through, primarily, case study research and evaluation. That is, the contribution that military strategy may make to, for example, diplomatic leverage in negotiations and the shaping of international bilateral, multilateral, formal and informal economic relationships.

Scholars have offered a few demaractions in order to taxonomise this literature, with Drezner distinguishing between forms of ‘geoeconomic favoritism’ ‘geopolitical favoritism’, and ‘public

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<sup>6</sup> Stephen Brooks, William Wohlforth, and John Ikenberry, “Don’t Come Home, America: The Case Against Retrenchment” *International Security* 37:3 (2012/13) p,11

goods' arguments.<sup>7</sup> Whereas Brooks, Wohlforth, and Ikenberry propose a difference between 'micro' and 'macro-level structuring'.<sup>8</sup> To summarise them both, these conceptual pathways explore whether the United States attracts greater levels of private capital because of its perceived safety as the world's hegemon, whether security subordinates may transfer resources to subsidise or placate the hegemon, and/or the manner in which the provision of public goods may underwrite and facilitate global economic activity.

In addition to this, and conversely, there is also literature which discusses the potential costs of specific strategic force postures and force structures, that is where forces are based and what type of units and equipment they are composed of. Equally, much of the general retrenchment literature itself offers broad criticisms of the fiscal outlays necessary to maintain strategic commitments. Although these tend to be framed in relatively crude basic accounting terms - that is, costs merely relate to the amount spent on military outlays in a given year. Yet there are broader interdependencies which are also explored in the literature, whether that is seeking to assess the macroeconomic effects of large military outlays, or how such spending may affect economic growth or, and more recently, the potential relationship between defence buildups and financial crises.<sup>9</sup>

The research presented in this thesis seeks to address the puzzle at the core of these debates: namely, does American military strategy generate economic benefits? With this being so, this overarching investigation over the economic effects of American military strategy involves addressing the following two sub-questions:

1. How does military strategy influence domestic and international economic arrangements?
2. To what extent does America's military strategy affect financial markets?

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<sup>7</sup> Daniel Drezner, "Military Primacy Doesn't Pay (Nearly As Much As You think)" *International Security* 38:1 (2013) pp, 52-79

<sup>8</sup> Brooks et al. "Don't Come Home, America", 40

<sup>9</sup> Thomas Oatley, *A Political Economy of American Hegemony* (New York: Cambridge University Press, 2015)

## **Argument**

I argue that there is significant evidence to suggest that the pursuit of US military strategy - that is, its objectives and approach - have influenced international economic relationships in ways economically beneficial to US national interests. For this purpose, I define a beneficial effect as one which benefits major economic stakeholders. This is because focusing on major economic stakeholders allows analysis at the state level, avoiding dealing with distributive effects in the domestic economy, whereby many normative and ideological considerations may come in to play. Moreover, it is major economic indicators and markets (GDP growth, for example) which governments tend to target instead of more specific configurations of economic activity.

I show that there are both specific and general pathways through which this operates, based on the common principal that American military strategy acts as a 'underwriter' for the extant international economic system. I suggest that this generates two logics which explain the economic benefits associated with US military strategy, both of which operate 'systemically' - that is, across the system. Meaning the mechanisms at play relate to either the processes and/or structure of the international political-economic system. Firstly, there is a general 'status quo' logic which sees military power as both a guarantor and promoter of specific structural configurations of the international political economy. And secondly, a more specific 'utility' logic operating on other states either bilaterally or multilaterally. This pathway assumes that US military strategy, particularly its security guarantees, may alter the given utility of other states political-economic decisions in America's favour, particularly with regard to adopting or changing international economic structures and relationships.

However, the data also clearly shows that these results often prove far more tentative and potentially circumstantial than commonly articulated by scholars in the literature. Nearly all specific pathways through which the United States is hypothesized to derive economic benefit suffer from generalisability issues, irrespective of the methodology used. While such problems are acknowledged in some areas of the methodological scholarship which informs the quantitative literature, they are broadly underappreciated in the specific strategic literature

itself. This applies equally to qualitative approaches which suffer from conceptually similar limitations. I propose that the absence of two key probabilistic properties, 'stationarity' and 'ergodicity', may explain this.

Stationarity, as Ruey Tsay notes, is "the foundation of time series analysis",<sup>10</sup> enabling inference about a specific random variable from one time period to another. Non-stationarity, on the other hand, often manifests itself as a discontinuity in the mean or variance of a variable. In the economic literature, this is often known as 'structural change' or a 'structural break', and involves distributional characteristics of the process shifting unexpectedly. As David Hendry and Michael Clements note, "Structural breaks – defined as sudden large changes, invariably unanticipated – are a major source of forecast failure, namely a significant deterioration in forecast performance relative to the anticipated outcome."<sup>11</sup>

Relatedly, ergodicity is a property that permits generalization from a *group* of observations, and therefore non-ergodicity may explain why research findings in the strategic literature are often difficult to generalize accurately. Ergodicity is defined mathematically,<sup>12</sup> but a workable verbal definition would state that the "'ergodic hypothesis' asserts that, asymptotically, the time average of an observable is equal to the space average."<sup>13</sup> That is, the behaviour of a collection of observations at a given time describes the behaviour of a single observation over time and vice versa. Consequently, for the time and space characteristics of our data to converge the probability structure of the process under observation cannot be dependent on the initial condition selected. In short, it cannot be path dependent.

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<sup>10</sup> Ruey Tsay, *Analysis of Financial Time Series* 3rd Edition (New Jersey: Wiley, 2010) p, 30

<sup>11</sup> David Hendry and Michael Clements, "Economic Forecasting: Some Lessons from Recent Research" *European Central Bank*, Working Paper no.82 October, 2001. p,6  
<https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp082.pdf?4899044289dedf57ef6cd2523f6b4da9>

<sup>12</sup> See Appendix 6:10

<sup>13</sup> Michael Brin and Garrett Stuck, *Introduction to Dynamical Systems* (Cambridge: Cambridge University Press, 2002) p, 69

The data relevant to this research topic does not demonstrate either of these properties, both of which will influence and circumscribe the ability of qualitative and quantitative methodological approaches to provide specific generalizable answers to the main research question. This introduces a considerable degree of uncertainty in to any analysis. Theoretically speaking, I suggest this proposes analytically interesting parallels with key assumptions of classical realist theory, offering lessons for the study of military strategy specifically and policy making more generally. Firstly, that specific avenues and instances of US military strategy influencing international economic relationships are not likely to be a reliable or prudent source of future policy making due to inferential problems associated with stationarity and ergodicity. And secondly, given the centrality of US military commitments and capacity to the founding and preservation of the contemporary US led international order, substantial changes in military strategy may undermine many of the aforementioned mechanisms producing beneficial economic outcomes.

This is not to say that strategy cannot change, but rather that key commitments and approaches underpin many of the mechanisms described throughout the later chapters. Consequently, in the short term, the effects of substantial changes in major alliance commitments or strategic approach open up greater possibility of developments in international order that may be adverse to US political and economic interests as they are *currently* conceived. In summary, the principal political economic influence of contemporary military strategy, and of US military power more generally, is the role it plays in underwriting the contemporary liberal international order. In turn, this is the prerequisite for other specific pathways to emerge.

## **Methods and Structure**

The thesis can be thematically split into two distinct parts: the first, comprised of three chapters, deals with the economic context and potential costs of US military strategy. The second, comprised of a further three chapters, then explores the manner in which US military strategy and force can be hypothesized to generate economic benefits.

In order to provide an analytical 'baseline' for analysis of the economic effects associated with American military strategy, the first two chapters are focused toward assessing the influence of American economic power alone. That is, attempting to isolate the kind of power that being the world's largest economic and financial power bestows. This is important insofar as if it turns out that economic factors can be seen to explain American power in arranging and ordering international political-economic behaviour, the analytical utility at looking toward any potential benefits of US strategic decisions declines substantially. Following this, the third chapter then engages with the potential costs associated with large defence outlays, particularly potential 'opportunity costs' and macroeconomic factors.

The fourth chapter begins the second section of the thesis, which assesses the manner in which US military strategy and force can be hypothesized to generate economic benefits. In this instance, beginning with econometric work on the benefits of primacy. The fifth, and penultimate, chapter then continues to evaluate qualitative claims which examine more general logics by which military factors may influence economic relationships, particularly how they may influence bilateral and multilateral negotiations of economic matters. The final chapter concludes by placing the findings in context to a more formalised presentation of the author's main arguments, particularly the broader theoretical implications.

Given the mixture of themes and questions that this thesis aims to investigate the methods involved will come to reflect this diversity. Resultantly, this is a mixed methods research piece, involving qualitative case study and archival work, as well as statistical analysis and modelling. Due to this mixing of research types and methods, the following section will break down the different methodologies, explaining the rationales and selection criteria involved. However, to provide an overview, this thesis uses the following forms of empirical and theoretical evidence:

- Quantitative statistical evidence; primarily in the form of time series analysis.
- Quantitative theoretical evidence in the form of mathematical and statistical simulations
- Qualitative case study analysis, both singular and comparative.



- Qualitative descriptive analysis in the form of historical ‘process tracing’; for example, through methodical exploration and evaluation of key historical events guided by explicit case selection criteria.

In what follows, these differing methodologies are dealt with sequentially, chapter by chapter.

### *Chapter 1: American Economic Power - ‘Economic Mass’*

The main section of this chapter engages with American coercive diplomacy, focusing on the manner in which the United State’s sheer economic mass was used to gain traction in diplomatic negotiations or quasi-trade-wars. As we shall see later, the most extensive bilateral target of these negotiations and trade disputes had, throughout the 1980s, been Japan. Whilst in last decade or so China has taken on far greater importance - in part, because of the success of these earlier interventions - Japan is brought into focus because of the availability of declassified documents and the extensive scholarly research that exists on the bilateral relationship throughout key periods. Using a mixture of archival resources, reports, and simple data analysis, the chapter draws out America’s use of economic coercion to achieve its desired international economic goals, focussing on a case study of US-Japan bilateral negotiations in 1980s. The purpose of this is to provide an analysis of what was earlier described as the ‘economic primacy’ argument - essentially the suggestion that American economic mass takes causal preeminence over military primacy in most, if not all, cases. Consequently, drawing out the manner in which the United States has used its internal market for coercive ends allows us to contextualise and ‘weigh up’ the relative merits of the arguments addressed.

Simple data analysis, a term used above, refers to display and description of data, in contrast to more advanced statistical analysis of such data. As an example, it might be necessary or desired to analyse the number of US anti-dumping initiations by nation state. And so the researcher would want to see a histogram of such data, perhaps a number of them over time so as to identify key actors and trends.

## *Chapter 2: Dollar Hegemony*

This chapter evaluates the economic benefits and drivers of American 'dollar hegemony' in the international monetary system. Because of this, some basic statistical models are used. In part, this revolves around analysing some of the potential drivers for the purchase of US treasury securities by foreign official and private actors, a theme that appears throughout the literature on military primacy and economic gain. I also use set theoretic methods, loosely based on Qualitative Comparative Analysis, to demonstrate set relations between specific attributes of monetary power and reserve currency status.

As with the preceding chapter simple data analysis is also used as a way to demonstrate growth in foreign reserve accumulation in East Asia after the 1997/8 financial crisis, acting as a visual aid in exploring and the understanding events. Further to this, I then also explore the network characteristics of the dollar's role in the international monetary system using some basic tools from graph theory. Critically analysing the results with a brief - but analytically powerful - evaluation of the distributional properties of the dollar's 'degree centrality'. That is, the relative share of inflows and outflows that are globally dollar denominated.

## *Chapter 3: Proposed Economic Costs*

Chapter three then explores the proposed economic costs of America's chosen military strategy, force structure, and force posture. I focus on two key features: the opportunity costs of military expenditure, and Thomas Oatley's thesis on macroeconomic instability. Given the first part of this chapter evaluates 'opportunity costs' and the effect of defence spending on the economy, a sufficiently extensive review and exposition of the commonly deployed arguments is necessary. In addition, with the debate on the manner in which military spending affects economic output having a rather long history, and generally proving rather inconclusive, a thorough examination of the assumptions of some of the models in use and the limitations of the data will aid in understanding why the issue has been so persistent. Linked to this research avenue, arguments regarding technological spillover from defence expenditures will also be addressed, albeit in this case without the use of statistical models, instead relying on the evaluation of ongoing academic

debates relating to government support and incubation of high-technology industries and 'research and development' (R&D).

Finally, as to further engage with this debate, the last section of the chapter is formed around a case study of Oatley's 'buildups, booms, and busts' thesis. That is, that US defence build ups have proved a key causal variable in American financial crises. Having already analysed the relationship between economic growth and defence spending, I move on to investigate the causal narrative he employs. Simple data analysis and basic statistical tests once again prove useful in achieving this task, with the broader case study itself permitting a specific exposition of the problems identified earlier in the chapter. Among other techniques, I re-estimate an econometric model using a variant of Vector Autoregression (VAR) that has been widely used by economists and political economists alike. I do this to demonstrate an important case of omitted variable bias in Oatley's work, as well as to further the points regarding ergodicity, exogeneity, and stationarity.

#### *Chapter 4: Proposed International Economic Benefits*

In this fourth chapter, I investigate the econometrically inspired literature on geoeconomic and geopolitical favouritism. Using new data and more powerful methodologies, I show that a relationship between American strategic decisions and economic inflows can be established, albeit with tentative effect sizes. I do this by collecting new data for reanalysis and through subjecting existing research findings to more rigorous appraisals. This reanalysis also shows that the strength of the relationship is sensitive to data and model choices, which has important implications that I discuss in the conclusion. Through this process, I demonstrate some methods which can be used across the literature on this topic in order to assess statistical relationships whilst also evaluating the robustness of the results generated. I begin by exploring the main geoeconomic favoritism arguments before turning to those causal pathways associated with geopolitical favoritism. In the final section I then use these results to inform a discussion over the operationalization of strategic factors as variables.

### *Chapter 5: 'Linkage' and Positional Advantage*

This chapter is built upon qualitative case study research, utilizing process tracing methods to evaluate the salience of American strategy in achieving international economic goals, focusing on instances of diplomatic negotiation. In the first part of the chapter, two different, albeit complementary, conceptions of how this can be achieved are explored. The first, 'linkage' politics, is limited, in case selection terms, by the availability of archival resources, severely curbing case selection criteria. Because of this, key events in the period of linkage diplomacy, mainly Kissinger's tenure as National Security Advisor and Secretary of State, are selected as cases to investigate. Nonetheless, drawing extensively on the Foreign Relations of the United States (FRUS) archives, the examples covered aptly demonstrate a verifiable pathway through which American military strategy has demonstrably contributed to affect economic outcomes in international politics. The second, concerning 'positional advantages' is somewhat more nuanced than linkage politics, with a far greater range of cases to call on.

Because of this, reflecting what drove case selection in the first chapter, this chapter reevaluates U.S.-Japan relations in the 1980s, utilising a host of declassified documents from the National Security Archive (NSA). In order to control for selection bias, in this case with respect to changing systemic polarity, the analysis is brought up to date through a evaluation of developments in the East Asian security system through the 1990's and 2000's. The rationale for selecting East Asia relates to the manner in which it is possible to control for the effects of relative economic power. Given that since the end of the Cold War the region has experienced rapid economic growth, it should be possible to better isolate the role of strategic factors relative to economic mass in contributing to achieving and developing international economic arrangements. At the end of the Cold War, the US economy was thirty one percent larger than the countries that now make up the ASEAN+3 grouping, yet in 2013 it was nearly seven percent smaller. Likewise, given its growing importance, Chinese growth dynamics are also of interest. In the same timeframe, for instance, Chinese GDP grew from seven percent of the United States' to sixty percent as of 2014.<sup>14</sup>

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<sup>14</sup> "World Economic Outlook Database, October 2015" Data and Statistics, International Monetary Fund, October

In addition to this, so as to investigate this phenomena 'out of sample' (in this case, regional), an evaluation of diplomacy leading up to the suspension of the gold window in 1971 is undertaken. More specifically, an analysis of German mediation of French pressure to return to gold exchange standard provides an accessible case through which to trace the positional advantage mechanism outside of East Asia. In the main part, the driving motivation for this stems from the availability of archival resources from this period, with there having been passing, yet unexplored, assertions elsewhere in the literature that German mediation may have been driven by defence concerns.<sup>15</sup>

#### *Chapter 6: Political Economy, Probability Theory, and Classical Realism*

This final chapter proceeds to formalise the main animating arguments of the thesis regarding the causes and consequences of some of the generalisability issues found throughout the topic and, indeed, the phenomena itself. In this chapter I argue that there are common properties to the data that explain this. My analysis suggests that a number of key tenets of probability theory cannot be assumed to apply to many of the variables analyzed in the international political economy literature, which has important implications for our inferences from both case study investigation and statistical analysis. These factors have rather notable parallels with core tenets of classical realist theory, which has consequences for drawing implications and interpretation from research regarding strategy generally and its influence on economic relationships more specifically.

In particular, I demonstrate some of the key mathematical and practical limitations associated with the data, starting with a discussion over model sophistication, and why increasingly powerful methodologies may still offer limited purchase over the given research question. I then proceed to address mathematical and practical issues through a number of mathematical examples and simple simulations, before concluding with an attempt at theoretically reconciling

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2015. Gross domestic product, current prices (U.S. dollars)

<http://www.imf.org/external/pubs/ft/weo/2015/02/weodata/index.aspx>

<sup>15</sup> *The Dollar and National Security*, pp, 110-12

these findings with our understanding of international security, particularly with the economic factors which are my main analytical focus.

# Literature Review

Over the last decade, rapid and sustained growth in aggregate Chinese power, particularly in defense expenditure and capability, has driven perceptions of American relative decline. In doing so it has empowered advocates of strategic 'retrenchment' to more firmly question the strategic logic and optimality of contemporary grand strategy, widely known as 'deep engagement'. Proponents of retrenchment call for a significant moderation of strategic ambitions as well as an associated organised withdrawal of US military forces and commitments from large parts of the globe, in no small part because of the fiscal ramifications of the 2008 financial crisis, perceived US strategic failure in Iraq and Afghanistan, and the resurgent threat faced from Putin's Russia. All of which they suggest contributes to impose costs on US freedom of action, and in .<sup>16</sup> More specifically, advocates of retrenchment tend to argue that the United States should scale back its military ambitions and curtail its security guarantees, lessening the threat of US entanglement in costly conflicts and rivalries. This would involve the US pulling back from its global military posture to avoid direct military interventions and instead rely on local allies and regional balances of power to prevail with the US only intervening if more vital US national interests were threatened.<sup>17</sup>

As noted earlier, grand strategy can be broadly understood as a theory for achieving national interests with national resources - it delineates and triages threats, interests, and objectives, and offers broad conceptual ways for achieving them. In general, grand strategy will have political, economic, and military dimensions, but is often solely addressed in relation to its military dynamics.<sup>18</sup> As grand strategy only sets out the overarching theory and concepts for defining and

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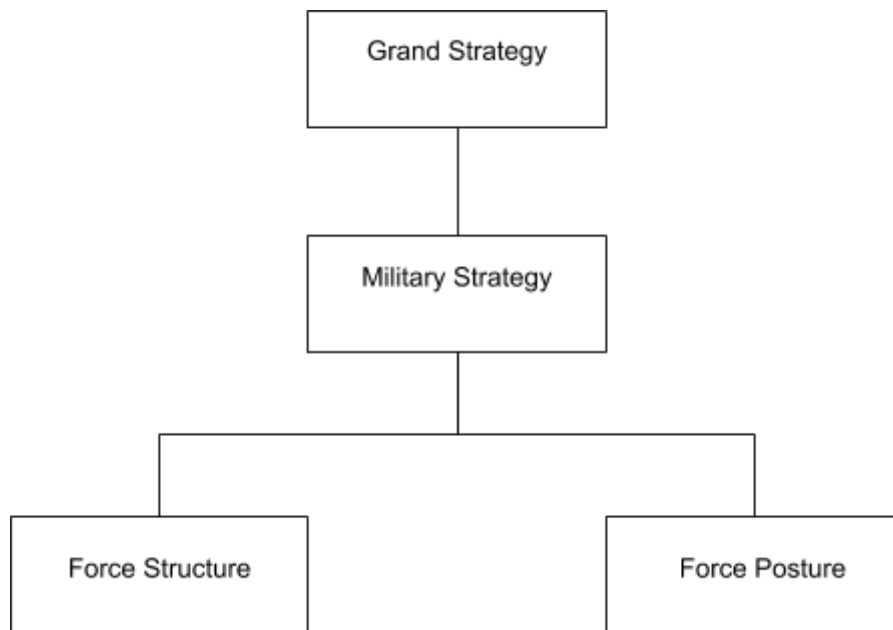
<sup>16</sup> Christopher Layne, *The Peace of Illusions: American Grand Strategy from 1940 to the Present* (Ithaca: Cornell University Press, 2006); Christopher A. Preble, *The Power Problem: How American Military Dominance Makes Us Less Safe, Less Prosperous, and Less Free* (Cornell: Cornell University Press, 2009)

<sup>17</sup> This has been most systematically and comprehensively detailed in Barry Posen's *Restraint: A New Foundation for U.S. Grand Strategy* (Ithaca: Cornell University Press, 2014)

<sup>18</sup> The latter is notable in realist scholarship, as can be seen in the literature quoted in the above footnote. An example of the broader definition can be found here, Brooks *et al.* "Don't Come Home, America" pp, 11-12

achieving national interests a national military strategy is required to define exactly how the military intends to achieve this, although in the case of the United States the grand strategic concepts set out in the National Security Strategy are rather prescriptive of what form the military strategy should take.<sup>19</sup> From here force structure and force posture is considered, with the former referring to the required military assets and capabilities needed to execute the strategy and the latter to the positioning of US military forces around the world (see figure 1).

**Figure 1 - Strategy Flow Chart**



Deep engagement is a grand strategy which emphasizes the provision of a wide array of security guarantees and forward deployed regional presences, and is deemed by its critics to be both

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<sup>19</sup> “National Security Strategy” The White House, February 2015.  
<http://nssarchive.us/wp-content/uploads/2015/02/2015.pdf>



provocative and increasingly unattainable, resulting in unnecessary and avoidable costs. Principally, this is because deep engagement requires a military strategy which places a premium on active management of the global security environment; in theory and in practice this has entailed committing to a raft of alliances and the forward stationing of U.S. troops abroad in vital areas of the globe. As the U.S. national military strategy notes,

“Forward deployed, rotational, and globally responsive forces regularly demonstrate the capability and will to act. Should deterrence fail to prevent aggression, the U.S. military stands ready to project power to deny an adversary’s objectives and decisively defeat any actor that threatens the U.S. homeland, our national interests, or our allies and partners...In case of aggression, denying adversaries their goals will be an immediate objective. This places special emphasis on maintaining highly-ready forces forward, as well as well trained and equipped surge forces at home...”<sup>20</sup>

Because of this, the military strategy of deep engagement demands significant resources and commitments be allocated to a number of allied states, entailing rather large fiscal outlays.

Given the events of 2008 and notions of a shift of economic gravity eastward,<sup>21</sup> it has been suggested that American power is in inexorable relative decline vis-a-vis its peers. In response to this, the wisdom that states which “do not react with agility and alacrity to a lower position are unlikely to last in the unforgiving game of power politics”<sup>22</sup> is invoked to support arguments for retrenchment. Critiques of deep engagement propose that the United States should significantly reduce its defence commitments and presences, cutting its military spending accordingly. Aside from, although related to, proposing to save the United States from finding itself tied up in unnecessary conflicts, variants of retrenchment therefore associate the winding down of a primacist grand strategy with economic savings. Indeed this is more often than not an explicit

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<sup>20</sup> “The National Military Strategy of the United States of America 2015” Joint Chiefs of Staff, June 2015. p,7.

[http://www.jcs.mil/Portals/36/Documents/Publications/2015\\_National\\_Military\\_Strategy.pdf](http://www.jcs.mil/Portals/36/Documents/Publications/2015_National_Military_Strategy.pdf)

<sup>21</sup> Danny Quah, “The Global Economy’s Shifting Centre of Gravity” *Global Policy* 2:1 (2011) pp, 3-9

<sup>22</sup>Paul MacDonald and Joseph Parent, “Graceful Decline?: The Surprising Success of Great Power Retrenchment” *International Security* 35:4 (2011) p, 19

objective.<sup>23</sup> Moreover, in some cases, scholars have suggested that retrenchment may, in fact, actually result in a net gain to the U.S. economy through lessening the opportunity costs that could be associated with military expenditure.<sup>24</sup>

However, the foundations of the debates over U.S. grand strategy find their roots firmly within broader, and familiar, theoretical discourses in International Relations. In particular, variants of neorealist theory, as in many other areas of the field, comes to define many of the parameters driving the analysis of grand strategic options. While neorealist inspired scholars are not always the dominant contributors to the topic, the assumptions and concepts associated with it, particularly ‘the balance of power’, do come to delineate much of the scope of the debate. Central to this discourse is the notion that relative stocks, and therefore changes, in material power are the defining feature of international relations. At base this essentially relates to a specific view of power epitomised by relative quantitative dynamics, whereby relative stocks and flows of goods and capital, often captured and presented in the form of aggregated economic indicators, relate to a state’s power to achieve their goals. Whilst this is an indubitable and vital component of national power, such an analytical lens may miss entire aspects of power in international politics, observing only the obvious and easily detectable residues of broader social processes. More importantly, analysis of these stocks and flows alone provides only a first order approximation which omits the possibility of ‘feedback loops’.

Gross domestic product (GDP), for instance, is a specific summation of economic processes in a given state, but isn’t in itself reducible to ‘the economy’, rather it is a *product* and sample of these economic process - a social process. Moreover, inasmuch as it is an indicator to the performance of such economic processes, GDP calculations provide only one of many possible calculations, itself based on, and biased by, specific conceptual limitations of what the economy ‘is’. Our understanding of International Relations, and thus also the nature of American power, are innately caught up in this. Moreover, our focus on changes in these aggregates has only

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<sup>23</sup> Posen, *Restraint*, 135

<sup>24</sup> Uk Heo, “The Relationship between Defense Spending and Economic Growth in the United States” *Political Research Quarterly* 63:4 (2010) pp, 760-770

intensified since the end of the Cold War. This period not only marks America's 'unipolar moment' but is also the beginning of a period of 'hyper-globalization', which bore witness to a substantial and sustained expansion in the global economy driven by the widespread integration of former communist and developing countries into the American-led world trading and financial systems.<sup>25</sup> Until this point it was the Western alliance, centred around the United States, which had defined much of global trade and production. With continued emerging market growth seemingly beginning to balance the scales between the dominant West and the trailing rest, a growing concern in the strategic literature, not to mention U.S. policy planning, concerns the potential consequences for strategic policy in a world in which U.S. power becomes steadily circumscribed.

Not long after Charles Krauthammer declared his 'unipolar moment' (1990), neorealist scholars published a range of articles on the likely responses to American unipolarity, speculating upon the potential longevity of such power disparity. Emblematic of this movement was Christopher Layne's 'The Unipolar Illusion', a by-the-book neorealist analysis depicting the inherent instability of a system structure that was defined by a significant imbalance of material power in favour of the United States. In keeping with traditional neorealist thought, Layne argued that "in a unipolar world, systemic constraints - balancing, uneven growth rates, and the sameness effect - impel eligible states (i.e., those with the capability to do so) to become great powers."<sup>26</sup> He hypothesised that recently leaked plans to maintain American primacy<sup>27</sup> would likely backfire for just this reason, prompting other states to increase their material power so as to erode the power discrepancy between themselves and the United States. Consequently, the intensification of the process of power diffusion which occurred throughout the early and mid- 2000s only sought to reinforce these claims. Famously, Jim O'Neill, Goldman Sach's former Chief Economist, coined the term BRIC (Brazil, Russia, India, China) to describe a group of the fast growing developing

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<sup>25</sup> Richard Baldwin and Javier Lopez-Conzalez, "Supply-chain Trade: A Portrait of Global Patterns and Several Testable Hypotheses" *The World Economy* (2014) pp, 1- 40; Arvind Subramanian and Martin Kessler, "The Hyperglobalization of Trade and Its Future" *Peterson Institute for International Economics*, Working Paper 13-6, July 2013.

<sup>26</sup> Christopher Layne, "The Unipolar Illusion: Why New Great Power Will Rise" *International Security* 17:4 (1993) p, 7

<sup>27</sup> The paper was published in 1993, a year after the 'Wolfowitz doctrine' was leaked by the New York Times.

economies that came to define this process. In the end, the 2008 financial crisis, often seen as an inflexion point in American decline, merely cemented the perception of declining U.S. power.<sup>28</sup> Further providing credence to the notion of dawning multipolarity, and emergent balance of power contests.

### *Neorealism and the Grand Strategic Literature*

The fundamentals of the neorealist position trace their lineage to Kenneth Waltz' theoretical work developed in *Man, the State, and War* and refined in *Theory of International Politics*, which outlines an ideal type, system level theorisation of international politics driven by distributions of material power among states. At base it is a formalisation of the age old concept of the balance of power. In this view, the 'polarity' of the system, defined as the number of great powers, is central to understanding of war and peace in the system. Waltz, and most other neorealist scholars, deem that a bipolar world of two powers is the most stable because "self-dependence of parties, clarity of dangers, certainty about who has to face them...are the characteristics of great-power politics in a bipolar world",<sup>29</sup> whereas multipolar systems are defined by greater degrees of uncertainty and dependence. In particular, alliance dynamics are deemed to enforce strategic rigidity insofar as "in alliances among equals, the defection of one member threatens the security of the others" and so can prompt conflict.<sup>30</sup> In a bipolar balance, on the other hand, neither power necessarily *needs* lesser great powers to execute strategic choices.

This feeds into grand strategy insofar as the conceptual primacy of such balances of power are not only central to strategic analysis, but also come to define the parameters of the conversation in the first place. Innately, such discussions therefore rely on aforementioned material readings of the international system, with the costs and benefits of the system determined by how they are perceived to affect such balances. The underlying contention is that relative stocks of resources, or resource potential, is at the core of power dynamics in international politics. In turn,

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<sup>28</sup> Jonathan Kirshner, *American Power After the Financial Crisis* (Ithaca: Cornell University Press, 2014)

<sup>29</sup> Kenneth Waltz, "The Origins of War in Neorealist Theory" *The Journal of Interdisciplinary History* 18:4 (1988) p, 624

<sup>30</sup> Waltz, "The Origins of War", 621

this means that the political-economic influences and effects of US military strategy and military force have tended to be analysed within the confines of this analytical paradigm. For example, prominent retrenchment advocates Paul MacDonald and Joseph Parent argue that “states should retrench whenever they experience declines in their relative power”<sup>31</sup> because “when ends are too ambitious for available means - a situation sometimes called the “Lippmann Gap” - states are overextended and open to predation.”<sup>32</sup> Likewise, and in keeping with Layne, Stephen Walt suggests that grand strategies of primacy will likely prompt states to pushback against American power, an act known as ‘balancing’, in order to insulate themselves from coercion and so as to secure autonomy.<sup>33</sup> Balancing involves building up resources to erode the power disparity between yourself and the leading state. Consequently, attempts at primacy are deemed to be *self-defeating*, as they are likely to entail competition that would undermine the power disparity that the strategy was envisaged to protect. Both realist accounts therefore argue that if the United States fails to respond to either a decline in its relative power, or take advantage of its concentration, they will suffer a more serious decline in consequence. In short, retrenchment is the ‘least bad option’, argued to be the most amenable to preserving America's relative power.

Indeed, critics of neorealist inspired retrenchment also subsequently voice their objections in this very form. William Wohlforth’s *The Stability of a Unipolar World*, published in 1999, argued that balance of power realists were likely incorrect in their assumptions because America's power preponderance had made the balance of power constraint essentially inoperative.

“The raw power advantage of the United States means that an important source of conflict in previous systems is absent...No other major power is in a position to follow any policy that depends for its success on prevailing against the United States in a war or an

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<sup>31</sup> Paul MacDonald and Joseph Parent, “Graceful Decline?: The Surprising Success of Great Power Retrenchment” *International Security* 35:4 (2011) p, 22

<sup>32</sup> MacDonald and Parent, “Graceful Decline?”, 19

<sup>33</sup> Stephen Walt, *Taming American Power: The Global Response to U.S. Primacy* (New York: W.W. Norton & Company, 2005)

extended rivalry. None is likely to take any step that might invite the focused enmity of the United States”<sup>34</sup>

Essentially, America’s preponderance is so overbearing that to ‘pick a fight’, so to speak, would be futile, merely attracting the ire of the world’s military superpower. Wohlforth’s argument further emphasised that because the United States is “an offshore power separated by two oceans from all other major states, the United States can retain its advantages without risking a counterbalance.” More than this, because the international system is built around American power, as long as it continues to exercise leadership the “the more long-lived and peaceful the system.”<sup>35</sup>

Nuno Monterio has provided a more formalised account of this logic in his *Theory of Unipolar Politics*. With his theoretical work suggesting that the durability of unipolarity is contingent on the strategic choices of the hegemon, particularly in that it avoids grand strategies that may entail a ‘competition cost’. A competition cost describes a strategy that would likely incentivise great powers to “engage in military competition, thereby eroding and eventually eliminating its [the United States’] power preponderance”.<sup>36</sup> Monterio suggests that strategies which emphasise offensive military activity, economic containment or military disengagement will most likely prompt such competition costs because each gives great powers incentives to circumvent a US-centric order. In particular, and in keeping with realist assumptions, he argues that “[military] disengagement opens the door to regional competition”.<sup>37</sup> In doing so, the implication is that the United States must continue to uphold the strategic status quo whilst also ensuring that the global economic system remains open so as to reduce the likelihood that such an eventuality occurs.

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<sup>34</sup> William Wohlforth, “The Stability of a Unipolar World” *International Security* 24:1 (1999) p, 7

<sup>35</sup> Wohlforth, “The Stability of a Unipolar World”, 8

<sup>36</sup> Nuno Monterio, *Theory of Unipolar Politics* (Cambridge: Cambridge University Press, 2014) p, 72

<sup>37</sup> Monterio, *Theory of Unipolar Politics*, 174

### *Political-Economic Deficiencies in the Grand Strategic Literature*

Aside from the tracking of material balances of power, the grand strategic literature often demonstrates a general ambivalence toward other economic or political-economic factors. To see why, it is only necessary to interrogate the primary concerns and definitions of grand strategy. For instance, Barry Posen defines grand strategy as focusing on “military threats, because these are the most dangerous, and military remedies because these are the most costly.”<sup>38</sup> Whilst eminently understandable, this definition belies that fact that there are considerable interdependencies between military force and economic power - with a potentially strong feedback loop between the former and the latter, rather than just the latter to the former. Because of this, regardless of whether one paints grand strategy as primarily dealing with security affairs, the entire debate is innately and deeply entangled with economic power whilst simultaneously presupposing, for much the same reasons, potential economic effects.

As has already been covered, such notions as the ‘lippmann gap’ or ‘imperial overstretch’ have long permeated the debate on American grand strategy, yet only a few studies have begun to unpack the more intricate interdependencies between military force and international economic relations. To date, perhaps the most systematic among these is Carla Norrlof’s book, *America’s Global Advantage*, which makes the case that American primacy - the coming together of economic and military dominance - “give[s] the United States certain positional and structural advantages in shaping the institutions of the international economic system.”<sup>39</sup> Most importantly, perhaps, is the argument that “America’s military preponderance facilitates commercial expansion, and also secures and raise the appeal of American asset markets.”<sup>40</sup> An assertion that implicitly, if not explicitly, suggests that retrenchment would come to undermine these advantages.

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<sup>38</sup>Barry Posen, *Restraint: A New Foundation for U.S. Grand Strategy* (Ithaca: Cornell University Press, 2014) p, 1

<sup>39</sup> Carla Norrlof, *America’s Global Advantage: US Hegemony and International Cooperation* (Cambridge: Cambridge University Press, 2010) p,6

<sup>40</sup> Norrlof, *America’s Global Advantage*, 248

One specific formulation of this logic suggests that the United States sees financial inflows after military victories, with a somewhat less strong, reciprocal, correlation between losses and financial outflows.<sup>41</sup> Although rather significantly underspecified, Norrlof's analysis points toward some empirically verifiable instances of economic spillover from military operations. Indeed, a similarly inspired argument advanced by Richard Maass posits that American Foreign Direct Investment (FDI) inflows are correlated with its military primacy.<sup>42</sup> Again, indicative of an interesting, and still emergent, research area. Further contributing to this line of reasoning, a piece authored by Stephen Brooks, William Wohlforth, and John Ikenberry argues that "the United States' most consequential strategic choice [has been] to maintain security commitments to partners and allies in Europe, East Asia, and the Middle East" suggesting that "without the security commitments, U.S. leverage for leadership on both security and *nonsecurity* issues declines."<sup>43</sup> Underlying this is the implicit notion that America's strategic preponderance aids in shaping nonsecurity relationships and, therefore, that retrenchment could strip the United States of vital capacity in influencing outcomes in nonsecurity areas. In essence, what they are describing is a form of 'structural power'. That is, the power "the power to shape and determine the structures of the global political economy within which other states, their political institutions, their economic enterprises... have to operate."<sup>44</sup> However, it is also more than this, it is a claim that one form of structural power (military) can be called on to buttress influence in another (the international economy).

### *Conceptions of Power in International Relations*

Structural power, as opposed to the more common conception of 'relational power', as mentioned above, concerns "the power to shape and determine the structures of the global political economy within which other states, their political institutions, their economic enterprises... have to operate."<sup>45</sup> This is placed in opposition to 'relational power', which as a

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<sup>41</sup> Norrlof, *America's Global Advantage*, 172-180

<sup>42</sup> Richard Maass *et al.*, "Correspondence: The Profitability of Primacy" 38:4 (2014) pp. 188-205

<sup>43</sup> Stephen Brooks *et al.* "Don't Come Home, America: The Case against Retrenchment" *International Security* 37:3 (2012/13) p, 11. Emphasis added.

<sup>44</sup> Susan Strange, *States and Markets*, 2nd Edition (London: Continuum, 1994) p, 25

<sup>45</sup> Susan Strange, *States and Markets*, 2nd Edition (London: Continuum, 1994) p, 25



distinct form of power analysis was first and most famously articulated by Robert Dahl in his 1957 paper 'The Concept of Power'. Dahl considered power to be, in effect, a social relation wherein power may be read as relationship among people or other social actors such as states. The now infamous way in which he captured this idea was to suggest that "A has power over B to the extent that he can get B to do something that B would not otherwise do,"<sup>46</sup> inferring upon A some causal power to affect B. However, for such a conception of power to be useful it must specify the factors to which it is applied, and to which it is subsequently limited.

Dahl suggests the following significant factors to establish when we specify a power relation: 1) the resources an actor commands, 2) the means of their deployment, 3) the probability of success, and 4) the 'scope' of such power. In "*The Concept of Power*" these aspects of power, and the broader conception itself, are illustratively demonstrated in the example of Presidential (U.S) power.<sup>47</sup> For instance, the resources of Presidential power are both formal and informal, including his constitutional powers as well as 'informal' powers of patronage and influence. These resources are thus animated through their means of deployment, i.e. "the *promise* of patronage, the *threat* of veto, the *holding* of a conference".<sup>48</sup> The aforementioned 'scope' is the intuitive notion that there is a field of issues that such power is restricted to, and therefore necessary to stipulate when declaring a power relation.

Given two actors, this notion of probability asserts that an actor A's power over another actor B may be conceptually accounted for as the difference between the probability of achieving a specified outcome after exercising power resources minus the probability of achieving this outcome without mobilising those resources (see Appendix I:1). This 'Dahlian' form of relational power analysis was later complemented through the 'faces of power' debate, which suggested that power was also exercised when actor A was able to suppress certain issue to the benefit of others, "when A devotes his energies to creating or reinforcing social and political values and institutional practices that limit the scope of the political process to public consideration of only

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<sup>46</sup> Robert Dahl, "The Concept of Power" *Behavioral Science* 2:3 (1957) p, 203

<sup>47</sup> Dahl, "The Concept of Power", 203

<sup>48</sup> Dahl, "The Concept of Power", 203

those issues which are comparatively innocuous to A”<sup>49</sup>, thus making them, to simplify, an ‘agenda setter’. Equally, it is also assumed that power may reside with those that have the capacity to affect another's preferences, wants, and thoughts. A form of power that closely resembles Joe Nye’s work on ‘soft power’ - essentially the power a great power has to attract another to its way of doing things. Whilst somewhat indeterminate, even a brief glance at international politics would illustrate the necessity for a great power to have some broader appeal besides brute force. Yet even with this expansive set of power concepts there remain important aspects of international politics that are beyond the scope of such power analysis.

From a conceptual standpoint, as Stefano Guzzini notes, a common critique of this form of power “is that the focus on strategic interaction or the bargaining level of analysis does not capture important power phenomena.”<sup>50</sup> Structural power, therefore, is the complementary power concept that corrects for this, although it is a conception of power that has a number of other meanings and definitions. For instance, Guzzini argues that there are three types of structural power conceptions in the International Relations literature, those that describe ‘indirect institutional power’, ‘nonintentional power’, and those that reflect ‘impersonal empowering’. The roots common to them all essentially ‘boils down’ to their emphasis on indirect, or nonintentional power, and the capacity to use, change, or asymmetrically benefit from a given social structure. With that said, some of these variants, particularly ‘indirect institutional power’ are not as far removed from conventional relational analysis as the authors may have assumed. The primary instantiation of this form of power, as Guzzini has it, is Stephen Krasner’s notion of ‘metapower’. Metapower, according to Krasner, “is the capacity to structure the environment within which decisions are made.” He therefore contrasts it with relational power by suggesting that “relational power accepts the existing rules of the game; meta-power behaviour attempts to alter those rules.”<sup>51</sup>

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<sup>49</sup> Bachrach and Baratz, “Two Faces of Power”, 948

<sup>50</sup> Stefano Guzzini, “Structural power: the limits of neorealist power analysis” *International Organization* 47:3 (1993) p,443

<sup>51</sup> Stephen Krasner, “Transforming International Regimes: What the Third World Wants and Why” *International Studies Quarterly* 25:1 (1981) p,122

In this formulation relational power is the utilization of capabilities within a predefined framework or structure, whereas meta-power attempts to change the structure of the relationship itself. Importantly, and because of this, when meta-power is “successfully implemented, it implies a change in relational power as well.”<sup>52</sup> The examples Krasner uses to illustrate this type of power cover national/bilateral and multilateral negotiation scenarios.<sup>53</sup> In the first category he suggests that regulating the activities of multinational corporations (MNCs) constitutes meta-power whereby it changes the rules by which they may operate, therefore potentially helping to level the balance between nation-states and international markets. In a more state-centric sense, OPEC can be seen as an example of the exercise of meta-power by which a group of otherwise relational weak nations were able to fundamentally reshape their relationship with the more materially dominant and affluent West. However, because of this, Krasner’s formulation of meta-power seems to somewhat dissolve itself into a relational power framework insofar as control of structure is merely reduced to another form of power resource. This is where the term ‘indirect institutional power’ presumably comes from. However, despite this hazy conceptual difference, what Krasner’s meta-power conception tells us is that the structure conditioning a relationship is an important aspect of intentional power analysis, particularly the capacity to emplace and later specific regimes.

Yet, as other conceptions of structural power illustrate, this is but the tip of the iceberg in terms of the different forms of power relationships that structural power can be seen to describe and explain. In particular, it is notable that the key emphasis of these other variants is the *unintentional* and *privileged* nature of structural power; that its attainment need not necessitate specific intention to use it. With respect to this, and building on Susan Strange’s definition of structural power, recent work by William Winecoff provides an intuitive, more empirically grounded articulation of structural power using graph theory. In particular, in this case, a form of network analysis. To illustrate his conception, Winecoff offers the following example:

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<sup>52</sup> Ibid., 122

<sup>53</sup> Krasner p,125

“the attractiveness of Goldman Sachs as a counterparty may have something to do with its particular skill at investing, but also the fact that Goldman Sachs has strong relationships with many other financial actors: it is prominent in the financial system. So Goldman Sachs attracts new business in part because it previously has attracted business.”<sup>54</sup>

That is, that some nodes in a system benefit merely from their position within a network and not because of specific power attributes. As the above example alludes to, Winecoff’s article focuses on America’s structural power within the global financial network. Given the availability of the requisite data, and its natural representation in quantitative form, analysing structural power in financial networks turns out to be relatively easy. Particularly when we compare it to political or strategic variables. In this instance, if we take the claim that structural power confers a ‘positional advantage’ within a social system we should expect to see these nodes exhibiting certain characteristics. In the language of graph theory we should see differences in the weighted and unweighted ‘degree’ of the node/s in question.

The degree of a node is the total number of in and out links that join it to the broader network. To formalise this, consider that all a network (graph) is, is a collection of vertices (nodes)  $V$  and a collection of arcs (links)  $A$ . Therefore a directed graph can be defined as  $D = (V, A)$ , whereby an arc is equivalent to a connection between two vertices, say  $u$  and  $v$ , that are elements of  $V$ . The unweighted ‘degree’ of a particular vertex is therefore the sum of in and out arcs, whereas a weighted indegree accounts for the magnitude of the individual arcs connecting the nodes together.<sup>55</sup> Using these tools, Winecoff convincingly demonstrates the dominance of the United States in global financial networks. More importantly, he manages to operationalise structural power theory in a way that is more empirically accessible and conceptually clearer, contributing to our understanding of the causal pathways in operation.

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<sup>54</sup> William Kindred Winecoff. “Structural Power and the Global Financial Crisis” p, 8

<sup>55</sup> Maarten van Steen, *Graph Theory and Complex Networks: An Introduction* (Marston Gate: Amazon, 2011) pp, 57-66

### *Conceptualising Political-Economic Power in the Grand Strategic Literature*

In general, research in this area is largely qualitative in nature, and often draws on detailed analysis of relevant historical case studies. Because of this, when economic factors are examined it tends to be in relation to general organizational principles to promote “a liberal economic order to expand the global economy and maximize domestic prosperity” whilst “creating, sustaining, and revising the global institutional order to secure necessary interstate cooperation on terms favorable to U.S. interests.”<sup>56</sup> The core logics of the ‘deep engagement’ school of American grand strategy argues that global US primacy helps it to,

“...manag[e] the external environment to reduce near- and long-term threats to U.S. national security; promoting a liberal economic order to expand the global economy and maximize domestic prosperity; and creating, sustaining, and revising the global institutional order to secure necessary interstate cooperation on terms favorable to U.S. interests... The pursuit of these three core objectives underlies what is arguably the United States’ most consequential strategic choice: to maintain security commitments to partners and allies in Europe, East Asia, and the Middle East.”<sup>57</sup>

Underlying this then is the argument that American military force underpins and aids in revisions of the global economic and security order that is the proposed fundamental benefit of a forward deployed force posture.<sup>58</sup> The fact that the U.S. “is the leading military power and security provider also enables economic leadership. The security role figures in the creation, maintenance, and expansion of the system.”<sup>59</sup>

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<sup>56</sup> Brooks et al. “Don't Come Home, America” 11

<sup>57</sup> Stephen Brooks, William Wohlforth, and John Ikenberry, “Don't Come Home, America: The Case Against Retrenchment” *International Security* 37:3 (2012/13) p,11

<sup>58</sup> Stephen Brooks and William Wohlforth, *America Abroad: The United State's Global Role in the 21st Century* (Oxford: Oxford University Press, 2016) pp, 171-172 ; Stephan Brooks and William Wohlforth, *World Out of Balance: International Relations and the Challenge of American Primacy* (Princeton: Princeton University Press, 2008) Robert Kagan, *The World America Made* (New York: Knopf, 2012); John Ikenberry, *Liberal Leviathan: The Origins, Crisis, and Transformation of the American World Order* (Princeton: Princeton University Press, 2011)

<sup>59</sup> Stephen Brooks, William Wohlforth, and John Ikenberry, “Don't Come Home, America: The Case Against Retrenchment” *International Security* 37:3 (2012/13) p, 40

More specifically, Brooks, Wohlforth, and Ikenberry propose two broad conceptual pathways that they believe link U.S. security and economic interests: what they term 'micro' and 'macro-level structuring'. The former describes the added advantage the United States purportedly gains from its security role when negotiating economic agreements, often on a bilateral basis. Whereas the latter refers to the ways in which military commitments coalesce around a U.S.-centric status quo and institutionally lock in sets of generic American economic preferences (open markets and non-discriminatory trade). The first is somewhat reminiscent of what is known as 'linkage' diplomacy, although is perhaps of a more subtle kind. A policy formulated under the Nixon administration, 'linkage' was a cornerstone of Kissinger's foreign policy. Kissinger himself describes such a policy as an attempt to create 'network of incentives and penalties to produce the most favourable outcome' in order to intentionally and actively link security and non-security issues in international negotiations.<sup>60</sup> In most cases this involved the Soviet Union, although on a number of occasions linkage diplomacy was used to shape and shove allies into accepting American preferences. For instance, Robert Art's research has demonstrated this under operation in the creation of the International Energy Agency.<sup>61</sup> Given European States' intransigence toward forming an oil consumer union in response to the 1973-74 oil crisis, Art describes how the United States attempted to overcome this collective action problem by linking this issue to security provision. He details how "Nixon tied the continued provision of American security to the Europeans and Japanese to their acceptance of a united consumers' energy front."<sup>62</sup>

Linkage is therefore a negotiating tactic that actively and intentionally seeks to take advantage of American strategic decisions, its military relationships and alliances, by linking such arrangements to other issue areas. In doing so, the hope is to maximise the chance of achieving more amenable diplomatic outcomes. In turn, the second conceptual pathway, 'macro-structuring', relies on the fact that the U.S. has been the principal architect of world order, and

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<sup>60</sup> Henry Kissinger, *Diplomacy* (London: Simon & Schuster, 1994), p.717.

<sup>61</sup> Robert Art, "American foreign policy and the fungibility of force" *Security Studies* 5:4 (1996) pp, 7 - 42

<sup>62</sup> Robert Art, "American foreign policy and the fungibility of force" *Security Studies* 5:4 (1996) p, 35

so what it “wants from the economic order is simply ‘more of the same’.”<sup>63</sup> Consequently, the best way to achieve that is to raise the security and economic opportunity costs of revising the system, thus locking in the *status quo*.

In helping further taxonomize these debates Drezner has usefully coined the terms ‘gloeconomic favouritism’ and ‘geopolitical favouritism’. The former refers to the process whereby the United States attracts greater levels of private capital because of its perceived safety as the world’s hegemon whilst the latter argues that security subordinates may transfer resources to subsidise the hegemon; in effect a subsidy in recognition of the U.S.’ position as security guarantor.<sup>64</sup> A final category concerns ‘public goods’ arguments. That is “states are most likely to enjoy public goods under a unipolar distribution of power, accelerating global economic growth and reducing security tensions,”<sup>65</sup> thereby creating path dependencies for the preservation of American hegemony, principally through creating a stable backdrop for international economic exchange.

To date, the scholarship on the purported economic benefits of American primacy has concentrated on two variants of gloeconomic favoritism. The first concerns the propensity for American military victories to influence foreign financial inflows into its macroeconomy, linking victories to increased inflows and losses to decreases.<sup>66</sup> The second major claim suggests that U.S. military primacy helps to attract systematically higher levels of foreign direct investment (FDI), although does not posit a causal mechanism underpinning this.<sup>67</sup> Conversely, the geopolitical favoritism literature has tended to focus on the influence of American force posture on trade levels between the United States and its allies. Most prominently, a recent and

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<sup>63</sup> Brooks et al. “Don’t Come Home, America”, 42-44

<sup>64</sup> Daniel Drezner, “Military Primacy Doesn’t Pay (Nearly As Much As You Think)” *International Security* 38:1 (2013) pp, 52-79

<sup>65</sup> Drezner, “Military Primacy Doesn’t Pay”, 58

<sup>66</sup> Carla Norrlof, *America’s Global Advantage: US Hegemony and International Cooperation* (Cambridge: Cambridge University Press, 2010) Chapter 6

<sup>67</sup> Maass et al. “Correspondence: The Profitability of Primacy” *International Security* 38:4 (2014) pp, 188-198; This has been more comprehensively explored by Drezner and Hite-Rubin. See Daniel Drezner and Nancy Hite-Rubin, “Does American Military Power Attract Foreign Investment?” in Jeremi Suri and Benjamin Valentino eds. *Sustainable Security: Rethinking American National Security Strategy* (Oxford: Oxford University Press, 2016).

comprehensive study produced by RAND purports to show a significant, positive, and sizeable relationship between US security commitments and trade levels.<sup>68</sup> Although it would seem that Brooks and Wohlforth's conception of 'micro-structuring' would also fit rather well under such a rubric.

In addition to discussions over the potential economic benefits associated with US military strategy and force posture, another element central to an analysis of the political economy of US military strategy is the economics of defence spending. While Drezner does briefly cover this topic,<sup>69</sup> there is no wider engagement with the broader premise that defence expenditure, particularly those the size of the United States, may result in either positive or negative macroeconomic spillover. It could be tempting to dismiss the relevance of this topic to the strategic literature insofar as it may be considered out of the disciplinary purview of the question, but ultimately the answer will impinge upon any cost/benefit analysis more generally. Indeed, a recently published, rather provocative argument from Thomas Oatley explicitly tackles just this issue. His work, *A Political Economy of American Hegemony*, expressly analyses some of the macroeconomic consequences of American strategy and force posture.<sup>70</sup>

Oatley's 'Boom and Bust' hypothesis links sustained military build ups to distortions in the American economy. His causal story suggests that defence buildups, specifically those that are deficit financed, provide stimulus to the US economy which, in turn, attracts capital into the United States. From here, and because of these inflows, Oatley suggests that these processes contribute to strengthen the dollar, choking off exports and encouraging investment in other areas of the economy, namely the housing sector and financial markets. In short, "America's political institutions and financial power transform security shocks into a persistent, pro-cyclical fiscal stimulus that fuels booms and generates economic and financial imbalances."<sup>71</sup> Using a wide range of methods, and drawing on a wide range of literatures, Oatley's book is a significant

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<sup>68</sup> Daniel Egel *et al.*, "Estimating the Value of Overseas Security Commitments" Santa Monica: RAND Corporation, 2016

<sup>69</sup> Drezner, "Military Primacy Doesn't Pay" pp, 57-58

<sup>70</sup> Thomas Oatley, *A Political Economy of American Hegemony* (New York: Cambridge University Press, 2015)

<sup>71</sup> Thomas Oatley, *A Political Economy of American Hegemony* (Cambridge: Cambridge University Press, 2015) p,7



intervention into these debates. In particular, it directly brings the economics of defence into strategic debates, especially with respect to military build ups. Attempting to improve upon a long line of studies that have aimed to isolate the relationship between military spending and economic growth,<sup>72</sup> Oatley's research suggests that a strong and positive relationship can be established between the two.<sup>73</sup>

Whilst somewhat of a detour from the other elements covered, it is nonetheless an important factor to consider. Indeed, in addition to his proposed categorization of different forms of military influence on economic processes, Drezner makes mention of the relative tradeoff between military primacy and 'economic primacy', i.e. the relative salience of economic factors in determining outcomes in which military primacy is deemed to play a causal role.<sup>74</sup> A factor that is of considerable importance in understanding any potential causal effect associated with military primacy, given that we must hold economic factors constant, so far as is conceptually reasonable, to be able to attempt to isolate an effect that could be attributed to American strategic decisions.

### *Missing Elements*

The contemporary empirical scholarship on the economic benefits of US military strategy arguably struggles to directly engage with the fundamental 'core logics' of deep engagement because they are defined at the systems level whereas most studies have searched for empirical effects in indices and processes that are sub-systemic. For example, the core logics associated with US military power refer to how it "figures in the creation, maintenance, and expansion of the [international economic] system."<sup>75</sup> Because of this, if there are positive economic effects associated with military primacy we should be able to detect these throughout periods in which systemic logics are theorized to be in operation. This stands in important contrast to much of the

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<sup>72</sup> Robert Alexander, "The Keynesian IS-MR Model and Military Spending" *Defence and Peace Economics* 26:2 (2015) pp, 213-221

<sup>73</sup> Oatley, *A Political Economy of American Hegemony*, 94-96

<sup>74</sup> On this, see his example concerning U.S.-EU and U.S.-South Korea trade agreements. Drezner, "Military Primacy Doesn't Pay", 65

<sup>75</sup> Brooks et al. "Don't Come Home, America", 40

current literature which attempts to isolate empirical effects in economic metrics which do not invoke core systemic logics.

As stated in the argument earlier, this thesis continues to argue that system level attributes and process generate two logics which explain the economic benefits associated with US military strategy. The first is a general 'status quo' logic which sees military power as both a guarantor and promoter of specific structural configurations of the international political economy. Whereas the second is a second more specific 'utility' logic operating on other states, as a consequence of this broader *status quo* role. This pathway assumes that U.S. military strategy, particularly its security guarantees, may alter the utility of other states decisions in America's favour, particularly with regard to adopting or changing international economic structures and relationships.

In addition, as Oatley's work reminds us, there is also a domestic economic component to consider. That is, if US military strategy was demanding large outlays that had a significantly negative effect on US macroeconomic health then the proposed advantages *may* well be nullified. This therefore demands an integrated approach that explores a number of aspects to US military strategy, including its objectives, its interaction with other major political-economic processes, and its potential and actualized influences on domestic and international economic activity.



# Chapter 1 - American Economic Power

The chapter explores the relevant economic and political-economic theory on international trade and economic relationships. It does so to provide an analytical baseline from which the later chapters may evaluate the role of US strategic commitments in generating beneficial economic outcomes. While in many cases this may seem to confirm the received wisdom on economic mass and trade relationships, it provides useful context from which to evaluate the relative utility of American coercive economic diplomacy. The second part of the chapter then moves onto a case study as a way of tracing these logics through actual events. In particular, an exploration of bilateral U.S.-Japan economic relations throughout the 1980s provides a rather incisive insight into how a large international market can be leveraged to gain economic advantage

The capacity of a state to achieve advantageous outcomes in international economic agreements, particularly in the contemporary period of relative great power stability, is often seen to be intimately related to the size and development of a given state's domestic economy. In many cases this can often be reduced to a function of a nation's 'import pull' - that is, the size of one's domestic market. This is because offering or restricting access to the given nation's market bestows a great deal of power to the nation in question. Consequently, this feature could by itself go a long way in explaining American diplomatic and coercive power in the international political economy. As a reflection of this, this chapter assesses the manner in which America's 'economic mass' contributes to increase its influence in international affairs. Whilst the answer to this question many seem strikingly obvious, an analysis of the modalities through which economic mass operates allows an assessment of just how relevant economic size and development is, providing a useful analytical benchmark for the later analysis of how American strategic decisions may influence international economic relationships.

## **The Centrality of Domestic Demand**

A key component of America's 'economic primacy', the aggregate size of its internal market is intrinsically related to the negotiation of international economic agreements. Moreover, given the obvious centrality of the economy to a nation state, economic concerns are thus likely to have spillover effects that may affect international political processes as well. Not only can we detect such influence in cases of American international economic adjustment diplomacy, but this also explains why Chinese economic growth will increasingly come to frustrate American interests. Indeed, the fact that China is steadily becoming the largest bilateral trading partner for a number of states is likely to prove progressively problematic. As Jonathan Kirchner notes,

“in international institutions and bilateral relations the United States, to its consternation, will find other states increasingly sensitive to how outcomes and agreements will affect their relations with China. More pointedly, in political disputes in which China and the United States find themselves on opposing sides, increasingly, in many corners of the world, China's case will be heard with more sympathetic ears, and this will come at the expense of American priorities.”<sup>76</sup>

In short, the blunt fact that many states either import and/or export a large proportion of their tradable goods to and from China is enough to fundamentally change international economic and political realities. Analogously demonstrating the role of 'economic mass' in international economic affairs. However, before we walk through the recent history of America's manipulation of its dominant trade position, it is best to first cover the proposed economic rationales underpinning it.

### ***A Brief Introduction to International Trade Theory***

The notion that a nation's presence in international trade is crudely a function of its economic mass has its roots, first and foremost, in basic intuition. And for this reason it has also been

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<sup>76</sup> Jonathan Kirchner, *American Power After the Financial Crisis* (Ithaca: Cornell University Press, 2014) p, 145

formalised in academic theory and research, often described by what is known as the ‘gravity model of trade’. The gravity model suggests that imports are likely to flow to nations with large economic activity and low trading costs, principally in relation to distance - due to shipping expenditures, for example - or other forms of trade barriers.<sup>77</sup> While the gravity model has a number of implications for economic analysis of trade, particularly with respect to how borders and trade barriers obstruct trade flows,<sup>78</sup> the concern here is merely with how size correlates with trade. In fact, as the very skeletal equation (given in Appendix 1:1) suggests, given American large demand for goods and its liberal attitude to international trade, it sits at the centre of the international trading system (see table 1).

**Table 1 – International Trade**

<b>International Trade, 2014</b>				
	<b>Imports (US\$ Billions)</b>		<b>Exports (US\$ Billions)</b>	
United States	1,997	China	2,161	
China	1,202	United States	1,373	
Germany	1,074	Germany	1,296	
United Kingdom	642	Japan	630	
Hong Kong	626	France	545	
France	626	Korea	522	

Source: World Integrated Trade Solution (WITS), World Bank. March 2016

<sup>77</sup> James Anderson, “The Gravity Model” National Bureau of Economic Research, NBER Working Paper Series, Working Paper No. 16576. p, 2  
<http://www.nber.org/papers/w16576.pdf>

<sup>78</sup> James Anderson and Eric von Wincoop, “Gravity with Gravitas: A Solution to the Border Puzzle” National Bureau of Economic Research, NBER Working Paper Series, Working Paper No. 8079  
<http://www.nber.org/papers/w8079>

However, the outline of the gravity model presented above, being as skeletal as it is, doesn't provide much analytic purchase over international trade dynamics, nor the coercive use of economic mass. For instance, it doesn't tell us why some states may trade certain goods but not others, nor does it shed any light on asymmetries in specific trade relationships. The exact aspects of importance to the analysis of this chapter. Because of this, it is worth briefly delving a little deeper into some economic theory on what factors may influence these dynamics before we move on to the analysis of specific cases. A major proviso to what follows is that the models discussed are rather abstract generalizations, and not meant to capture all relevant dynamics.

### *Comparative Advantage*

As intuitive as the gravity model is, if one considers the myriad of reasons driving international trade it is readily apparent that more has to be at play, particularly in an age of purported 'hyperglobalization'.<sup>79</sup> The oldest and most commonly espoused logic of international trade, not to mention the cornerstone of much early theory, concerns 'comparative advantage'.

Intuitively, the concept of comparative advantage exploits the fact that some nations are better placed to produce goods at lower costs than others. In addition to this, owing to economies of scale, if nation's specialise in producing different products to one another overall aggregate output should increase as a consequence of free trade. To borrow an example,<sup>80</sup> consider the scenario in which the United States requires ten million roses for sale on Valentine's Day, and that the resources devoted to this are equivalent to those needed to produce 100,000 thousand computers instead. Wouldn't it be easier to have these grown somewhere more hospitable to plant growth at this time of year, say Colombia? Moreover, assume that given lower worker productivity and a more hospitable climate, Colombian opportunity costs for 10 million roses are only 30,000 computers.

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<sup>79</sup> Arvind Subramanian and Martin Kessler, "Hyperglobalization of Trade and Its Future" *Peterson Institute for International Economics*, Working Paper 13-6, July 2013

<sup>80</sup> Paul Krugman *et al.* *International Economics: Theory and Policy* 10th Edition (Harlow: Pearson, 2015) pp, 57 -58

If the United States specialised in computers and Colombia in roses, production would look something like table 2.1,

**Table 2.1 – Comparative Advantage Example**

	Roses	Computers
United States	0	100,000
Colombia	10,000,000	0

Instead of table 2.2,

**Table 2.2**

	Roses	Computers
United States	10,000,000	0
Colombia	0	30,000

The hypothetical trade-off in this very skeletal model is that the United States could produce the 100,000 computers and not produce 10 million roses, whilst Colombia could produce the 10 million roses and not produce 30,000 computers. In the ideal situation, as shown above, consumers therefore get 10 million roses and 100,000 computers, significantly increasing economic welfare and expanding aggregate output compared to the available counterfactuals. In this sense,



“a country has a comparative advantage in producing a good if the opportunity cost of producing that good in terms of other goods is lower in that country than it is in other countries...Trade between two countries can benefit both countries if each country exports the goods in which it has a comparative advantage.”<sup>81</sup>

The workhorse of the comparative advantage model, and of all trade theories in general is the ‘production possibilities frontier’. Conceptually, as we saw above, this merely expresses the idea that for an economy to produce more of one good it must sacrifice the production of another. If we develop the ‘roses vs. computer’ example a little further by adding in the relative amount of labour attributed to the production of each, we can see how this works out in practice.

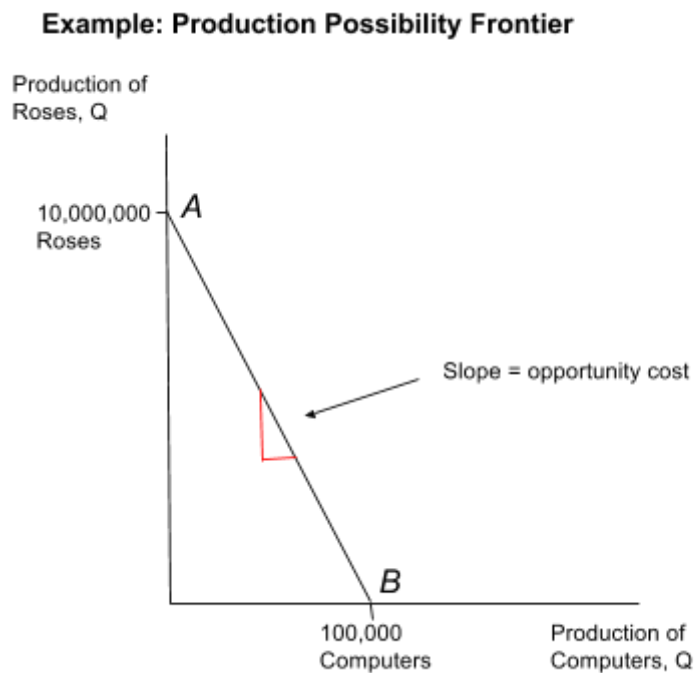
Let us suggest that in the United States it takes one man hour to produce one rose and one hundred to produce one computer, this would then place aggregate labour supply at ten million units. I.e. if all productive labour was put to use in producing roses we would get the ten million figure from above, likewise if it were computers we would get one hundred thousand. That is, labour used in the production of a specific quantity of either good cannot exceed aggregate labour supply (see Appendix 1:2), it must be less than or equal to it. This also means that the opportunity costs in terms of roses is simply the unit labour costs over the unit labour costs of computers, that is for every rose ‘made’ an economy could have made .01 computers (1/100). Conversely, for every computer made, the economy could ‘make’ one hundred roses (100/1).

If we look at figure 2 we can see that if this relation is constant, we can graph a slope. By doing so, we can illustrate that production can be any mixture of values along this slope, all conforming to the relation that that the opportunity costs is reflected by the aforementioned quotients. If a country wants to expand production of computers, it must do so at the expense of roses, thus moving down the slope from point *A* to point *B*.

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<sup>81</sup> Krugman *et al.* *International Economics*, 58

**Figure 2 – Production Possibilities Frontier**



Prices then factor into this model by way of the relative money made on selling a unit of product in relation to how many units of labour are input. For instance, if I could make a pair of shoes an hour and sell them for £5 or spend two hours making a shirt and sell it for £12, I'd choose to make the shirts. Therefore price over unit labour costs is the value of an hours labour. Factored back into the above comparative advantage model, a state will trade in one good when price *and* unit labour differentials permit. For instance, it must be more cost efficient to specialise and produce one good, then sell the excess in order to buy the second good from your trade partner. This operates for both partner regardless of whether one has an absolute advantage over the other or not.

To see this, imagine that in our ongoing rose/computer example that the prices of the products are £1 for roses and £250 for computers. Further suppose that the labour needed to produce these in Colombia is 1 man hour for roses (just as in the States) but 300 for computers, given lower technological and productivity levels. To work out which product a nation is better off producing you only need to work out the relative hourly value that you produce through either option and pick the highest (see Appendix 1:3). This allows a quick comparison of which one is actually more profitable to manufacture. Notice that for Colombia it actually makes sense to produce roses and exchange them for computers rather than manufacture them themselves. This is because it takes so much extra effort to construct them that they might as well as produce far more roses, sell the excess and use the profit to buy computers off of the Americans.<sup>82</sup>

However, as most readers may have observed, such a rendering of trade is over simplistic and misses a number of important features in international economics. Some of which are more important to our later discussion than others. Most obviously, it fails to account for natural 'factor endowments'. That is that some nations are abundant in labour, some in capital, and some in resources. All of which influence the calculus of trade. Moreover, and perhaps just as importantly, such a hypothetical and skeletal model also misses 'distributional effects', that is the effect trade has on different groups within the economy. This is where the Heckscher-Ohlin model comes in. The 'HO model' fleshes out the Ricardian model by adding in details on factor endowments, stipulating that the country that is abundant in a factor exports the good whose production is intensive in that factor.<sup>83</sup> Differences in factor endowments act in a similar way to differences in labour productivity that are illustrated above, making the production of some goods more advantageous than others, thus offering up differentials in the opportunity costs between two nations.

The key concept at play in this model is how different factors affect the aforementioned Production Possibilities Frontier (PPF). Instead of one production variable to account for, labour,

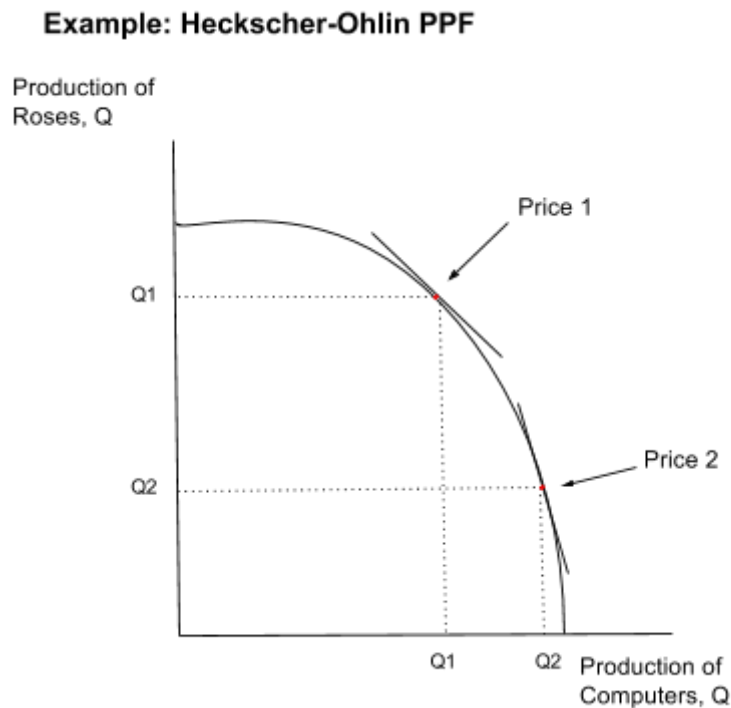
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<sup>82</sup> For Colombia the hourly value derived from producing computers is  $(1/300)(250) = 0.75$ , whereas for roses it is  $(1/1)(1) = 1$ .

<sup>83</sup> Krugman *et al. International Economics*, Chapter 5

we now may have two or three. Such as capital or land, for instance. Given this, the PPF is not going to be a straight line because there isn't a one-for-one trade off between labour use in either industry, but between two or three factors. This in turn further helps to explain specialisations in production and export. Fundamentally this is because the PPF is governed by the marginal value that each factor adds to production, which itself is a function of the both the price of the product and the opportunity costs involved in producing it. These changes help to explain why there is an asymmetry in the who gains and loses from trade at the domestic level, with the more abundant factor - given the right price - benefitting disproportionately.

**Figure 3 – Heckscher Ohlin PPF**



As the figure 3 attempts to demonstrate, when the price of a good rises, so then does the equilibrium condition for the PPF. This is because when the relative price of computers increases, the price slope (illustrated by the diagonal lines) alters, changing the levels of overall production

in favour of computers. The slope increases in steepness because price increases in computers makes the ratio of prices between roses and computers even steeper than before.

Yet to what extent do these skeletal models reflect reality? And how do they help us understand American coercive economic diplomacy? As it turns out, while these are very simplistic models, there seems to be a decent amount of evidence to support *some* of the basic premises underlying them. As will later be demonstrated, this isn't to say that these models describe perfectly the nature of the global trading system, but rather that they provide a reasonable level of analytical power over trade dynamics in general. For instance, a recent paper from the United States' National Bureau of Economic Research (NBER) finds reasonable evidence from a medium sized study on agricultural goods to support the notion of comparative advantage.<sup>84</sup> The paper reports two reasonable r-squared values (0.26 and 0.54) for their predictive model, which illustrates the amount of explained variance the model accounts for. In this case 26% and 54% respectively.<sup>85</sup> Whilst not the best fit, given the limitations of the dataset<sup>86</sup> and the very skeletal nature of the model, it still provides a useful insight into trade dynamics. Indeed, far larger scale studies also find persistent and strong evidence for comparative advantage and OH model dynamics in international trade relationships.<sup>87</sup>

With that said, these basic trade models miss a number of very important dynamics in international trade that are not only vital to understanding the trading system itself, but also why and how certain trade conflicts appear. Specifically, there are three central processes of international production missing. Accounts of 1) the globalization of production, 2) high levels of intra-industry trade, and 3) the pervasive and central role of oligopolistic/imperfect competition.

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<sup>84</sup> Arnaud Costinot and Dave Donaldson, "Ricardo's Theory of Comparative Advantage: Old Idea, New Evidence" National Bureau of Economic Research, NBER Working Paper Series, Working Paper 17969. April 2012.

<http://www.nber.org/papers/w17969.pdf>

<sup>85</sup> R-squared values range from 0 to 1, with 1 demonstrating a complete linear fit with the model to the data. In an OLS model such as this, a coefficient value relays the information "how much does the dependent variable change when the independent variable changes by one unit?"

<sup>86</sup> See Costinot & Donaldson, "Ricardo's Theory of Comparative Advantage", 6

<sup>87</sup> Przemyslaw Kowalski, "Comparative Advantage and Trade Performance: Policy Implications", *OECD Trade Policy Papers*, No. 121, OECD Publishing. 2011

[http://www.oecd-ilibrary.org/trade/comparative-advantage-and-trade-performance\\_5kg3vwb8g0hl-en](http://www.oecd-ilibrary.org/trade/comparative-advantage-and-trade-performance_5kg3vwb8g0hl-en)

### *The 'New Trade Theory'*

These three concerns have been explored in an evolving and (relatively) new strand of trade theory that has been labelled New Trade Theory (NTT), which speaks to and integrates the concerns raised above. NTT emerged from the growing empirical contradictions between what the above trade theory predicted about the nature of international trade and what empirical economists actually observed. At the time the most obvious anomaly was the large levels of intra-industry trade between the developed nations.<sup>88</sup> Given that Ricardian and HO theories predict trade between nations with different factor endowments and/or large productivity differentials, it would seem odd for trade to be concentrated within developed nations. Moreover, you might also imagine that the products traded would be also be rather different. This assumption wasn't true then and it isn't true now.

As it turns out, consumers like diversity within products, and so are willing to buy the 'same' product from a number of countries that may be capable of production here. An accessible example would be cars. Japan and the United States, two nations with large car industries, also trade a large number of cars between one another. Equally, and compounding this, there has been a recent trend (from the very late 1980s onward) toward globalization of production chains.<sup>89</sup> Principally, this is that products are rarely made in their entirety by one manufacturer, nor from components from one specific state. Rather, they often integrate components from around the world. Some countries - China, for instance - actually specialise in integrating the components rather than doing much of the production themselves. A now famous paper by Jason Dedrick, Kenneth Kraemer and Greg Linden, explored these dynamics with respect to the production of the iPod and notebook PCs. It's findings illustrated what many had already

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<sup>88</sup> This was the basis for Helpman and Krugman's seminal *Market Structure and Foreign Trade: Increasing Returns, Imperfect Competition and the International Economy* (Cambridge: MIT Press, 1985)

<sup>89</sup> Richard Baldwin and Javier Lopez-Gonzalez, "Supply-chain Trade: A Portrait of Global Patterns and Several Testable Hypotheses" *The World Economy* (2014) pp, 1-40

assumed, that whilst the final assembly of many of these products was completed in China, and thus marked 'Made in China', they were, and are, manufactured in a number of different countries. In addition, as we shall see, the value captured at each point of production is drastically different according to the type of activity or manufacturing process undertaken. Dedrick et al. find that Chinese companies only captured 2% of the value added of manufacturing the iPod, with manufacturing in itself only coming to represent 65% of total value added (see table 3).

**Table 3 – iPhone Cost Breakdown**

	Input	Supplier Country	Estimated, \$	% of Total
<b>Wholesale Price</b>			224	
<b>Factory Costs</b>				
	Hard drive	Japan	73.39	33
	Display	Japan	23.27	10
	Processor	United States	8.36	4
	Control chip	United States	4.94	2
	Battery pack	Japan	2.89	1
	SDRAM	Korea	2.37	1
	RAM	Japan	1.85	1
	Flash memory	United States	0.84	0.004
		<b>Sub-total</b>	117.91	53
		<b>Other parts</b>	22.79	10
		<b>Assembly and test</b>	3.86	2
		<b>Total factory</b>	144.56	65
	<b>Remaining (Apple gross profit)</b>	United States	80	36

Around the same time as this, Robert Koopman and his colleagues published a paper that attempted to provide a more systematic appraisal of the composition of Chinese exports. Their estimation methods aimed at decomposing Chinese exports to evaluate the level of 'value added'

they represented. Essentially, the domestic value added component of recorded exports. Their paper was one of the first to use domestic input-output tables to evaluate the ratio of foreign to domestic value added in Chinese output, particularly by further demarcating between processing import and exports, and normal imports and exports. The former are therefore examples of 'processing trade'. Processing trade is the practice of importing a product for the sole purpose of further processing and re-exporting it. In earlier work, trade economists had used methods which decomposed exports on the assumption the products produced for exports and domestic use would likely share the same ratio of value added from domestic to foreign inputs. Yet Koopman et al. suggest that because of the scale of processing trade in Chinese exports this is likely to underestimate the foreign value added. Emblematically, in some industries, particularly electronics, foreign value added actually contributes about two-thirds of the total value added.<sup>90</sup>

Because of this, there has recently been a move to investigate the global fragmentation of production chains more systematically by attempting to integrate national input-output tables with global trade data. The World Input Output Database (WIOD) project, funded by the European Commission is both publically available and comprehensive. It covers all then members of the EU (EU 27) as well as thirteen other major countries, including the United States and China. In addition, there is also the Measuring Trade in Value Added project (TiVA) run and funded by the OECD in collaboration with the WTO. TiVA has the added advantage that derived indicators are available online, indicators that are already corrected for the processing trade distortions discussed earlier.<sup>91</sup> Their value added as a percentage of gross trade indicators, in particular, provide an interesting and alternative appraisal of global trade dynamics. Below is a table (table 4) breaking down the foreign value added share of Chinese exports from 2011. In descending

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<sup>90</sup> Robert Koopman, Zhi Wang, Shang-Jin Wei, "How Much of Chinese Exports is Really Made in China? Assessing Domestic Value-Added when Processing Trade is Pervasive" *NBER Working Paper No. 14109*, the National Bureau of Economic Research, June, 2008.

<http://www.nber.org/papers/w14109>

<sup>91</sup> On this see Marcel Timmer, Erisk Dietzenbacher, Bart Los, Robert Stehrer, and Gaaitzen de Vries, "An Illustrated User Guide to the World Input-Output Database: the Case of Global Automotive Production" *Review of International Economics* 23:3 (2015) p, 581



order, it displays a snapshot of Chinese exports that have the highest percentage of foreign value added.

**Table 4 – Foreign Value Added in Chinese Exports**

**Foreign Value Added, Chinese Exports, 2011**

Industry	% of total value added
C30T33X: Computer, Electronic and optical equipment	54.99
C30T33: Electrical and optical equipment	53.81
C31: Electrical machinery and apparatus, nec	48.63
C23: Coke, refined petroleum products and nuclear fuel	47.97
C24: Chemicals and chemical products	44.59
C21T22: Pulp, paper, paper products, printing and publishing	43.91
C20T22: Wood, paper, paper products, printing and publishing	42.03
C23T26: Chemicals and non-metallic mineral products	41.4
C28: Fabricated metal products	40.25
C20: Wood and products of wood and cork	39.41
C25: Rubber and plastics products	38.56
C34: Motor vehicles, trailers and semi-trailers	33.14
C27T28: Basic metals and fabricated metal products	32.52

Source: Trade in Value Added (TIVA) database, October 2015. Organisation for Economic Cooperation and Development. Indicator 'EXGR\_FVASH'.

As we can see, most high end Chinese exports have high levels of foreign value added content. In a number of the cases above, this level of content is close to or exceeding the majority of the value added in the export product. As NTT would predict, this would therefore demand high levels of intra-industry trade between nations which may not be expected in other trade theories. In addition to this, and perhaps more importantly, this also introduces elements of hierarchy to

the international trading system with respect to one's position in the global supply chain. In some cases, for instance, a nation's contribution to a supply chain may be oligopolistic, further enhancing both respite from, and the ability to deploy, coercive economic diplomacy.

To see why this is so, consider that approximately 80% of all PCs use Intel corporation CPUs (central processing units).<sup>92</sup> Given the high barriers to entry in the semiconductor industry, and high technology more generally, switching suppliers would be far more difficult. Moreover, given the lack of alternatives, it would take a long while for other firms to scale up their production to fill the gap. Given that for your products to operate and/or be commercially successful, especially in the short term, it is a necessary to include these components you would be unlikely to afford trade friction with the nation in question. On the other hand, if the another nation produces in a easily substitutable position in the global supply chain, such as labour intensive product assembly, then you may have a number of alternatives to nation in question. That is, there are a number of other trade partners with whom you can purchase the required parts or services. It should therefore be obvious that states with oligopolistic/monopolistic positions within global supply chains tend to be at an advantage in conducting economic coercive diplomacy.

With that said, if two states with oligopolistic or monopolistically competitive firms develop trade frictions the dynamics may change significantly. Indeed, it is the nature of this difference which may explain the intensity of U.S.-Japanese trade disputes throughout the 1980s. In many ways it was the description of the dynamics of these imperfect markets which were to prove NTT's most enduring legacy. Broadly speaking there are three 'market structures' that capture the nature of imperfectly competitive markets; monopolistically competitive, oligopolistic, and monopolistic. With the oligopolistic markets of most interest to the discussion here. Nonetheless, to see why they differ from the ideal of a perfectly competitive market it is worth briefly explaining all three.

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<sup>92</sup> Ian King, "Intel Forecast Shows Rising Server Demand, PC Share Gains", *Bloomberg*, July 15, 2015  
<http://www.bloomberg.com/news/articles/2015-07-15/intel-forecast-shows-server-demands-makes-up-for-pc-market-woes>

Monopolistically competitive markets differ from perfect markets in some subtle yet important ways. Principally, the central difference is that the products produced and sold in monopolistically competitive markets are *differentiable*. That is to say that they are not perfect substitutes for one another as we may assume in a perfectly competitive market. If they were perfect substitutes the demand curve would be 'flat', which is to say that either an increase or a decrease in price would offer no benefit to the firm. To see why this is so is rather simple, albeit unintuitive, because we rarely encounter perfect competition in the real world. For instance, if products are perfectly substitutable then any increase in the price a firm charges will result in no sales, as customers will go elsewhere. Following this, if the firm does not produce at cost, then other firms will in order to take their custom. In short, price comes to equal cost, so prices cannot be lowered either. Thus the demand curve is 'flat'. In contrast to this, a monopolistically competitive market has a downward sloping demand curve, where a decrease in price can increase sales, although for a potentially large trade off in price to quantity. An example of such a market could be the restaurant business. Whilst 'the same' inasmuch as they all sell customers food, the differences between them, and the heterogeneous preferences of the customer base, mean that different restaurants are not perfectly substitutable for one another.

Therefore, the key characteristics of monopolistically competitive markets are; 1) a downward sloping demand curve representing product differentiation, 2) a large number of sellers, and 3) no/ very low barriers to entry, i.e. that the costs to entry are low and profitable businesses will be emulated. This means that in the short run, monopolistically competitive firms will be profitable, but in the long run the low barriers to entry will increasingly and completely erode profitability. The skeletal dynamics of this are rather simple to explain with the help of a little algebra and a few graphs. A monopolistic competitor will produce at the point in which marginal revenue equals marginal cost because producing at a marginal revenue above marginal cost would be indicative of spare capacity in some form or another leading firms to maximise production until they are producing at or near cost. The firm's profit is therefore the difference between the average cost and the demand price at this point. The average cost is just the sum of the fixed costs divided by quantity plus the marginal cost (see Appendix 1:4). The fixed cost is

divided by the quantity because as the number of products sold increases the fixed cost becomes lower per unit, i.e. if up-front investment for a product line is £400 and each item costs an additional £20 to make, selling twenty units would have lower average costs than ten.

The trouble is that other market participants see the monopolistic competitor making all this extra profit and want to get in on the action, cutting into the first firm's market share, thus shifting the demand curve down and to the left. In the long run, left to run its course, the market will eventually behave like a perfectly competitive market, snuffing out profit by pushing the price down so that firms sell at average cost. The trouble with this simplistic rendering, however, is how advertisement, innovation, and preferences come to effect this process. In many cases rendering this pathway inoperative. Why? Because innovation and advertisement have the inverse effect that other firms entering the market would have, pushing the firm's demand curve back out and increasing profit once more. While not intrinsically linked to U.S.-Japan economic diplomacy in the 1980s, monopolistic competition begins to inform us of how the structures of markets begin to change incentives for action or inaction.

In particular, if we move on to explore how oligopolistic markets work, we can begin to see the dynamics that motivated American and Japanese actions throughout this period. More importantly, we can also demonstrate why the United States may have been so effective in its trade disputes. That is, at least, in regards to achieving policy objectives. True monopolies are well understood and do not feature much in this discussion, yet the dynamics of oligopolistic markets do. The key feature separating monopolistically competitive markets from oligopoly is the barriers to entry in oligopolistic markets. That is, there are high costs associated with entering an oligopolistic market. These could take the form of steep, path-dependent learning curves for certain products, or a history of corporate mergers making the average firm size very large. In this situation, new firms cannot readily enter the market in order to take advantage of outsized profits, so production becomes a competitive game between the existing firms in the market. If there are two firms, say home and foreign, they therefore compete for a fixed share of the market in which they operate, with extra production by one often coming at the expense of the other.

The dynamics of this process explain a lot about why and how the United States undertook such extensive economic diplomacy with the Japanese throughout the 1980s.

In one of a number seminal papers on the subject, James Brander and Barbara Spencer proposed that such a market structure would permit states to undertake 'strategic trade policies' that in other situations would likely decrease the welfare of the state in question. In 'perfect' competition, all a subsidy or tariff would do is raise the price of imports, making the nation worse off. Not only are goods more expensive, but industries may suffer from lack of competition resulting in inferior products or the promotion of uncompetitive industries at the expense of others, resulting in inefficient capital allocation. However, Brander and Spencer argued that the unique market structure of oligopoly could actually benefit certain states,

"Export subsidies can appear as attractive policy tools, from a national point of view, because they improve the relative position of a domestic firm in noncooperative rivalries with foreign firms, enabling it to expand its market share and earn greater profits. In effect, subsidies change the initial conditions of the game that firms play."<sup>93</sup>

That is, that the gains from 'profit shifting' can exceed the costs imposed by changes in the 'terms of trade'.<sup>94</sup>

An easy way of seeing this is via another borrowed example.<sup>95</sup> Say we have two countries, A and B, with firms 'Boeing' and 'Airbus' (respectively) producing the same product, passenger planes. They are competing only for another market, a market toward which they have two choices: produce or not produce. They are also bound by the fact that if one enters this market the venture is profitable but if both enters, it is not. If both entered, for instance, the resulting price

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<sup>93</sup> James Brander and Barbara Spencer, "Export Subsidies and International Market Share Rivalry" NBER Working Paper Series, Working Paper No. 1464. National Bureau of Economic Research. 1984. Abstract. <http://www.nber.org/papers/w1464.pdf>

<sup>94</sup> Whereby 'terms of trade' is the technical term for the ratio between export and import prices - resulting in an expression that broadly demonstrates the ratio of goods that can be purchased for every 'unit' of goods exported.

<sup>95</sup> Paul Krugman, "Is Free Trade Passe?" *The Journal of Economic Perspectives* 1:2 (1987) pp, 135 - 136

would be too low to cover the high sunk costs of investment. In other words, they need to earn the returns to scale that the market offers as a whole, not a part. In consequence, the only winning strategy is either to be first into such a market, or to receive a subsidy that covers the potential losses made on entry made if both countries decide to produce. Whilst a skeletal model, lacking dynamic elements as well as subsequent price competition, this should begin to paint the broad dynamics at play. In the two tables below I illustrate two payoff matrices, the first in which there is no subsidy, and the second in which there is.

**Table 5.1 – Export Subsidy Example**

Payoff without Subsidy

		Airbus	
		P	N
Boeing	P	-5,-5	100,0
	N	0,100	0,0

**Table 5.2**

Payoff with Airbus Subsidy

		Airbus	
		P	N
Boeing	P	-5,5	100,0
	N	0,110	0,0

Table 5.1 demonstrates the baseline scenario without a subsidy, whereby both firms lose if they both produce (P) but win if only one enters. The second, table 5.2, alters this dynamic slightly by

introducing a ten unit 'subsidy' to Airbus. As you can see, the outcome is that whatever Boeing does Airbus is always better off producing. In acknowledgement of this, Boeing is therefore deterred from entering, shifting the relevant economic activity to Europe.

Once again, whilst a crude example, it is illustrative of the fact that states can shift profits in oligopolistic markets if they introduce the right subsidy or restrict the entry of another firm into their markets. Further to this, as the coming case study will demonstrate, states can also use a variety of other tools to effectively subsidise the expansion of their oligopolistic firms. Allowing them access to cheap loans, subsidising R&D, and creating tariff and nontariff barriers-to-entry to foreign firms. The proviso to this, however, is that such strategies will 'work' only if the other state doesn't retaliate, as a trade war would be dangerously damaging to both. In fact, it is the threat of retaliation that is the main tool the United States used against Japan during the 1980s. The threat being all the more pronounced because of America's domestic market demand for the products in question. For instance, if 60% of the global demand for computer chips comes from the United States and 40% from Japan, then the United States would have a very strong hand in coercing Japan into winding down potential subsidies they may have been paying. Indeed, these elements are the pivotal concepts at play in the episodes of U.S.-Japan trade conflict that will be explored in the following section.

### *Summary*

As the next section will demonstrate, elements of all these factors are present in cases of American coercive trade diplomacy over the last thirty years. Particularly the manner in which competition over imperfect markets and goods played out with respect to the United States and its trade partners. As has been briefly covered above, there are a number of industries which are deemed of 'strategic' importance to national economies, one's in which the exercise of unfair trading practices may have a pronounced, long term effect on relative market share. As has been established, there is also the broader necessity of having access to large markets to export to and import from, not least strategic access to monopolistic markets. This may take on even greater importance to those nations that have export oriented growth strategies. Further factor into this

how dependent other trade relationships will be on such market access as a result of intra-industry trade necessitated by fractured global production chains, and the importance of access to large markets is magnified. As a consequence, those nations with large internal markets are likely to gain considerable bargaining advantages from offering and denying access to such large sources of demand, particularly when market share of strategically important goods is at stake. We may tie this back into our main discussion over the influence of military primacy on economic processes insofar as significant shifts in relative trade volumes are likely to have large knock-on effects in regards to relative international influence between actors.

## **Economic Mass and Coercive Diplomacy**

Well known as a vocal advocate of free trade, the United States actually has a far longer history of protectionism and strategic trade policies. Until the end of the Second World War, America's tariff levels were actually very high, even in the period before the great depression.<sup>96</sup> Indeed, it was Alexander Hamilton who published one of the first major works on mercantilism in his *Report on the Subject of Manufactures*.<sup>97</sup> As Douglas Irwin has demonstrated, by early 1792 nearly all of Hamilton's tariff recommendations had been implemented.<sup>98</sup> With increasingly, albeit oscillating, high tariff levels persisting up until a brief drop during and after the First World War. Rather famously the United States then introduced the 'Smoot-Hawley' tariffs in response to the stock market induced downturn of 1929, the introduction of these tariffs coincided with a 40% decline in U.S. imports, with a solid proportion directly attributed to the trade restriction it induced.<sup>99</sup> In concert with the Federal Reserve's contractionary monetary policy, these

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<sup>96</sup> Ha-Joon Chang, "Kicking Away the Ladder: An Unofficial History of Capitalism, Especially in Britain and the United States" *Challenge* 45:5 (2002) p,68

<sup>97</sup> Alexander Hamilton, "Report on the Subject of Manufactures" United States Department of the Treasury, 1827 <https://archive.org/details/alexanderhamilt00caregoog>

<sup>98</sup> Douglas Irwin, "The Aftermath of Hamilton's 'Report on Manufactures'" Working Paper 9943, NBER Working Paper Series, National Bureau of Economic Research. August 2003. <http://www.nber.org/papers/w9943.pdf>

<sup>99</sup> Douglas Irwin, "The Smoot-Hawley Tariff: A Quantitative Assessment" *The Review of Economics and Statistics* 80:2 (1998) pp, 326-334



protectionist tariffs were central to the onset and perpetuation of the Great Depression.<sup>100</sup> A shock which reverberated around the world.

Apparently having learnt the lessons of the Great Depression, the United States proceeded to construct a global (albeit Western-centered) free trading system after the end of the Second World War. Part of the most comprehensive post-war settlement in history, the United States tied Western Europe and Japan together in wide ranging economic and political arrangements. Further focusing on establishing a set of global institutions to regulate and stabilize political and economic relationships.<sup>101</sup> This included the General Agreement on Tariffs and Trade (GATT - late the World Trading Organisation), the International Bank for Reconstruction and Development (IBRD - late the World Bank), the International Monetary Fund (IMF), and the United Nations (UN). Fast forward to the late seventies, however, and the United States is beginning to feel the economic and political effects of asymmetric openness. Since the end of the war, the United States has experienced a steady material relative decline with respect to its allies, with rapid growth witnessed in Japan and Germany. Specifically, it tolerated Japanese discriminatory trade practices, opening its market to Japanese goods without receiving reciprocal access. As a way of framing this, consider that in 1961 the United States had a 48.5% share of global motor vehicle production, whereas by 1981 it was down to 22.8%.<sup>102</sup>

In the following section I explore the manner in which the United States deployed its economic leverage to rectify this perceived imbalance, extracting economic concessions from Japan throughout the 1980s and into the early 1990s.

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<sup>100</sup> Milton Friedman and Anna Jacobson Schwartz, *The Great Contraction, 1929-1933* (Princeton: Princeton University Press, 2008)

<sup>101</sup> John Ikenberry, *After Victory: Institutions, Strategic Restraint, and the Rebuilding of Order after Major War* (Princeton: Princeton University Press, 2000) Chapter six

<sup>102</sup> United States Department of Transportation, "Table 1-23: World Motor Vehicle Production, Selected Countries (Thousands of vehicles)" Bureau of Transportation Statistics. October 2011.  
[http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/national\\_transportation\\_statistics/html/table\\_01\\_23.html](http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/national_transportation_statistics/html/table_01_23.html)

## ***U.S.-Japan Economic Diplomacy 1980 - 1998***

The trade pressures that developed throughout the 1980s find much of their grounding in the unusual structure of the Japanese political-economy. In particular, there are a number of unique institutions that proved particularly effective at creating and reproducing potent and, somewhat unofficial, protectionist trade barriers. These are the *Zaibatsu*, *Keiretsu*, and the *Amakudari*. The *Zaibatsu* were large Japanese industrial conglomerates that operated essentially as cartels; family controlled, vertically integrated informal amalgamations of different firms which engaged in discriminatory and self-promoting domestic and international trade relations. Attempts were made to break this up after the Second World War, yet these were quickly halted when geostrategic competition with the USSR intensified. The US archives demonstrate this logic rather clearly,

“SCAP [Supreme Commander, Allied Powers] reiterates his view that removal of any further reparations, except facilities presently being processed for removal under the Advance Transfer Program, would seriously affect the stabilization program...In the event of war with the Soviet Union we might have cause to regret the removal of these facilities from Japan.”<sup>103</sup>

Because of this, the process of breaking up the *Zaibatsu* was incomplete, with many of these firms morphing into *Keiretsu*.

*Keiretsu* were similar organisation of either horizontal or vertical integration centred around a bank that provided favourable financing and bail outs. Laura D’Andrea Tyson attributes the following advantages to such structures:

“The ability to cross-subsidize product lines, using profits from strong divisions to support weak ones or to start new ones; the ability to rely on internal demand when external

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<sup>103</sup> United States Department of State, *Foreign Relations of the United States, 1949. The Far East and Australasia (in two parts)* Volume VII, Part 2. U.S. Government Printing Office, 1949. pp, 627 + 636

markets falter; the ability to tailor-make equipment for downstream uses; and the ability to maintain secure supplies of critical outputs.”<sup>104</sup>

Automatically this should begin remind most readers of the early discussion over oligopoly and state subsidies. Whilst not explicit instances of state support, many of these facets of the Keiretsu had similar effects, which were further compounded by actual interventions by the Japanese state. Keiretsu firms have been found to be more innovative than their non-Keiretsu peers<sup>105</sup> and tend to discriminate against foreign firms, instead preferring and providing long-term relationships within their Keiretsu structure, impeding sales penetration from foreign producers.<sup>106</sup> As we shall see later, some economists have even claimed that this very structure *may* make trade retaliation difficult and even counter-productive.<sup>107</sup> To see how government intervention came to reinforce these practises, it is first necessary to understand the third institution, the Amakudari.

The Amakudari, unlike the other two institutions, is an informal social relationship that was prevalent in the Japanese economy up until the late nineties. Amakudari translates to ‘descent from heaven’ and is a nepotistic practice that guaranteed bureaucrats employment in top industries upon retirement. Perhaps not all that uncommon in other nations, Japan’s Amakudari was intricately planned and of considerable practicable importance to understanding discriminatory trade practices. In a widely read and thorough evaluation of Japan’s finance ministry (known as the Okurasho), Peter Hartcher detailed the ministry's amakudari practices. His research contends that the Okurasho strategically place retired members into a myriad of large public and private organisations to gain influence and retain loyalty. “All of Japan’s national

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<sup>104</sup> Laura D’Andrea Tyson, *Who’s Bashing Whom? Trade Conflict in High-Technology Industries* (Washington: Institute for International Economics, 1992) p, 56

<sup>105</sup> Lee Branstetter, “Vertical Keiretsu and Knowledge Spillovers in Japanese Manufacturing: An Empirical Assessment” *Journal of the Japanese and International Economies* (2000) pp, 73-104

<sup>106</sup> James Levinsohn, “Car Wars: Trying to Make Sense of U.S.-Japan trade Frictions in the Automobile and Automobile Parts Markets” NBER Working Paper Series, Working Paper 5349, National Bureau of Economic Research, November 1995.

<http://www.nber.org/papers/w5349.pdf>

<sup>107</sup> Larry Qiu and Barbara Spencer, “Keiretsu and Relationship-Specific Investment: Implications for Market-Opening Trade Policy” NBER Working Paper Series, Working Paper 8279, National Bureau of Economic Research, May 2001.

ministries practice amakudari” Hartcher claims, “the Okurasho, however, has relocated more officials into Japan’s economic architecture - in the public and private sectors - than any other ministry.”<sup>108</sup> These appointments buy the access and loyalty of the Okurasho, helping with loan allocations, mergers, and access to information and influence. Creating a network of inter-linkages between public and private institutions in Japan that not only promote domestic business at the expense of foreign business, also preventing their hostile takeover and limiting foreign market penetration.<sup>109</sup> As one could imagine, these institutions alone provided potent anti-competitive and non-tariff barriers to foreign firms trading with Japan.

In addition to this, Japan’s economy exhibited forms of partial economic liberalisation that aided in reinforcing these processes. Among other things, Japan retained some significant restrictions upon its financial system which contributed to under-represent the Japanese Yen in international foreign exchange markets.<sup>110</sup> Indeed, Treasury officials and private manufacturers alike argued that this underrepresentation had a great deal to do with the trade deficit afflicting the United States, specifically by way of strengthening the value of the dollar with respect to the Japanese Yen.<sup>111</sup> Although perhaps only a complementary reason for this differential, the matter nonetheless attracted enough attention to merit considerable diplomatic activity to resolve. This, of course, was the basis for the Yen-Dollar agreement.

The Yen-Dollar agreement was signed on May 29, 1984. Obliging the Japanese, through the Ministry of Finance, to take actions to liberalize Japan’s capital markets and to internationalize the Yen to a position commensurate with its trade status.<sup>112</sup> The agreement was driven by aforementioned American concerns that Japanese restrictions on foreign exchange activity was exacerbating the relative strength of the dollar and so helping to drive America’s current account

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<sup>108</sup> Peter Hartcher, *The Ministry: The Inside Story of Japan’s Ministry of Finance* (London: Harpercollins, 1997) p,37

<sup>109</sup> Hartcher, *The Ministry*, pp, 34,42,-43, 84-85,92-94,119-121,129-130,218-219.

<sup>110</sup> Shinji Takagi, “Internationalising the Yen, 1984-2003: Unfinished Agenda or Mission Impossible?” BIS Paper No. 61, *Bank for International Settlements*, 2011

<sup>111</sup> United States General Accounting Office, “International Finance: Implementation of the Yen/Dollar Agreement” June 1986. Appendix I

<sup>112</sup> United States General Accounting Office, “International Finance: Implementation of the Yen/Dollar Agreement” June 1986. Appendix I

deficit. However, implementation was slow and the results even more so.<sup>113</sup> Moreover, even with the conclusion of the Yen-Dollar agreement, there were still a large number of more important and unresolved issues at hand. Central to this, of course, was that much of the dollar's exceptionally high value had very little to do with the lack of Japanese financial liberalisation. Rather, there is a far stronger connection (as I shall later demonstrate) between the dollar's price and the 'Volcker Shock' of the early 1980s. More broadly, as mentioned earlier, it was many of the informal and difficult to resolve structural features and processes of Japanese economy that really curtailed U.S. market access.

#### *Anti-Competitive Practices: Motorola and Cray Computers*

An informative example of these 'structural barriers' that prevented U.S. market access can be found in the battle over supercomputer access in the eighties. Much of which is centered around America's then leading producer, Cray Research. Cray had produced the world's first supercomputer in 1976 whereas Japan didn't produce one until 1983. Which, as Laura D'Andrea Tyson points out, was coincidentally also the year of Japan's first purchase of such a machine - from the same Japanese producer.<sup>114</sup> Of equally as much interest, even by the early nineties Japanese machines were neither as fast nor as cost-effective as American produced supercomputers.<sup>115</sup> As readers may be beginning to imagine, there was a definitive reason to this. That is, beginning as far back as the late 1950s, Japanese officials and businessmen decided to nurture a domestic industry in computing, involving the usual mixture of mercantilist measures such as protection, financial aid, and government sponsored R&D projects.<sup>116</sup> In addition to this, when Cray attempted to gain market access in the eighties *keiretsu* relations (as expected) came to prove a potent barrier. For instance, Cray's largest customers were firms that did not have *keiretsu* relations with Japanese computer firms.<sup>117</sup>

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<sup>113</sup> Hiroo Taguchi, "On the Internationalization of the Japanese Yen" in Takatoshi Ito and Anne Krueger eds. *Macroeconomic Linkage: Savings, Exchange Rates, and Capital Flows* (Chicago: University of Chicago Press, 1994)

<sup>114</sup> D'Andrea Tyson, *Who's Bashing Whom?*, 76

<sup>115</sup> U.S. Congress, Office of Technology Assessment, *Competing Economies: America, Europe, and the Pacific Rim* (Washington: U.S. Government Printing Office, 1991) p,258

<sup>116</sup> Office of Technology Assessment, *Competing Economies*, 260

<sup>117</sup> D'Andrea Tyson, *Who's Bashing Whom?*, 77

However bad perceived structural barriers were in private markets, public sector access was even worse. Japanese public and quasi-public procurement was typified by “vague procedures, closed bidding practices, and a [sic] unstated, “buy Japanese” policy [which] had effectively kept U.S. manufacturers out of the Japanese market.”<sup>118</sup> In strategic, oligopolistic industries such as supercomputing, public procurement procedure matters because of the manner in which it may act as a ‘subsidy’ to domestic firms. That is, how an almost guaranteed market for a product allows an otherwise unprofitable machine to be developed and sold. Likewise, this is why there are also regular government-private sector collaborations on R&D, although these are not subject to the same trade laws as public procurement. For instance, The Federal Coordinating Council on Science, Engineering and Technology recalled how Japanese supercomputer purchases were delayed until domestic companies could fill the demand. In 1987 American companies had approximately a 70% global market share, whereas 85% of Japan’s market was served by less powerful, lower value-for-money Japanese machines.<sup>119</sup> It was this obvious and systematic bias which was to lead to the signing of a Supercomputer Trade Agreement with Japan in 1987.<sup>120</sup> While supercomputer trade frictions were further addressed in 1989,<sup>121</sup> they seem to have persisted rather strongly into late nineties.<sup>122</sup> In fact, it was in the late nineties that a raft of prominent anti-dumping petitions were logged. In this case, upon the fear that Japanese supercomputer firms were ‘dumping’ product onto US markets.

The particular case in question, the Cray-NEC case, result in a 454% anti-dumping duty placed upon offending Japanese NEC machines. The nature of ‘dumping’ in this particular case was that the machine being sold was done so at below cost. That is, the firm would have made a loss on

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<sup>118</sup> FCCSET Committee on High Performance Computing, “FY 1986 Annual Report of the Federal Coordinating Council on Science, Engineering and Technology” January 1987. p,8

[http://science.energy.gov/~media/ascr/pdf/program-documents/archive/Annual\\_reports\\_of\\_fccset\\_subcommittee.pdf](http://science.energy.gov/~media/ascr/pdf/program-documents/archive/Annual_reports_of_fccset_subcommittee.pdf)

<sup>119</sup> FCCSET Committee, “FY 1986 Annual Report” ,8

<sup>120</sup> General Agreement on Tariffs and Trade, “Procedures to Introduce Supercomputers” Committee on Government Procurement, 27 October, 1987.

[https://www.wto.org/gatt\\_docs/English/SULPDF/91320090.pdf](https://www.wto.org/gatt_docs/English/SULPDF/91320090.pdf)

<sup>121</sup> Robert Pear, “Far-Off Silver Lining in Dispute with Japan” *The New York Times*, May 27 1989

<sup>122</sup> Evelyn Iritani, “U.S. Supercomputer Maker Wins Anti-Dumping Ruling” *Los Angeles Times*, September 27, 1997

the product. Dumping can be a useful, albeit risky, trade tactic for mercantilist powers insofar as it destroys the profitability of firms in the attacked country. In time, this allows the mercantilist firms to gain market share at their expense and then return to profitability. Although in this case, it doesn't seem all that empirically clear that Japan was dumping these machines onto US markets. Indeed, this particular product was a declining machine type and the broader picture of procurement between US and Japanese machines was greatly toward America's favour on most counts.<sup>123</sup> Nonetheless, as with everything within this chapter, what is most important is the perception of the US public and of US policymakers. States only initiate trade retaliation or coercive diplomacy when they perceive to be afflicted by, or subject to, a threat.

So what tools does the United States have to get its way in international economic agreements? While we know that one nation's mass is likely to be a key determinant in arranging the broad strokes of international economic discourse, how does a powerful state deal with the subtleties?

### ***American Trade Defence Legislation and Practise***

In many cases throughout the relatively short history of the state system, states have conducted trade with an eye to disadvantage their rivals for their own gain. This, indeed, was the premise of original mercantilist policy. Despite the end of the Second World War and the attempt to build a freer and fairer trading system, mercantilist policies continue. As I have shown, the Japanese were to use such tactics rather masterfully throughout their period of 'economic miracle'. In fact, the Americans themselves may even have partaken in similar measures themselves under the pretense of 'anti-dumping' actions. Nonetheless, how did the United States react to these perceived injustices? What economic and legal tools were available to them?

While most unfair trading practises are meant to be conducted through the WTO (then the GATT), some nations retain the right and capacity to initiate independent trade defence actions. The United States is one them. Among the most famous of America's trade defence acts is the

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<sup>123</sup> See annex 2 and all end figures. Patrick Messerlin, "Antidumping in Supercomputers or Supercomputing in Antidumping? The 'Cray-NEC' Case" *European Centre for International Political Economy*. September 2009. <http://ecipe.org/publications/antidumping-supercomputers-or-supercomputing-antidumping-cray-nec-case/>

U.S. Trade Act of 1974, particularly Section 301. But this is only one, among many, of the tools that the United States has/had at its disposal. There are VIEs, VERs, countervailing tariffs, anti-dumping tariffs, as well as ‘Super’ 301s. All serving different purposes, with varying sets of tradeoffs and advantages.

### *Tools of the Trade: Section 301*

Section 301 of the U.S. Trade Act of 1974 was created to respond to perceived foreign restrictive trade barriers, in hope of applying pressure for their removal and achieving American export expansions in due course. Section 301 cases can be initiated independently by an American firm or industry or may be self-initiated by the United States Trade Representative (USTR). At first the USTR is obliged to seek a settlement directly with the foreign country concerned, and for cases covered under a relevant trade agreement (WTO, NAFTA) the formal mechanism is required to be used. When, and if, these processes are exhausted the USTR is then authorized to act independently. As the Congressional Research Service describes,

“If a settlement cannot be reached within a specified period, 12 to 18 months for most cases, except for intellectual property rights, the USTR is required to determine whether or not to retaliate. Such relation usually takes the form of 100% on selected imported products from the offending country: the level of which is generally intended to equal U.S. trade losses resulting from the trade barrier.”<sup>124</sup>

As the excerpt mentions, intellectual property concerns are not covered by Section 301. They are instead dealt with under a provision known as ‘Special 301’, which is derived from the same trade act. It requires that the USTR identify and rank countries that breach or deny adequate protection for intellectual property rights (IPR), authorising 301 investigations into the worst violators.

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<sup>124</sup>Wayne Morrison, “Section 301 of the Trade Act of 1974, as Amended: Its Operation and Issues Involving its Use by the United States” Congressional Research Service, Report 98-454. p,2  
<http://crs.wikileaks-press.org/98-454.pdf>



Whilst Section 301 was used rather prominently throughout the 1980s, by far its most famous variant is known as 'Super 301'. Super 301 emerged in the late 1980s as a result of mounting public and congressional discontent with America's growing trade deficit and perceived anti-competitive trade activity. A provision of the Omnibus trade and Competitiveness Act of 1988, the Super 301 essentially muscled up Section 301,

“Many in Congress believed that executive officials had failed to take full advantage of Section 301 of the Trade Act of 1974, ...With the passage of Super 301, Congress forced the Executive's hand: Executive officials would have to self-initiate 301 proceedings, and in the process establish and reveal publicly an explicit set of market access priorities.”<sup>125</sup>

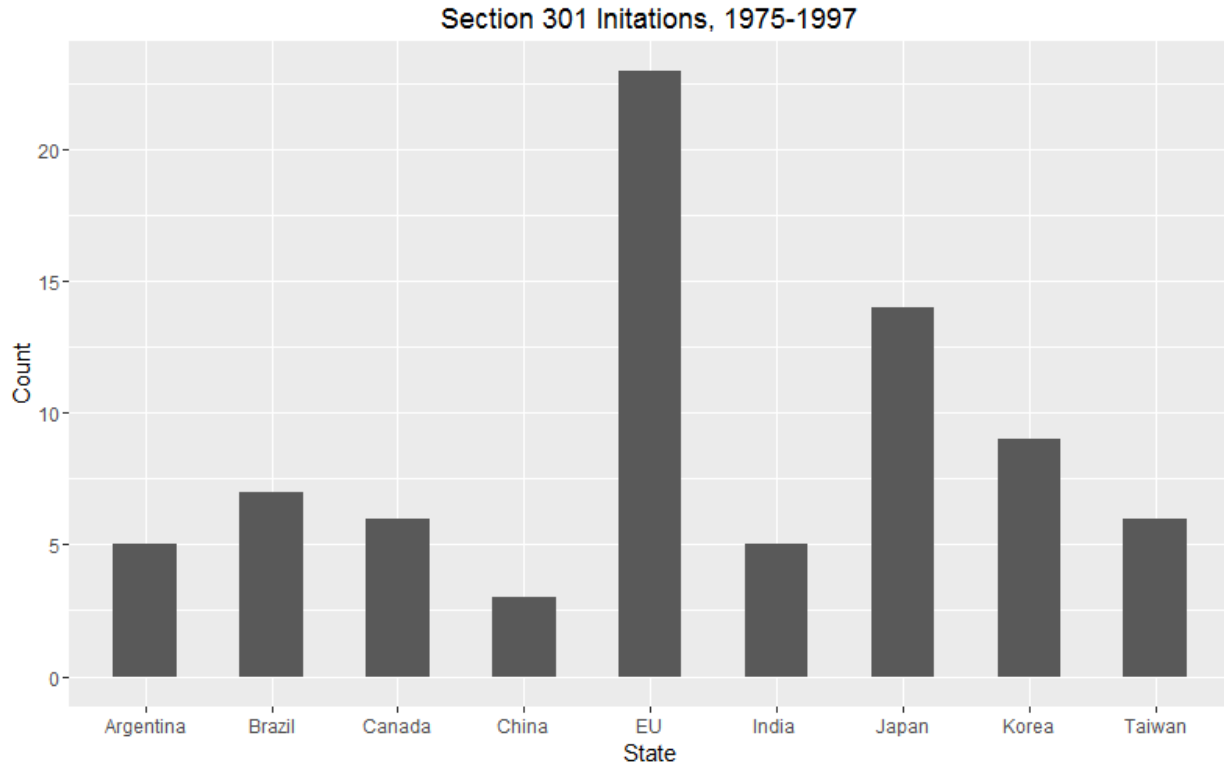
A controversial provision, the Super 301 tended to prove rather useful in applying pressure to achieve trade liberalization goals. However, opponents of the provision labelled it "unilateral, discriminatory and counterproductive," protesting that such legislation would result in trade wars.<sup>126</sup> Needless to say, these trade wars never materialized. But then foreign officials are not likely to praise trade provisions that they know will force their hands in opening up their markets or relenting on anti-competitive pressures. So how useful were these 301 provisions? And how regularly were they used? Below I have transcribed some data to visualise this (figure 4).

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<sup>125</sup> Michael Mastanduno, "Setting market Access Priorities: The Use of Super 301 in US Trade with Japan" *The World Economy* 15:6 (1992) pp, 729-730

<sup>126</sup> Reginald Dale, "Super 301: A Trade 'Monster' It Isn't" *The New York Times*, April 9, 1993.  
<http://www.nytimes.com/1993/04/09/business/worldbusiness/09iht-thin.html>

**Figure 4 – Section 301 Initiations**



Source: Thomas Bayard and Kimberly Ann Elliott, *Reciprocity and Retaliation in U.S. Trade Policy* (Washington: Institute for International Economics 1994); Kimberly Ann Elliott and David Richardson, "Determinants and Effectiveness of 'Aggressively Unilateral' U.S. Trade Actions" in Robert Feenstra ed. *The Effects of U.S. Trade Protection and Promotion Policies* (Chicago: University of Chicago Press, 1997)

As the graph demonstrates, by far and away the largest target for section 301 initiations was the European Union (then the European Community), followed by Japan and Korea. Why is this? Once more, we can relate this back to our earlier discussion on NTT. When nations are competing in similar product areas, particularly in oligopolistic industries, a threat of tariffs is likely to be far more pressing than if it were in a complementary line. To see why this is so, remember that

oligopolistic markets operate on increasing returns to scale, with average costs decreasing per unit of output sold. If a tariff were placed on a nation, blocking its exports from that market, it would lose market share rapidly to the other nation's oligopolistic firms. Furthermore, because price competition isn't a feasible way to gain back this share, the costs of raising barriers to entry could be exceedingly high. According to John Conybeare "trade complimentary implies low elasticities of demand for each other's product, and high costs to a trade war. Countries with similar economic structures would have substitutes for each other's product and a higher elasticity."<sup>127</sup> Equally, some have argued that competitive trade relationships between states encourages domestic interest groups and government institutions to be better united behind threats, which are then deemed to be more credible.<sup>128</sup> Trade competitiveness in this sense refers to the similarities of their export profiles. I.e. are they exporting the same product types. To see why this might occur, it has to be kept in mind that "the nation issuing the threat will most likely have large export-seeking and import-competing sectors specializing in the production of the same commodities as the target country."<sup>129</sup>

With respect to the frequency of cases, in the overall period covered (1975-1997) there were 78 initiations. From 1975 through until 1997 there were 44, whereas in the period after, from 1988 through until 1997, there were 34.<sup>130</sup> To a certain degree this demonstrates that the USTR hadn't been as sparing with the use of 301s as Congress had claimed, although at the same time many of the issue areas relating to the later cases were in more strategic industries. As covered earlier, these included supercomputers and automobiles. The real question then, is how successful 301 initiations were. Zeng provides an index that allows us to compare effectiveness across nations. His index involves calculating the average concession rates of major U.S. trading partners in

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<sup>127</sup> John Conybeare, *Trade Wars: The Theory and Practice of International Commercial Rivalry* (New York: Columbia University Press, 1987) p, 47

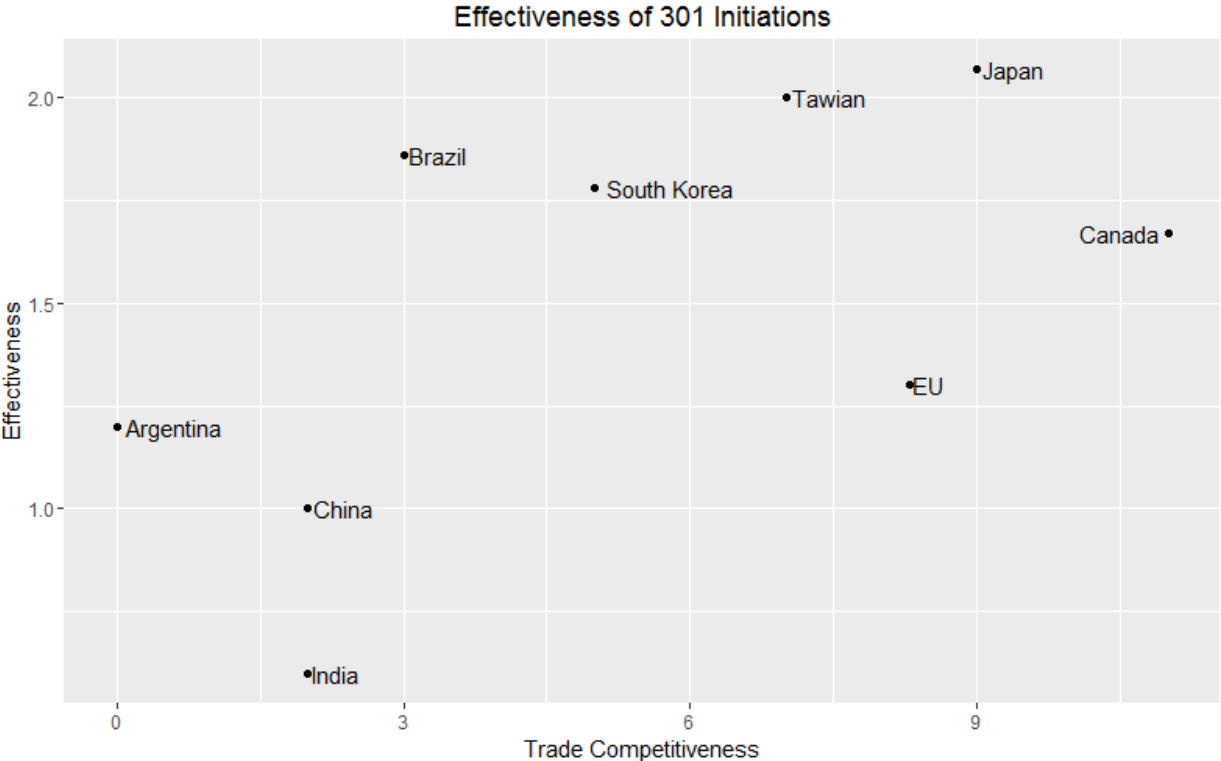
<sup>128</sup> Ka Zeng, *Trade Threats, Trade Wars: Bargaining, Retaliation, and American Coercive Diplomacy* (Ann Arbor: University of Michigan Press, 2004) p,41

<sup>129</sup> Zeng, *Trade Threats*, 45

<sup>130</sup> Thomas Bayard and Kimberly Ann Elliott, *Reciprocity and Retaliation in U.S. Trade Policy* (Washington: Institute for International Economics 1994); Kimberly Ann Elliott and David Richardson, "Determinants and Effectiveness of 'Aggressively Unilateral' U.S. Trade Actions" in Robert Feenstra ed. *The Effects of U.S. Trade Protection and Promotion Policies* (Chicago: University of Chicago Press, 1997)

Section 301 investigations. He considers the United States to have been ‘largely successful’ if there is substantial compliance with U.S. demands; ‘partially successful’ if the target agrees to American demands on some, but not all, of the issues under dispute; ‘nominally successful’ if the issue reoccurs or if the target nation does not implement the agreement; and ‘not at all successful’ if the United States reached no agreement at all. Zeng codes concessions from 0 to 3, whereby ‘not at all successful’ is 0. The results are then averaged by country.<sup>131</sup> In figure 5 we see this visualized.

**Figure 5 – Section 301 Effectiveness**



The graph aptly demonstrates and confirms what both NTT and Zeng predicted. That states with competitive trade structures are more responsive to trade threats than complementary economies. With that said, there is a slight problem with this comparison insofar as it aggregates a number of different product areas together that are of varying importance to the United States.

<sup>131</sup> Zeng, *Trade Threats*, 61

For instance, the super-majority of 301s brought against the EU were for agricultural goods whereas in Japan it included supercomputers, satellites and semiconductors. Very different industries and priorities. Likewise, there is a definitive difference between those nations that are U.S. allies and those who are not. This could be a coincidence, but is more likely linked to the fact that developed countries and U.S. allies are broadly congruent groupings. Although, as we shall see, there are more alluring security elements in other episodes of economic diplomacy worthy of investigation.

### *Tools of the Trade: MOSS/VIE/VER*

In addition to 301 initiations, the United States also deployed a number of other trade defence tactics. In general, these other trade defence mechanisms work in concert with one another to achieve their goals. For instance, the threat of 301 action was often used to motivate progress on other market opening initiatives. With Japan in the 1980s this centred around what were known as Market Oriented Sector Selective (MOSS) talks and quota based trade limitation and expansion policies known as Voluntary Import Expansions (VIEs) and Voluntary Export Restraints (VERs). But what were they? And how effective were they?

MOSS talks were initiated in the mid-eighties to address growing concern over market access in Japan, particularly non-tariff barriers and anti-competitive practices. In 1985 the initial areas addressed in these talks were telecommunications, electronics, medical equipment/pharmaceuticals, and forestry products. In 1986 transportation machinery and auto parts were added. In contrast to the other measures, MOSS negotiations did not impose any form of quotas that restricted or artificially expanded trade in anyway, instead “built on the free-trade principle that when all barriers were eliminated, market forces would prevail.”<sup>132</sup> Among a number of other things, the negotiators focused on creating transparency in government procurement contracts that had been traditionally opaque and almost purposefully complex. The simplification of these processes and the setting of equal standards and regulations was

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<sup>132</sup> United States General Accounting Office, “U.S.-Japan Trade: Evaluation of the Market-Oriented Sector-Selective Talks” National Security and International Affairs Division. July 18, 1988. p, 13

therefore important to US negotiators, likewise copyright protection was a high priority for a number of industries, particularly in high technology industries. The United States' General Accounting Office (GAO) provided a review of the perceived success of these talks,

“U.S. business representatives that GAO interviewed were generally positive about the outcome of the MOS talks, even when they did not have specific examples of direct benefit derived from MOSS agreements. The structure of the MOSS talks was considered very important by many U.S. firms contacted. In particular, the use of high-level government negotiators and the on-going interaction between government and industry were considered essential to the success of these negotiations.”<sup>133</sup>

Quantifiable data was far harder to come by, specifically because the Plaza accord induced exchange rate correction would be a far more important factor in alleviating pressure on America's current account.<sup>134</sup>

However, MOSS talks were only ever a small part of U.S. efforts to gain access to Japanese markets, and one that is unlikely to have been as important as other factors. For instance, the aforementioned GAO report noted that “relatively few respondents believed that the MOSS talks alone helped to increase their access to the Japanese market to a great extent.” admitting that “‘intangible’ barriers, including regulations and business practices, persist in many Japanese sectors and are relatively less responsive to government intervention.”<sup>135</sup> In fact, both before, during, and after the MOSS process the United States used threats of 301 action to negotiate a number of trade opening agreements. These VERs and VIEs, while controversial, were vital components of such a strategy.

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<sup>133</sup>General Accounting Office, “U.S.-Japan Trade”, p,2

<sup>134</sup> Indeed, the G5 meeting at Plaza marked an inflection point in U.S.-Japan economic diplomacy. With a number of major agreement successfully negotiated from 1985 onwards. The timing of which, as we will see in later chapters, is rather interesting. Although will not be explored in this section.

<sup>135</sup> General Accounting Office, “U.S.-Japan Trade”, pp,2-3

Voluntary Export Restraints and Voluntary Import Expansions share a number of commonalities, particularly their ironic use of the word ‘voluntary’. The alternative to negotiating these actions was generally a 301 sanction, and so for reason we covered earlier there tended to be a great deal of effort to successfully negotiate them. Although as Mitsuo Matsushita records, VERs were often negotiated irrespective of US International Trade Commission (ITC) decisions.<sup>136</sup> Admittedly, however, USITC reports are non-binding on the USTR. VERs impose export limitations on the target country. In the case of the U.S and Japan a VER targeted at Japan would limit the amount of specified product that Japan could ship to the United States. Likewise, VIEs set a quota for importing certain goods into Japan from the United States. This can take the form of either quantitative targets with respect to value or blunt market share. Below, in table 6, I display some major VIEs and VERs.

**Table 6 – List of VERs/VIEs**

Voluntary Export Restraints	
Sector	Duration
Automobiles	1981 - 1994
Machine Tools	1987 - 1993
Colour TVs	1977 - 1980
Steel	1969 - 1992
Textiles	1957 - 1991
Semiconductors	1986 - 1996
Voluntary Import Expansions	
Sector	Duration
Semiconductors	1986 - 1996
Automobiles	1995 - 2000

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<sup>136</sup> Mitsuo Matsushita, “A Japanese View of United States Trade Laws” *Northwestern Journal of International Law & Business* 8:1 (1987) pp, 43-44

One of the more famous VIEs was negotiated in 1986 to deal with what America perceived as Japanese 'dumping' of semiconductors onto U.S. markets. The 1986 U.S.-Japan Semiconductor Trade Agreement (STA) obliged the Japanese to stop the dumping of semiconductors and to facilitate foreign firms securing 20% of the Japanese semiconductor market.<sup>137</sup> A motivating factor sealing the deal was Japan's eagerness to "avoid the automatic imposition of antidumping penalties and possible 301 sanctions."<sup>138</sup> To prevent 'dumping' of semiconductors, Japan's Ministry of International Trade and Industry (MITI) had agreed to monitor the price of Japanese chip exports, effectively placing limits on the export of semiconductors in a formally voluntary form of VER.<sup>139</sup> Even so, after only a year the American's deemed that the Japanese had not fulfilled the terms of the agreement and imposed a 100 percent retaliatory tariff on a number of Japanese electrical goods.<sup>140</sup>

Equally, a large number of U.S. electronics firms (non-semiconductor producers, that is) actively campaigned against such action. This is because export restraints caused a rise in the price of Dynamic Random-Access Memory (DRAM) that a number of manufacturers used in their products. In a large part this is because the US market share for DRAM shrunk from 70% to 20% in rather short order. When prices rose in America it was perceived that this was because of export limitations, which in turn made U.S. computer manufacturers charge higher prices for their products, thus making them less competitive.<sup>141</sup> Whether this is true or not is not entirely relevant, as D'Andrea Tyson pointed, there are reasons to suspect it may not be.<sup>142</sup> Rather, the salient fact is that they were perceived to have caused these price increase. As a result of this, by 1991 the only provision that survived was for market access.<sup>143</sup> But was it successful? Well, by 1991 the 20% target had been achieved, in itself a vital indicator. In addition, since then, the

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<sup>137</sup> Douglas Irwin, "The U.S.-Japan Semiconductor Trade Conflict" in Anne Krueger ed. *The Political Economy of Trade Protection* (Chicago: University Of Chicago Press, 1996) p,5

<sup>138</sup> Irwin, "The U.S.-Japan Semiconductor Trade Conflict", 10

<sup>139</sup> D'Andrea Tyson, *Who's Bashing Whom?*, 109-110

<sup>140</sup> Zeng, *Trade Threats*, 142-43

<sup>141</sup> Irwin, "The U.S.-Japan Semiconductor Trade Conflict", 7-8

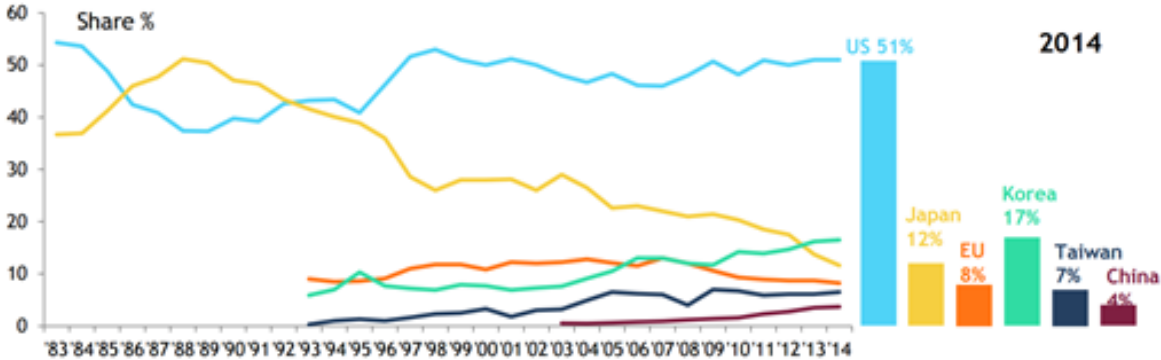
<sup>142</sup> D'Andrea Tyson, *Who's Bashing Whom?* ,117

<sup>143</sup> Irwin, "The U.S.-Japan Semiconductor Trade Conflict", , 12



United States has also rapidly regained market share. In the figure 6 I display the relevant data supplied by the American Semiconductor Industry Association (SIA) from 1983 up through 2014.

**Figure 6 – US Share of Global Semiconductor Market**



As we can see, as of 2014 the United States accounted for 51% of global Semiconductor production. The next nearest, Korea, is only at 17%. More interestingly, U.S. fortunes seems to have inflected in around 1987/88 - the year after the semiconductor agreement.

The aforementioned VERs operate in a similar manner, albeit with different modalities and potential downsides. VERs, as touched on earlier, involve (unsurprisingly) a restriction of exports. As shown on the above table, the first was the 1981 Automobile VER. A response to America's shrinking share of global automobile manufacturing, the U.S. automobile industry lobbied for protection. America's share of production had begun declining from the 1950s onwards, largely as a consequence of the economic rebuilding and renewal of Western Europe and Japan. Understandably, automobile production is a very large American industry, and a highly oligopolistic one - dominated by three companies; General Motors, Ford, and Fiat-Chrysler. This powerful position within the US economy, and the political salience of industrial decline, made lobbying for protection a far easier job than in many other industries.

While the Reagan administration did not want to undermine its commitment to free enterprise, the United States, “following a ‘non auto-related’ trip to Japan by U.S. Trade Representative Brock in March 1981,” nonetheless managed to agree a VER with Japan. As Douglas Nelson recalls, “the Japanese government announced that it would voluntarily restrict exports of automobiles to the United States to 1.68 million units.”<sup>144</sup> Formally a success insofar as American negotiators and industry achieved their desired outcomes, VERs are nonetheless highly controversial trade instruments. In the main part this is because VERs, like VIEs, are anticompetitive in nature. Forming what some economists had come to term the ‘new protectionism’ in economic thought and practice in the 1980s. VERs were deemed to be particularly distortionary insofar as they may have a number of peculiar and unintended side-effects. One of the seminal papers on the topic, for instance, noted how they could and had led to ‘quality upgrading’ by the exporting nation. Choosing to target higher-end, higher value vehicles to get around any potential profit loss associated with quantitative limitations.<sup>145</sup> Likewise, the effects of VERs are also very sensitive toward the assumptions of which they are based and how they react over time.

Bhagwati illustrates this rather succinctly when he notes how a market structure mistake in the EECs VER on VCRs actually ended up restricting domestic output even further. The reason for this (in short) was that the VER had been designed to operate in context to a competitive market, not a monopolistic one. As it turned out, however, the EEC market for VCR production was in fact monopolistic, incentivising production costs for profit gain.<sup>146</sup> With that said, the most prominent complaint is that VERs reduce the importing nation’s consumer welfare; that is, the importing nation’s consumers are worse off. There are a number of reasons for this, but in the main part this is because VERs restrain competitive behaviour. For instance, consider a duopoly whereby the foreign and domestic firm compete on price. Now add a quantity based VER and you will see

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<sup>144</sup> Douglas Nelson, “Making Sense of the 1981 Automobile VER: Economics, Politics, and the Political Economy of Protection (Chicago: University of Chicago Press, 1996) p, 38

<sup>145</sup> Jagdish Bhagwati, “VERs, Quid Pro Quo DFI and VIEs: Political-Economy-Theoretic Analyses” *International Economic Journal* 1:1 (1987) p, 8

<sup>146</sup> Bhagwati, “VERs, Quid Pro Quo DFI and VIEs”, 9

that this will lead both firms to raise prices, even if the VER is set at the free trade level. This is because the domestic firm can raise its prices without worrying that consumers will instead choose to buy from abroad. Likewise, the foreign firm can raise prices as well because the raising of the domestic firms prices means that it will not itself be priced out of the market.<sup>147</sup> In theory, therefore, making the consumers worse off.

It is for this reason that among the 'new protectionist' measures, most economists tend to prefer the VIE. This is particularly so given that a number of observers believe VIEs to improve competition through opening up market access where it was restricted before.<sup>148</sup> Although, once again, a number of economists also believe that both VIEs and VERs contribute to reduced welfare through trade reduction and price increases.<sup>149</sup> However, the trouble with these debates is that many of them are conducted through formal modelling rather than empirical research, offering up internally coherent mathematical models that compete on assumptions rather than evidence. For instance, on the whole semiconductor prices, contrary to complaints, decreased dramatically after the 1987.<sup>150</sup> At whilst opening up the Japanese semiconductor market to foreign competition. Nonetheless, irrespective of these concerns, the United States has used these tools on a number of occasions, and generally not to its disadvantage. Moreover, the salient fact - for this thesis at least - is that the U.S. negotiators achieved what they had *wanted*.

#### *Tools of the Trade: Anti-dumping Duties*

While not a unique tool to the United States, one of the more regularly deployed trade defence techniques has been initiations of anti-dumping petitions and tariffs. Briefly covered before, dumping is essentially a predatory pricing policy. The WTO defines dumping as follows, "if a company exports a product at a price lower than the price it normally charges on its own home

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<sup>147</sup> Motoshige Itoh and Sadao Nagaoka, "VERs, VIEs, and Global Competition" in Edward Graham and David Richardson eds. *Global Competition Policy* (Washington: Institute for International Economics, 1997) p,482

<sup>148</sup> D'Andrea Tyson, *Who's Bashing Whom?* 134

<sup>149</sup> Itoh & Nagaoka, "VERs, VIEs, and Global Competition" 497

<sup>150</sup> Bruce Grimm, "Price Indexes for Selected Semiconductors, 1974-96" *Survey of Current Business* February 1998. p, 9

<http://www.bea.gov/scb/pdf/national/nipa/1998/0298od.pdf>

market, it is said to be “dumping” the product.” continuing to note that “the WTO Agreement does not regulate the actions of companies engaged in ‘dumping’. It focuses is on how governments can or cannot react to dumping - it disciplines anti-dumping actions.”<sup>151</sup> More generally, dumping is the process of exporting a good at a loss, most often at below manufacturing cost or due to some form of subsidy. For what may be obvious reasons, this rather simple sounding demarcation is highly clouded in practice. Indeed, the specific legislative phrase, “a product is to be considered as being dumped, i.e. introduced into the commerce of another country at less than its *normal value*,” is very vague.<sup>152</sup> Particularly because determining what a ‘normal value’ would or should be could be rather difficult when subsidies and state aid are involved, or access to accounts are obstructed.

In fact, the supercomputer example covered earlier exemplifies many of the issues involved in initiating and calculating anti-dumping action. Japan, however, is a far easier case to analyse than China would be, for example. This is because Japan was a largely a market economy, and although state aid was rather prevalent it wasn’t quite as extensive as we see with the Chinese. In China, by comparison, the state not only controls a vast amount of domestic credit allocation, but also engages in export subsidies and industrial capacity building.<sup>153</sup> Indeed, much of the contemporary global debate over ‘overcapacity’ in certain manufacturing industries (particularly steel) is attributable to Chinese overinvestment in these areas. By overinvestment, it is mean that China’s gross fixed capital formation (GFCF) has been exceeding high for decades whilst capacity utilization has dropped.<sup>154</sup> An indirect form of ‘dumping’, it could be argued. For instance, in

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<sup>151</sup> World Trade Organization, “Anti-dumping”  
[https://www.wto.org/english/tratop\\_e/adp\\_e/adp\\_e.htm](https://www.wto.org/english/tratop_e/adp_e/adp_e.htm)

<sup>152</sup> World Trade Organization, “Agreement on Implementation of Article VI of the General Agreement of Tariffs and Trade 1994”. P,145  
[https://www.wto.org/english/docs\\_e/legal\\_e/19-adp.pdf](https://www.wto.org/english/docs_e/legal_e/19-adp.pdf)

<sup>153</sup> See, U.S.-China Economic and Security Review Commission, “2015 Report to Congress” November, 2015. pp, 153-156; Michael Martin, “China’s Banking System: Issues for Congress,” Congressional Research Service. February 20, 2012. Pp, 37-43 ; Joshua Chaffin, “EU berates China over steel subsidies: Report concludes country is providing illegal subsidies” *The Financial Times*, January 14, 2013. <https://next.ft.com/content/6d4e6408-5e68-11e2-b3cb-00144feab49a> ; Fayen Wong, “Steel industry on subsidy life-support as China economy slows” *Reuters*, September 18th, 2014. <http://www.reuters.com/article/us-china-economy-steel-idUSKBN0HD2LC20140919>

<sup>154</sup> Biliang Hu and Jian Zhuang, “Knowledge Work on Excess Capacity in the People’s Republic of China” *Asian Development Bank*. July 2015.

2014, the World Bank put China's GFCF at 44% compared to the United States' 20%.<sup>155</sup> Yet, calculating whether such aid constitutes 'dumping' can be difficult. Nonetheless, for the more direct subsidies, WTO legislation makes some provisions.

For instance, with respect to China, the WTO allows members states to treat China as a 'non-market economy' (NME) in anti-dumping initiations<sup>156</sup>. This permits them to find a comparable market economy at a similar level of develop to China from which to take costings, as state support will skew Chinese pricing. Yet, as mentioned, the WTO only oversees the framework for anti-dumping tariffs and petitions - it doesn't pass judgment. Where it does take action, however, is in dispute settlement.<sup>157</sup> Whereby states may ask the WTO to challenge the imposition of such tariffs. If found to be unwarranted, the WTO will request the country in questions removes any relevant duties.<sup>158</sup> Failure to comply ultimately ends in trade sanctions.<sup>159</sup> Yet what can anti-dumping initiations tell us about U.S. trade leverage? And how does it link back to Japanese diplomacy throughout the eighties?

As a common trade defence tool, anti-dumping initiations are rather numerous and well detailed. In addition to this, there is also ample access to the relevant data which allows us to look at who, when, and for what the U.S. has targeted other nations. A look at this data is interesting insofar as anti-dumping inations provide a good proxy for overall trade friction, and so should paint further light on the effectiveness of U.S.-Japan diplomacy as well as the identify current and evolving trade frictions. In what follows, I display all publically available data on anti-dumping

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<http://www.adb.org/sites/default/files/project-document/161581/knowledge-work-excess-capacity-prc.pdf>

<sup>155</sup> World Bank Group, "Gross fixed capital formation (% of GDP)"

[http://data.worldbank.org/indicator/NE.GDI.FTOT.ZS?order=wbapi\\_data\\_value\\_2014+wbapi\\_data\\_value+wbapi\\_data\\_value-last&sort=desc](http://data.worldbank.org/indicator/NE.GDI.FTOT.ZS?order=wbapi_data_value_2014+wbapi_data_value+wbapi_data_value-last&sort=desc)

<sup>156</sup>World Trade Organization, "Accession of the People's Republic of China," November 23, 2001.

[https://www.wto.org/english/thewto\\_e/acc\\_e/completeacc\\_e.htm](https://www.wto.org/english/thewto_e/acc_e/completeacc_e.htm)

<sup>157</sup> World Trade Organization, "Technical Information on anti-dumping"

[https://www.wto.org/english/tratop\\_e/adp\\_e/adp\\_info\\_e.htm](https://www.wto.org/english/tratop_e/adp_e/adp_info_e.htm)

<sup>158</sup> For example, see. European Commission, "WTO confirms China illegally imposed anti-dumping duties on scanners from the the EU" February 23, 2013.

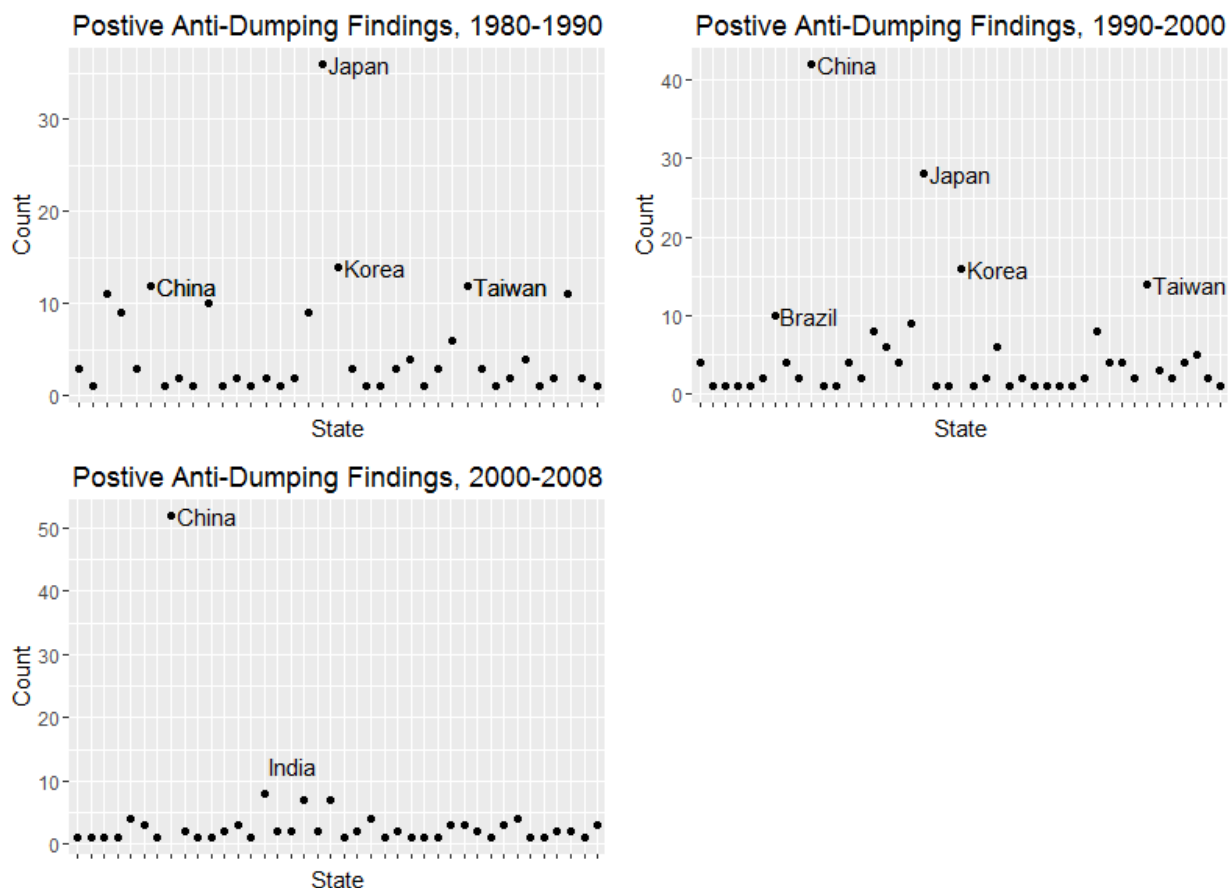
<http://trade.ec.europa.eu/doclib/press/index.cfm?id=871>

<sup>159</sup> World Trade Organization. *Understanding the WTO* (Switzerland: WTO, 2015) p,58

[https://www.wto.org/english/thewto\\_e/whatis\\_e/tif\\_e/understanding\\_e.pdf](https://www.wto.org/english/thewto_e/whatis_e/tif_e/understanding_e.pdf)

initiations by the United States from 1980 through to 2008.<sup>160</sup> The data has been collated from the United States International Trade Commission and manually inputted into a database for analysis. Figure 7 displays total positive findings by target country in two time periods.

**Figure 7 – US Antidumping Findings**



Positive findings, understandably, are those initiations that have been found to be warranted. The graphs are split as follows; the first is from 1980 until 1990, the second from 1990-2000, and the third from 2000-2008. The logic guiding this, whilst crude, is that Japanese initiations should register a significant drop after the 1980s if the United States had been successful. But what does the data say? As the graphs begin to demonstrate, positive anti-dumping findings against Japan

<sup>160</sup> United States International Trade Commission, "Import Injury Investigations Case Statistics (FY 1980-2008)" Office of Investigations. February 2010.

didn't decrease all that much in the 1990s. They fell from thirty-six throughout the 1980s to twenty-eight throughout the 1990s. Whilst on the surface this doesn't look all that impressive, with context it is somewhat better. As we covered earlier, the 1990s witnessed a concerted effort by the Clinton administration to break up restricted markets. Indeed, aforementioned author, Laure D'Andrea Tyson, an advocate of defensive trade actions, was made President Clinton's Director of the National Economic Council throughout this time.

What is more impressive, however, is the near total collapse of anti-dumping findings against Japan in the 2000s - down to seven throughout this eight year period. While the Japanese may have 'responded well' to this form of diplomatic and trade pressure, new challenges quickly materialised. Most obviously this includes China, a nation with whom progress on trade restrictive processes hasn't been quite as quick as it had been with Japan. The reasons for this are mixed, but as we shall explore in subsequent chapters Japan's security relationship with the United States played a strong role in many of these negotiations. With that said, as the cases above have illustrated, the United States seems to derive considerable negotiating leverage from the size and development of its domestic economy alone. Yet, as was covered in the introduction, the scale of its domestic consumer market is not America's only asset. It's pronounced centrality with global financial markets is often deemed to be just as an important source of leverage and benefit. 'Dollar Hegemony', as we shall see, is a potent source of economic strength for the United States.

### ***Chapter Summary***

This chapter has shown that the United States gains considerable advantages from its economic position within the global political economy. Not only is its general economic size advantageous, but its very large relative consumer demand for high technology, high value-added goods is even more so. The implications of this are that the United States already has a large number of positional advantages from which to negotiate changes to the formal and informal structures of the global economy.

## Chapter 2 - Dollar Hegemony

The previous chapter analysed the influence the United States' large economic size and consumer demand has upon its ability to achieve international political-economic outcomes. However, some of the more pronounced aspects of American economic primacy relate to its financial and monetary hegemony, with American primacy within global financial and monetary markets widely believed to bestow significant advantages in international economic and political relations.<sup>161</sup> For this reason, this chapter also explores the contribution America's financial and monetary position makes to its international political-economic 'leverage'.

In the International Relations literature the most regularly cited example refers to the capability this confers to sustain large fiscal deficits, particularly for military expenditures. As Jonathan Kirshner has noted, "since the end for the Cold War, at least, an era of US hegemony and the unquestioned role of the dollar as the world's money, the need for national security strategy to be 'financially sustainable' was not much worried about by American planners."<sup>162</sup> The dynamics that have facilitated this essentially relate to the dollar's preeminent role in the global financial and economic system, which contribute to drive demand for the holding of U.S. dollars and U.S. dollar denominated assets. Because of this, the United States is able to adopt economic policies that would cause other nations to suffer disciplinary divestment action from international financial markets.

One of the elements that reinforces this advantage is the fact that America draws credit largely in its own currency, "the United States is unique in having a virtually unlimited line of credit with

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<sup>161</sup> Alan Wheatley eds. *The Power of Currencies and Currencies of Power* (London :IISS, 2013); Benjamin Cohen and Eric Chiu, *Power in a Changing World Economy: Lessons from East Asia* (New York: Routledge, 2013); David Andrews (ed.) *International Monetary Power* (Ithaca: Cornell University Press, 2006); Benjamin Cohen *Organizing the World's Money: The Political Economy of International Monetary Relations* (New York: Basic Books, 1977); Jonathan Kirshner, "Dollar Primacy and American Power: What's at Stake?" *Review of International Political Economy*, 15:3 (2008) pp, 418–38.

<sup>162</sup> Jonathan Kirshner, "Dollar Diminution and New Macroeconomic Constraints on American Power" in Jeremi Sure and Benjamin Valentino eds. *Sustainable Security: Rethinking American National Security Strategy* (Oxford: Oxford University Press, 2016) p,1



the rest of the world, which is largely denominated in its own currency.”<sup>163</sup> The U.S. Treasury reported that of March 31, 2016 the external debt of the United States stood at \$17.5 trillion. Of this, \$14.8 trillion is denominated in U.S. dollars, while only \$1 trillion is in foreign currency. The remaining \$1.6 trillion is classified as ‘unallocated’, which accounts for “debt in Direct Investment and Trade Credit and advances of the General Government.”<sup>164</sup> Dollarized international transactions benefit U.S. firms who subsequently incur lower foreign exchange risk and easier access to financing. Likewise, domestic consumers (as well as nonfinancial corporates) likely see a reduction in interest rates on borrowing because of the increased inflows into the U.S. economy.<sup>165</sup> Indeed, this was one of the core ideas behind the ‘savings glut’ hypothesis of former Federal Reserve governor, Ben Bernanke.<sup>166</sup> While controversial, and somewhat empirically contestable, the main point is that higher foreign demand for dollar assets, such as bonds, generated by excess savings would increase their price and therefore lower their yield.

Collectively then, demand for U.S. assets can be seen to extend a number of advantages to American economic actors. But what is the precise nature of these advantages? In the following section, I will explore the foundations of the dollar's international role and analyse its position within global financial and monetary markets, describing some of the key drivers for dollar asset demand. I then turn to the major advantages these dynamics have for US financial and economic interests. In doing so, an analytic baseline can be set for later sections discussing the role of US military power and strategy in influencing economic and financial relations.

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<sup>163</sup> Ronald McKinnon, “The International Dollar Standard and the Sustainability of the U.S. Current Account Deficit” *Brookings Papers on Economic Activity* 2001:1 (2001) p, 228

<sup>164</sup> United States Department of the Treasury, “Table B. Gross External Debt Position: Foreign Currency and Domestic Currency Denominated Debt, December 31, 2015” Treasury International Capital System, March 31, 2016.

<http://ticdata.treasury.gov/Publish/debtb2015q4.html>

<sup>165</sup> Francis Warnock and Veronica Warnock, “International Capital Flows and U.S. Interest Rates” NBER Working Paper Series, Working Paper 12560. October 2006. <http://www.nber.org/papers/w12560.pdf> ; Michael Dooley *et al*, “The Revived Bretton Woods System” *International Journal of Finance and Economics* 9 (2004) pp, 307-313 <http://dept.ku.edu/~empirics/Read/Dooley04.pdf>

<sup>166</sup> Ben Bernanke, “Remarks by Governor Ben Bernanke: The Global Saving Glut and the U.S. Current Account Deficit” The Federal Reserve Board, March 10, 2005.

<http://www.federalreserve.gov/boardDocs/Speeches/2005/200503102/default.htm>

## ***The Foundations of International Monetary Power***

The U.S. dollar has been dominant in international monetary relations for most of the twentieth century, but took on its undisputed position with the establishment of the Bretton Woods system following the Second World War. Pegged to gold at \$35 per ounce, the dollar was the official reserve currency through until 1971. Even the ‘surprise’ shedding of the dollar-gold peg failed to tarnish the position of the dollar in the international monetary system. As I shall demonstrate later, dollar usage remained dominant until the end of the Cold War, whereby the reunification of Germany and the rise of Japan only had limited effects on dollar ‘market share’.<sup>167</sup> Even retaining its dominance after the financial crisis of 2008.<sup>168</sup> But what characteristics define a reserve currency? Are there specific attributes required?

These questions have absorbed a number of scholars over the years, including Charles Kindleberger, Ben Cohen, and Barry Eichengreen. In the main part, the dominant understanding refers us, understandably, to economic factors. Krugman’s 1984 paper on the matter lists two major factors, arguing that “the currency of a country which is important in world markets will be a better candidate for an international money than that of a smaller country.”<sup>169</sup> In addition to this, Krugman also alludes to the manner in which the use of a currency as an international money itself reinforces the currency’s usefulness. What we now call a ‘network effect’. The first being very much in keeping with the general ‘economic mass’ perspective of the previous chapter. With the second also being very understandable. In fact, as I shall cover in due depth later, network effects can prove very important in international relations generally and financial markets more particularly. Although, as Eichengreen and Flandreau have demonstrated, the persistence and salience of network effects may be contextually contingent. They note, for instance,

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<sup>167</sup> Bank for International Settlements, “Central Bank Survey of Foreign Exchange and Derivatives Market Activity 1995,” Monetary and Economic Department. May 1996.

[http://www.bis.org/publ/r\\_fx96.pdf](http://www.bis.org/publ/r_fx96.pdf)

<sup>168</sup> Doug Stokes, “Achilles’ deal: Dollar decline and US grand strategy after the crisis” *Review of International Political Economy* 21:5 (2014) pp, 1071-1094

<sup>169</sup> Paul Krugman, “The International Role of the Dollar: Theory and Prospect” in John Bilson and Richard Marston eds. *Exchange Rate Theory and Practice* (Chicago: University of Chicago Press, 1984) p,274

<http://www.nber.org/chapters/c6838.pdf>

“While it pays to for importers and exporters use the same currency as other importers and exporters when, inter alia, invoicing and settling trade, a central bank has no similar incentive to concentrate its reserve portfolio in the same currency as other central banks; to the contrary, it will have an incentive to hold a diversified portfolio of reserves.”<sup>170</sup>

An important, albeit contingent caveat, as we shall see in due course.

In addition to these two elements, there are a further set of rather uncontroversially, and intuitive factors to account for. It isn't enough, for instance, just to have a large share of global production and trade, rather a state issuing a reserve currency needs to exhibit a few further attendant features. The most obvious of which is the need for deep and well developed financial and capital markets, “these markets make the currency an attractive one in which to hold assets and in which to transact.”<sup>171</sup> What use is it holding large amounts of currency that cannot be invested? A further feature of this is that these markets would be even more preferable if they were as open and as liquid as possible. After all, a financial market isn't so attractive if you cannot move your assets in and out of it freely. Most actors would therefore be more willing to hold a currency in which a wider range of investments could be made. Likewise, if this market is not liquid and open, actors will face higher opportunity and transactions costs. This is because a less liquid market will have higher frictions that will increase the cost of purchasing and selling assets and currency compared to one that is more liquid. That is, higher liquidity markets reduce mismatches between supply and demand and thus lower bid/ask spreads.

In addition to this, poor liquidity and closed markets may prove a source of significant risk insofar as in times of crisis assets may be locked into a nation's market and not readily sold. Furthermore,

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<sup>170</sup> Barry Eichengreen and Marc Flandreau, “The Federal Reserve, the Banks of England, and the Rise of the Dollar as an International Currency, 1914-1929,” Paper presented at the BIS annual research conference, June 2010. Bank for International Settlements.

<http://www.bis.org/events/conf100624/eichengreenflandreupaper.pdf>

<sup>171</sup> Eric Helleiner, “Political determinants of international currencies: What future for the US dollar?” *Review of International Political Economy* 15:3 (2008) pp, 357-358

and somewhat rarer, there is an associated risk that assets in closed markets could or may be expropriated with greater ease than in open markets. For instance, during the 2012/13 Cypriot banking crisis, the imposition of capital controls on the Cypriot economy preceded a 10% expropriation of private uninsured assets. Something that is not possible in an open market where assets can be transferred largely at will. You could imagine, moreover, that a desperate authoritarian or dictatorial regime may also be tempted to expatriate foreign assets in times of crisis, or at least slow down capital flows to limit a run on their financial system. This, as we shall see, is one of the important differences between *de facto* and *de jure* openness driving the desirability of holding different currencies and denominated assets.

Finally, the other important factor to consider is the stability of the currency's value. If the currency in question has a solid history of stable value - itself often linked to low inflation and relatively sound macroeconomic fundamentals - market participants will be more likely to want to hold it. In fact, it was along this reasoning that a number of economists believed that a dollar crisis was imminent from the mid-2000s onwards. Rather prominently, Nouriel Roubini predicted that America's then 'twin deficits' would erode the willingness of foreigners to invest further in U.S. official assets. Roubini suggested that not even large scale divestment was necessary, rather that it was "sufficient that foreign central banks reduce the *rate* at which they accumulate new dollar reserves, to lead to a sharp movement of the U.S. dollar, of U.S. long-term interest rate and of the price of many other risky assets."<sup>172</sup> Whilst ultimately wrong about the nature of the crisis to come, it highlights a fear that was in the mind of many monetary economists at the time. That a precipitous fall in the value of the dollar, in combination with large scale external debt and foreign asset accumulation, would lead some states to question the merits of continued dollar asset accumulation. Ultimately undermining the reserve currency status of the dollar.<sup>173</sup>

### *The Roles of International Money*

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<sup>172</sup> Nouriel Roubini and David Altig, "Does Overseas Appetite for Bonds Put the U.S. economy at Risk?" *The Wall Street Journal*, March 29, 2005.

<http://online.wsj.com/public/resources/documents/econoblog03292005.htm>

<sup>173</sup> See, Barry Eichengreen, "Sterling's Past, Dollar's Future: Historical Perspectives on Reserve Currency Competition" National Bureau of Economic Research, NBER Working Paper No. 11336. May 2005

Krugman's 1984 paper on the dollar is one of the earliest and most well-cited papers to introduce a skeletal framework for understanding the roles of international money. As figure (##) demonstrates, we can demarcate these between official and private roles, where official roles are those carried out exclusively by states and private roles are those undertaken largely by non-state market participants (that is unless a company is state owned). In a general sense, a medium of exchange is analogous to the role that any currency plays within a domestic economy, that is it facilitates the exchange of diverse goods and products. Currencies, and therefore mediums of exchange, are useful insofar as they are fungible in ways that other instruments may not be, and in a way that crude barter is definitely not. A unit of account is intimately related to the medium of exchange as it explains what currency goods and services are invoiced in. Lastly currencies also act as a store of value, although not necessarily purely in the form of currency deposits. What I mean by this is that states hold dollars as foreign reserves but these tend not to be held directly as dollar deposits but rather in treasury bills, which being highly liquid are nearly equivalent.

In fact, U.S. treasury bills are often used in international finance as a benchmark for a safe investment. That is, one can work out the 'excess return' on an asset by comparing it to the 'risk free' alternative of investing money in U.S. government debt instruments.<sup>174</sup> Testament to the safety and store of value U.S. debt instruments are perceived to imply. In the following section I take a more in-depth and detailed look into the role of the dollar in the contemporary international financial system. Evaluating its position with respect to its peers, and attempting to quantify and demonstrate how and why its position is so dominant.

### ***American Monetary Power - The Empirics***

As was covered briefly earlier, there are a number of conditions that are widely deemed to be prerequisites for reserve currency status. Yet, given the disparate elements, directly measuring 'monetary power' can be difficult. Nonetheless, a number of scholars have made efforts to do just this. With by far and away the most comprehensive being the formulation put forward by

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<sup>174</sup> Ruey Tsay, *Analysis of Financial Time Series* 3rd edition (Wiley: New Jersey, 2010) pp, 5-6

Carla Norrlof in her 2014 piece, *Dollar Hegemony*. In this paper, Norrlof proposes that America's relative 'monetary capability' and 'currency influence' sufficiently explain the dominance of the US dollar in international financial and monetary transactions. Norrlof defines 'monetary capability' as "the underlying resource base required for exercising currency influence,"<sup>175</sup> itself comprised of two 'dimensions': economic and political. The economic dimension, as I have largely covered, is comprised of intuitive economic aggregates such as the size of a nation's GDP, its trade ledger, and the depth of its capital markets. In addition to which, to account for whether such markets are open, Norrlof also combines these indicators with the Chinn-Ito index of financial openness.<sup>176</sup> The 'political dimension' on the other hand turns out to be shorthand for military power, as "a strong military and naval power can be used to collect debt from faraway places and is an important political source of global currency status."<sup>177</sup>

The exact pathways for this aren't explored in this particular article, but Norrlof's prior work, and that of many other scholars, alludes to a number of important mechanisms. Whether that be through the creation and underpinning of the very international political and economic order itself,<sup>178</sup> the cajoling of allies into holding assets,<sup>179</sup> or through buying influence in the continued development and negotiation of international economic relationships.<sup>180</sup> In addition to this, Norrlof also proposes some further pathways linking dollar hegemony to military power, although these are far more eclectic and are in fact the subject of investigation in the following chapter.<sup>181</sup> The second part of Norrlof's formulation, 'currency influence', refers to "the extent to which a specific currency is used internationally."<sup>182</sup> More specifically, her indicator is a

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<sup>175</sup> Carla Norrlof, "Dollar Hegemony: A Power Analysis" *Review of International Political Economy* 21:5 (2014) p, 1046

<sup>176</sup> Norrlof, "Dollar Hegemony," 1046-47

<sup>177</sup> Norrlof, "Dollar Hegemony," 1047

<sup>178</sup> John Ikenberry, *Liberal Leviathan: The Origins, Crisis, and Transformation of the American World Order* (Princeton: Princeton University Press, 2011)

<sup>179</sup> Doug Stokes, "Achilles' deal: Dollar decline and US grand strategy after the crisis" *Review of International Political Economy* 21:5 (2014) pp, 1071-1094

<sup>180</sup> Stephen Brooks *et al*, "Don't Come Home, America: The Case against Retrenchment" *International Security* 37:3 (2012/13) pp, 7-51

<sup>181</sup> Carla Norrlof, *America's Global Advantage: US Hegemony and International Cooperation* (Cambridge: Cambridge University Press, 2010) Chapter 6

<sup>182</sup> Norrlof, "Dollar Hegemony," 1048

weighted index of official reserve holdings and private foreign exchange transactions, attempting to account for influence that “cuts across the three roles (medium of exchange, unit of account, and store of value) that a global currency must play in international markets.”<sup>183</sup>

Borrowing from this account, and that developed earlier in this section, I will now move onto demonstrate how specific attributes, picked according to the theoretical material above, account for currencies relative usage in foreign exchange transactions. I use foreign exchange data because it provides a broad overview of usage across major currencies, and by its very nature covers a diverse number of transaction types, whether that be foreign exchange intervention or international trade transactions. In particular I use the Bank for International Settlements’ “Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity in 2013,” which aggregates data from across the world. In keeping with Norrlof I also demarcate between capability and influence, with this overview only providing evidence toward the determinants of monetary power - that is, the tangible foundations. The ‘influence’ indicators would be explored in a later section. As will an analysis of the advantages dollar primacy bestows.

Below, table 7 tabulates the top fifteen foreign exchange currencies, listed in descending order, with five binary determinants listed in columns alongside. In order to make the requisite conditions clearer and less ambiguous I decide to make them binary. With each determinant either being dichotomous or indicative of some threshold. Column three illustrates whether the currency in question has a fifty percent share of global FX turnover, whereas column four shows the actual percentage.

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<sup>183</sup> Norrlof, “Dollar Hegemony,” 1048

**Table 7 – Determinants of FX Turnover**

Foreign Exchange Turnover - Determinants

Currency	State	50% Share?	Actual %	10% of Global GDP?	10% of Global Trade	Large Capital Markets?	Open?	Safe Asset?
USD	USA	1	87	1	1	1	1	1
EUR	EZ	0	33.4	1	1	1	1	0
JPY	Japan	0	23	0	0	0	1	0
GBP	UK	0	11.8	0	0	0	1	0
AUD	Australia	0	8.6	0	0	0	1	0
CHF	Switzerland	0	5.2	0	0	0	1	0
CAD	Canada	0	4.6	0	0	0	1	0
MXN	Mexico	0	2.5	0	0	0	0	0
CNY	China	0	2.2	1	1	0	0	0
NZD	New Zealand	0	2	0	0	0	1	0
SEK	Sweden	0	1.8	0	0	0	1	0
RUB	Russia	0	1.6	0	0	0	0	0
HKD	Hong Kong	0	1.4	0	0	0	1	0
SGD	Singapore	0	1.4	0	0	0	1	0
TRY	Turkey	0	1.3	0	0	0	0	0

Given that currency trades are bilateral, traded between two different currencies, the overall count equates to two-hundred percent. That is, the figure shown is indicative of the percent of times that the currency in question was on one side of a transaction. The remaining four



determinants are selected to be representative of the theoretical arguments suggested earlier. The first condition is the size of the nation's economy, in this case placed at a threshold of ten percent of global GDP. Likewise, the trade column marks nation's as 1 if they also have at least a ten percent share of global trade, in this case with the European Union being considered as one entity.<sup>184</sup> The next considers the size of the relevant nation's capital markets, in this case taking data from the World Federation of Exchanges which records the size of the stock market in question. While Norrlof also includes 'bond issuance' in her index, I have decided to omit bond issuance from mine. The reason for this is that rapid growth in capital markets, or even just large capital markets relative to GDP themselves, are not inherently a 'good thing'. Indeed, outsized bond issuance is a source of financial instability - large debt markets relative to a nation's GDP increase systemic risk. In fact, the Bank for International Settlements now uses a departure from trend growth in credit-to-GDP as an indicator of potential banking crises.<sup>185</sup> China's rapid rise in corporate debt issuance over the largest few years isn't something to be heralded, for instance.<sup>186</sup>

The next factor assess a nation's financial openness using the Chinn-Ito index. The Chinn-Ito index measures the *de jure* openness of an economy by assessing restrictions on capital flows recorded in the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions*.<sup>187</sup> The choice of a *de jure* indicator as opposed to a *de facto* indicator is that those economies that are *de facto* open - such as China - often allow money to come freely in, but reserve the right to restrict it going out.<sup>188</sup> Chinn and Ito's index ranks countries on a scale from 0 to 1, with 1 being the most open. In the above table I assign a 1 to those states that score greater than 0.7 on this index. The final column then assigns a 1 to currencies that score 1's in columns 4-7 and, most importantly,

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<sup>184</sup> World Trade Organization, "International Trade Statistics 2015" p, 45  
[https://www.wto.org/english/res\\_e/statis\\_e/its2015\\_e/its2015\\_e.pdf](https://www.wto.org/english/res_e/statis_e/its2015_e/its2015_e.pdf)

<sup>185</sup> Bank for International Settlements, "BIS Quarterly Review: International Banking and Financial Market Developments" Monetary and Economic Department, September 2015. p, 33  
[http://www.bis.org/publ/qtrpdf/r\\_qt1509.pdf](http://www.bis.org/publ/qtrpdf/r_qt1509.pdf)

<sup>186</sup> McKinsey & Company, "Debt and (Not Much) Deleveraging" McKinsey Global Institute. February 2015. p, 75

<sup>187</sup> Hiro Ito and Menzie Chinn, "Notes on The Chinn-Ito Financial Openness Index - 2013 Update"  
[http://web.pdx.edu/~ito/Readme\\_kaopen2013.pdf](http://web.pdx.edu/~ito/Readme_kaopen2013.pdf)

<sup>188</sup> David Keohane, "This isn't the Chinese capital account liberalisation you're looking for" *The Financial Times*. July 17, 2015.  
<http://ftalphaville.ft.com/2015/07/17/2134607/this-isnt-the-chinese-capital-account-liberalisation-youre-looking-for/>

whose central government issues debt instruments backstopped by a sovereign central bank. This condition is important because it provides the foundation for a global 'safe asset', the role that I earlier ascribed to U.S. government debt securities. The reason that a centrally issued asset and a sovereign central bank are necessary is that centrally issued assets are backstopped by the central government, whereas regional ones may not be. In addition, without a sovereign central bank to prop up the central government, the currency would be at risk of potential default.

The most obvious example of a country that fails to fulfill these roles is the European Union's Eurozone. While scoring highly on other features, the Eurozone does not issue debt securities, and regional debt is not fully backstopped by the European Central Bank. As evidenced by this repeated crises, members of the Eurozone are therefore exposed to the risk of sovereign default. That is unless they qualify for the Outright Monetary Transactions (OMT) program, which have proved somewhat controversial.<sup>189</sup> The problem with OMT is that it is highly conditional, and so not all that reliable or 'risk free'.<sup>190</sup> Because of this, there is only one country that fulfills all of the necessary criteria and that is the United States. While the Eurozone has many of these characteristics, as stated above, it lacks one of the core features necessary for a reserve currency - a safe asset. In addition, the Eurozone is well known to remain financially fragmented, without either the depth or interconnection of U.S. financial markets.<sup>191</sup> Severely curtailing its attraction or ability to take on a larger role in the international monetary system.

Given that the provision of a safe asset is a function of some of the other factors, it appears that there is a wide range of necessity conditions that need to be fulfilled before reserve currency status can be achieved. Moreover, missing from this tabulation is an account for one of the more popular features suspected to reproduce dollar hegemony - network effects. Krugman mentioned these briefly in his paper, noting how nation's foregoing their own currency for that of a foreign 'vehicle' currency contribute to swell demand for that very vehicle currency. Making

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<sup>189</sup> Guntram Wolff, "The ECB's OMT Programme and German Constitutional Concerns" *Bruegel*, August 28, 2013. <http://bruegel.org/2013/08/the-ecbs-omt-programme-and-german-constitutional-concerns/>

<sup>190</sup> European Central Bank, "Technical features of Outright Monetary Transactions" September 6, 2012. [http://www.ecb.europa.eu/press/pr/date/2012/html/pr120906\\_1.en.html](http://www.ecb.europa.eu/press/pr/date/2012/html/pr120906_1.en.html)

<sup>191</sup> Helleiner, "Political determinants of international currencies" 358

the process somewhat self-reinforcing.<sup>192</sup> In fact, this effect has been well noted in the literature on dollar primacy.<sup>193</sup> And has been quoted as one of the key factors supporting the reproduction of this dominant position.<sup>194</sup> By far the most detailed exposition of this logic can be found in the recent work of William Winecoff. Given that the global financial system is a network, Winecoff uses network analysis to determine the ‘structural’ features of the system. Helping to bridge a divide between structural power theories and empirical international political economy. Networks investigate the number and nature of connections (financial flows) between specific states (nodes), using reasonably basic graph theory methods to quantify the connections. The important element of this, as Winecoff notes, is that “the topology of the network matters.” That is,

“Networks behave differently under different probability distributions of tie formation: if the topology is trivial, nodes will attract links with equiprobability; if the topology is non-trivial, some nodes will attract links with a higher probability than others.”<sup>195</sup>

This, of course, is a manifestation of the ‘network effect’ mentioned above.

Returning to the example from the introduction to this thesis, a specific node could be seen to attract a large number of linkages purely because of its position and existent connection with a network. Or in Winecoff’s formulation, “the attractiveness of Goldman Sachs as a counterparty may have something to do with its particular skill at investing, but also the fact that Goldman Sachs has strong relationships with many other financial actors: it is prominent in the financial system. So Goldman Sachs attracts new business in part because it previously has attracted business.”<sup>196</sup> The key indicator that tracks the attractiveness of a node is its ‘degree centrality’, which accounts for the relative number of connections one node has with all the others. In

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<sup>192</sup> Krugman, “The International Role of the Dollar,” 60.

<sup>193</sup> See Helleiner, “Political determinants of international currencies,” 359

<sup>194</sup> Stokes, “Achilles’ deal,” 1087

<sup>195</sup> William Winecoff, “Structural power and the global financial crisis: A network analytical approach” *Business and Politics* 17:3 (2015) p,8

<sup>196</sup> Winecoff, “Structural power” 8

nonlinear networks such as this one, these linkages are weighted. With the weight of which corresponds to the value of the flows between the states in question. The 'degree' of a node can be broken down further still into the 'in' and 'out' degree, which measure the number of connections that go into the node and the number that leave the node. In the case of financial data, and many of data types, these connections can be 'weighted'. That is, we use the size of the flow measured in dollars to weight the linkages.

From this, Winecoff then moves on to suggest that "in real-world networks the distribution of degree centrality tends to be durable: nodes which are prominent at time  $t$  tend to remain prominent at time  $t+1$ ."<sup>197</sup> This is because "as new connections formed between nodes, the probability that they involve high-prominence nodes is greater than the probability that they involve low-prominence nodes."<sup>198</sup> This reading seems to be borne out in his subsequent empirical analysis, with the degree centrality of the United States suffering very little as a result of the financial crisis. Which seems to confirm the notion that centrality could be durable, at least offering evidence to support the assumption of low volatility.

Yet some recently unearthed data regarding reserve currency composition from the early to mid 20th century produces some scepticism about the expected volatility surrounding this process. It is using such data that Barry Eichengreen finds evidence to suggest that the reserve currency status of the dollar may be prone to significant discontinuity in volatility when a currency with the same characteristics is present. In essence, this means the variance surrounding the dollar's position in the international monetary system is likely, given specific circumstances, to be higher than the last twenty to twenty-five years of data may appear to demonstrate.<sup>199</sup> Eichengreen's

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<sup>197</sup> Winecoff, "Structural power", 15

<sup>198</sup> Winecoff, "Structural power", 16

<sup>199</sup> Barry Eichengreen and Marc Flandreau, "The Rise and Fall of the Dollar, or When Did the Dollar Replace Sterling as the Leading Reserve Currency?" Prepared for the conference in honor of Peter Temin, Cambridge, 9 May 2008. A longer version was presented to the Past, Present and Policy Panel, Genoa, Italy, 28-29 March 2008.

[http://eml.berkeley.edu/~eichengr/rise\\_fall\\_dollar\\_temin.pdf](http://eml.berkeley.edu/~eichengr/rise_fall_dollar_temin.pdf); Livia Chitu, Barry Eichengreen and Arnaud Mehl, "When did the dollar overtake sterling as the leading international currency? Evidence from the bond markets" *Journal of Development Economics* 111 (2014) pp, 225-245  
<http://www.sciencedirect.com/science/article/pii/S0304387813001351>

work rest on two different but similarly illustrative datasets; the first being foreign reserve composition in the early 20th century, and the second relating to the currency denomination of global bond markets in roughly the same period. In many ways this is a very good analogue for the Bank for International Settlements data on foreign exchange turnover mentioned earlier insofar as it allows a comparison of relative share and period-to-period volatility of reserve currency status in two different time periods.

Comparing such data should be illuminating inasmuch as it provides a testbed for the claim that 'degree centrality' is self-reinforcing, not to mention the 'durability' and related volatility. But why would this be important? Discovering the real volatility (its variance) is important because it helps describe key characteristics of the data generating process. It is from here that we base any statistical analyses and can infer whether or not we can make accurate 'forecasts' about the variables under question. As I will continue to describe and demonstrate, when the variance is low and bounded we may be comfortable in doing so, but when it is not, this could prove rather foolhardy. The specific element we look for when attempting to ascertain predictability is therefore *low* and *bounded* volatility/variance. My contention is that the low volatility seen in recent years is entirely conditional on the absence of an alternative currency with the the same core features of the dollar's. The 'unconditional' distribution is therefore likely to exhibit volatility far higher than recent data suggests. In essence, that these sub-sets of data mask the actual properties of the data process we are concerned with. In distributional terms, the true distribution will exhibit higher 'kurtosis' than recent experience would dictate.

Kurtosis is the fourth standardised moment of a statistical distribution which measures the weight of the 'tails' - that is, the presence of low-probability, high value observations. Broadly speaking, these 'moments' help to describe the shape of the statistical distribution including its mean, its variance, its 'skewness' and so on. Kurtosis is the fourth moment, and the notation for the standardised kurtosis and the standardised excess kurtosis can be found in Appendix 2:1. Whilst looking a little intimidating the basic logic behind this 'moment' can be found in the fact that raising a number to the fourth power (see the numerator) insures that the sign of the sum

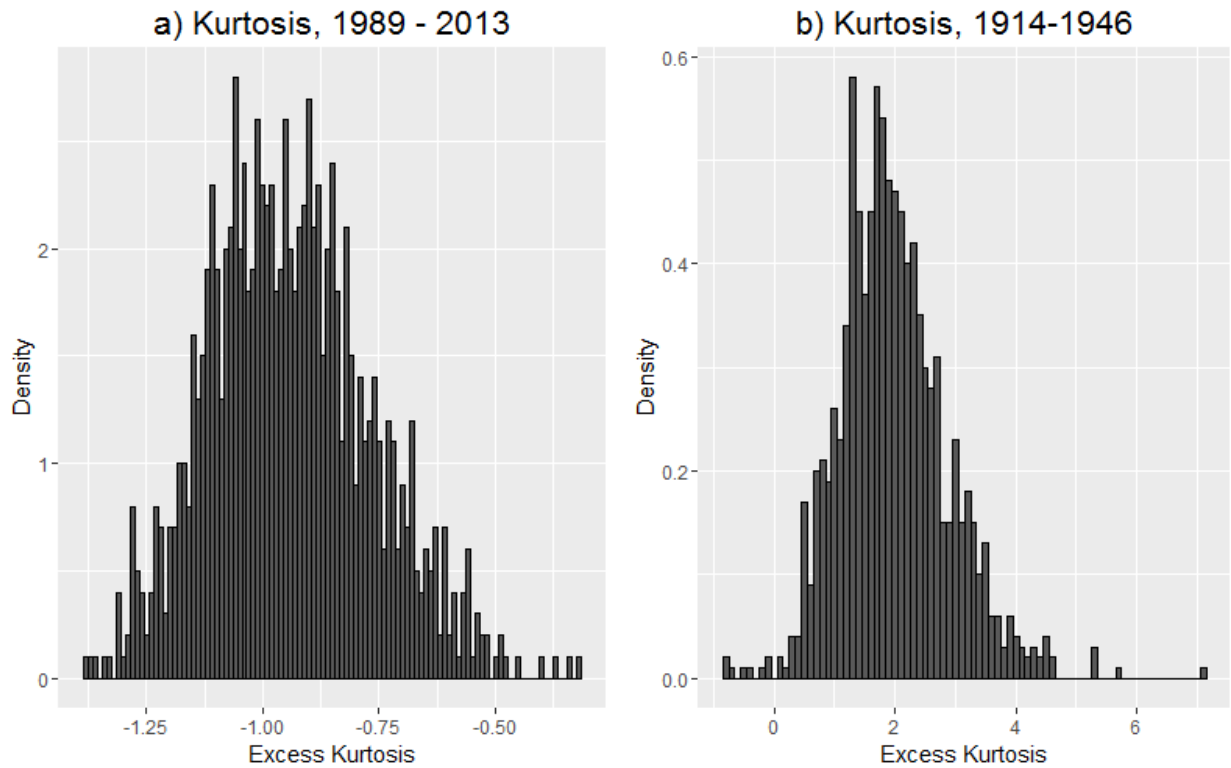
is positive. Moreover, raising a number to a power gives greater weight to larger observations, in this case the 'outliers' which we are trying to detect. As an example, in the case of our financial data, this could be the observation of a sudden drop or sudden increase in the dollar's share of FX turnover. Linked to this, all the 'excess' kurtosis does is subtract the kurtosis of the normal distribution from the calculation in order to provide a benchmark for analysis. These equations therefore allow us to see the variability of the data we are working with. That is, how confident we can be about inferring from the samples we have. It is from this analysis that I make the claim that that 'activation mechanism' that explains the onset of high volatility periods can be linked back to the former analysis on set-theoretic requirements for reserve currencies. This improves on Eichengreen's account by directly engaging with the data generating process itself.

I begin by collating recent data on the share of the U.S. dollar in global foreign exchange turnover. The data I use is from the aforementioned and displayed BIS *Triennial Banking Survey*, which has observations from 2013 going back until 1989. For the historical data I use Livia Chitu *et al*'s data on the dollar composition of international bond markets, with data running annually from 1914 through to 1946.<sup>200</sup> My basic aim is to compare the kurtosis of both distributions, aiming to empirically demonstrate the true variance associated with the dollar's position within international monetary markets. The idea is to ascertain how robust the 'network effect' is, with the results - as I shall later explain - speaking to the predictability, sustainability of dollar hegemony more broadly. Given the limited data, I decided to resample the data sets I have. In this case I use a 'bootstrap' resampler, which randomly selects distributions from the original data. More specifically, I actually take 1000 resample measures of the kurtosis of each distribution in order to demonstrate the likely true kurtosis of both datasets. The results are displayed in figure 8 below.

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<sup>200</sup> Livia Chitu *et al*. "When did the dollar overtake sterling as the leading international currency?" 225-245

**Figure 8 – Kurtosis of USD Reserve Currency Share**



As we can see, the difference in kurtosis is drastic. The recent data actually exhibits negative excess kurtosis, that is the variability in this dataset is actually lower than the normal distribution. It is this lack of volatility in recent times that has presumably guided, at least in part, the observations of low variance and high reliability in network effects. However, the second plot (b) paints an entirely different story. The 1914-1948 dataset exhibits rather high excess kurtosis, with observations out to 7 and the weight of the distribution of these resamples sitting at around 2. The implication being that the variance in the first distribution is drastically lower than in the first. More importantly, they are both technically from the same larger distribution insofar as they proxy the degree centrality of the dollar as a node in the global financial system.

But why does this matter? In the main part, it is because any form of forecasting or prediction largely entails and assumes neat variances. Without this, forecasts will be wildly inaccurate, much the same way as macroeconomic models. Because of this, projecting and predicting continued dollar primacy cannot be all that reliably based on the mathematical properties of recent observations. Rather, it is necessary to more thoroughly interrogate the fundamental reasons for dollar hegemony as they will affect the conditional properties of the distributions in question. In short, network analyses may not be as informative as first thought without first accounting for factors and events which may drive potential discontinuities.

To expand upon some of the fundamental determinants of reserve currency status displayed earlier in the next section I run the logic underlying dollar primacy through a case study of East Asian foreign reserve accumulation. I aim to draw out some of the interlocking logics and pressures driving dollar asset accumulation and thus the monetary primacy of the U.S. dollar.

### **Case Study: East Asian Reserve Accumulation**

Having suffered sustained speculative attacks against its currency, Thailand abandoned its currency peg in July of 1997. Perhaps not the most severe sounding of events, the floating of the Thai Baht signaled the onset of the East Asian financial crisis, with significant repercussions for regional and global monetary relationships. In the seminal case of what came to be known as 'original sin' the 'Asian Five' nations - inclusive of Thailand, the Philippines, Malaysia, Korea, and Indonesia - had taken on considerable dollar denominated debts throughout the 1990s. Original sin, a term coined by Barry Eichengreen and Ricardo Hausmann, refers to the situation in which

“the domestic currency cannot be used to borrow abroad or to borrow long term, even domestically. In the presence of this incompleteness, financial fragility is unavoidable because all domestic investments will have either a currency mismatch (projects that



generate pesos will be financed with dollars) or a maturity mismatch (long-term projects will be financed with short-term loans).”<sup>201</sup>

Why is this problematic? Well, if your exchange rate takes a turn for the worst, tanking in value, the debts you took out at 100 baht to 1 dollar may now be priced at 200 baht to the dollar. Refinancing or paying that debt back would cripple you. This, in a roundabout way, is what occurred in East Asia.

By mid-1997 the Asian five collectively held \$274 billion in foreign currency denominated debt,<sup>202</sup> which had been accumulated for two broad, interlocking reasons. The first can be related to domestic factors, whereby domestic borrowers had taken on these debts on the assumption that their dollar pegs were stable and their export oriented growth was a one way bet. Whereas the second was more international, driven by inflows of ‘hot money’ into these economies - that is, short term, speculative lending/investment.<sup>203</sup> However, a number of factors set the scene for a slowdown in the economic growth that had underpinned these dynamics. The normalization of U.S. interest rates in early 1994 contributed to drive up the value of the dollar, to which most Asian currencies were pegged, affecting their broad effective exchange rate. More pressingly, China’s 1994 devaluation of the Renminbi aggravated already intense export competition between East Asian states. China’s currency fell by 50% and its \$10.6 billion trade deficit in 1993

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<sup>201</sup> Barry Eichengreen and Ricardo Hausmann, “Exchange Rate and Financial Fragility” NBER Working Paper Series, Working Paper 7418. November 1999. p,3  
<http://www.nber.org/papers/w7418.pdf>

<sup>202</sup> Steven Radlet and Jeffrey Sachs. “The Onset of the East Asian Financial Crisis” in Paul Krugman ed. *Currency Crises* (Chicago: University of Chicago Press, 2000) p, 113

<sup>203</sup> Federal Reserve Bank of San Francisco, “What Caused East Asia’s Financial Crisis?” *FRBSF Economic Letter*, August 7, 1998.  
<http://www.frbsf.org/economic-research/publications/economic-letter/1998/august/what-caused-east-asia-financial-crisis/#Boom>

inverted to a \$4.2 billion surplus at the end of 1994.<sup>204</sup> Events that began to circumscribe export earnings and growth in a number of East Asian economies.<sup>205</sup>

Combined with large and volatile capital inflows, this slowing growth and revenues caused concern over the capacity of private actors to repay debt and speculation that the Asian currency pegs would come under pressure. The result, as I recalled earlier, was the Thai devaluation, subsequently followed by speculative attacks and devaluations across East Asia. Given that sharp devaluations now made dollar debts even more usnatoanale these nations entered rather severe recessions, having rather consequential economic and political ramifications. But how does this relate back to the dollar? Not only is the dollar central to these entire episode but the crisis itself marked one of the pivotal motivations for the large international imbalances which were to develop throughout the 2000s, ultimately cumulating in the '08 financial crisis. The dynamics that supported this build up, and those underlying the East Asian crisis itself , succinctly illustrate the power of the dollar in the international monetary system. Moreover, they also begin to illustrate some of the benefits, and potentially the costs, associated with dollar primacy.

Figure 9 displays the foreign reserve holdings of key East Asian states from 1990 up until 2010. We can clearly see an inflection in reserve accumulation happening after the Asian financial crisis, albeit with somewhat of a delay. Moreover, most graphs actually display two inflection points. As I have said, there is one beginning relatively soon after the East Asian crisis yet there is also another occurring in the early 2000s. It is the reason behind this which is of most interest to us. East Asian reserve accumulation, particularly in this period, can be seen to be driven by two main factors. The first, was to build 'war chests' of foreign reserves to cushion future economic shocks without need of recourse to the IMF. This is understandable given the fact that many nation's felt that the IMF had been unduly harsh in its demands for particularly harsh austerity and rather

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<sup>204</sup> Chan Huh and Kenneth Kasa, "Export Competition and Contagious Currency Crises" Federal Reserve Bank of San Francisco, FRBSF Economic Letter, January 16, 1998.  
<http://www.frbsf.org/economic-research/publications/economic-letter/1998/january/export-competition-and-contagious-currency-crises/>

<sup>205</sup> Richard Cronin, "Asian Financial Crisis: An Analysis of U.S. Foreign Policy Interests and Options" Congressional Research Service. April 23, 1998.

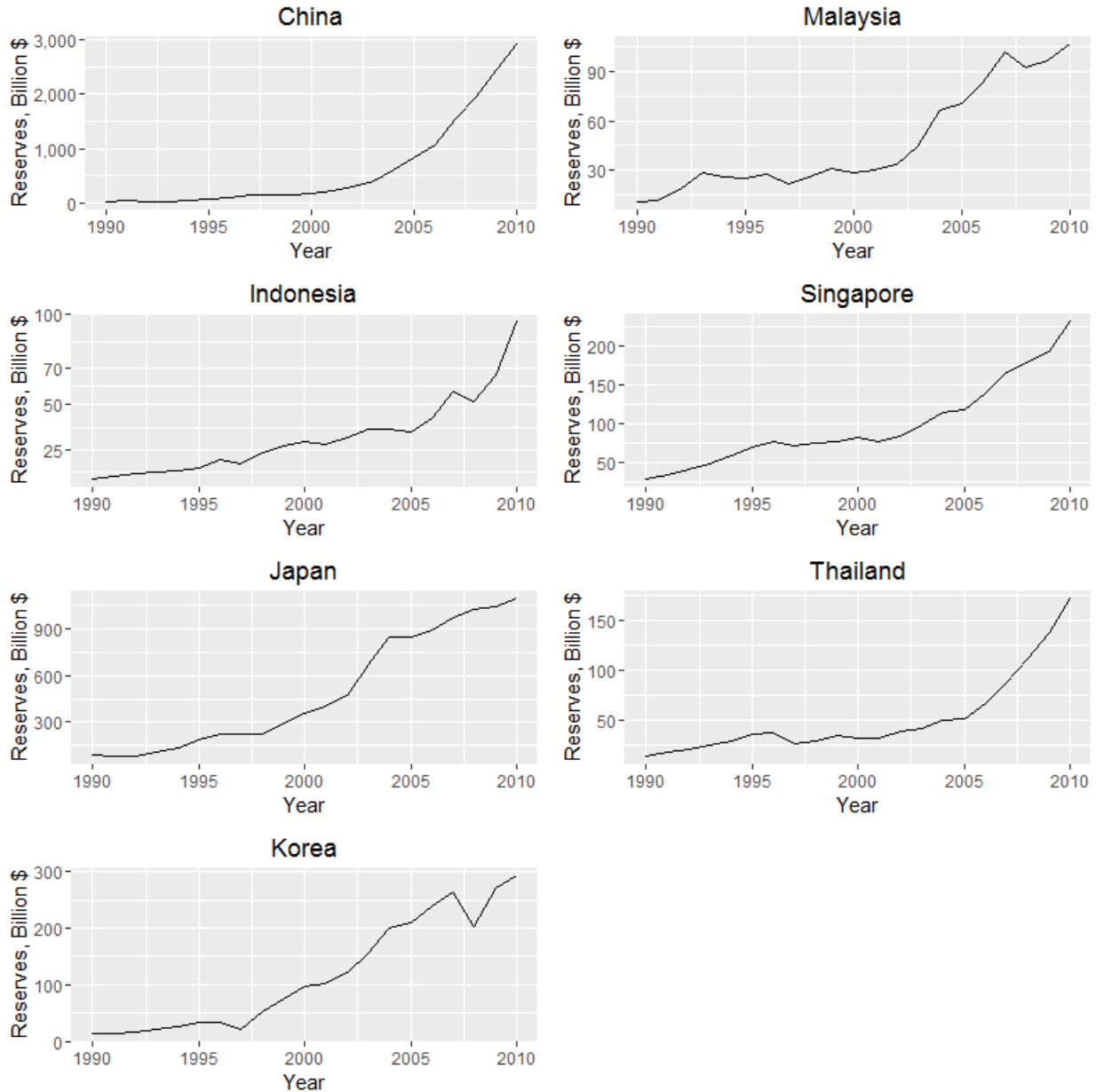
deep structural reform.<sup>206</sup> However, whether this is true or not is a different matter altogether. The second factor is that the U.S. dollar began a 'nose dive' in value as of 2002, fundamentally changing the incentives for East Asian states to intervene in foreign exchange markets. As William Cline had suggested back in 2005, "by now, the buildup of reserves has far surpassed any magnitude that might be attributed to such externally imposed shocks, and is instead almost certainly a manifestation of a preferred policy of export-led growth."<sup>207</sup>

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<sup>206</sup> Paul Bowles, "Asia's Post-Crisis Regionalism: Bringing the State Back in, Keeping the (United) States Out" *Review of International Political Economy* 9:2 (2002) pp, 230-256

<sup>207</sup> William Cline, *The United States as a Debtor Nation* (Washington DC: Institute for International Economics, 2005) p, 230

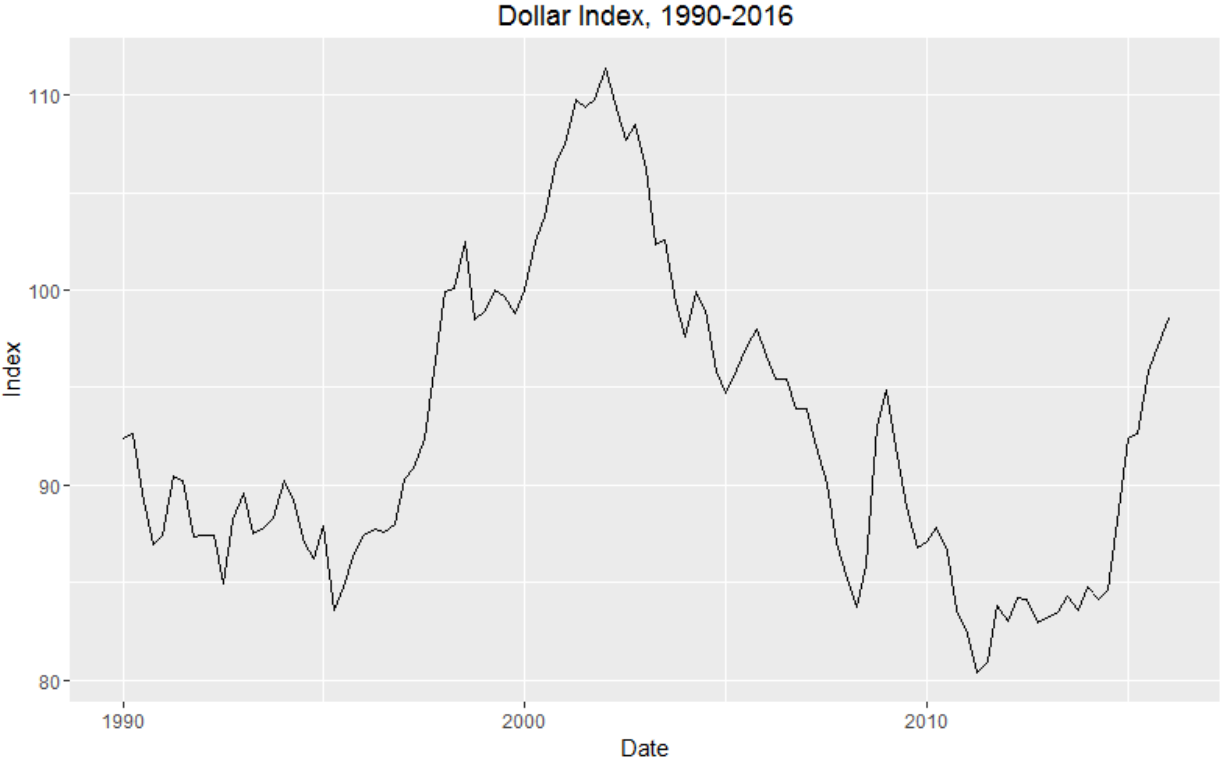
**Figure 9 – Foreign Reserves of East Asian States**



However this begs the question as to why such large accumulation didn't occur throughout the nineties. Luckily, the answer to this is rather simple to deduce. Export orientated industrialisation is often centred around a favourable exchange rate differential - that is, that one's exchange rate is kept from appreciating or at least limited in doing so with reference to a main trading partner. Because of this, the most illustrative reason to show why reserves were not accumulated in large

numbers throughout most of the nineties is to look at a graph of the dollar index. In figure 10 I display the Federal Reserve's real broad dollar index from 1990 through until 2008. The index tracks the dollar's value vis-a-vis a broad set of global currencies to demonstrate relative changes in its value from a fixed period, in this case 1990. As can be seen, the dollar was strengthening throughout the nineties meaning that East Asian states had little need to intervene in order to keep their currencies from appreciating, in fact instead of selling their own currency and buying dollars they may have had to have done the opposite in order to keep their currency pegs in position. This changed, however, in the early 2000's. Around the time in which we see the second inflection in reserve accumulation.

**Figure 10 – Dollar Index, 1990-2016**



For further context, consider that it was only in the late 1980s/ early nineties that most of the developing world really beginning joining the global trading system. For obvious reasons, this was particularly true for the ex-Soviet bloc. Richard Baldwin and Javier Lopez-Gonzalez demonstrate that the inflection point was in 1991, which marked the moment in which the G7's export share

slipped into continuous decline. In addition, it was also around this time that there began a pervasive negotiation of Bilateral Investment Treaties (BITs) across the planet.<sup>208</sup> Both trends contributed to significantly expand international trade, innately increasing pressure for exchange rate intervention for export orientated states. Indeed, work by Arvind Subramanian and Martin Kessler largely concurs with their analysis. Using aggregate data on global exports, including that on total value added, they demonstrate an unmissable inflection point beginning around 1993, just as tariffs were in the process of being slashed globally. Nicknaming this period that of “hyperglobalization.”<sup>209</sup> In addition to this, and a further impetus for the inflection seen in the early 2000s, was the fact (as I mentioned in an earlier chapter) that China formally joined the WTO in 2001. Leading to a dramatic decrease in tariff levels and a subsequent increase in exports.

Because of this, pressures and incentives for East Asian states to intervene in their exchange rates were greatly increased by a combination of these factors. The lynchpin of which, however, remains the dollar exchange rate. In a broader sense, this can be seen to relate to what is known as the ‘monetary superpower hypothesis’. Codifying what is a reasonably well accepted, and rather intuitive, notion that because of the dollar’s *de facto* role as global reserve currency the U.S. Federal Reserve also *de facto* drives global liquidity conditions. David Beckworth and Christopher Crowe believe that the monetary superpower hypothesis provides a more robust answer to the factors driving global imbalances before the financial crisis than does the more popularised alternative, Bernanke’s ‘savings glut’ hypothesis. The savings glut hypothesis argues that the arrow of causation explaining the build of global imbalances prior to 2008 ran from export oriented nations intentionally running trade surpluses to Western nations running trade deficits. As Bernanke explains,

“In my view, a key reason for the change in the current account positions of developing countries is the series of financial crises those countries experienced in the past decade

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<sup>208</sup> Richard Baldwin and Javier Lopez-Gonzalez, “Supply-chain Trade: A Portrait of Global Patterns and Several Testable Hypotheses” *The World Economy* (2014) pp, 1-40

<sup>209</sup> Arvind Subramanian and Martin Kessler, “The Hyperglobalization of Trade and Its Future” Global Citizen Foundation, Working Paper 3. June 2013.

<http://www.colorado.edu/AmStudies/lewis/ecology/hyperglobalization.pdf>

or so... additionally, reserves were accumulated in the context of foreign exchange interventions intended to promote export-led growth by preventing exchange-rate appreciation.”<sup>210</sup>

But what is the ‘monetary superpower hypothesis’ (MSH) and how can we verify its validity?

As I briefly mentioned above, the MSH proposes that a consequence of the dollar’s reserve currency status is that the United States’ Federal Reserve acts as the *de facto* global central bank - its monetary superpower. To see why this may be so, the dynamics explored in the previous section on foreign reserve accumulation and the dollar exchange rate are rather informative. As Beckworth and Crowe argue, “the Federal Reserve’s superpower status comes from the fact that it manages the main reserve currency of the world to which many countries either explicitly or implicitly peg their currency.”<sup>211</sup> This means that when the United States loosens monetary policy, affected states have to respond. This is because a loosening of interest rates contributes to lower the value of the currency in question. Not only do lower interest rates make the currency less attractive for investment but expanding the money supply in itself contributes to ‘water down’ the currencies value. Although the extent and conditions under which this holds may be disputed.<sup>212</sup> For instance, if my economic strategy is based upon exporting to the West, particularly the United States, this exchange rate pressure could contribute to undermine it.

Because of this, loose monetary conditions in the United States would incentivise export orientated states to intervene in their exchange rates to maintain desired exchange rate

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<sup>210</sup> Ben Bernanke, “Remarks by Governor Ben S. Bernanke - The Global Saving Glut and the U.S. Current Account Deficit” The Federal Reserve Board, March 10, 2005.

<http://www.federalreserve.gov/boarddocs/speeches/2005/200503102/>

<sup>211</sup> David Beckworth and Christopher Crow, “The Great Liquidity Boom and the Monetary Superpower Hypothesis” in David Beckworth, eds *Boom and Bust Banking: The Causes and Cures of the Great Recession* (Oakland: The Independent Institute, 2012) p,112

<sup>212</sup> On this see criticisms of contemporary ‘Quantitative Easing’ policies. Critics had feared that QE would invite hyperinflation, which didn’t occur. Reminding us, once again, how contingent social systems are. The following primer provides some context to this. Steve Hanke, “Commentary: Hyperinflation? No. Inflation? Yes.” *CATO Institute*, April 2013.

<http://www.cato.org/publications/commentary/hyperinflation-no-inflation-yes>

dynamics. It is this process that explains reserve accumulation - an example may be useful, however. Imagine I am an exporter, and when I sell my goods to another country I receive payment from them in, say, dollars. I now have to sell the dollars to buy my own currency, with this transaction having the property of increasing the supply of dollars and so decreasing their price. Conversely, by raising demand for my currency I increase their price. It is this process that, *in theory*, that is meant to prevent the occurrence of sustained current account surpluses or deficits. The reason for this is rather simple. The more product I sell, the more currency I have to sell thus appreciating the value of my currency, eventually eroding my price advantage. Whilst a very skeletal understanding of the process, and thus exposed to a number of caveats, it helps to explain why currency intervention works. For instance, given the dynamics I have just covered, 'export oriented industrialisation' would be very difficult to pull off. This is because currency appreciation is likely to erode my price advantage rather quickly, thus closing off one of the key avenues for export competition.

Currency intervention stymies this process by 'correcting' appreciation pressure. This is achieved through intervening in foreign exchange markets to buy dollars and sell my domestic currency, reversing the pressure that led to appreciation in the first instance. This effect could also be achieved by the central bank (and other nominated banks) merely exchanging dollars for the domestic currency, avoiding the process of having to sell the dollars and decrease their relative value. China is deemed to use such a process, which has the side effect of inducing monetary easing into the economy - a form of economic stimulus.<sup>213</sup> The reason for this is that the central bank has to create (in this instance) renminbi to exchange for the dollars instead of buying, increasing the money supply. Technically this could be sterilized by 'mopping up' the excess liquidity through bond issuance, but the Chinese seemed to have relied on using manipulating the bank required reserve ratio (RRR) to achieve this instead.<sup>214</sup> Raising the RRR, for instance, would pull money out of the economy. Or, at least, limit credit creation. These interventions can

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<sup>213</sup> Thomas Shik, "PBOC Intervention and the Renminbi" Hang Seng Bank, China Economic Monthly. March 2015. [http://www.hangseng.com/cms/tpr/eng/analyses/PDF/201503\\_CHEM\\_eng.pdf](http://www.hangseng.com/cms/tpr/eng/analyses/PDF/201503_CHEM_eng.pdf)

<sup>214</sup> U.S. Department of the Treasury, "Report to Congress on International Economic and Exchange Rate Policies" Office of International Affairs. October 2014. p,14



also be undertaken in reverse. That is, to limit exchange rate depreciation as part of maintaining a band or preventing unwanted devaluation. But why choose to intervene in the dollar rate in the first instance? Simply put, because the United States is, more often than not, the main export market for other states. Therefore making the USD pivotal to the execution of the aforementioned export oriented industrialization strategy.

This contributes to explain the difference between the value of the USD decreasing or increasing. Moreover, it is also rather central to understanding why intervention may cease, as we have recently seen with China. This allows us to ‘test’ the validity of the MSH by stipulating the conditions under which we would see intervention and when we shouldn't. The specifics of which are not difficult to deduce from the above:

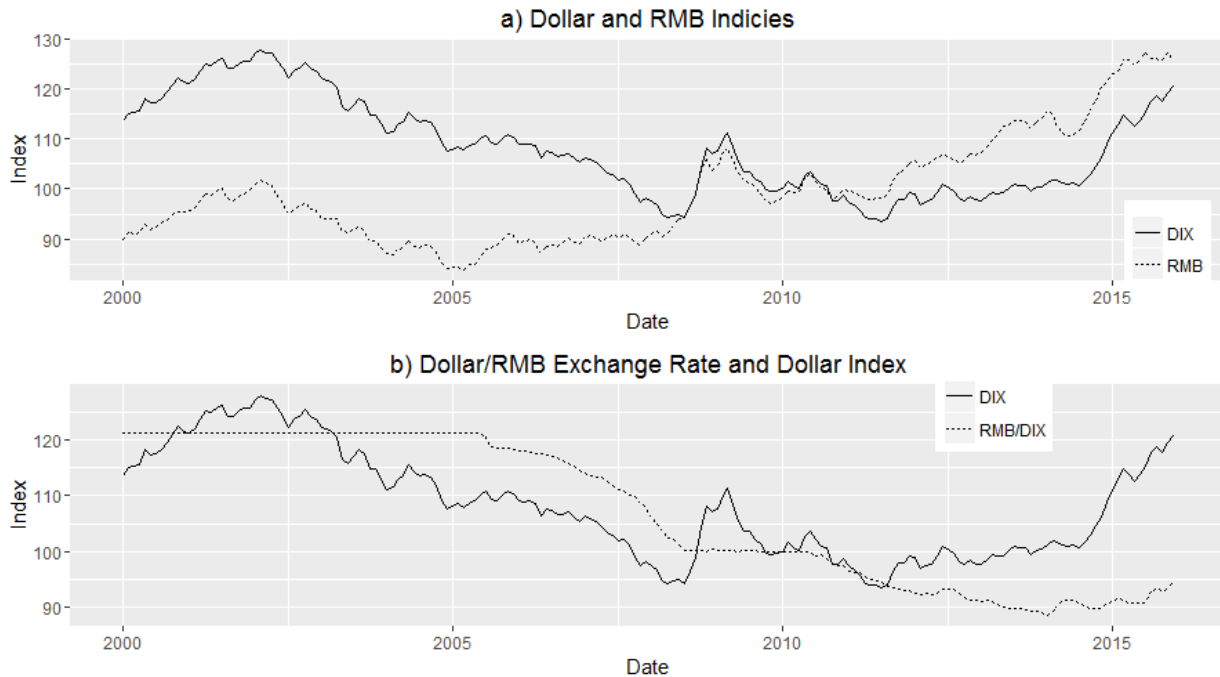
- If the USD weakens vis-a-vis the reference country, the reference country will intervene to correct this. Resulting in the state *increasing their holdings of dollar assets*.
- If the USD goes on a strengthening run holdings of dollar assets will *stabilize or decrease*.

Looking at Chinese foreign reserves and the RMB/USD exchange rate over the last decade provides ample evidence for this, as I will illustrate below.

The first graph (a) of figure 11 shows exchange rate indices for the U.S. dollar and Chinese Renminbi with the indexes set to 100 for the year 2010. Data is drawn from FRED and the Bureau of Economic Analysis, spanning from Q1 2000 up until Q4 2015 . These indices do not measure the bilateral exchange rate but rather the ‘broad’ exchange rate between the specific currency and a large set of its trade partners. And so are indicative of relative raises and falls in the value of the currency with the rest of the world. As this chart illustrates, the RMB broad indice is innately cointegrated with the dollar index. While the value of the RMB fluctuated rather wildly, it generally rather tightly follows the dollar. With this being the case, we can also see that it followed the dollar up in value on its recent strengthening cycle, demonstrated in the fact that

RMB was strengthening until midway through 2015, whereafter the PBOC intervened to loosen the dollar peg.

**Figure 11 – RMD/USD Exchange Rate/s**

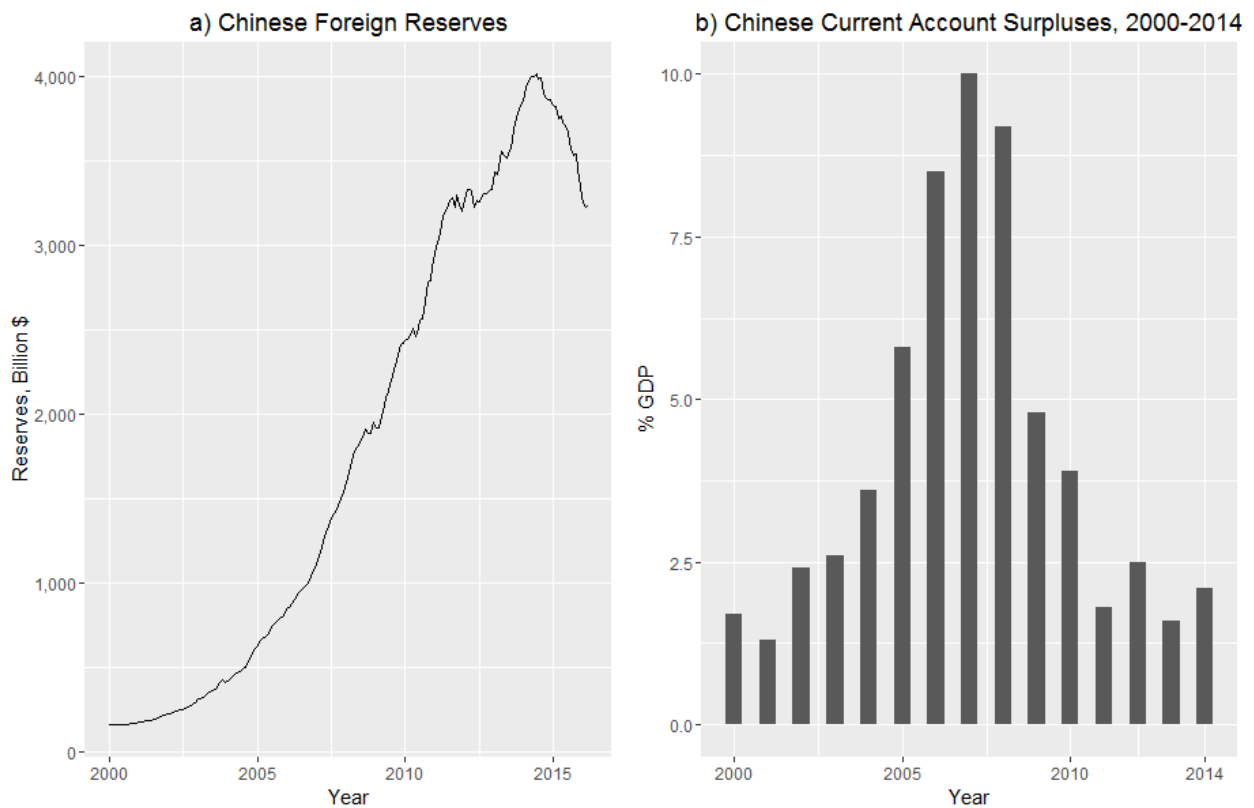


Graph b once again shows the dollar index, but this time graphs it next to the RMB/USD exchange rate. In the form that this graph is shown, the higher the value of the y-axis the lower the Renminbi is with respect to the USD. It is, therefore, *somewhat* of a proxy for whether, and to what extent, the Chinese were engaging in foreign exchange intervention. The flat lines during the periods 2000-2005 and 2008-2010 are particularly indicative. Showing very obvious foreign exchange intervention on behalf of the Chinese state. On the flip-side, the period between this, 2005-2008, demonstrates the effect of China liberalising its exchange rate regime, illustrated by a rather considerable appreciation vis-a-vis the Dollar throughout this time. Although, as I will shortly demonstrate, when other factors are considered, this appreciation was considerably less than may have been expected, and also rather quickly arrested. Nonetheless, the salient point revealed is that the RMB has demonstrably followed the USD when it suits the economic

objectives of the Chinese state. Breaking the peg when the recent Dollar strengthening run threatened to pull the RMB up in value. But do foreign reserves data corroborate this?

Figure (12, graph a) details the rapid accumulation of Chinese reserves throughout the 2000s, peaking at just over \$4 trillion in late 2014. Figure (12, graph b) further displays World Bank data on Chinese current account surpluses from 2000 until 2014. One of the more interesting elements of graph 'a' is that reserve accumulation didn't slow all that much during the 'dirty float' of 2005-2008.

**Figure 12 – China's Reserves and CA Surpluses**



There could be a number of reasons for this, but it seems apparent that the extremely high current account surpluses around this time (demonstrated in graph b) could do much of the explaining. To see why this might be so, consider that these trade surpluses imply that there would be considerable demand for trading the excess dollars incurred from these surpluses for

RMB. In consequence, even whilst attempting to loosen the dollar peg, the PBOC would still have to engage in considerable foreign exchange activity to keep appreciation within the required range.

Chinese reserve accumulation can therefore be seen to closely track the needs of the Chinese state with respect to export competitiveness and the value of the U.S. dollar. Not only do we see a steep accumulation rate when a firmer peg was reapplied in 2008, but the inflection point seen in 2014 represents the second point made above. Namely, that ‘if the USD goes on a strengthening run holdings of dollar assets will *stabilize or decrease*.’ This is because now the dollar is strengthening their may actually be a need to sell dollars against RMB to to keep the prices in check, increasing the value of the RMB with respect to the dollar in order to keep the peg stable. There are other reasons for this, however. Not only (until recently, at least) has China proposed incremental liberalisation of its currency,<sup>215</sup> but recent and sustained capital outflows may cause the same effect as currency intervention. This is because the strengthening of the dollar with respect to the RMB tips on its head the assumptions underpinning the Dollar/RMB ‘carry trade’. That is, borrowing in dollars under the assumption that the RMB would steadily appreciated against it, profiting off of what should be steadily decreasing interest payments on these loans. When this inverts, however, investors will presumably want to unwind these positions, leading to Renminbi being sold for dollars at the PBOC and its associated banks in order to pay down these debts.<sup>216</sup>

However, so far I have shown only graphical evidence for this effect, but given the numerous points regarding time series data already covered in this thesis it is probably wise to demonstrate this correlation as well. Allowing us to connect theory to the empirics. Drawing this directly back to the MSH, I therefore attempt a basic linear regression to see whether or not there is a distinct correlation between reserve accumulation and loose U.S. monetary policy. In particular, given

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<sup>215</sup> Atlantic Council, “Renminbi Ascending: How China’s Currency Impacts Global Markets, Foreign Policy, and Transatlantic Financial Regulation” June 2015

<sup>216</sup> Robert Neil McCauley and Chang Shu, “Dollars and renminbi flowed out of China” *Bank for International Settlements*, March 6, 2016.

[http://www.bis.org/publ/qtrpdf/r\\_qt1603u.htm](http://www.bis.org/publ/qtrpdf/r_qt1603u.htm)

interest in how the falling dollar and low interest rates of the early to mid 2000s influenced reserves I focus in on this time period. I borrow largely from Beckworth and Crow's work on the subject, employing their measure of loose monetary conditions; namely, the U.S. Federal Reserve's deviation from the 'Taylor Rule'. The 'Taylor Rule' is a rather commonplace measure of 'appropriate' monetary policy which is essentially a simple equation that describes the 'optimum' interest rate in light of three economic conditions: 1) the rate of inflation, 2) the 'assumed equilibrium interest rate', and the aggregate output of the economy in question. Anything lower than this is therefore assumed to be loose. After the requisite process of normalising the data, I then regress this on Chinese reserve accumulation by simple linear, single term OLS.

The results, given the simplicity of the model and the nature of time series data, are rather good. It seems that deviations from the Taylor rule may explain up to 29% of the variation in Chinese foreign reserves throughout this time period. This is especially good given the fact that the measure in question, this deviation from the Taylor Rule, is but a crude approximation for 'loose' monetary policy. Moreover, given the diverse range of factors involved in any economic process, particularly in relation to lagged caution and feedback loops, this is a rather strong relationship. With that said, due to the 'artificial' nature of this measure, I also estimate a further simple regression on the broad dollar index, displayed in column two. I use the dollar index because it would seem the key causal pathway through which loose monetary policy would be transmitted to countries with exchange rates pegged to the U.S. dollar.

**Table 8 – Chinese Reserves and US Monetary Policy**

Chinese Reserves Regression		
	Chinese Foreign Reserves	
	(1)	(2)
Deviation from Taylor Rule	-0.010*** (0.003)	
Dollar Index		-0.968*** (0.243)
Constant	0.060*** (0.006)	0.068*** (0.004)
R <sup>2</sup>	0.32	0.34
Adjusted R <sup>2</sup>	0.29	0.32
Shapiro-Wilk p-value	0.36	0.50
F Statistic (df = 1; 30)	14.25***	12.28***

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

As can be seen in table 8, the r-squared value is similar to that from the Taylor rule, covering about 32% of the variation in Chinese reserve accumulation over the period from 2000 through to 2008. Whilst not a complex model, its simplicity and robust, rather strong response helps to corroborate the evidence presented previously.

In the main part, it helps to elucidate and confirm a further way through which American monetary hegemony is built and sustained. What it doesn't do, however, is detail the proposed advantages such a position bestows. It is this to which I next turn.

### **Dollar Primacy: Financial and Monetary Advantages**

The United States derives considerable advantages from its dominant position within the international monetary system, all of which essentially revolve around the manner in which the general and sustained demand for dollars and dollar assets influence investment decisions. That is, how the policy choices of the U.S. government often come secondary to the fundamental logics driving dollar asset accumulation. Furthermore, whereas the military 'favouritism' arguments covered in the introduction run causality between military primacy toward economic gains, the inverse, on many occasions, is just as pertinent. There are three major pathways

through which this may be seen to operate, two of which reflect the powers to 'delay' and 'deflect' with the third referring to more 'structural' elements of power. Firstly, dollar primacy permits the U.S. Federal Government to sustain considerable and protracted fiscal deficits at reasonably low interest rates where other states may not. This helps to smooth economic adjustment as well as affording considerable flexibility in the manner in which this is achieved. Likewise, and secondly, dollar primacy allows the United States to sustain large external deficits without much worry, dragging in more resources than it produces for long periods of time. Both of these elements together have two further derived benefits: the ability to make rather pronounced 'exchange rate gains' and the power to 'deflect' part of American macroeconomic adjustment onto other partners.

The third key advantage may be grouped under that broad heading of 'structural power', in that dollar primacy affords considerable advantages to U.S. financial market participants. The 'network effect' covered earlier being but one such instantiation of this. Further, the U.S. government itself also gains forms of structural power from dollar primacy. This is because the dominant role of the dollar innately places the United States in a prime position when it comes to international monetary arrangements. As I shall go on to illustrate, this may afford the United States a rather strong informal role in the development of certain regional monetary institutions. Collectively, therefore, dollar primacy has a number of important beneficial externalities. I take each one in turn.

#### *The Power to Delay - Deficit Financing*

Enabling protracted and sizable deficit spending is considered one of the key causal pathways associated with dollar hegemony. Rather pertinently, this feeds into security by way of facilitating the funding of military expenditures, which have often been run on deficit. Indeed, some believe that this role is so pivotal that the "vulnerability of the greenback presents potentially significant and underappreciated restraints upon contemporary American political and military

predominance.”<sup>217</sup> The fear being that a reduction in the willingness of foreigners to purchase dollar denominated assets, particularly U.S. treasuries, would innately impose borrowing restrictions on the Federal Government. Jonathan Kirschner offers the following analogy,

“How would the US political system react to life under the watchful and newly jaundiced eye of international financial markets, with reduced macroeconomic policy autonomy, greater demands that its economic choices meet the ‘approval’ of international financiers and investors, and forced to finance its military adventures not by borrowing more dollars, but with hard cash on the barrelhead?”<sup>218</sup>

Such a ‘normalization’ of American macroeconomic policy *could* render the deficits of the Bush and Reagan era’s untenable. In fact, as I briefly touched on earlier, it was the fear of a dollar crisis derived from similar dynamics that was generally ‘predicted’ before the 2008 crisis. Whilst this didn’t happen, a cursory delve into why a dollar crisis was thought to be possible is rather insightful.

Nouriel Roubini, one of the more infamous economists ‘calling’ a forthcoming crisis throughout the early to mid 2000s believed that foreign central banks may begin to diversify their holdings of U.S. treasuries sparking a run on the dollar and a rapid rise in interest rates on American debt instruments. The underlying rationale for this was that dollar debt was being brought on mass by foreign investors at short maturities, with Roubini claiming that the average maturity of Treasuries had declined to 55 months with a marginal maturity of 33 months. What this means is that total Federal Government financing needs (at his time of writing) would be far higher than just looking at the (particularly large) fiscal deficit would presuppose.<sup>219</sup> Combine this with

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<sup>217</sup> Jonathan Kirschner, “Dollar Primacy and American Power: What’s at Stake?” *Review of International Political Economy* 15:3 (2008) p, 418

<sup>218</sup> Jonathan Kirschner, “Dollar Primacy and American Power: What’s at Stake?” *Review of International Political Economy* 15:3 (2008) pp, 430-31

<sup>219</sup> Nouriel Roubini and David Altig, “Does Overseas Appetite for Bonds Put the U.S. economy at Risk?” *The Wall Street Journal*, March 29, 2005.

<http://online.wsj.com/public/resources/documents/econoblog03292005.htm>



President Bush's rather rash tax cuts and spending increases, namely for the Middle Eastern wars initiated under his Presidency, and there was a recipe for pronounced fiscal and financial distress - that is, if the United States had been most other countries. Understandably, it is in acknowledgment of this that a number of strategic scholars have noted that "America's geopolitical preeminence hinge on the dollar's reserve currency role. If the dollar loses that status, US Hegemony will literally be unaffordable."<sup>220</sup>

With that said, as ever, there seems to be a slight proviso. That is that irrespective of dollar's privileged position its debt isn't actually all that large with respect to its GDP. Although, given how large its GDP is, the absolute levels that needs to be refinanced must also be taken into account. Nonetheless, it should be noted that Japan - a nation whose currency only has a 23% share in global FX turnover as compared to the U.S. dollar's 87% - sustains a debt burden of approximately 249% of its GDP as of 2014. The United States', on the other hand, is currently sitting in at around 105% of its GDP.<sup>221</sup> The implication isn't that debt levels do not matter, nor that Japan is getting on fine as it is. But rather that there are a number of other factors to consider when discussing particular debt ratios. Specifically, as in the case of Japan, whose government owns large quantities of the securities in question. Whilst in the United States large amounts of debt is indeed foreign owned (as we have already seen) it must also be noted that the Federal Reserve also holds large quantities of Treasury securities. Having at least \$2.4 trillion on its books as of 2016.<sup>222</sup> Moreover, given its large size and reliable economic record, it would seemingly take a rather catastrophic economic shock to stop people purchasing large quantities of its debt irrespective of a relative degradation in its reserve status. What is at stake, therefore, is what kind of interest rate relief does and has the United States been afforded by dollar primacy? Is

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<sup>220</sup> Christopher Layne, "This Time It's Real: The End of Unipolarity and the Pax Americana" *International Studies Quarterly* 56 (2012) p,208

<sup>221</sup> Federal Reserve Economic Database, "General government gross debt for Japan" and "Federal Debt: Total Public Debt as Percent of Gross Domestic Product", Federal Reserve Bank of St. Louis. <https://research.stlouisfed.org/fred2/series/GFDEGDQ188S> ; <https://research.stlouisfed.org/fred2/series/GGGDTAJPA188N>

<sup>222</sup> Federal Reserve Economic Database, "U.S. Treasury securities held by the Federal Reserve: All Maturities" Federal Reserve Bank of St. Louis. <https://research.stlouisfed.org/fred2/series/TREAST>

there a way of assessing how much could these excess inflows may have contributed to lessening America's interest rate burden?

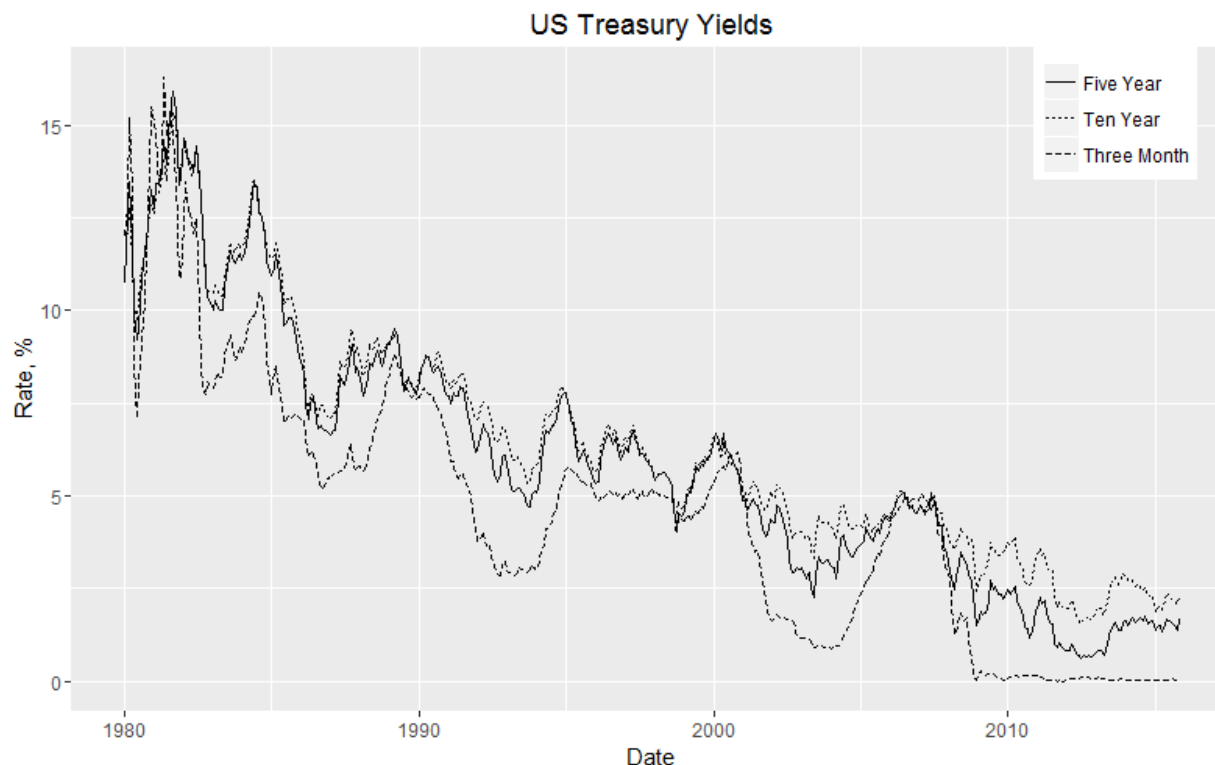
In keeping with intuition and basic economic theory, the more bidders there are for a product (in this case, U.S. Treasury securities) the higher the price will be. In relation to government bonds this means that the interest rate will be lower. In slightly more technical terminology 'yields move inversely to prices'. This can be even more clearly seen when the auctioning process of U.S. Treasuries is considered. Treasury bills, for instance, are issued at "at a discount or at par" which means at a discount to their face value.<sup>223</sup> Therefore, if I buy a security at \$950 dollars yet receive \$1000 at maturity I have received an interest rate of 5.2%. Because of this, the more the price is bid up by extra buyers or larger purchasers the lower the effective interest rate the U.S. pays. Whilst these dynamic are somewhat different for the Treasury's inflation protected securities, known as 'TIPS', the basic logic is still in operation. Consequently, this should mean that the large foreign official inflows into US Treasuries should show up in the data.

One rather obvious objection to take care of first, however, is that the long period called the 'Great Moderation' may skew our understanding of any potential effect. This is because the Great Moderation marked a period not only of decreasing and stable inflation expectations but also, and innately linked to this, a secular decline in interest rates.

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<sup>223</sup> Treasury Direct, "How Treasury Auctions Work"

**Figure 13 – US Treasury Yields, 1980-2015**



As the graph above (figure 13) demonstrates, yields on all three major U.S. government bond maturities have been in secular decline since the 1980s. That is, that interest rates had been dropping well before the large inflows of the 2000s were taken into accounts. Part of this (and no small part, either) can be linked to Governor Volcker’s interest rate ‘shock’ of the 1980s, which saw the Federal Funds rate raised to in excess of 20% in order to tame inflation. Variations on this theme of maintaining ‘price stability’ (i.e. low and stable inflation) have long been credited with providing the backdrop to this period of moderation. With the Federal Reserve required to implement a ‘dual mandate’ of stable prices and maximum employment in 1977.<sup>224</sup> Beginning with Volcker’s focus on price stability, Central Banks from around the world began directing monetary policy explicitly toward this purpose.<sup>225</sup>

<sup>224</sup> Federal Reserve Bank of Chicago, “The Federal Reserve’s Dual Mandate” May 2016.

<https://www.chicagofed.org/publications/speeches/our-dual-mandate>

<sup>225</sup> Sarwat Jahan, “Inflation Targeting: Holding the Line” *International Monetary Fund*, Finance & Development.

As we can see, the result was declining inflation, and along with this, declining interest rates. To see why these go hand in hand it is worth considering what factors and investor or lender takes into account when loaning money or buying bonds. Presumably, if you perceive that inflation is likely to be high or volatile you will ask for a premium on the bonds to reflect losses incurred by monetary depreciation. Likewise, when these expectations stabilise, as they did after the Volcker shock,<sup>226</sup> investors will not require such premiums. Presumably being increasingly confident to do so the longer the inflation rate stays low and stable. That is, that “the reduction in the level of trend inflation has been a key factor behind the Great Moderation.”<sup>227</sup>

To see this more explicitly tied back into interest rates, it is worth looking into the available literature on the issue. Thankfully, given its perceived theoretical centrality, there have been a number of research papers conducted to assess the likely influence of inflation expectations on interest rates and bond yields. Furthermore, due (once again) to its perceived importance, there have also been a number of studies into the influence of foreign inflows on yields and rates. In fact, for obvious reasons, they are often conducted in the same analysis. This is because any statistical investigation must have to control for the potential effects of all (or at least most) other major contributing factors to be valid. Consequently, this should allow us to tentatively explore the likely influence of foreign inflows, and thus dollar primacy, on bond yields. One such paper by Francis and Veronica Warnock proposes adding another term into a multiple linear regression to assess how foreign official inflows into US bond markets correlate with changes in yields.<sup>228</sup> Which, whilst simple, should allow us to be able to assess if a prerequisite condition for an effect between the two variables is present - namely correlation.

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<http://www.imf.org/external/pubs/ft/fandd/basics/target.htm>

<sup>226</sup> See, Federal Reserve Economic Database, “University of Michigan: Inflation Expectation” Federal Reserve Bank of St.Louis.

<https://research.stlouisfed.org/fred2/series/MICH>

<sup>227</sup> Jonas Arias, “Monetary Policy, Trend Inflation and the Great Moderation: An Alternative Interpretation” International Finance Discussion Papers, Board of Governors for the Federal Reserve System. January 2015. P,1

<https://www.federalreserve.gov/econresdata/ifdp/2015/files/ifdp1127.pdf>

<sup>228</sup> Francis and Veronica Warnock, “International capital flows and U.S. interest rates” *Journal of International Money and Finance* 28 (2009) pp, 903-913.

Their analysis therefore helps to measure the effect of foreign inflows on the ten year treasury yield controlling for the effects of the others. The basic intuition behind how this is achieved in linear regression (OLS), is that the coefficients of each variable are calculated by first ‘stripping out’ the influence of all other factors on the ten year treasury yield *and* on foreign inflows. It is now possible, in theory, to estimate the effect of foreign inflows on treasury yields in isolation to these other factors. They demonstrate that an inflow equivalent to one percent of U.S. GDP correlated with a depression of interest rates by approximately 19 basis points.<sup>229</sup> That is, 0.19 percent. Such a large effect size has been corroborated by other research both before and after theirs.<sup>230</sup> With Ben Bernanke *et al* estimating in 2004 that for every \$1 billion inflow long term yields were suppressed by 0.7 basis points (.007 percent), at a time when inflows were up to a \$100 billion a year.<sup>231</sup> Illustrating necessary prerequisite evidence in support of one of the mechanisms through which dollar primacy benefits the United States.

#### *The Power to Delay - Current Account Deficits*

One of the more obvious examples of a benefit the United States has received as a consequence of its privileged role in the international economy has been the capacity it has shown to run persistent and large current accounts deficits. That is, to consistently import more than it exports (see figure 14). In general, particularly in the past, current account deficits were perceived to be rather troubling. Not only, of course, is it indicative of producing less than you consume, but there are also potential financial problems to be considered. If you regularly import more than you export then by definition you are having to borrow to fund these goods coming into the country. From this, there is likely to be a limit to which foreigners are willing to lend you money, particularly if a prolonged deficit leads to the questioning of your capacity to pay back the loans

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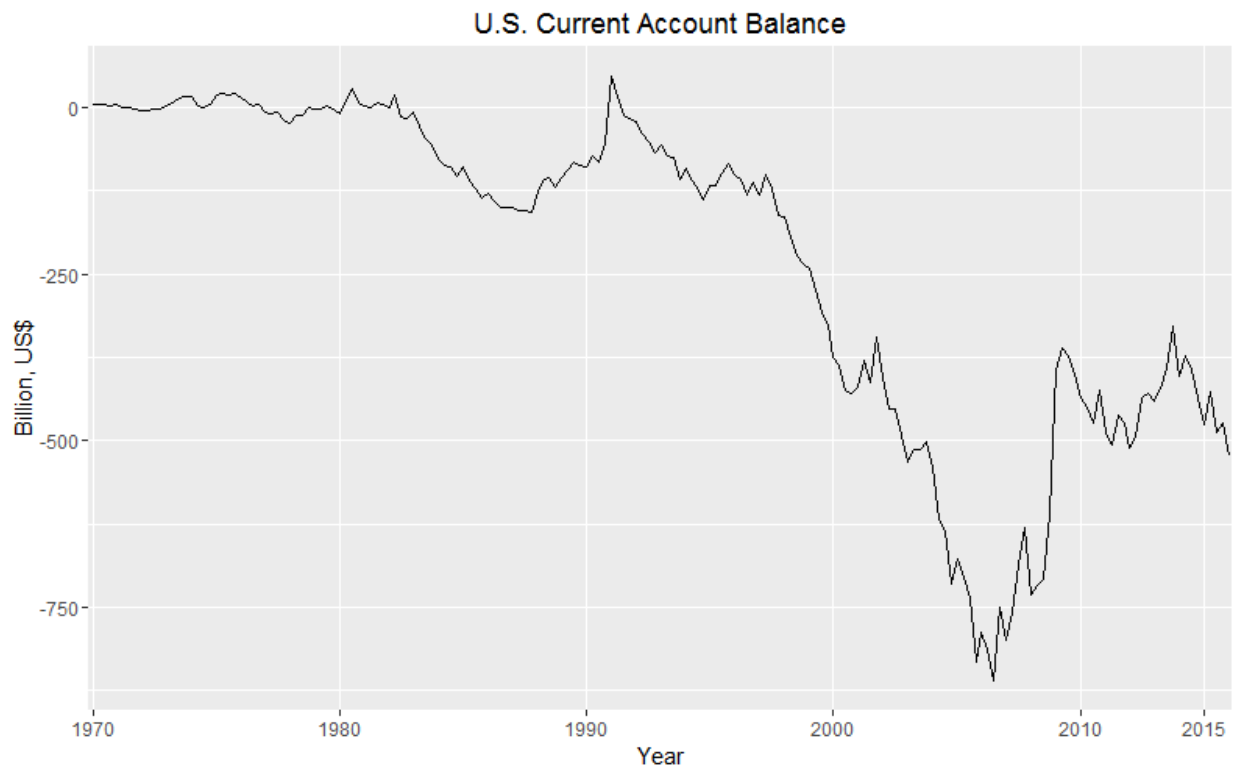
<sup>229</sup> Francis and Veronica Warnock, “International capital flows and U.S. interest rates” *Journal of International Money and Finance* 28 (2009) p, 913

<sup>230</sup> Daniel Beltran, “Foreign Holding of U.S. Treasuries and U.S. Treasury Yields” Board of Governors of the Federal Reserve System. International Finance Discussion Papers, 1041. 2012.  
<https://www.federalreserve.gov/Pubs/IFDP/2012/1041/ifdp1041.pdf>

<sup>231</sup> Ben Bernanke *et al*. “Monetary Policy Alternative at the Zero Bound: An Empirical Assessment” Finance and Economics Discussion Series, Federal Reserve Board. 2004. p, 63  
<https://www.federalreserve.gov/pubs/feds/2004/200448/200448pap.pdf>

in the future. Equally, it may impact the value of your currency. This is because more dollars are having to be sold to buy other currencies than other currencies sold to buy dollars.

**Figure 14 – US Current Account Balance, 1970-2016**



Yet many states *have* to buy dollars. As I covered above, it is often intrinsic to their economic growth models. Moreover, given what I covered earlier with respect to the structural attributes of American markets (their depth and liquidity, amongst other factors) foreigners have considerable reason to invest or loan to the United States. With that said, the ‘causal’ linkage between deficits and other variables is still somewhat unclear. That is, if we refer back to the discussion earlier over the competing theses on the ‘savings glut’ and the ‘monetary superpower hypothesis’ we can begin to see that deficits may not necessarily originate from investment decisions in the United States, but *could* be the result of sustained foreign inflows providing cheap credit to U.S. firms and consumers. More fundamentally, given that exchange rates should adjust to eliminate these deficits, it must be widely acknowledged that a good part of this deficit

is due to distortions imposed around the world through currency intervention and mercantilist domestic economic policy.

Either way, the United States has sustained these pronounced deficits for years, and not had to face any adjustment difficulties. Effectively delaying the day when it may need to reverse the trend. Indeed, depending on the composition of the deficit, it may not be that much of a problem at all. As then UK Chancellor of the Exchequer, Nigel Lawson, suggested in the early 1980s,

“To the extent that current account deficits reflect private saving and investment decisions, that there are no distortions, and that expectations rational, then there are no reasons for the the government to intervene.”<sup>232</sup>

This is what is known as the “Lawson doctrine”. It essentially stipulates that as long as the current account deficit is made up of individual private transactions which are all reasonably sound, then the deficit itself should be seen so to. The only provisos to this, of course, are that the deficits cannot be the result of government deficit spending, nor can they be largely related back to some form of severe market distortion. Such as protracted exchange rate intervention, or, more aptly, a mechanism such as the Euro, which may prevent exchange rate adjustments in certain states.

To see why private transactions may not be a problem but government deficits will be it is only necessary to consider yourself undertaking a transaction. For instance, in a private transaction, I will (most of the time) make an investment when I perceive that I will make a profit, and in this instance I only need to worry about this one transaction, not the millions of others occurring across the economy. Which isn't true of government deficits. This is because the government is so large that it is engaging in transactions with thousands of people, firms, and governments simultaneously. Therefore when government driven deficits get too large it is easy to see why there *could* be a perception that this risks default. Luckily, the United States does not face either

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<sup>232</sup> Olivier Blanchard, “Current Account Deficits in Rich Countries” Mundell-Fleming Lecture, International Monetary Fund. November 9-10, 2006. p,4  
<https://www.imf.org/external/np/res/seminars/2006/arc/pdf/blan.pdf>

of these constraints. As we have already seen, for instance, states and private actors buy treasuries irrespective of U.S. macroeconomic decisions. This isn't to say that these aren't necessarily risky, nor that imbalances should be ignored, but rather the United States has demonstrably more flexibility than other state when choosing particular policies.

It is for his reason that Norrlof argues that these deficits have benefited the United States because it has "raised consumption beyond what is produced in the the United States" and, moreover, allows the United States to derive "considerable bargaining leverage from its integrated, consumer-oriented, market."<sup>233</sup> Soaking up far more imports than if it were constrained by keeping its current account in balance. Directly relating to this, American current account deficits, through a novel consequence of their financing, have also lead to perceptive benefits for the United States. An effect to which I shall now turn.

#### *Exchange Rate Gains*

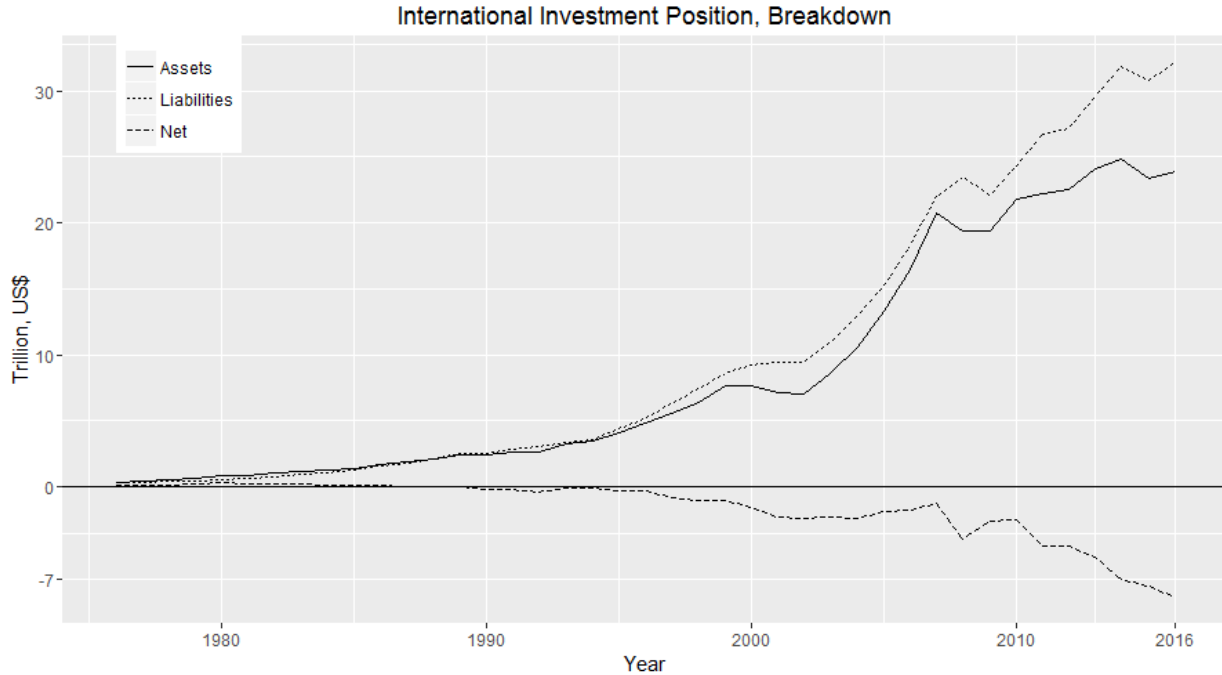
When a state consecutively imports more than it exports, it must turn to foreign financing to fund the gap. That is, the current account deficit must be matched by a capital account surplus. Over the long run, the total amount of money that comes into and flows out of the United States is recorded as the United States' International Investment position (IIP). Succinctly put, the international investment position records the stock of assets the U.S. owns abroad and the stock of foreign owned assets in the United States. The difference between the two is the Net International Investment Position (NIIP). In the figure 15 I display a time series of America's IIP taken from the United States' Bureau of Economic Analysis (BEA), as we can see the data demonstrates that the United States has persistently taken on more international liabilities than it holds in assets.

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<sup>233</sup> Norrlof, *America's Global Advantage*. 89

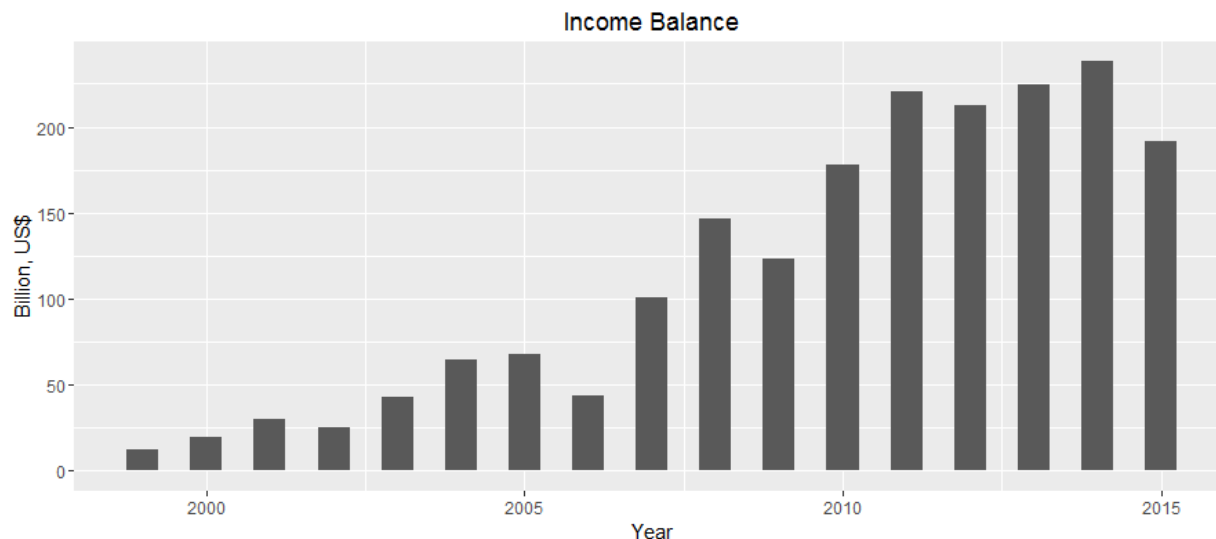


**Figure 15 – US International Investment Position, 1970-2016**



In most cases this would require a nation to pay more out in interest payments and so on than it received back. Imagine, for instance, if I had \$1000 in liabilities and \$500 in assets, both with yields of 5%, I'd pay out \$50 and receive \$25. However, as most observers will have noted, this won't necessarily be true of any one nation's portfolio. In fact, the balance on returns on a nation's international investment portfolio will be directly related to investment decisions which in turn reflect interest payment differentials. In the case of the United States, it has actually *benefitted* from this particular portfolio configuration; that is, the United States has earned more than it has payed out. As we can see in the graph below, the balance on income payments and receipts has been positive for at least the last fifteen years. But why is this so?

**Figure 16 – US Income balance, 1999-2015**



The key, as figure 16 alludes to, is the composition of the U.S. portfolio. In the main part, the key reason behind this return differential is that the large part of U.S. liabilities are accounted for by relatively low yielding treasuries whereas U.S. assets tend to be in higher yielding equities and direct investment.<sup>234</sup> Norrlof suggest that this differential makes the United States reminiscent of a “world venture capitalist ... in effect selling low-yield securities to buy high-yield securities.”<sup>235</sup>

In short, dollar primacy enables a dynamic that extends the capability of the United States to run protracted current account deficits. Moreover, as we have seen, even the financing of this deficit has resulted in sustained and beneficial outcomes for the United States. Receiving more money in interest payments on their lesser holdings than they have had to pay out on their liabilities. There is, however, an additional benefit to be found in the literature. What Cohen describes as the ‘Power to Deflect’, which “represents the capacity to avoid the transitional cost of adjustment by *diverting* as much as possible of that cost to others.”<sup>236</sup>

<sup>234</sup> U.S. Department of Commerce, “Table 4.1. U.S. International Transactions in Primary Income” International Data, Bureau of Economic Analysis. March 17, 2016.

<sup>235</sup> Norrlof, *America’s Global Advantage*, 118

<sup>236</sup> Cohen, “The Macrofoundations of Monetary Power,” p.4. Emphasis in original.

### *'Exporting Inflation' - The Power to Deflect*

The final benefit derived from dollar primacy, once again intimately related to the former factors, regards the capability to 'deflect' adjustment costs, primarily through monetary policy. To see why this occurs, all one needs consider is the former work that has been covered on the decision of many countries to peg their exchange rates to the U.S. This permits the United States to 'deflect' adjustment insofar as monetary easing by the Federal Reserve won't necessarily manifest itself as inflation in the United States' domestic economy. In theory, for instance, the 'creation' of dollars *should* deflate all dollars by definition. That is, if we have a stock of dollars, say 100, that exist across a specified economy at any one time the creation of an extra ten will therefore devalue the others. Think of it this way, if we have ten objects in an economy that are valued at a combined 100 dollars, each dollar buys 0.1 objects. Now, if we print an extra ten dollars, we now have 110 dollars split between ten objects. Now each dollar only 'buys' 0.09 objects. Yet this doesn't happen in practice.

Bringing it back to the global economy, the United States can print these dollars and instead of them degrading the purchasing power of the U.S. dollar much of this hypothesised inflation is actually exported abroad. But why? When the U.S. dollar is somewhat inflated through monetary easing many nations have two options, particularly (if not mainly) those states who adopt export oriented growth strategies. They can either sit back and let the differential appreciate their bilateral exchange rate or they can intervene to 'sterilize' the Fed's activity. This means that these foreign central banks will have to intervene to bring their currency down in relation to the U.S. dollar. This means that foreign goods are not technically degraded by the debasing of the dollar. Think about it this way; if the dollar was debased by ten percent and the foreign country made no effort to counteract this, foreign goods would be approximately ten percent more expensive. However, if the dollar was debased by ten percent and the foreign currency choose to sterilize this by printing an equivalent amount of money, the United States doesn't suffer from this form of inflation.

In fact, what happens is that the foreign country actually ‘imports’ American inflation. Returning to the former example I recounted on Chinese foreign exchange intervention, the Chinese government has recently responded to the depreciating of the U.S. dollar by intervening in foreign exchange markets. In particular, they bought dollars by *printing* RMB rather than *buying* USD. This means that China monetary eases in its own economy, monetary easing that isn’t soaked up by another actor, thus *importing* inflation from the United States. In this way, the United States may deflect the costs of economic adjustment by expanding its monetary supply and failing to pay large parts of the consequences. In fact, as the name suggests, the cost of adjustment is generally felt by American trade partners. Those who may choose to peg their currencies to the dollar, thus importing their monetary policy.

In sum, once more, dollar primacy proves pivotal in facilitating specific benefits to the U.S. economy. Offsetting a large proportion of the costs that may be associated with monetary easing, pushing the more direct costs onto its trade partners.

### ***Chapter Summary***

In the last two chapters I have demonstrated that the United States derives considerable economic power from its domestic economic attributes alone. This provides a necessary analytical baseline from which to conduct analysis of the main research question in the following chapters. As I investigated in the first chapter, the United States’ economic mass is the source of a number of these advantages. Intuitively, as I have demonstrated, its large domestic market for foreign goods gives it considerable negotiating leverage when conducting international economic diplomacy. Moreover, and innately related to this, American dominance in high technology industries combined with this coercive capacity bestowed by its large domestic market has been useful in maintaining its position in the global value chain. Having additional beneficial spin-offs for U.S. national defense. America’s economic mass also comes into play when we consider what was covered in this chapter. While there are a number of other idiosyncratic factors to account for, the foundation for American monetary power is once again largely a function of size.

Earlier, I covered the fact that one of the fundamental reasons for states to use U.S. dollars relates to its position as the world's largest trader. Or, at least, the largest export destination for a number of nations, particularly those following export oriented economic strategies. Moreover, and equally a function of the large economic size of the United States, it is the depth and liquidity of American financial markets which attract large numbers of investors from abroad. Driving many of the benefits covered above. However, an important element to note about dollar primacy is that, to a not inconsiderable degree, it is the result of some rather notable path dependencies. That is, the current centrality of the dollar has a firm connection with political and economic arrangements made after the Second World War. As we know, after the First World War the U.S. dollar actually fluctuated between being the dominant currency in the international monetary system, only having cemented after the Second World War.<sup>237</sup> The process responsible for this being the establishment of the Bretton Woods system in 1945, which was to be centred around a fixed exchange rate system with a gold linked U.S. dollar at its core.

At first look this may not be the most interesting observation but, as we shall see, it alludes to a number of very important factors. In the main part it demonstrates the intimate interdependencies between economics, politics, and security, which begs the question as to how and in which ways they may be related. This invites us to investigate the feedback loops that may be present between these variables, if not to ponder the direction of the 'causal arrow'. That is, does causation purely run from economic strength to military power? Or can military power also feedback into economic strength? Throughout the last two chapters there have been a number of occasions in such a potential linkage has appeared, not least in the earlier discussion over U.S.-Japanese economic diplomacy in the 1980s. Why was there a sudden inflection in Japan's willingness to concede on economic matters in the mid-1980s? Was it all to do with economic threats or were there defense relations at play? It is to such matters that the subsequent chapters will now turn, specifically chapter five. Before I do so, however, there are specific

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<sup>237</sup> Barry Eichengreen and Marc Flandreau, "The Rise and Fall of the Dollar, or When did the Dollar REplace Sterling as the Leading Reserve Currency?" Paper Prepared for conference in honor of Peter Emin, Cambridge, May 9th, 2008.

[http://eml.berkeley.edu/~eichengr/rise\\_fall\\_dollar\\_temin.pdf](http://eml.berkeley.edu/~eichengr/rise_fall_dollar_temin.pdf)

domestic economic costs of strategic decisions to explore, as they form a regular point of criticism of contemporary American grand strategy.

## Chapter 3 - Proposed Domestic Economic Costs of Military Strategy

In the following chapter I review and critically analyse the key pathways through which scholars perceive that defence outlays and strategies may produce domestic macroeconomic benefits or costs. It does so to provide a more balanced overall assessment of the political-economic costs and benefits of US strategic commitments.

Indeed, assessment of the economic costs and consequences of military outlays have been a consistent feature of warfare and statecraft. Not only does the desire for military force bring about questions as to how it will be funded, but also calls into question the potential 'opportunity costs' such expenditure could impose. That is, the foregone investments that could have been made with the money allocated to defence. Unsurprisingly then these concerns have also found their way into contemporary debates over U.S. grand strategy. Linked to this, and far more recently, there has been an expanded discourse over the potential political-economic spillover from military presences abroad. It is a literature that aims to investigate direct economic and financial gains or losses that might arise from providing security guarantees to specific actors, as well as securing the global commons - air and sea lanes, for instance - more broadly. This rather broad array of research areas and questions therefore has a direct focus on finding empirical, often quantitative, answers and appraisals. In the main part this has seen scholars merely retrieving the relevant data on the question at hand, summarizing its descriptive characteristics, and constructing arguments accordingly. More recently, however, there has been a tendency to use econometric methods in an attempt to discover the 'causal' relationships at hand, particularly when there appears to be relevant and available data to do so. So what does this literature tell us? And does it shed any light on the political-economic influences of American military strategy?

In this chapter I investigate scholarship on the ‘opportunity costs’ of funding given military strategies, looking into traditional ‘guns vs butter’ debates as well as more modern analysis over defence spending and economic growth. This section then culminates in a case study of Thomas Oatley’s argument that military spending, through increasing fiscal deficits, actually contributes to causing financial crises. By doing so, I hope to explore the contributions and methods of the contemporary literature, describe some key deficiencies, then tie the appraisal together by drawing it through the case study in question.

## **Weighing up the opportunity costs of Military Primacy**

### ***The ‘Lippmann Gap’***

While the end of the Second World War was greeted with a brief spell of rather considerable demobilization, the onset of the Korean War marked a return to large scale defense outlays. The overall level of expenditure may have been reduced following this conflict, but due to the Cold War defense spending remains at an elevated percentage of GDP compared to before 1954 up to this day. Because of this, given the costs incurred and the ever greater strategic burdens the United States came to assume, it is unsurprising that scholars began to focus their attention toward the limits of American power and the threat of strategic over ambition. With this being so, traditional arguments tended to emphasise strategic over-extension and resource limitations and misallocation as the key opportunity costs associated with military spending. One of the first major articulations of such logic was introduced by Walter Lippmann in 1943, where he argued - not unintuitively - that strategic commitments had to be reconciled to national capabilities at the risk of overextension. Arguing that “Foreign policy consists in bringing into balance, with a comfortable surplus of power in reserve, the nation’s commitments and the nation’s power.”<sup>238</sup> The disparities between this objectives, therefore, represents what is known as the ‘Lippmann Gap’. While perhaps a little analytically thin, Lippmann’s work is important insofar as it signalled greater scholarly scrutiny over the limitations of military power and the resulting strategic dilemmas this invokes.

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<sup>238</sup> Walter Lippmann, *U.S. Foreign Policy: Shield of the Republic* (Boston: Little Brown, 1943) p, 9



A more thorough, fleshed out argument was later to be found in Paul Kennedy's seminal book *The Rise and Fall of the Great Powers*, in which he introduced the notion of 'imperial overstretch'. That is,

“decision-makers in Washington must face the awkward and enduring fact that the sum total of the United States' global interest and obligations is nowadays far larger than the country's power to defend them all simultaneously.”<sup>239</sup>

It is a logic that relates back to, and was influenced by, Joseph Chamberlain describing Britain as 'the weary Titan staggers under the too vast orb of his fate', albeit argued through an impressive set of cases studies amounting to over 800 pages. Yet irrespective as to whether you agree with the logic or not, large scale defense outlays do not just have directed cost and funding implications. For every dollar spent on defense a dollar either isn't spent on some other government related program or is not left in the taxpayer's pocket. Indeed, Robert Gilpin famously invoked this logic when he suggested that incumbent hegemonic powers often succumb to the effect of rival power free-riding on the public goods that hegemons provide. Arguing that “the tendency is for the economic costs of maintaining the status quo to rise faster than the economic capacity to support the status quo.”<sup>240</sup> This is further compounded by the fact that other states in the system benefit from the hegemon's security provision and technological prowess without having to pay for it. “In time, the differential rates of growth of declining and rising states in the system produce a decisive redistribution of power and result in disequilibrium in the system.”<sup>241</sup>

A contemporary example of this can be seen in China taking advantage of the open international free trade regime and freely transversable sea lanes to focus its resources toward economic growth alone. Although, admittedly, this has begun to change somewhat as of recent.

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<sup>239</sup> Paul Kennedy, *The Rise and Fall of the Great Powers: Economic Change and Military Conflict from 1500 to 2000* (London: Fontana Press, 1989) p,666

<sup>240</sup> Robert Gilpin, *War & Change in World Politics* (Cambridge: Cambridge University Press, 1981) p, 156

<sup>241</sup> Gilpin, *War & Change*, 185

Nonetheless, at the same time, while the United States spends hundreds of billions of dollars on defense other states such as China can instead spent hundreds of billions on education, infrastructure, or even mercantilist subsidies. The more colloquial name for this scenario is the ‘guns vs butter’ trade-off. The dilemma over whether to spend funds on military armaments or domestic programs - ‘guns or food’. The archetypical opportunity cost. For example, the American Society of Civil Engineers suggests that America already has a pronounced investment gap of around \$1.1 trillion, *potentially* resulting, in their view, in \$3.1 trillion in lost GDP growth.<sup>242</sup> Although, as this thesis continues to argue, most of the tools used for such forecasting are rather poor, with macroeconomic forecasting having very large errors and rather prone to sharp discontinuities.<sup>243</sup>

In many ways, it is this dilemma over ‘excess spending’ and free riding that motivates Barry Posen’s work on grand strategy. In his *Restraint*, Posen proposes that “major force structure cuts should allow the United States to save significant amounts of money, cutting the defense budget to perhaps 2.5 percent of GDP.”<sup>244</sup> Bringing U.S. defense spending down toward a more ‘normal’ share of GDP in keeping with allied expenditures. Indeed, as he goes on to note “including expenditures on the wars, the United States was spending 4.8 percent of GDP on defense in 2011, while these allies [France and the UK] were averaging 2.25 percent.”<sup>245</sup> To see this more clearly, I below reproduce the table of comparative military spending that Posen himself displays in his book,

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<sup>242</sup> American Society of Civil Engineers, “Failure to Act: The Impact of Current Infrastructure Investment on America’s Economic Future” , 2013.  
[http://www.asce.org/uploadedFiles/Issues\\_and\\_Advocacy/Our\\_Initiatives/Infrastructure/Content\\_Pieces/failure-to-act-economic-impact-summary-report.pdf](http://www.asce.org/uploadedFiles/Issues_and_Advocacy/Our_Initiatives/Infrastructure/Content_Pieces/failure-to-act-economic-impact-summary-report.pdf)

<sup>243</sup> Board of Governors of the Federal Reserve System, “Update Historical Forecast Errors ” Division of Research and Statistics, April 2014. P,3  
<https://www.federalreserve.gov/foia/files/20140409-historical-forecast-errors.pdf> ;  
Bank of England, “Evaluating forecast performance” Independent Evaluation Office, November 2015.  
<http://www.bankofengland.co.uk/about/Documents/ieo/evaluation1115.pdf>

<sup>244</sup> Posen, *Restraint*, xiv

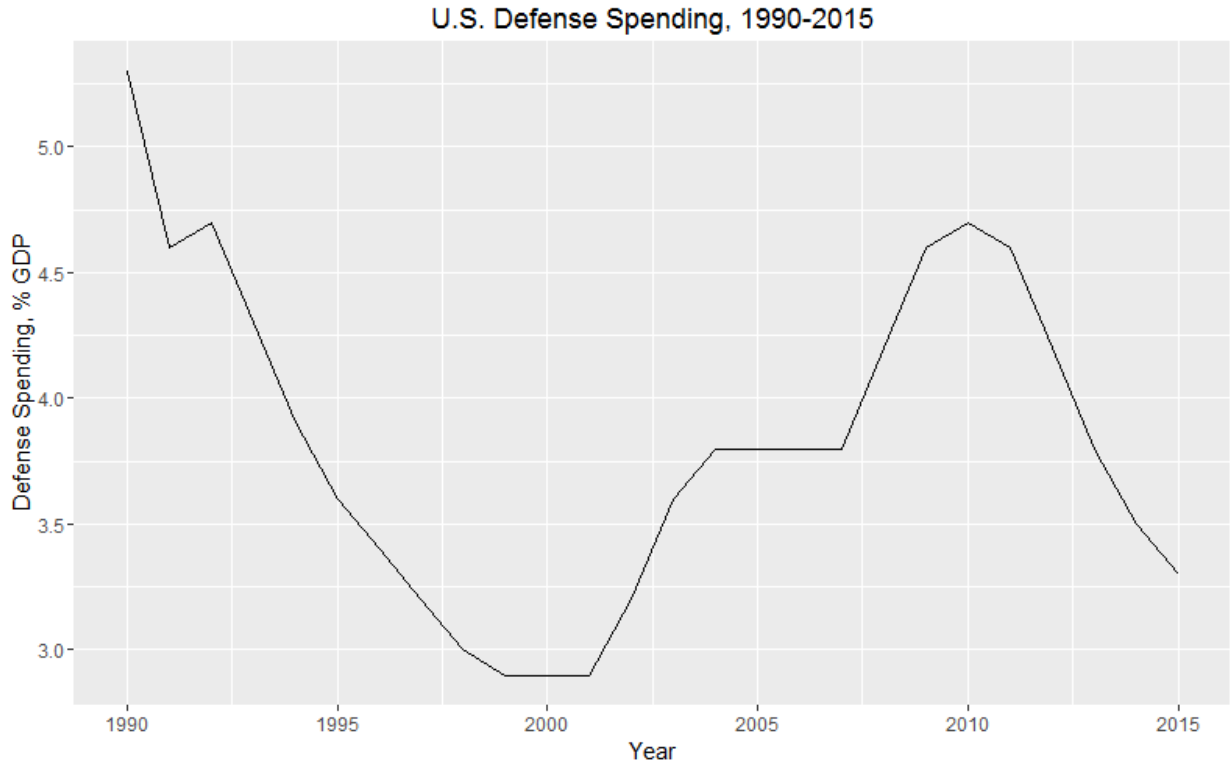
<sup>245</sup> Posen, *Restraint*,27

**Table 9 – US and Allied Military Spending**

Country or Group	GDP (trillion, \$)	GDP per capita (\$)	Military spending (billion, \$)	Military spending (% of GDP)	Military personnel
United States	15.09	48,111	687.0	4.5	1,564,000
NATO (Europe)	17.45	31,140	282.5	1.6	2,027,000
Japan	5.9	45,902	59.83	1.0	241,250

As we can see the United States spends considerably more than its allies in both nominal and relative terms. What should be noted, however, is that the year from which this data was taken marks the second highest absolute level of military spending in U.S. history. While these dynamics have not changed all that much (as we can see in figure 17), it nonetheless provides a degree of bias in the comparisons at hand.

**Figure 17 – US Defense Spending, 1990-2015**



Moreover, this brings our attention to the fact that any spending, as a percentage or as a nominal amount, is itself only relative to what one wants to achieve by such spending. With regards to the United States, a larger share of its GDP is required to finance military spending in order to achieve its national interests than other allied states currently expend in part because they rely on American security guarantees for some degree of their own protection. Moreover, the ‘percent of GDP’ representation also fails to note that at these expenditure levels, the UK and France are not effective, *independent* power projectors. For instance, France required extensive help to undertake its operations in Mali in 2013. “We can emphasize the very substantial and helpful support the USAF is providing to the French in Mali in terms of ISR, air-to-air refueling, and logistic transport assets,” noted a French Embassy Spokesman. “The French air force possesses its own assets in those three strategic areas, but not as widely as the USAF does.”<sup>246</sup> Similarly, cuts to the UK’s levels of defence spending meant that a suspected submarine incursion

<sup>246</sup> Quoted in Gabe Starosta, “Mission to Mali” *Air Force Magazine*. November 2013. <http://www.airforcemag.com/MagazineArchive/Pages/2013/November%202013/1113mali.aspx>

into British territorial waters in 2015 had to be responded to by French submarine hunting aircraft.<sup>247</sup> Linked back to Posen's work, there needs to be some consideration over America's unique position in the world, with even his 'Command of the Commons' strategy requiring high-quality, *independent* power projection capabilities.

Regardless of this, however, the salient point covered above is that there are clear and definitive arguments to suggest that there may be considerable opportunity costs attributable to America's large defense outlays. An issue I shall investigate in greater depth in the next section.

### ***Defense Spending and Economic Growth***

One of the more thoroughly researched opportunity costs associated with military spending relates to the effect such spending may have on economic growth rates. In fact, there is an entire field of research into this topic entitled 'defense economics'. More broadly, however, any estimation of the influence of a specific variable on the aggregate domestic economy is, by its definition, a question of macroeconomics. This allows us to investigate a broader literature and so a wider set of assumptions, models, and methods. For reasonably obvious reasons investigating the potential link between defense spending and economic growth tends to be undertaken using quantitative methods, with a focus on formal modelling and econometric estimation. Because of this, it is rather important to ascertain what assumptions these models are built on and the difference between what they intend to measure and actually measure. Understandably, the main way in which this is achieved is by inserting a term into a model and/or equation that accounts for changes in military spending then proceeding estimating this relationship.

The problem is this relies on a number of pivotal, albeit somewhat tenuous assumptions. Even before we have begun, for instance, we have assumed that our models do in some manner reflect

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<sup>247</sup> Ben Farmer, "Britain calls in French to hunt Russian sub lurking off Scotland" *The Telegraph*, November 22, 2015.  
<http://www.telegraph.co.uk/news/uknews/defence/12010438/Britain-calls-in-French-to-hunt-Russian-sub-lurking-off-Scotland.html>

reality - that is, they are good estimators of the economic system. And secondly, we have assumed that tracking correlation is sufficient to posit some form of causal narrative between certain variables. The trouble is, both of these assumptions are far from certain. To see why and how this so, we first should explore some of the key models used in the defense economics literature. There are two that seem to be of particular note, the Feder-Ram model and the Augmented Solow model. The first, the Feder-Ram model, saw Basudeb Biswas and Rati Ram take a model developed by Gershon Feder in 1983 that aimed to investigate the effect of exports in economic growth and adapt it to investigate the role of defense expenditures.<sup>248</sup> As may seem intuitive, the Feder-Ram model cleaves off the civilian sector from the military sector according to shares of labour and capital, adjusted for price differences and inclusive of military externalities on civilian labour and capital markets.

The basic model distinguishes only between military output and civilian output, with both employing labour and capital from the same sources. In addition, it is also assumed that military production may have external effects on civilian production, that is an 'externality' effect. The equation (see Appendix 3:1) therefore includes a military term in the civilian production function, which, in theory, should allow the estimation of this externality effect when the model is specified for econometric evaluation. In its final form then, the growth equation for the Feder-Ram model inserts a term accounting for military spending into the equation, suggesting that capital, labour *and* military spending should influence changes in economic output. Permitting researchers to test this assumption using statistical estimation. This equation can then be converted into a number of econometric representations, although the original specification is displayed in Appendix 3:2.<sup>249</sup> As I've already mentioned, there are a number of slightly different representations, and some have an additional term in the econometric equation that can be derived from further algebraic manipulation. Specifically, the third term can be split into two in order to estimate productivity differentials and the externality effect as different variables.<sup>250</sup>

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<sup>248</sup> Basudeb Biswas and Rati Ram, "Military Expenditures and Economic Growth in Less Developed Countries: An Augmented Model and Further Evidence" *Economic Development and Cultural Change* 34:2 (1986) pp, 361-372 ; Gershon Feder, "On Exports and Economic Growth" *Journal of Development Economics* 12 (1982) pp, 59-73

<sup>249</sup> Biswas and Ram, "Military Expenditures and Economic Growth," 363

<sup>250</sup> Feder, "On Exports and Economic Growth," 67

Nonetheless the basic intuition of the model is rather simple. Essentially, the model estimates a 'neoclassical production function' that assumes the economy to grow as function of the supply and growth in labour and capital, albeit in this case with a military variable added into the mix. Nonetheless, this is all the econometric process is estimating, allowing the scholar in question to plug the received values back into the model in question.

Yet there are a number of problems with this model before we even get into the econometric practicalities of measurement, or the conceptual basis justifying the estimation of such a model. Paul Dunne *et al* had the following to say about the four term model,

“There is a severe simultaneity problem in having the growth rate of military expenditure on the right-hand side, since if the share of military expenditure is constant, variations in the growth in output will determine the growth of military expenditure. Multicollinearity between the final two terms may cause large standard errors and imprecise estimates of the externality parameter. The model is static, with no lagged regressors or dependent variable, which is a major problem both in time-series, where slow adjustment is pervasive, and in cross-section, where it is well known that initial income is an important determinant of growth”<sup>251</sup>

Equally, the model is also considerably underspecified, lacking a large number of variables that other macroeconomic models now include. Although, presumably, if there was a large enough effect this should shine through in most models - a problem I will return to later. For which reasons it has now been largely replaced by an augmented Solow-Swan growth model.

The Solow-Swan model is once again a neoclassical model, utilizing the classic 'Cobb-Douglas production function' which assumes that growth, once again, is essentially a function of labour and capital. Albeit, with a new term that describes technological process. The basic form of the

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<sup>251</sup> Paul Dunne, Ron Smith and Dirk Willenbockel, “Models of Military Expenditure and Growth: A Critical Review” *Defence and Peace Economics* 16:6 (2005) p,456

production function can be found in Appendix 3:3, but in essence it is a simple neoclassical model relating output to capital, technology, and labour. The equation is set up so that there are 'constant returns to scale' which means that if the values of labour and capital double the output doubles. Conversely, if there were increasing returns to scale output would more than double and vice-a-versa.

Dunne *et al.* propose using this model to assess the influence of military spending on growth by developing the model into an econometric equation which models output as a function of output at that prior time period, plus investment, minus capital depreciation, *and* inclusive of current and lagged military spending (see Appendix 3:4).<sup>252</sup> This is therefore an improvement, albeit a minor one, over the last model we investigated insofar as it includes a lagged term for military spending. This is rather simple, that is the fact that it is highly unlikely that most changes in any economic variables will have a contemporaneous effect on output. For example, lowering interest rates will take a lagged effect on most other economic variables, albeit at different lags. It may take a few quarters to stimulate economic activity, for instance. In essence then, this equation is estimating a neoclassical style production function with military spending 'bolted-on'. The extent to which this is prudent, however, is debatable - as I shall continue to demonstrate. But before I do, what kind of evidence have these models produced?

Uk Heo has contrasted variants of both models, producing conflicting results. In the above Solow derived model, contemporary spending had a negative relationship with economic growth while the lagged measure had a positive coefficient. As Heo points out "this result indicates that the economic effects of defense spending on growth in the United States are meaningless because the size of the effects is virtually zero."<sup>253</sup> In addition, it also suggests that there might be a problem with what these measures are actually assessing - that is, over what interpretation the correlations between the series in the regression have. Likewise the Feder-Ram derived model showed that military spending and military externalities had an insignificant relationship with

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<sup>252</sup> Dunne *et al.* "Models of Military Expenditure and Growth," 458

<sup>253</sup> Uk Heo, "The Relationship between Defense Spending and Economic Growth in the United States" *Political Research Quarterly* 63:4 (2010) p, 766



growth. Although neither of these results should be all that surprising, considering the magnitude and nature of military spending. Yet even before these criticism there are a few reasonably obvious problems to account for.

Firstly, these are ‘supply-side’ models which do not account for demand dynamics or ‘price rigidities’, that is the types of dynamics that define Keynesian inspired macroeconomics. In addition to which they display some obvious signs of omitted variable bias, failing to account for (or model) a wide range of other expectations or economic actors. The first of these problems, the lack of focus on price rigidities and demand dynamics, contributes to ignore the wide literature and empirical evidence supporting ‘multiplier effects’ resulting from government spending. A multiplier effect, to place it in a crude context, explains why some economists and policymakers promote the idea of ‘stimulus spending’. A multiplier merely implying that a one percent increase in government spending will elicit a greater than one percent increase in aggregate output as a consequence. For instance, a 2013 working paper by Olivier Blanchard and Daniel Leigh provided evidence to suggest that fiscal multipliers had been grossly underestimated in the period after the ‘08 Financial Crisis, leading to wildly incorrect growth and deficit forecasts by the IMF. Blanchard and Leigh’s method was simple but informative,

“We focused on this issue by regressing the forecast error for real GDP growth on forecasts of fiscal consolidation. Under rational expectations, and assuming that forecaster used the correct model for forecasting, the coefficient on the fiscal consolidation forecast should be zero. If, on the other hand, forecasters underestimated fiscal multipliers, there should be a negative relation between fiscal consolidation forecasts and subsequent growth forecast errors.”<sup>254</sup>

While the r-squared fit for the regressions demonstrating this relationship aren’t all that high, at 0.5 for most variants of the regression line, the relationship between large-scale fiscal

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<sup>254</sup> Olivier Blanchard and Daniel Leigh, “Growth Forecast Errors and Fiscal Multipliers” IMF Working Paper, January 2013. P,3  
<https://www.imf.org/external/pubs/ft/wp/2013/wp1301.pdf>

consolidation and steep declines in GDP growth is nonetheless rather solid. But how and when do these 'fiscal multipliers' work?

The notion of a multiplier is based on the understanding that particular fiscal decisions - such as tax cuts or spending increases - have an effect on output that is not in proportion to the original sums involved. For instance, spending £100 billion on repairing infrastructure may elicit more than £100 billion in extra economic activity. This can be for a number of reasons, not least that the repair or expansion of infrastructure may result in greater ease of business. One of the major underlying conceptual 'workhorses' is the notion of 'Marginal Propensity to Consume' (MPC). Whereby MPC can be defined as the proportion of extra (marginal) income that is spent on consumption. Because if this it is best expressed as a quotient with the change in consumption in the numerator and the change in income in the denominator. If the outcome was 1, for instance, that would mean all marginal income is spent. Whereas if it was 0.5 only half would be and so on. The notation for this is trivial, so it can be omitted for the appendix. In our example, when the government spends the £100 billion, the MPC comes into effect through explaining how much of the income the firms and workers involved in constructing the respective infrastructure subsequently spend rather than save.

To understand how this relates to fiscal policy and our discussion over military spending we need to consider two scenarios. That is, spending outside of an economic crisis and spending inside and economic crisis. Presumably outside of an economic crisis all spending has a multiplier effect irrespective of whether it is government or private spending. There may be some differences in the resulting MPC due to differences in the kind of things governments and private individuals invest in or purchase, but controlling for this they could be assumed to be roughly similar. However, in an economic crisis, this is unlikely to be the case. This is because in a recession the private sector's MPC is likely to drop considerably. Given the poor macroeconomic outlook private sector actors will not be as willing to invest or spend, preferring instead to save or repay debt. An illustrative way of looking at this is Richard Koo's notion of a 'balance sheet recession',

“When a debt-financed bubble bursts, asset prices collapse while liabilities remain, leaving millions of private sector balance sheets underwater. In order to regain their financial health and credit ratings, households and businesses are forced to repair their balance sheets by increasing savings or paying down debt. This act of deleveraging reduces aggregate demand...”<sup>255</sup>

In this situation the MPC declines sharply, contracting aggregate demand. However, in such an environment the government may step into fulfil this lost demand through spending and investment.

Related back to the question over economic growth and government spending (military or otherwise) we therefore could just look into research (or conduct our own) on these fiscal multipliers. And, as stated above, this has already been done. Rather famously, for instance, the IMF acknowledged that they had considerably underestimated fiscal multipliers in their growth forecasts for the Eurozone. The evidence recalled above suggesting a very strong linkage between fiscal consolidation and GDP growth forecast errors. More specifically, the IMF found the following,

“The main finding, based on data for 28 economies, is that the multipliers used in generating growth forecasts have been systematically too low since the start of the Great Recession, by 0.4 to 1.2, depending on the forecast source and the specifics of the estimation approach. Informal evidence suggests that the multipliers implicitly used to generate these forecasts are about 0.5. So actual multipliers may be higher, in the range of 0.9 to 1.7.”<sup>256</sup>

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<sup>255</sup> Richard Koo, “The World in Balance Sheet Recession: Causes, Cure, and Politics” *Real-World Economics Review* 58 (2001) p,19

<sup>256</sup> International Monetary Fund, “World Economic Outlook: Coping with High Debt and Sluggish Growth” October 2012. P,41

<https://www.imf.org/external/pubs/ft/weo/2012/02/pdf/text.pdf>

Indicating, not unintuitively, that government spending has significant effects on growth. Particularly, it seems, in times of economic distress. And in consequence, analysis of these multipliers seems to make a lot of the aforementioned modeling of military spending on economic growth rather redundant. Surely it would make more sense to estimate multipliers then seek to control for differences between military and nonmilitary government spending?

In fact, the more fruitful area of research would be to evaluate if, and how, military spending may have higher opportunity costs than other government spending. Indeed, as Heo notes, military spending is considered to have a number of negative externalities that may aggravate the opportunity costs involved. In a general sense the criticism boils down to the fact that defense expenditures may crowd out expenditure on other services such as education or health care, moreover there are persistent fears (pointed to non-military government expenditure, too) that such spending may have “a dampening effect on investment through competition for the nonconsumption portion of total economic output.”<sup>257</sup> Essentially suggesting that military spending will compete for investment from the civilian sector. Although, as we saw in the first two chapters, this seems somewhat unlikely given the amount of capital that continuously flows into the United States.

However, say we accept that this does happen, then the competition for investment could also be compounded by the fact that military expenditures have lower productivity than civilian consumption of investment. Spending \$100 billion on defense rather than on infrastructure, education, or healthcare will not likely produce as much additional economic activity, for instance. Well, this is the contention, at least. This thus leads on to the second point regarding the abstract nature of the models in question. That is, the fact that there are not very granular, and so failure to model a number of other features (in addition to those already identified) that could be of importance to economic processes. A way to look at this is to ask what models do the government use for their predictions? Specifically, central banks. As it turns out, perhaps unsurprisingly, central banks do not use anything like the models mentioned above. They tend

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<sup>257</sup> Heo, “The Relationship between Defense Spending and Economic Growth in the United States,” 761

to use models known as ‘Dynamic Stochastic General Equilibrium’ (DSGE) models. Let’s break down those terms quickly. Dynamic implies that the model is time varying, unlike the static Feder-Ram model mentioned above. Whereas ‘stochastic’ implies that the model is built to take account of the fact that the economy is often hit by random shocks such as those to GDP or productivity. The final part, the ‘general equilibrium’, refers to the fact that the model as whole should revert to an overall equilibrium. In contrast to this, ‘partial equilibrium’ would imply that only a single part of the model or market was in equilibrium.

These models include a number of factors that those mentioned above do not, although the aforementioned Cobb-Douglas production function does find itself into most DSGE’s with respect to goods production.<sup>258</sup> With that said, the US Federal Reserve’s DSGE does not contain a single mention about military spending, nor does it really factor in any multiplier effects. Indeed the Fed’s model has this to say about fiscal spending,

“...government spending shock, which plays a very limited quantitative role in the model, accounting for less than 5% of the fluctuations of all variables, except at very short forecast horizons. In terms of dynamics, this shock boosts GDP growth in the very short run, and hours for a few quarters, generating some mild inflationary pressures that are kept in check by a rise in interest rates.”<sup>259</sup>

Not dismissing the notion, but somewhat dismissing its importance. However, by far the most important thing to remember about any of these models is that even with their relative mathematical sophistication (particularly, if not primarily, the DSGEs) they do not really work very well at any great time horizon. GDP forecasting, for instance, can be relatively good at short horizons but outside of these small time frames the errors tend to be large.

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<sup>258</sup> For example, see Federal Reserve Bank of New York. “The FRBNY DSGE Model” Staff Report No. 647. October 2013. p,8

[https://www.newyorkfed.org/medialibrary/media/research/staff\\_reports/sr647.pdf](https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr647.pdf)

<sup>259</sup> Federal Reserve Bank of New York. “The FRBNY DSGE Model” Staff Report No. 647. October 2013. p,23

From their own calculations, the Federal Reserve has shown that the average error for their GDP projections starts at  $\sim \pm 1.3\%$  at a one year time horizon, growing to  $\sim \pm 1.9\%$  at a two year time horizon, and  $\sim \pm 2.1\%$  at a three year time horizon. Meaning that, on average, a mean forecast of 1.5% percent of GDP for a year hence could have been 2.8% or it could have been as low as 0.2%.<sup>260</sup> Moreover, confidence intervals on their forecast projections are massive. For instance, in the paper describing their DSGE, the New York Fed indicated confidence intervals of between -4% to 8% on a forecast of  $\sim 2.5\%$  for GDP growth at a one year time horizon. What this suggests is that we need to be *very* careful in making causal inferences regarding military spending and economic growth, even if we presuppose that the measures we use actually detect the phenomena we wish to study and analyse. And here's the rub. That, in itself, is uncertain. As I shall proceed to elaborate, defense spending cannot be assumed to have any real clear, causal connection to economic output because it is largely exogenous to other economic processes. Thus further complicating our analysis.

### *Defence Spending is Exogenous*

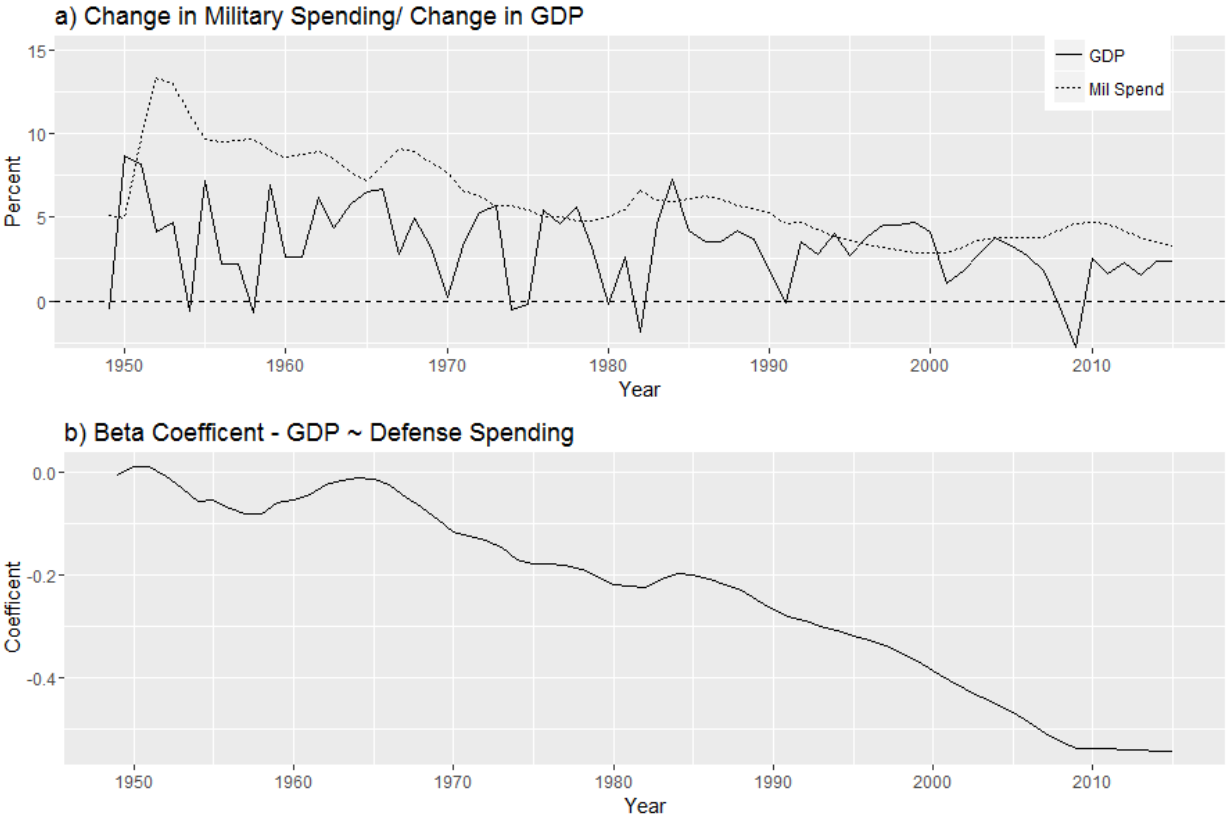
One of the key problems in analysing military spending is that it is arguably 'exogenous' to other economic factors; that is, it often changes with respect to political considerations not economic fundamentals. One way to see this is to consider that a change in many major economic variables has no innate connection with the level of military spending a government may choose. The exception to this, of course, would be a major recession or depression which would cause the government's revenue to contract considerably, *potentially* forcing across the board spending cuts onto the government in question. Relatedly, and in addition to this, there are subsequent problems with estimating the correlation between military spending and economic growth that would seem to confound analysis. As an illustrative example, in the nineties, military budgets were cut as the global economy rapidly expanded. This would mean that military spending would be negatively correlated with growth in this time period, whilst also telling us nothing about the causal relationships involved.

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<sup>260</sup> Board of Governors of the Federal Reserve System, "Updated Historical Forecast Errors" Division of Research and Statistics. April 98th, 2014. p, 2  
<https://www.federalreserve.gov/foia/files/20140409-historical-forecast-errors.pdf>

To see this we can look at a times series of military spending as a percentage of GDP compared to a time series of GDP growth rates. For reference, the data for GDP came from FRED, and is their annualised and seasonally adjusted change in real GDP, whereas defense spending data came from SIPRI. As the figure 18 demonstrates, the two series do not move together, with the series of military spending interrupted by frequent spikes tied to military buildups before (and throughout) the Korean and Vietnam wars as well as the Reagan buildup of the 1980s. Moreover, military spending has also seen a secular decline over the years, from a high of 13.3% of GDP in 1952 down to 3.3% in 2015. A third series - shown in plot b - shows the regression coefficient between the two series as it evolves over time.

**Figure 18 – US Military Spending and Changes in GDP**



This was created using a 'dynamic linear model' which uses Maximum Likelihood Estimation (MLE) and a Kalman filter to estimate the regression coefficient for each year, thus demonstrating how and if this relationship changes over time. As we can see, the relationship between the two variables is irregular, not to mention entirely insignificant. Whilst not a rigorous test, it begins to flesh out a factor I will build on throughout this chapter - namely the demonstrable absence of a major and/or constant connection between the two variables.

As a way to test this assertion, I analyse the 'causal' structure of military spending with respect to GDP. The most widely accepted way to achieve this, statistically speaking, is through conducting 'granger causality' tests. In essence, these granger causality tests assess whether an impulse in the lag of the causal variable 'causes' a requisite change in the next period in the effect variable. That is, essentially we test whether regressing a variable, say  $Y$ , on its own lagged values gives us any less or more information than if  $Y$  is estimated on its own lagged values *and* that of another variable, say  $X$ . If lagged values of  $X$  provide significantly useful information in predicting  $Y$ ,  $X$  can therefore be said to 'granger cause'  $Y$ . In effect, conceptually all we are doing is confirming if one of the necessary conditions of causality is in place - that is, that the 'cause' comes before the 'effect' (see Appendix 3:5).<sup>261</sup>

I conduct such tests at a number of different lag lengths between one and ten quarters, using data taken from the FRED and the BEA. For reasons previously discussed, logarithms of the data are taken and the resulting series are then first differenced to impose weak stationarity and attempt to normalise the data. The results, as displayed in table 10 below, are the p-values resulting from these tests. The p-values are ascertained from tests which evaluate whether the coefficient for lagged values of military spending as a predictor for GDP growth are sufficiently and significantly greater than zero. In this case, if the p-value is greater than 0.01 there is no granger causality at that lag.

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<sup>261</sup> Helmut Lutkepohl, *New Introduction to Multiple Time Series Analysis* (Springer: Berlin, 2007) pp,41-42



**Table 10 – Military Spending/GDP Granger Causality Test**

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1	0.228
2	0.378
3	0.377
4	0.515
5	0.558
6	0.485
7	0.612
8	0.461
9	0.348
10	0.389

As we can see, no connection can be detected at any lag length. Providing evidence to suggest that a prerequisite for causality is absent, suggesting that analysis relating defense spending to GDP faces some rather fundamental obstacles to validity, at least, that is, when considering some of the statistical properties. Although, as I have briefly covered above, there may be opportunity costs involved relating to productivity and multiplier effects.

#### *Technological Externalities of Defence Spending*

With this in mind, what about potential technological externalities? For instance, it has been repeatedly argued that,

“The buildup in defense-related federal R&D spending that began in the 1940s and persisted through the 1980s was responsible for propelling many of the pivotal technological breakthroughs of the 20th century, including jet engines, avionics systems, weather satellites, electronic computers, the Internet, computer software and graphics, global positioning system (GPS) facilities, and cell phones. Spinoffs such as these have

been an important channel through which defense spending has bolstered America's larger technological advantage and positively affected economic growth."<sup>262</sup>

So what can we learn about these potential externalities? And what are the proposed mechanisms at play?

In the main part, as the excerpt above alludes to, it is presupposed that the research and development budget which attends U.S. defence spending generates positive 'spin-offs' for U.S. industry and American consumers. It is an argument Brooks and Wohlforth, two prominent grand strategic scholars, explicitly use to posit a positive externality of American defence outlays - "technological capacity also magnifies economic capability, and military capability also can have spin offs in both the economic and technology areas."<sup>263</sup> The causal mechanism at play here is enhanced by the fact that the United States spent the 1980s and 1990s developing a 'dual-use' military- industrial base. Whereby 'dual-use' technologies are those that have applications in military and civilian sectors, covering a very wide range of products. For instance, the European Union's published list of export restrictions for dual-use technologies covers nearly every product type imaginable from electronics all the way through to marine and computing technology.<sup>264</sup>

However, while some dual-use technologies were indeed unintentional 'spin-offs' of military programs - such as the primitive architecture of the internet tracing its lineage back to ARPANET - there is also a broader and more systematic process underlying the notion of economic 'spin-offs'. In large part, this can be traced back to the 1980s when the DoD were reflecting on their perceived erosion of technological superiority with respect to emerging nations such as Japan.

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<sup>262</sup> MacKenzie Eaglen and Julia Pollak, "US Military Technological Supremacy Under Threat" *American Enterprise Institute*. November 2012. P,1  
[http://www.aei.org/wp-content/uploads/2012/11/-us-military-technological-supremacy-under-threat\\_172916742245.pdf](http://www.aei.org/wp-content/uploads/2012/11/-us-military-technological-supremacy-under-threat_172916742245.pdf)

<sup>263</sup> Stephen Brooks and William Wohlforth, "The Rise and Fall of the Great Power in the twenty-first Century" *International Security* 40:3 (2015/16) o, 16

<sup>264</sup> European Council, "Council Regulation (EC) No 428/2009" Official Journal of the European Union, May, 2009.  
[http://trade.ec.europa.eu/doclib/docs/2009/june/tradoc\\_143390.pdf](http://trade.ec.europa.eu/doclib/docs/2009/june/tradoc_143390.pdf)

They feared that the current structure of defence procurement was under-utilizing the productive and innovative capacity of U.S. industry whilst failing to generate sufficient cost-efficient advances from 'in-house' R&D programs. The United States deemed that a sealed-off defence sector was unnecessary and counter-productive, contributing to undermine the international competitiveness of U.S. industry more broadly. As former Secretary of Defense, William Perry, noted,

“In general, we believe most of the technologies the Defense Department depends upon - electronic, semiconductors and computer software, to mention a few - have equivalents in the commercial industry. Therefore we do not believe we have to maintain a defense-unique capability in those areas.”<sup>265</sup>

It was a view that had come to fruition throughout the 1980s, driven in no small part by *de facto* trade wars over products such as semiconductors which were described earlier. For instance, a 1988 report by the Defense Science Board, which ultimately led to the creation of Technology Reinvestment Program (TRP), suggested that the future of U.S. military-industrial relations rested “on its ability to successfully transfer technology to and from our own commercial technology base.”<sup>266</sup> An aim that up until that time had not been sufficiently realised.

Whilst the DoD had made efforts towards this end with the creation of the Independent Research and Development (IRD) program in the early 1980s, the TRP made a more overt and well funded effort to “promote integration of the commercial and military industrial bases...contributing to the commercial competitiveness of U.S. industry through dual-use technology investments.”<sup>267</sup> Subsequent reports classify four categories of dual-use spillover; 1) purposeful spin-off, 2) direct

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<sup>265</sup> Richard White *et al*, “A Survey of Dual-Use Issues” Defense Advanced Research Projects Agency, March 1996. I-1 <http://www.dtic.mil/dtic/tr/fulltext/u2/a309221.pdf>

<sup>266</sup> Defense Science Board, “The Defense Industrial and Technology Base” Department of Defense, October 1988. A-2

<http://www.dtic.mil/dtic/tr/fulltext/u2/a202469.pdf>

<sup>267</sup> White *et al*, “A Survey of Dual-Use Issues”, iii

spin-on, 3) indirect spin-on, and 4) 'industrial base strengthening'.<sup>268</sup> While I have covered 'spin-off' before, the concepts of 'spin-on' and 'industrial base strengthening' may need a little more explaining. Spin-on concentrates on selecting and funding contemporary commercial technology to be used 'off-the-shelf', lowering costs and fostering competition. With the indirect variant aiming to influence the further development of existing products to better fit military needs. Whereas the final category, 'industrial base strengthening', aims toward the promotion and maintenance of domestically based high-technology production. Enabling us to delineate a large number of avenues through which integrated military R&D has spillover effects onto the domestic American economy.

To place the figures involved in these programs in context, I display a timeseries of American defense R&D expenditures in figure 19. The data comes from the American Association for the Advancement of Science (AAAS), and is collated from official U.S. governments and reports, with the data expressed in constant 2016 dollars.<sup>269</sup>

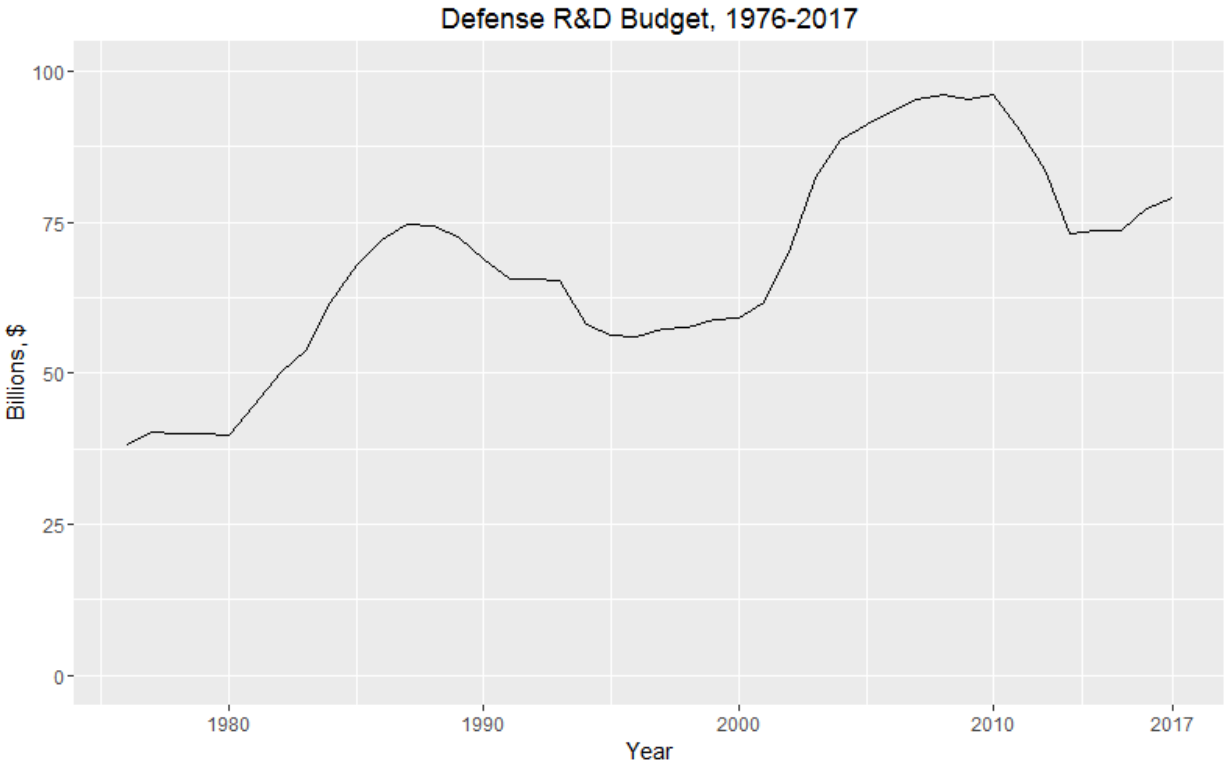
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<sup>268</sup> White *et al*, "A Survey of Dual-Use Issues", II-7-II-8

<sup>269</sup> American Association for the Advancement of Science, "Historical Trends in Federal R&D," R&D Budget and Policy Program.

<http://www.aaas.org/page/historical-trends-federal-rd>

**Figure 19 – US Defense R&D Budget**



For comparative purposes, consider that R&D expenditure for year 2016 is expected to be in the range of \$80 billion, whereas the *entire* Chinese military budget for 2015 was approximately \$210 billion dollars, which itself was considerably above the third largest defense budget, Saudi Arabia's, which stood at \$80 billion.<sup>270</sup> As we can see, the amounts in question are not inconsequential.

However, although we have considerable data on R&D expenditures, and we have specific examples and programs to explore, linking inputs to outcomes is rather difficult. As we have already explored earlier in this chapter, using statistical methods to detect relationships is going to be very difficult, and somewhat uninformative. Not only is the macroeconomy poorly modelled, but it is very difficult to run the 'counterfactuals' which we would need to strip out the effect of defense R&D spending. Because of this, a qualitative case study might prove potentially more illuminating. For instance, a recent and rather provocative work by Mariana Mazzucato has

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<sup>270</sup> Stockholm International Peace Research Institute, "SIPRI Military Expenditure Database" *SIPRI databases*. <https://www.sipri.org/databases/milex>

detailed the role of American federal R&D in funding and developing some of the more consequential high-technology innovations in the last thirty to forty years. Mazzucato argues that the,

“technology which went into the [iPhone] originated from numerous government agencies such as the CIA, DARPA and the Department of Defense. What is interesting is that this model was used as inspiration for additional projects like ARPA-E, which is today doing for clean technology what DARPA did for the internet. The Department of Health, the second biggest spender in innovation, after the Department of Defense, has been incredibly important across the entire innovation chain and very mission oriented.”<sup>271</sup>

Her research into the origins of the main components of the iPhone seem to confirm this. Moreover, they place defense related programs at the centre of the innovation process.

Indeed, the Office of Science and Technology Policy (OSTP), one of the U.S. executive offices tasked with advising the U.S. president on science and technology issues, lends some support to this analysis. Writing back in 2006, the OSTP suggested that “Research funded by the Department of Defense, the National Science Foundation, the National Institutes of Health, the Department of Energy, and the National Institute of Standards and Technology contributed to the breakthrough technologies of magnetic storage drives, lithium-ion batteries, and the liquid crystal display, which came together in the development of MP3 devices” illustrating “the unexpected benefits of basic research.”<sup>272</sup> While the iPhone, iPod, and related technologies are hardly groundbreaking devices in-and-of-themselves, the types of technologies they integrate are widely used and *individually* represent very important technological advances. I reproduce Mazzucato’s diagram in figure 20 below. As you can see, a large number of the major technological innovations that went into various generations of Apple products find their origin as products of Federal agencies, with a particular prominence of defense agencies.

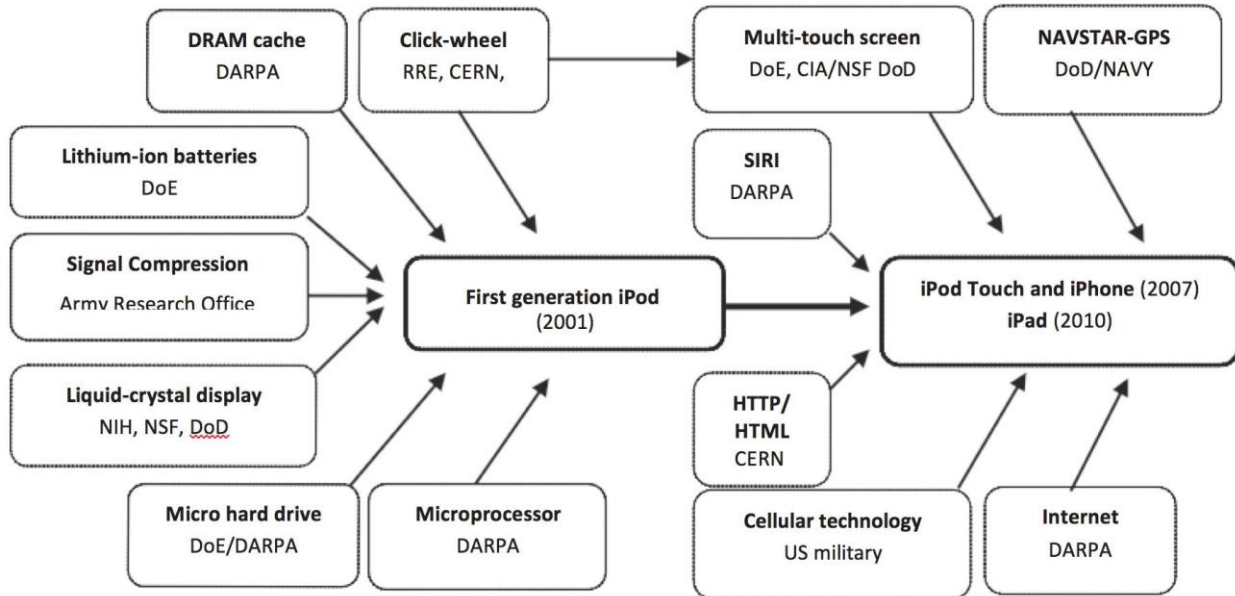
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<sup>271</sup> Mariana Mazzucato, “The Coffees of the Secretary-General” Organization for Economic Cooperation and Development, May 2014. p,7

<http://marianamazucato.com/wp-content/uploads/2014/10/MAZZUCATO-Brochure.pdf>

<sup>272</sup> Office of Science and Technology Policy, “American Competitiveness Initiative: Leading the World in Innovation” February 2006. p,8

**Figure 20 - iPhone Technologies**



Source: Mariana Mazzucato, *The Entrepreneurial State: Debunking Public vs. Private Sector Myths* (Anthem Press: London , 2013) p, 109

Prominent among these organizations is DARPA, the Defense Advanced Research Projects Agency. Perhaps the most important of all the relevant agencies in question. It was created in the 1950s by the Eisenhower administration in order to combat perceived advances in Soviet technology, seeking to reach for “transformational change instead of incremental advances.”<sup>273</sup> A brief scan of their officially declared projects is enough to confirm this, not least their long history of substantial innovation, including the miniaturization of GPS and the creation of stealth technology.

In light of this, the contribution of defense R&D seems to be predicated on the fact that it takes on projects that the private sector would not for reasons relating to lack of demand or heightened

<sup>273</sup> Defense Advanced Research Projects Agency, “About DARPA” <http://www.darpa.mil/about-us/about-darpa>

risk and long payoff schedules - forms, presumably, of 'market failure'. It would seem unlikely, for instance, that a private company would choose to invest large sums of money in 'blue skies' projects. And even when we do see this, the money is often directly or indirectly funded through government. The most prominent and high profile example of this would be the businesses associated with American entrepreneur, Elon Musk. Most famously, he is the founder and head of the company SpaceX, which is the first private company to develop and test a space rocket, with their Falcon 9 vehicle now supplying the International Space Station. Elon Musk is also the head/chairman of two other rather famous companies, the car producer Tesla Motors and the large solar power company, SolarCity. Musk's firms also happen to have been the recipient of approximately \$4.9 billion in U.S. government subsidies.<sup>274</sup> Often, it seems, using subsidies and capital from one company to 'cross-subsidise' the others, with SpaceX bailing out SolarCity through a large purchase of its issued bonds in 2014.<sup>275</sup>

Now this isn't to suggest that this particular setup is necessarily a good one, in fact, directly subsidising car firms and solar firms is arguably rather negative (that is, if one considers that a state 'picking winners' induces systemic risk that would otherwise be localised). But rather points to how *certain* projects, such as Musk's SpaceX program, are unable to exist without government support. Indeed, SpaceX is the first entity (government or private) to produce and successfully test a partially reusable space rocket. In this case, ones that have been able to land themselves on floating drone platforms at sea.<sup>276</sup> Whilst not a defence related project, it exemplifies how large leaps in technology are often the results of government funded initiatives that private firms do not have an interest in touching - there is unlikely to be much commercial demand for a reusable rocket, for instance. Yet the commercial and economic spin-offs of space

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<sup>274</sup> Jerry Hirsch, "Elon Musk's growing empire is fueled by \$4.9 billion in government subsidies" *Los Angeles Times*, May 30, 2015.

<http://www.latimes.com/business/la-fi-hy-musk-subsidies-20150531-story.html#page=1>

<sup>275</sup> Susan Pulliam *et al.* "Elon Musk Supports His Business Empire with Unusual Financial Moves" *The Wall Street Journal*, April 27, 2016.

<http://www.wsj.com/articles/elon-musk-supports-his-business-empire-with-unusual-financial-moves-1461781962>

<sup>276</sup> Loren Grush, "SpaceX successfully lands its rocket on a floating drone ship for the first time" *The Verge*, April 8, 2016.

<http://www.theverge.com/2016/4/8/11392138/spacex-landing-success-falcon-9-rocket-berge-at-sea>



exploration have been rather high, with the demands and requirements of space travel forcing innovation of products that may have taken far longer to develop.<sup>277</sup> Likewise, defense research expenditures have similar effects, providing the funding *and* market for high-technology products where they may not have existed before. Infact, this actually mirrors one of the Japanese mercantilist mechanisms I covered in the first chapter. Recall the example of American supercomputer sales, whereby Japan refused to buy American products and was later found to have proved a guaranteed market for Japanese produced machines. Making a product 'competitive' where it wouldn't have been before.

In short, whilst not entirely clear cut, it seems rather intuitive that intimate R&D connections between the defence industry and high technology industries would foster innovation and growth. Although, as the examples of other government programmes allude to, the defence connection in and of itself is not the underlying mechanism at play. Rather the causal chain is one that links government investment in high-technology projects and industries to innovation.

### *Summary*

Throughout this section, I have covered a number of issues with arguments tying defense expenditures to economic growth. Itself a sub-section of research that seeks to explore how America's chosen military strategy contributes to economic processes and outcomes. I assessed econometric studies linking military spending to GDP growth, arguing that the poor model performance and variable exogeneity suggests that the literature and methods were conceptually and practically poorly suited to discovering these outcomes. In turn, as covered directly above, I then sought to address arguments pertaining to the externalities of R&D expenditures, which seemed to have a more intuitive and direct connection to economic outcomes than much of the econometric literature assessing the correlation between time series variables. Notwithstanding the small role that this particular question plays in the overall

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<sup>277</sup> National Aeronautics and Space Administration, "About Spinoff", Technology Transfer Program. <https://spinoff.nasa.gov/about.html> ; and for a more general overview, Neil deGrasse Tyson, "The Case for Space" *Foreign Affairs* March/April 2012. <https://www.foreignaffairs.com/articles/north-america/case-space>

assessment of the linkages between American strategy and American economic power, it is nonetheless emblematic of a number of the problems that are to be found in the main rump of the literature. Specifically, the ‘favoritism’ arguments that have been popularly expounded by scholars working more closely with how American strategic power projection influences bilateral economic relationships between the U.S. and its allies.

In the light of this, in the next section I offer a case study which engages more thoroughly with one specific argument, namely Thomas Oatley's thesis that American military buildups have proved a pivotal driving force in creating financial crises - specifically that of 2008. In doing so, I can seek to tie together the arguments and criticisms addressed above into one coherent case.

### **Case Study: Defence Spending, Fiscal Deficits, and Financial Crises**

In his latest book, *A Political Economy of American Hegemony*, Thomas Oatley makes an argument linking sustained military build-ups to distortions in the American macroeconomy. Motivating Oatley's analysis is his belief that the contemporary literature suggests that “military spending has no economic consequences”, disagreeing with this Oatley instead intends to highlight “the large and persistent imbalances that deficit-financed military buildups generate.”<sup>278</sup> His causal story suggests that defence buildups, what he terms ‘security shocks’ - specifically those that are deficit financed - provide stimulus to the U.S. economy which in turn attracts excess capital into the United States. Building on some earlier research,<sup>279</sup> he suggests that this stimulus is therefore far more potent than it would be in other countries due to American ‘financial power’, which is “the ability to escape the ‘crowding out’ constraint.” Where this crowding out constraint usually means that government borrowing comes at the expense of the private sector due to limited loanable funds in the economy, thus circumscribing the stimulative effect of deficit spending.

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<sup>278</sup> Oatley, *A Political Economy of American Hegemony*, 19

<sup>279</sup> Thomas Oatley *et al.* “The Political Economy of Global Finance: A Network Model” *Perspectives on Politics* 11:01 (2013) pp, 133-153

In the American case, however, “when government borrowing increases, foreign capital rushes in to plug the gap between the increased demand for funds and an unchanged domestic supply of savings.”<sup>280</sup> From here, and because of these inflows,<sup>281</sup> Oatley suggests that these processes contribute to strengthen the price of the dollar, choking off exports and encouraging investment in other ‘non-tradable’ areas of the economy, namely the housing sector and financial markets.<sup>282</sup> Following this, as we now know, a bubble emerged throughout the early to mid-2000s which was to later pop in rather spectacular style. In short, “America’s political institutions and financial power transform security shocks into persistent, pro-cyclical fiscal stimulus that fuels booms and generates economic and financial imbalances.”<sup>283</sup>

So how does the case study fit into the overall themes of this thesis? As I will show, Oatley’s argument is indicative of many of the problems raised above, but it also emblematic of one of the core themes underlying this thesis. Namely, the distinct limitations imposed upon the generalizability of arguments in strategic studies broadly, but analyses of strategic-economic interaction more specifically. Mathematically - as I covered in the introduction - this can be related back to problems regarding stationarity and ergodicity. And in a qualitative sense, manifests itself in the unpredictability we witness in international politics day-to-day. In this case specifically we see that the general argument outlined above is applied ‘hook, line, and sinker’ to all the specific cases, despite some rather notable (and arguably causally consequential) differences between them.

For example, in an interview summarising the book's logic, Oatley had the following to say about applying his argument to the ‘08 financial crisis:

“The basic idea is the following. The U.S. funded the wars in Iraq and Afghanistan by borrowing rather than by raising taxes....*the capital inflows that financed the budget*

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<sup>280</sup> Oatley, *A Political Economy of American Hegemony*, 9

<sup>281</sup> Oatley, *A Political Economy of American Hegemony*, 9-14

<sup>282</sup> Oatley, *A Political Economy of American Hegemony*, 132-139

<sup>283</sup> Oatley, *A Political Economy of American Hegemony*, 7

*deficit strengthened the dollar, thereby reducing the competitiveness of American manufacturing. As commonly noted, American manufacturing shed 3 million manufacturing jobs during this period.”*

The core claim in this excerpt, as highlighted, is to link not just increased capital flows with a stronger dollar, but then to subsequently suggest that this then had the effect of choking off exports whilst driving investment in housing, as we see below:

“Now this creates a bit of a puzzle. If the economy is expanding but manufacturing employment is shrinking, then where are these new jobs being created? *The simple answer is that growth and job creation occurred in industries sheltered from foreign competition, especially in housing...*The housing boom pushed home prices up, leading investors to invest even more in housing in the quest for capital gains.

The financial crisis itself was a fairly predictable consequence of these broader economic conditions. Every asset bubble must pop, and when it did the institutions that held the mortgage-backed securities experienced significant weakness in their balance sheets.”<sup>284</sup>

As we can see, Oatley makes a number of distinct claims which are tied together into one internally consistent causal narrative. The core claims are as follows. 1) deficit driven military build-ups encourage capital inflows, 2) increased capital inflows drive up the price of the dollar, choking off exports, 3) the ‘stimulative’ effect of deficit spending contributes to an asset boom, which occurs in the relatively more competitive areas of the economy - that is, the non-manufacturing sectors.

Whilst a convincing argument in many respects, with elements of this causal narrative providing seemingly intuitive explanations for different elements of recent American economic crises, I find

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<sup>284</sup> Henry Farrell, “Here’s why the Iraq War may have helped trigger the financial crisis” *The Washington Post*, October 15, 2015. Emphasis mine  
<https://www.washingtonpost.com/blogs/monkey-cage/wp/2015/10/15/heres-why-the-iraq-war-may-have-helped-trigger-the-financial-crisis/>

some rather important inconsistencies, as well as considerable methodological constraints. A key problem, as we shall see, is that Oatley's model does not generalise as he claims it does;

“while we think of this crisis [2008] as a unique event, it isn't. The Reagan Administration's deficit-financed military buildup created almost identical economic conditions with almost identical consequences: first a housing bubble and then a banking crisis (the Savings and Loan crisis). And though a bit different, the Johnson Administration's deficit-financed Vietnam buildup was the central factor driving the collapse of the dollar's peg to gold. Thus, throughout the postwar period, America's reliance upon deficit-financed military buildups has generated economic booms and eventually financial instability.”<sup>285</sup>

In fact, as I will demonstrate, the causal narrative does not well fit either the 2008 crisis nor the economic dynamics seen in the 1980s. Equally, the econometric work - whilst technically correct in implementation- undertaken to tie pieces of this narrative together proves ill-suited to the task, often proving either underpowered or conceptually difficult to justify. In light of this, I split this critique into two parts, focusing on two 'narrative' problems, that is, a critique of the posited causal mechanisms. In doing so, I highlight key differences in these cases that limit the generalizability of the core argument.

Indeed, in assessing Oatley's posited causal narrative, two prominent contradictions immediately emerge. 1) Firstly, the steep rise in the value of the dollar seen throughout the early 1980s does not coincide with the beginning of the Reagan military build-up. Nor does Oatley tackle one of the most obvious reasons driving the increase in the dollar's value at that time- the Federal Reserve's 'Volcker shock' instituted to quell rampant inflation rate. And secondly, 2) the causal narrative for the 2008 financial crisis faces a large discontinuity insofar as the dollar *very* famously sunk in value throughout the 2000s, thus arguably invalidating the causal chain. I tackle both in turn.

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<sup>285</sup> Farrell, "Here's why the Iraq War may have helped trigger the financial crisis"

## The Reagan Buildup

The theoretical justification for the suggestion that American fiscal deficits should ultimately lead to a stronger dollar is based upon a well used macroeconomic model called the 'Mundell-Fleming Model'.<sup>286</sup> Whilst it is usually expressed mathematically, an explication of the intuition behind the model will more than suffice. The Mundell-Fleming model provides a theoretical extension of the workhorse 'IS-LM' (investments/savings - liquidity preference/money supply) economic model by including capital mobility between countries. In essence, the model allows us to run a thought experiment between three different types of economic systems: 1) an open economy with a fixed exchange rate, 2) a small economy with a floating exchange rate, and 3) a large economy with a floating exchange rate. As I shall now detail, in each case the causal logic for how government deficits come to influence the economy is different.<sup>287</sup>

In an open economy with a fixed exchange rate, government deficits expand demand in the economy, pushing up interest rates above some hypothetical average 'global interest rate', therefore attracting international capital to the country. The reason for this, understandably, is that there is now a greater demand for the hypothetical stock of loanable funds in the economy, meaning that demand is exceeding supply, thus pushing the 'price' (in this case the interest rate) up. Because of this, foreign capital will be attracted into the country to take advantage of this differential. This process thus puts pressure on the domestic exchange rate as more people are trying to acquire the nation's currency, acting to pushing up its prices too. However, given the exchange rate is fixed, the central bank is obliged to intervene in order to offset this process through monetary easing. Whilst this has a number of attendant problems, it nonetheless arrests the appreciation of the currency in the short term. Meaning that deficit spending in this form of economy should not lead to exchange rate appreciation, allowing economic expansion and likely attendant inflation.

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<sup>286</sup> Oatley, *A Political Economy of American Hegemony*, 87 -89

<sup>287</sup> For details, see Gregory Mankiw, *Macroeconomics*, 9th Edition (New York: Worth, 2015) Chapter 12

However, in the second case - the small economy with a flexible exchange rate - this process is slightly, yet importantly, altered. In this instance, when capital comes into the country the exchange rate is left to appreciate due to the flexible exchange rate, coming to an end when a sufficient amount of capital has flowed into the country so that the interest rate equalises with the global rate. By this time, however, the currency will have risen and contributed to the causal mechanism Oatley posits. That is, helping to choke off exports to some degree or another, and potentially motivating investment to move toward the non-tradable sectors of housing and finance. However, in this instance, the contribution made toward generating asset bubbles is limited because the increased aggregate demand generated by government spending is offset by the contraction in exports that exchange rate increases would likely bring about. Which is where the third case - the large economy with a floating exchange rate - comes into play.

The dynamics are once again slightly, but pivotally, different. This time around when the government stimulates aggregate demand this not only influences the domestic interest rate, but given the large size of this economy, its increase in demand for funds actually pushes up the global interest rate, albeit to a lesser degree. In doing so, while capital flows into this large country to take account of this interest rate differential, the currency actually appreciates less than it would if it were the small economy described above. This is because the inflow of capital does not have to be enough to offset the entire domestic interest rate increase, but only the difference between the domestic and international rates. Which we have already noted has also been increased by the large country's demand for funds. It is this form of economy that Oatley (and many others) believes describes the United States.<sup>288</sup> Indeed, if it didn't there could not conceivably be any other country on the planet that could, that is given the United States is the world's largest economy. This feeds into Oatley's argument by seemingly confirming two core logics of his causal narrative. Firstly, that deficit spending does indeed contribute to exchange rate appreciation *and*, secondly, that deficit spending increases the nation's growth rate. This is important insofar as Oatley claims that this growth spurt encourages investment in areas

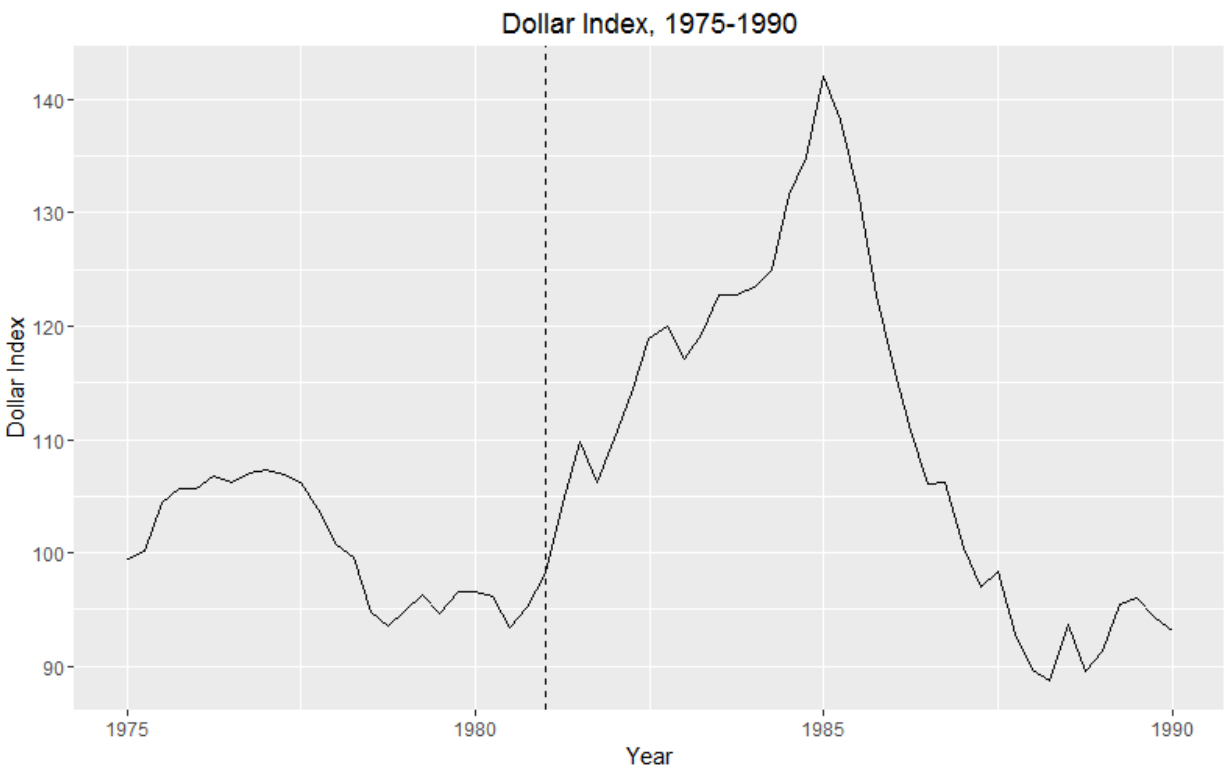
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<sup>288</sup> Oatley, *A Political Economy of American Hegemony*, 87 -89

susceptible to asset booms, such as finance and housing, ultimately leading to financial instability.

Now, while we have some 'model evidence' for his causal narrative, does this logic generalize to his key cases? There appear to be some key limitations. Let us take the Reagan buildup as our first example. In the figure 21 I display the quarterly dollar index (major currencies) from 1975 up until 1990, marking with a dotted line the year in which the Reagan military buildup began. As we can see, this roughly corresponds with the beginning of the dollar strengthening cycle which runs until about 1985, although the upward trajectory on the index is in fact apparent before this event.

**Figure 21 – Dollar Index, Reagan Administration**

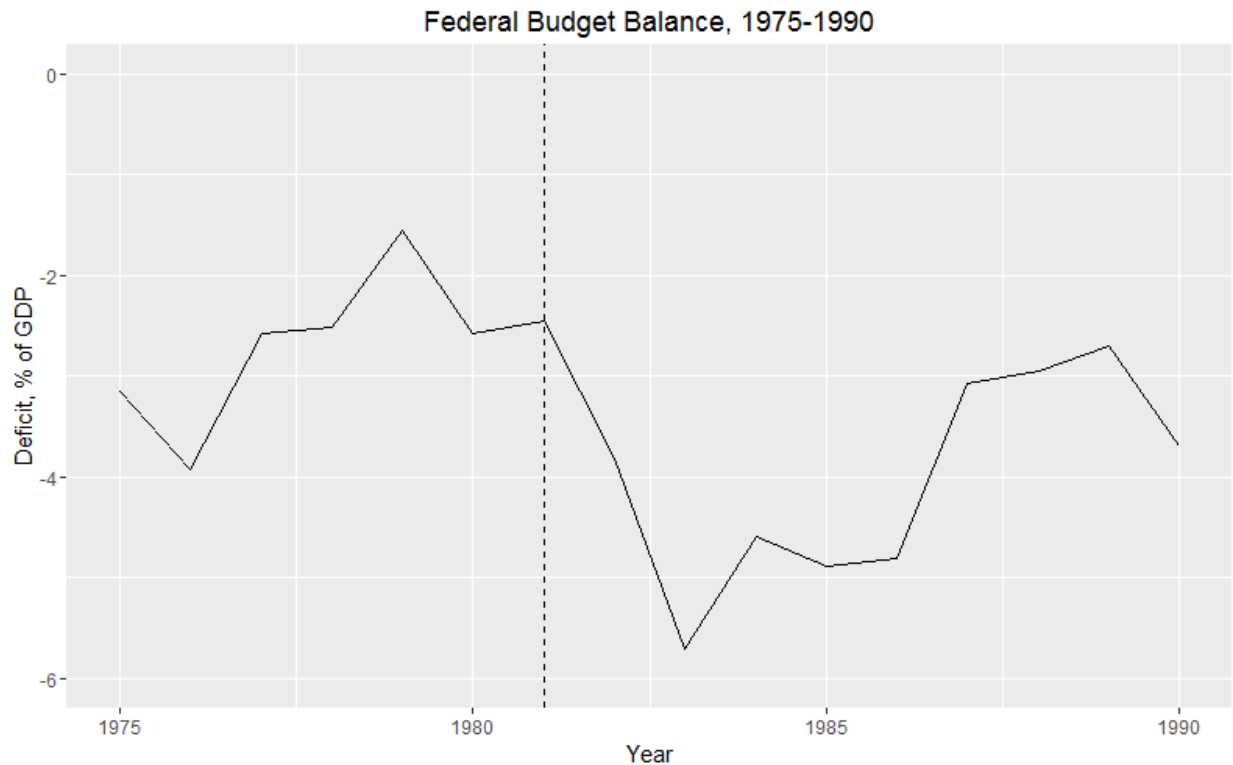


Remembering the theoretical model covered earlier, this would seem to make sense. A large budget deficit should precipitate an increase in US interest rates, inviting foreign financial inflows, thus pushing up the relative price of the dollar. As we can see in figure 22 below, there is a rather



strong mapping between a deterioration in the federal budget balance and certain movements the dollar index, but certain spikes seem unexplained by such increases.

**Figure 22 – Federal Budget Balance, Reagan Administration**



Indeed, as former Governor of the Federal Reserve, Janet Yellen, noted at the time, basic economic models predict that “deficits place upward pressure on interest rates, inducing an inflow of foreign funds. With flexible exchange rates, an influx of capital causes the country's currency to appreciate, which diminishes the competitiveness of its products in world markets.”<sup>289</sup> The causal mechanism that Oatley posited. Yet, the economy, and exchange rates in particular, are complexly interconnected, and so not often the result of such mechanistic processes. That is, there are highly interactive, often demonstrating complex interactions with other economic variables and contexts. And it is this which speaks to the core of the issue. There are a number of ‘causal mixtures’ that could produce the same observed effect. In this case, we

<sup>289</sup> Janet Yellen, “Symposium on the Budget Deficit” *Journal of Economic Perspectives* 3:2 (1989) p, 18 <http://pubs.aeaweb.org/doi/pdfplus/10.1257/jep.3.2.17>

see an inflection in the dollar index prior to the onset of extra deficit spending under Reagan, with the budget itself having already have been in persistent deficit for a number of years.

A particularly prominent omission is that Oatley's account discounts a rather important economic event throughout this time period, which is a very sharp spike in American interest rates - what came to be known as the 'Volcker Shock'. The Volcker Shock was initiated by then Governor of the Federal Reserve, Paul Volcker, after he was appointed in late 1979.<sup>290</sup> One of the primary (although far from exclusive) ways in which Volcker achieved this was by raising interest rates, particularly the Federal Funds rate. The Federal Funds rates is functionally similar to the 'Bank Rate' in the United Kingdom, insofar as it controls short term interest rates by manipulating the interest on what banks charge one another for borrowing reserves in overnight markets.<sup>291</sup> Volcker began raising these rates when he was first appointed to stem inflation which was running toward 15%, succeeding in stabilising inflation increases by mid-to-late 1980.<sup>292</sup> Despite a sharp decrease in interest rates in early 1980 as to try and alleviate unemployment increases, the Volcker Fed raised the Fed Funds rate rapidly in late 1980, heading toward 20% and finally resulting in a decrease in the inflation rate.<sup>293</sup>

Movements in US interest rates, and their generally elevated levels throughout the eighties, have similar and interdependent effects with budget deficits insofar as both influence foreign demand for US debt instruments. And in turn both will therefore influence demand for dollars in international currency markets. For example, an increase in interest rates by definition marks an

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<sup>290</sup> Greater background can be found here, Bill Medley, "Volcker's Announcement of Anti-Inflation Measures" *Federal Reserve History*, October 1979.

<http://www.federalreservehistory.org/Events/DetailView/41>

<sup>291</sup> See notes' on the following link for more details. Federal Reserve Economic Data, "Effective Federal Funds Rate" Federal Reserve Bank of St.Louis.

<https://fred.stlouisfed.org/series/FEDFUNDS#0>

<sup>292</sup> Federal Reserve Economic Database, "Trimmed Mean PCE Inflation Rate", Federal Reserve Bank of St. Louis.

<https://fred.stlouisfed.org/series/PCETRIM12M159SFRBDAL>

<sup>293</sup> Tim Sablik *et al.* "Recession of 1981-82", *Federal Reserve History*.

<http://www.federalreservehistory.org/Events/DetailView/44>

increase the dollar's value,<sup>294</sup> and it is relatively easy to see why. If one day I can hold dollar denominated assets that have an interest rate floor of say 2% (given, for instance, by the interest rate on short term treasury security) but the next I can hold the same asset yielding 4% due to interest rate changes,<sup>295</sup> the demand for dollars and dollar denominated assets will increase, thus pushing up its value. The trouble with interest rate increases (or decreases) is that the effect is conditional on a wide number of other factors, including the relative interest rate movement of other states as well as underlying domestic economic fundamentals. In a wide number of cases, for instance, large interest rate increases are used purposefully to support a falling currency to 'offset' other economic factors.

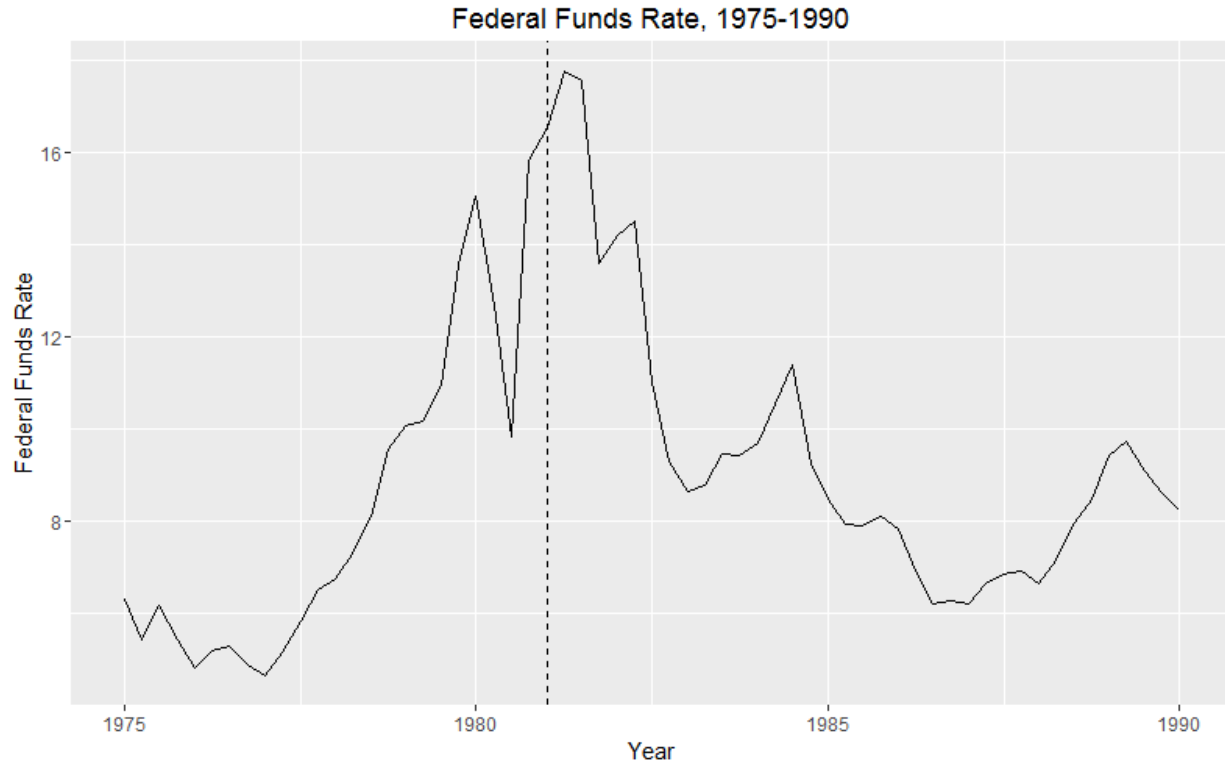
Consequently, changes in interest rates not only help to provide a coherent part of the explanation for increases in the dollar index, but also help empirically map out some of the more severe spikes in the dollar's value. For example, while a deterioration in the government budget balance seems to coincide with some significant changes in the dollar index there are some notable exceptions. At the same time, however, the federal funds rate remained persistently high throughout this period, with certain large spikes in the Federal Funds rate coinciding with lagged spikes in the dollar index, inviting further investigation.

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<sup>294</sup> For the basic underlying logic, see Frederic Mishkin, *The Economics of Money, Banking, and Financial Markets* 10th Edition (Pearson: Columbia University, 2013) p, 486

<sup>295</sup> The correlation between interest rates and treasury bill yields is very tight, and not unsurprisingly. This is because the Federal Reserve intervenes in bond market through its 'Open Market Operations' in order to influence interest rates, which involves buying and selling treasury securities in order to influence market prices. The resulting r-squared from forty-five years of raw data is about 98% - nearly perfect.

**Figure 23 – Federal Funds Rate, Reagan Administration**



As I have mentioned, the dollar index began its rise well before the Federal budget balance went into significant deficit, and continued its rather meteoric rise in the face of a rapidly growing trade deficit which would normally actually contribute undermine such a process. To see why, consider that a trade deficit by definition implies that the United States is importing more than it exports, thus raising the demand for foreign currencies while reducing demand for its own. Because the United States is the global reserve currency, this process is somewhat undermined, but should nonetheless register some effect. In fact, as I shall turn to in due course, throughout the 2000s this causal logic was definitively in play. The large and persistent U.S. current account deficit, combined with falling interest rates, resulted in a steady deterioration of the dollar's value throughout this time period.<sup>296</sup>

<sup>296</sup> David Beckworth and Christopher Crow, "The Great Liquidity Boom and the Monetary Superpower Hypothesis" in David Beckworth, eds *Boom and Bust Banking: The Causes and Cures of the Great Recession* (Oakland: The Independent Institute, 2012) ; Olivier Blanchard *et al.* "The U.S. Current Account and the Dollar" NBER Working Paper No. 11137, *National Bureau of Economic Research*. February 2005. <http://www.nber.org/papers/w11137>

More generally, as the above example illustrated, there is an intrinsic relationship between interest rates and exchange rates, although one that is often clouded by perturbations in other related processes. For instance, in the early 1980s a number of prominent economists warned about the toxic *mixture* of high interest rates and large fiscal deficits driving a large scale dollar appreciation. In a report for the National Bureau of Economic Research in 1986, Benjamin Friedman highlighted the “fundamental fiscal-monetary imbalance” that “has led to unprecedentedly high real interest rates, and has thereby helped to drive up the real dollar exchange rate.”<sup>297</sup> This causal observation was corroborated by then Federal Reserve Governor, Paul Volcker. When asked about whether the Fed had included exchange rate concerns in their monetary policy calculus in the early-to-mid eighties he had the following to say,

“The priority was to deal with inflation. We conducted a restrictive policy, *and it resulted, among many other things, in high interest rates and a big appreciation of the dollar.* During that period, frankly, the US Treasury was not interested in doing anything to modify that...”<sup>298</sup>

Given the wide acceptance of this connection, not to mention its theoretical grounding, there is a large literature on the topic of how interest rates influence other economic processes, and a substantial amount specifically focused on exchange rates. For instance, a seminal paper by Former Federal Reserve Governor Ben Bernanke and Alan Blinder found the federal funds rate to have substantial, significant predictive power over a wide range of different economic

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<sup>297</sup> Benjamin Friedman, “Implications of the U.S. Net Capital Inflow” NBER Working Paper Series, Working Paper No. 1804. *National Bureau of Economic Research*. January 1986. p, 2

<sup>298</sup> Russell Green, “An Interview with Paul Volcker” in Fred Bergsten and Russell Green, *International Monetary Cooperation: Lessons from the Plaza Accord After Thirty Years* (Washington: Peterson Institute for International Economics, 2016) p,27 Emphasis added

variables.<sup>299</sup> Finding the federal funds rate to be granger causal for, among others, capacity utilization, industrial production, and unemployment.<sup>300</sup>

In addition to this, and perhaps unsurprisingly, a number of papers have also offered evidence linking changes in the Federal Reserve's monetary policy to changes in the exchange rate. Indeed, Federal Reserve research suggests that changes in the federal funds rate explain large amounts of variation in bilateral dollar exchange rates, albeit with a delay of upward of a year.<sup>301</sup> This delay should not be all that surprising given how such a change has to percolate through the economy by increasing borrowing costs and increasing capital inflows, both of which are bound to have a significant lag. In some ways this can be seen to be conceptually analogous with the 'j-curve' effect describing the manner in which exchange rate changes are conceptualized to influence trade balances. Writing in 1987 on the trade imbalance that opened up in the 1980s, Paul Krugman noted that "lagged effects of the strong dollar continue to be a major source of the trade deficit even though the rise of the dollar from 1980 to 1985 has now been reversed." Which itself is related to the fact that there are "substantial lags in the adjustment of both prices and quantities to exchange rates, probably representing a tendency of firms to commit themselves to suppliers for extended periods of time."<sup>302</sup> The 'j-curve' therefore takes its name from the fact that a decline can persist well after a correction in the exchange rate before itself correcting sharply a few time periods later, much like a downward sloping jay. With that said, estimation and modelling of this connection can be rather difficult to ascertain. In a large part this is to do with many of the factors mentioned earlier, and finds an empirical manifestation in the poor forecasting performance of a number of econometric models.

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<sup>299</sup> Ben Bernanke and Alan Blinder, "The Federal Funds Rate and the Channels of Monetary Transmission" *The American Economic Review*, 82:4 (1992) pp, 901-921.

<sup>300</sup> Ben Bernanke and Alan Blinder, "The Federal Funds Rate and the Channels of Monetary Transmission" *The American Economic Review*, 82:4 (1992) p, 905

<sup>301</sup> Charles Evans, "The Dollar and the Federal Funds Rate" Chicago Fed Letter 84, The Federal Reserve Bank of Chicago. August 1994.

<sup>302</sup> Paul Krugman and Richard Baldwin, "The Persistence of the U.S. Trade Deficit" *Brookings Papers on Economic Activity* 1 (1987) pp, 43,2

A number of papers which systematically review the performance of exchange rate models ‘out of sample’ seem to corroborate this. In principle, these papers essentially test a number of economic models against a simple ‘random walk’ model which suggests that exchange rates will move upward or downward in the next period with the same probability - much like flipping a coin, and so making the process essentially random. The earliest of these efforts, produced by Rogoff and Meese in 1983, found that no available econometric model was able to systematically out-forecast this basic process.<sup>303</sup> A finding which has been substantiated by more recent work which has likewise found that “for the majority of cases one cannot differentiate the forecasting performance between a structural model and a random walk model.”<sup>304</sup> Yet this is hardly surprising. If we had a good working model of exchange rates, there would not be anyone making large amounts of money in foreign exchange markets. That aside, we can nonetheless attempt to demonstrate at least a basis for an empirical connection, much as the papers cited earlier have done so.

To confirm these findings myself, and so to more solidly ground my critique, I run models on two different datasets. The first includes data on the federal funds rate, capital inflows, the dollar index, the budget balance, and defense spending. Excluding the budget balance data, which is from the BEA, all other series have been taken from FRED in quarterly format from 1975 up until 1990. The second dataset is composed of only two variables, the effective federal funds rate and the dollar-yen exchange rate, but takes weekly data instead of quarterly to increase the observation count. It, too, is from FRED and records 575 observations from 1979 through until 1990. I selected the dollar-yen exchange rate instead of the broader dollar index so as to test the linkage between interest rate changes and the exchange rate on a ‘cleaner’ dataset. To see what I mean by this, keep in mind the fact that the theory suggests that changes in the federal funds rate should encourage foreigners to acquire dollar assets because of the relative changes in the yields of dollar assets that result from interest rate movements. With this being so, at the very

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<sup>303</sup> Richard Meese and Kenneth Rogoff, “Empirical Exchange Rate Models of the Seventies: Do they fit out of sample?” *Journal of International Economics* 14 (1983) pp, 3-24

<sup>304</sup> Yin-Wong Cheung *et al.* “Empirical exchange rate models of the nineties: Are any fit to survive?” *Journal of International Money and Finance* 24 (2005) p, 1161

least, we should be able to detect this connection with America's largest trading partner (at that time, Japan). Whereas the dollar index may not offer similar results given that it being an aggregation of many exchange rate indices may contribute to 'wash out' statistical information.

The models I use are essentially the same, but serve somewhat different purposes. The first simply tests for granger causality, and by doing so is merely attempting to establish a prerequisite condition for causality. Whereas the second attempts to build a time series model to demonstrate how the federal funds rate offers *some* forecasting power to our understanding of movements in the yen-dollar exchange rate. Because of this both models are essentially VARs, but they are calibrated in different ways to suit different purposes. The first model, using the dataset consisting of quarterly observations of five variables, assessed granger causality on four different cleaned series. I assessed data that was taken in logarithms as well as that in raw form, further using data that is either converted to first differences or percentage changes from one period to the next. The idea behind this was to make sure the results were not statistical artifacts of the specific cleaning procedure. With that said, the only cleaning procedure which produced data passing Shapiro-Wilk normality tests was the series that was first logged, then converted to percentages. Further to this, using Ljung-Box and Augmented Dickey-Fuller tests, the data also demonstrated at least some elements of non-stationarity. This implies that forecasting from these series would require further transformation and/or non-linear models to better capture (insofar as would be possible) the dependencies in the data. However, for our purposes, this problem should not affect the descriptive inferences too much. Below I display the results from the granger causation tests on the logged, percentage change series which passed normality tests.



**Table 11 – Dollar Index Granger Causality Tests**

Impulse Variable	Response Variable	Lag/s	P-value/s
Dollar Index	Federal Funds	1, 2	0.01, 0.03,
Federal Funds	Dollar Index	5	0.1
Budget Balance	Capital Inflows	1, 2	0.01, 0.02

While there could be some confusion over the direction of causation, the results demonstrate that both the dollar index and the federal funds rate is better modelled when lags of the other are included in the relevant equation.

To further analyse this problem, I then proceeded to estimate a specific VAR for the relationship between changes in the federal funds rate and changes in the yen-dollar exchange rate. To begin with I first attempt to replicate others work so as to work from some form of analytical ‘baseline’, in this case a similar test carried out by Charles Evans of the Federal Reserve Bank of Chicago. His analysis was also undertaken to ascertain the relationship between the federal funds rate and the dollar-yen exchange rate, covering a similar time span - that is, between 1979 and 1994. I manage to replicate Evan’s work nearly identically. In this case, though the replication of his ‘impulse response functions’. An impulse response function (IRF) takes the VAR model and converts it into what is known as its ‘wold moving average representation’, a representation which is capable of answering the question: ‘if I apply a shock to one variable, what happens to the other variables in the VAR over time?’ That is, how does a change in one variable propagate through the system we have estimated into other variables? The notation for this can be found in Appendix 3:6.

The first equation models a collection of variables,  $Y$ , to be the result of a constant, plus some linear combination of their past values and an error term. Whereas the second is a conversion of this equation into another representation based on the error terms, a result of the fact that a

mean stationary VAR can be recursively described as a sum of its errors.<sup>305</sup> Using this equation to perform the IRF, we first ‘orthogonalize’ the second terms on the right hand side of the equality, which essentially makes the error terms uncorrelated so that we can trace out the effect of an impulse in one variable controlled for the effects of others. We further set the mean term (the first term to the right of the equality) to zero so as to isolate the variation of the variables around this mean, in theory giving us a clearer picture of the reaction of the system to a shock in one of the variables.<sup>306</sup> The elements of the phi matrix can therefore be interpreted as the response of the system at time  $t$  to shocks  $i$  periods ago.<sup>307</sup>

To see what this means, and to illustrate the results I achieved in the replication, below I detail the two IRFs estimated from Evan’s VAR in case the reader wishes to compare them with those in the original paper.<sup>308</sup>

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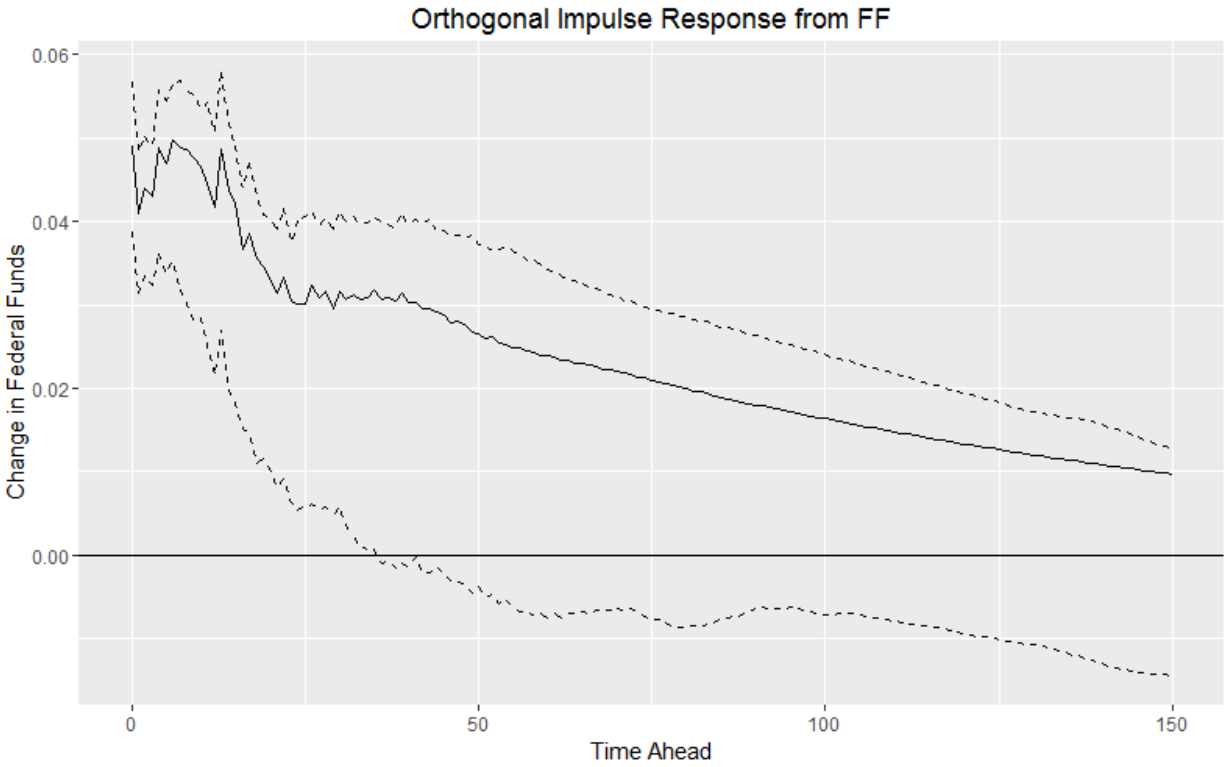
<sup>305</sup> Lutkepohl, *Multiple Time Series Analysis*, 14

<sup>306</sup> Lutkepohl, *Multiple Time Series Analysis*, 51

<sup>307</sup> Lutkepohl, *Multiple Time Series Analysis*, 58

<sup>308</sup> Charles Evans, “Interest rate shocks and the dollar” *Economic Perspectives* 18:5 (1994), Federal Reserve Bank of Chicago. p, 14

**Figure 24 – Impulse Response Function, Federal Funds into Federal Funds**



**Figure 25 – Impulse Response, Federal Funds into Dollar/Yen**

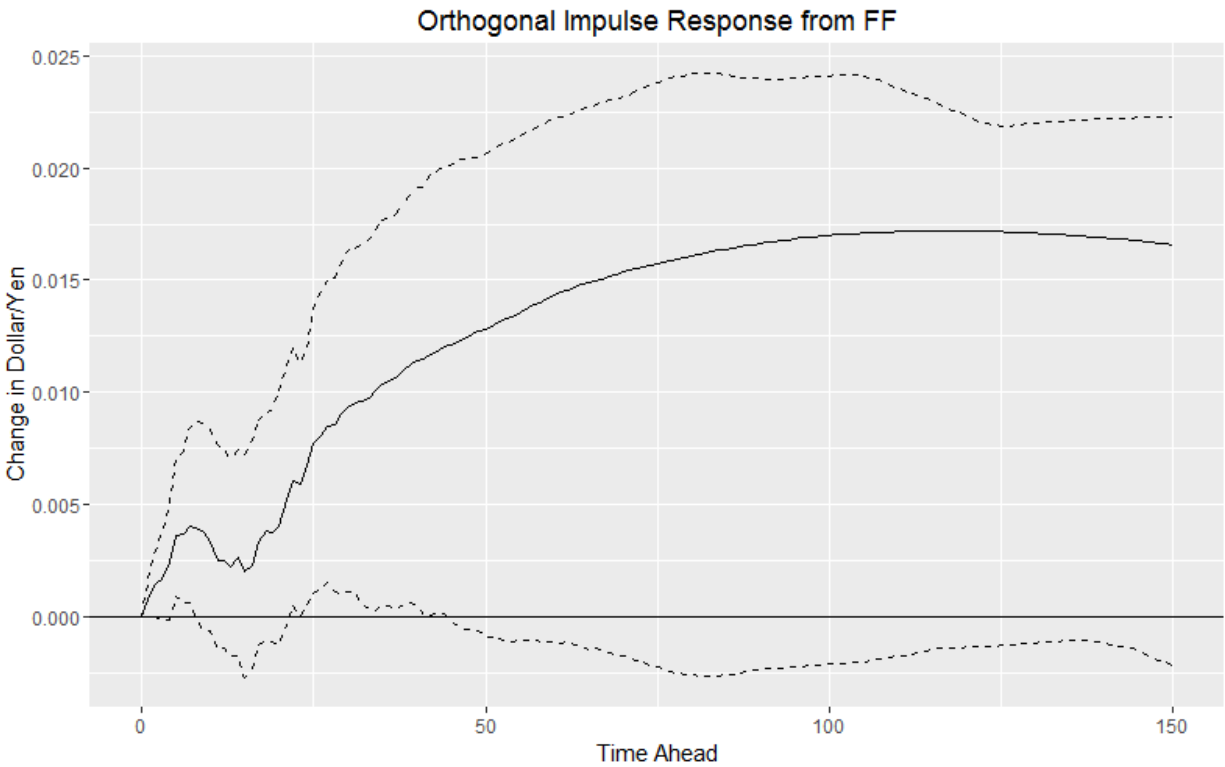


Figure 24 shows the IRF for the federal funds rate after a shock in its own error term, illustrating that this model calculates that a positive shock to the federal funds rate has a persistent and positive influence on the federal funds rate in the future, although at a rather low magnitude. Figure 25 then displays the influence of a federal funds shock on the dollar-yen exchange rate, demonstrating, as expected, that an increase in the funds rate correlates with an increase in the exchange rate in the dataset in question. In addition to this, the data from this model would also seem to suggest that this effect is maximized at around one-hundred weeks from the original shock - fitting theoretical expectations of a delayed effect.

However, the problem with these results is that they are produced from a non-stationary VAR, which is mathematically problematic. As I mentioned earlier, this was not by choice, but the result of that of the Federal Reserve economist in question. I know that original to have been constructed in this way as my results correspond identically with those of Evan's - as mentioned above my IRFs were the same, as were the forecast variances, which I calculated to be almost identical to the originals.<sup>309</sup> The key problems associated with non-stationary data (as covered briefly above) are that the regressions involved in the model are likely 'spurious', that is they may not really measure changes in the variables but merely their trends.<sup>310</sup> This contributes to inflating the test statistics describing the model, but also to poor out-of-sample forecast performance. As an example of this, Evan's VAR model reports that it explains 99% of the variance in the yen-dollar exchange rate. If this were true, however, he would either be a very rich man or there would not be any unforeseen volatility in the yen-dollar foreign exchange markets - the likelihood of either is left to the reader's discretion. Because of these problems, I proceed to estimate my own VAR variant.

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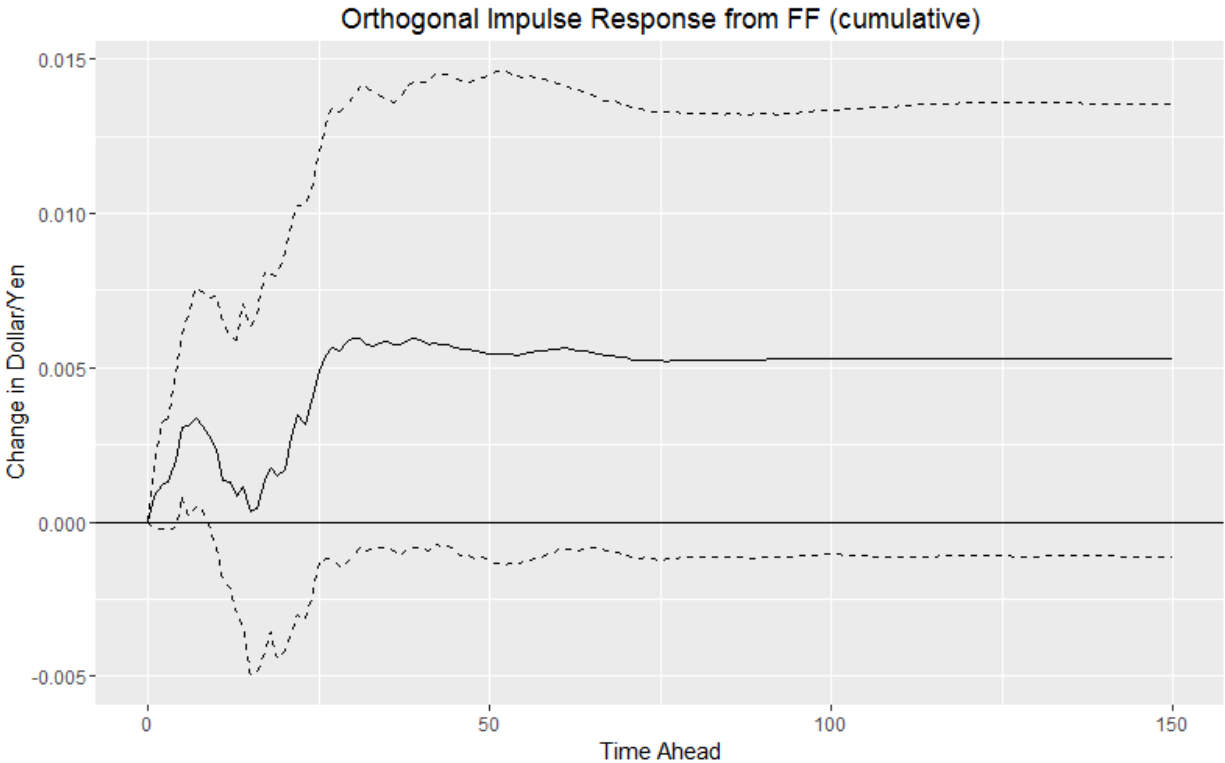
<sup>309</sup> The original forecast variances are to be found on p,17 of Evans, "Interests rate shocks". My results were within a percent of Evan's for 150 weeks of calculations.

<sup>310</sup> David Hendry, "Econometrics - Alchemy or Science?" *Economica* 47: 188 (1980) pp, 387-406  
<http://www.economia.unam.mx/profesores/eloria/cursos/HENDRYECONOMETRICS.pdf>

Given the limited ambitions driving the estimation of this VAR - that is merely the confirmation of a sufficient correlational linkage between the federal funds rate and the dollar-yen exchange rate - I estimate, much like Evans, a standard VAR with linear estimators. In order to make the data stationary I first take the natural logarithm of both series and then first difference them, a process which Augmented Dickey-Fuller tests suggest was successful in removing the unit root. Lag selection was then evaluated by investigating the partial autocorrelation of the series themselves. Taking the theoretical literature into account, as well as Evan's VAR, I then iteratively altered this choice so as to remove autocorrelation in the residuals of the model, settling on 26 weeks, identical to Evans.

The cumulative IRF for the influence of a change in the federal funds rate on the dollar-yen exchange rate is displayed in figure 26. The cumulative IRF assesses, as the name suggests, the cumulative, long-run effects of the shock instead of the individual movements at each period, in this case allowing greater clarity than the original series, which oscillated rather wildly.

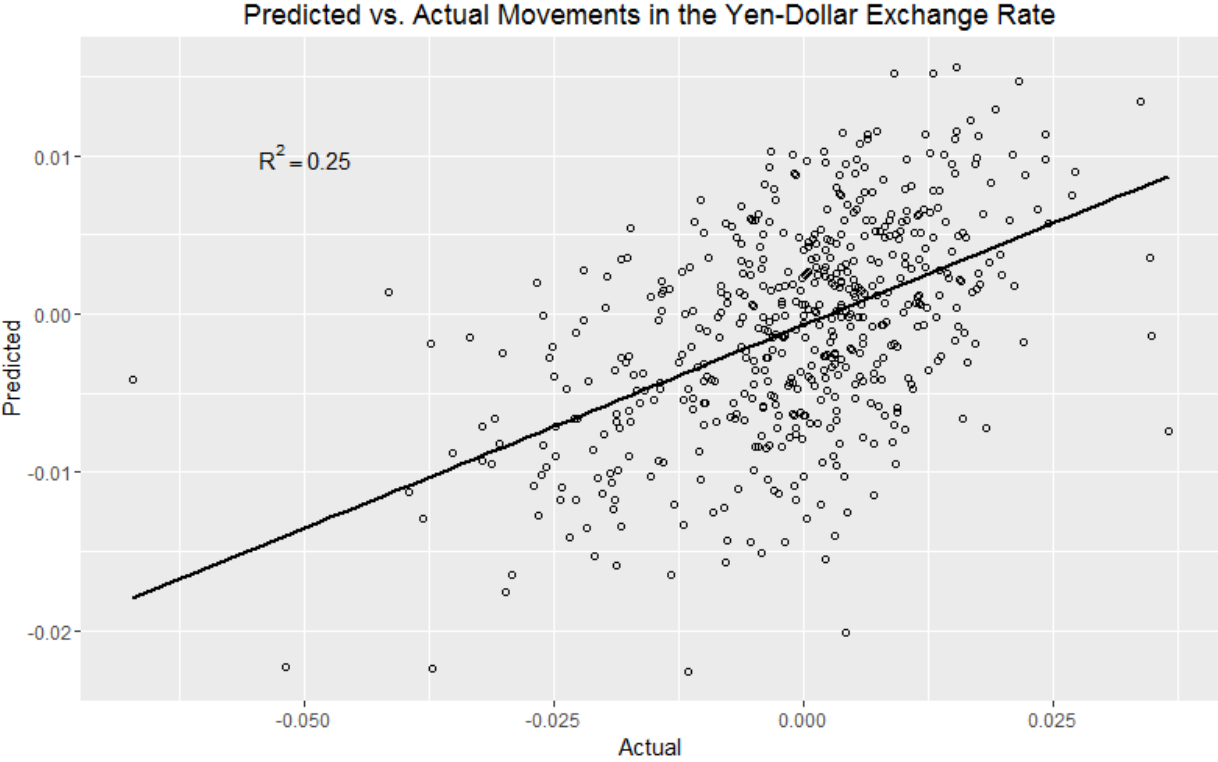
**Figure 26 – Cumulative Impulse Response, Federal Funds into Dollar/Yen**



As we can see the estimated influence of a federal funds shock is similar to that found in Evan’s, but of lower magnitude. Conversely, the forecast variance is radically different, with this VAR showing a considerable drop in the explained variance. Emblematically, this model only explains 10% of the variance in the data compared to Evan’s postulated 99%. This is likely the result (as stated above) of regressing on first differences instead of the original levels. With that said, two things should be kept in mind. Firstly, the purpose of this VAR, and secondly, that this is time series data. With respect to the first point, more complicated models could be estimated to improve the fit, but the objective here is merely to confirm a correlation between the federal funds rate and a major US bilateral exchange rate in the sample analysed. Secondly, explaining ten percent of the variance with a simple, two variable, autoregressive model is not at all bad when one considers the myriad of factors involved, as well as the volatility we have empirically observed in exchange rate movements.

In figure 27 I display the model's predicted values compared to the values actually observed. The line running through the middle is the regression line, which regresses the actual values on the predicted, demonstrating an r-squared value of ~25%. The model therefore demonstrates that it manages to track some 'broad strokes' of the relationship between the two variables. In short, and in combination with the rest of the evidence in this section, pointing to significant omitted variable bias in the Oatley's causal argument.

**Figure 27 – Predicted vs. Actual Movements in Yen-Dollar Rate**



The above does not intend to suggest that the inclusion of this variable, or the estimation of these models, contributes to alleviate the problems of generalizability seen in Oatley's thesis. Rather, it exemplifies how generalization can lead to the omission of important elements of *specific* cases and the importance of the interaction between specific variables.

## The '08 Crash

The omission of interest rate/exchange rate dynamics detailed above manifests itself once more in Oatley's analysis of the '08 financial crisis, albeit with a slightly different twist. Returning to the posited causal mechanism for the period we see a number of important claims which do not seem to stand up to scrutiny. Particularly the argument that "the capital inflows that financed the budget deficit strengthened the dollar, thereby reducing the competitiveness of American manufacturing",<sup>311</sup> supposedly causing a contraction in imports and contributing to unemployment in manufacturing industries. This leaves us with a number of key causal claims to investigate, two of which are of most importance. The first is that the dollar appreciated during the time period preceding the crash, whereas the second suggests that the housing boom was a direct consequence of this. A result, so it is argued, of a diversion of productive investment toward sectors protected from import competition.

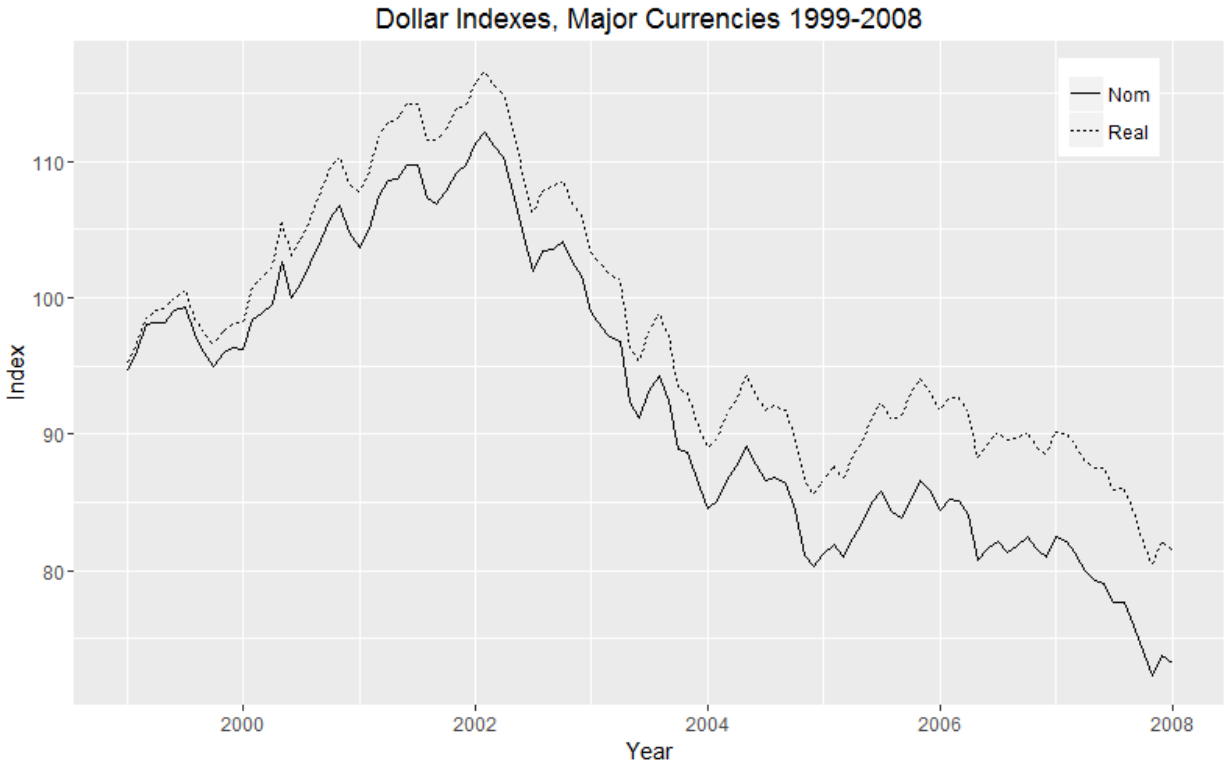
However, before we investigate this claims, let us first begin by displaying some of the relevant time series for the period. The most important, and most obvious, to explore would be the relative strength of the dollar at the time leading up to the crisis. Below I display four different series, taken from FRED, covering the time period from 1999 through until 2008. Figure 28.1 displays the US dollar major currencies index in both the nominal and real indexes. Figure 28.2 displays the China-US bilateral exchange rate, and figure 28.3 displays the Euro/Dollar exchange rate. In addition to the aggregate dollar index, these bilateral exchange rates allow us to check that the aggregation hasn't 'washed out' an important relationship, say, for instance, that the dollar had actually participated against the renminbi. This would be important given the size of Chinese exports, specifically due to China being the United States' largest trading partner and key source of export competition.

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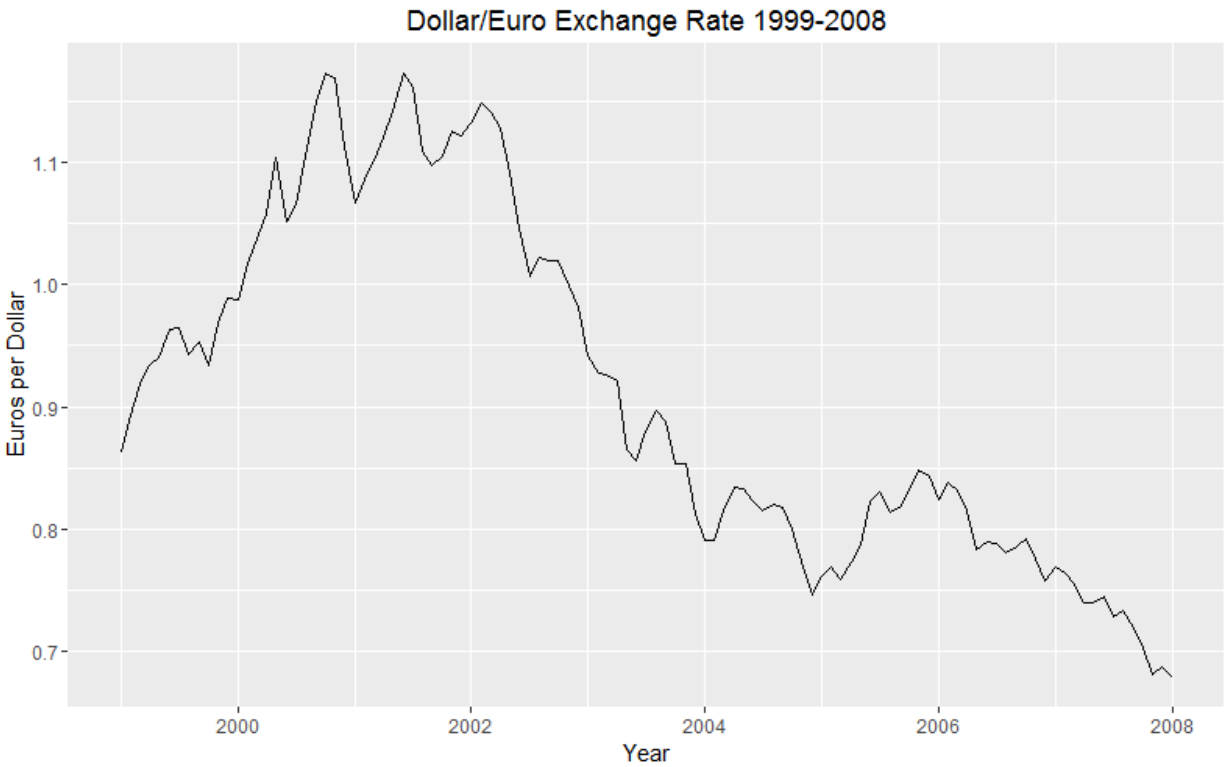
<sup>311</sup> Henry Farrell, "Here's why the Iraq War may have helped trigger the financial crisis" *The Washington Post*, October 15, 2015.



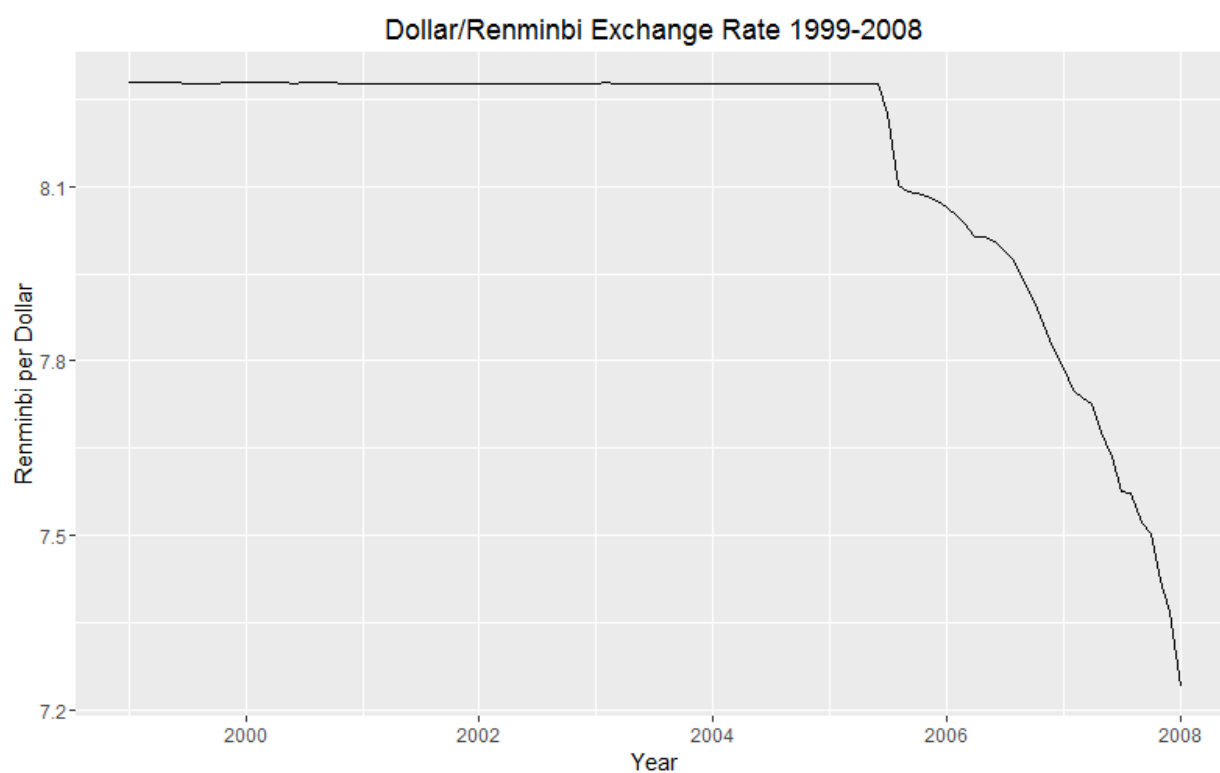
**Figure 28.1 – Dollar Exchange Rate/s, 1999-2008**



**Figure 28.2**



**Figure 28.3**



As we can see, after 2002 the dollar went into a pronounced and sustained decline leading up until the financial crisis. A result that is robust to inflation adjustments, as the real series shown in the same graph demonstrates. This depreciation can also be seen in the second graph displaying the euro/dollar exchange rate, as well as the third and final graph showing the renminbi/dollar exchange rate. To answer the first and most obvious question, the constant exchange rate of ~ 8.2 renminbi per dollar seen from 1999 up until late 2005, is the result of the hard peg followed by the People's Bank of China at that time. The appreciation after this date comes as the Chinese loosened their peg to allow the renminbi to *appreciate* against the dollar. Nonetheless, the main and most obvious point here is that there was *no* appreciation prior to the '08 crisis.

By itself, this significantly undermines Oatley's thesis. Not only does the stated link between dollar appreciation and declining export competition not exist, but the argument that fiscal

deficits cause dollar appreciation is then also invalidated in the form it is posited. Finally, it also calls into question another pillar of the argument - namely that dollar appreciation (which didn't occur) emanating from a defense build-up was a driving factor in diverting investment into the housing market and so stoking the bubble itself. In this narrative defense spending causes a fiscal deficit, which subsequently increases foreign capital inflows, these inflows then force a dollar appreciation, this appreciation then chokes off exports causing capital to reallocate to industries sheltered from foreign competition. Normally, so the argument goes, this is something like the housing industry. Yet, we know much of this mechanism to already being invalidated by events leading up to '08, and we also know that economic/financial 'bubbles' are relatively pervasive across a number of different economies and circumstances.

Insofar as there are commonalities they are very generic and could be accounted for by a number of different mechanisms. The Bank for International Settlements - 'the Central Bank of Central Banks' - has developed a set of 'early warning indicators' over the last few years which track movements in specific economic variables which have tended to precede financial crises in a wide number of states. These variables are 1) the Credit-to-GDP gap, 2) the property price gap, 3) debt service ratio, 3) the debt service ratio if interest rates rise by 250 bp.<sup>312</sup> In essence, this indicators measure the departure from trend of these variables, with the idea to track if there is a credit and/or property price spike which could indicate a speculative bubble. What they do not measure, however, is the underlying causes of these bubbles, presumably because of their potential idiosyncrasies. For instance, the diversion of funds from one economic activity to the other is not necessarily driven by the search for investments safe from foreign competition (as Oatley mentions). China, for example, has recently suffered a stock market crash, yet it would be hard to pin this on import competition.

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<sup>312</sup> Bank for International Settlements, "BIS Quarterly Review - International banking and financial market developments" March 2016. pp, 28-29  
[http://www.bis.org/publ/qtrpdf/r\\_qt1603.pdf](http://www.bis.org/publ/qtrpdf/r_qt1603.pdf)

In his seminal work, - *Manias, Panics, and Crashes: A History of Financial Crises* - Charles Kindleberger, following Hyman Minsky, argued that speculative bubbles can often be traced back to some kind of shock to the economic system,

“events leading up to a crisis start with a ‘displacement,’ some exogenous, outside shock to the macroeconomic system. The nature of this displacement varies from one speculative boom to another. It may be the outbreak or end of a war, a bumper harvest or crop failure, the widespread adoption of an invention with pervasive effects - canals, railroads, the automobile - some political event or surprising financial success, or a debt conversion that precipitously lowers interest rates.”<sup>313</sup>

These shocks therefore create novel investment opportunities which themselves incentivise the diversion of funds from other areas of the economy. In practice, and particularly in the ‘08 crisis, this process was the product and consequence of financial innovation, accelerated by loose monetary policy and compounded by low market volatility. Likewise, the Chinese bubble coincided with liberalisation of the financial system, continued easy credit, and some very exotic financial products that rivalled those seen in the ‘08 crisis.<sup>314</sup>

In short, the link between financial crises and military related deficit expenditure is far more tenuous than has been presented. Whilst some of these dynamics may contribute to the processes driving asset bubbles, it is far from the most or only important factor. Likewise, and more importantly, the causal narrative outlined in Oatley’s work does not apply to the ‘08 crisis at any rate. This should lend caution to the notion that the pursuit of certain U.S. military actions is somehow the lynchpin for understanding the development of major financial crises in the American macro-economy since the 1980s.

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<sup>313</sup> Charles Kindleberger, *Manias, Panics, and Crashes: A History of Financial Crises* 3rd Edition (New York: John Wiley & Sons, 1996 ) p,12

<sup>314</sup> For example, Bloomberg News, “Chinese Brokerages Want to Bundle Margin Debt into Bonds” August 7, 2015. <http://www.bloomberg.com/news/articles/2015-08-07/chinese-brokerage-to-sell-first-margin-loan-backed-abs-amid-rout>

## ***Chapter Summary***

This chapter has assessed the macroeconomic effects of US strategic commitments through reviewing and analysing the relevant economic and political-economic literatures and claims. It shows that there are unlikely to be outsized macroeconomic costs associated with military expenditure that are not associated with any other form of government spending. In fact, conversely, it suggests that there may in fact be potentially significant technological externalities associated with such budgets. In consequence, more confidence can be had that US strategic commitments do not contribute to cause economic costs beyond those associated with other large scale government expenditures.

Throughout the main case study I demonstrated some of the distinct limitations with the literature attempting to link American defence expenditures to the functioning of the American domestic economy. For instance, in the case of Oatley's model, his generalization drowns out what is actually important in each event. In addition to this, and far more significantly, my analysis has attempted to demonstrate two interrelated points. Firstly, that obtaining measurements regarding the relationships between these variables is extremely difficult. Different measurements and estimators of the same phenomena, small effect sizes, and simultaneity are among some of the factors which contribute to mitigate our capacity to take unbiased statistical measurements. Secondly, and far more fundamentally, there is structural instability in the relationships between the main variables, the result of complexity and non-stationarity. This problem being what it is, generalizability is very limited, circumscribing certain forms of analysis. In this sense, defense spending is such a small economic process - relative to the others - that accurate isolation of linkages, as well as significant effect sizes, will be made incredibly difficult.

# Chapter 4 - Proposed International Economic Benefits

Using new data and more powerful methodologies, this chapter shows that a relationship between American strategic decisions and economic inflows can be established, albeit with tentative effect sizes. I do this by collecting new data for reanalysis and through subjecting existing research findings to more rigorous appraisals. This reanalysis also shows that the strength of the relationship is sensitive to data and model choices, which has important implications that I discuss in the conclusion. Through this process, I demonstrate some methods which can be used across the literature on this topic in order to assess statistical relationships whilst also evaluating the robustness of the results generated. I begin by exploring the main geoeconomic favoritism arguments before turning to those causal pathways associated with geopolitical favoritism. In the final section I then use these results to inform a discussion over the operationalization of strategic factors as variables.

Throughout this chapter I explore arguments attempting to link American military strategy to beneficial economic outcomes. There are two broad arguments animating this research area, one that has been termed 'geopolitical favoritism' and the other 'geoeconomic favoritism'. Geopolitical favoritism describes situations in which security subordinate states transfer resources to the hegemon where they would not have done so otherwise, whereas geoeconomic favoritism refers to the situation in which the United States attracts greater levels of private capital because of its perceived safety and strength.<sup>315</sup> In both cases, the hypotheses in question posit a connection between some element of American strategy and capital flows into US economic and financial markets either through official transfers or private flows. Driving this research is concern over the rising costs of sustaining US military primacy in a world in which its

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<sup>315</sup> Daniel Drezner, "Military Primacy Doesn't Pay (Nearly As Much As You Think)" *International Security* 37:3 (2012/2013) pp, 58-62

economic power has been relatively degraded.<sup>316</sup> That is, if American military might generates forms of economic benefit that offset some degree of its cost then simple retrenchment strategies may not in fact not produce the fiscal savings they promise.<sup>317</sup> In short, identifying a positive economic effect would isolate a ‘multiplier effect’ that may significantly undermine the fiscal rationale for reducing America's security commitments. It is in relation to this that quantitative research pertaining to economic and political externalities generated by specific American strategies promises to add formal rigour to grand strategic research and so help settle pressing problems.

## Geoeconomic Favoritism

Analysis of ‘geoeconomic favouritism’ has taken precedent in these debates due to the fact that data on official transfers is widely available and has been largely, albeit not conclusively, compiled. Currently, scholarship has concentrated on two variants of geoeconomic favoritism. The first concerns the propensity for American military victories to influence foreign financial inflows into its macroeconomy,<sup>318</sup> whereas the second suggests that US military primacy helps attract systematically higher levels of foreign direct investment (FDI).<sup>319</sup> While most prominent advocates of America’s current grand strategy focus on the more general system creating and preserving role of American military commitments,<sup>320</sup> due to lack of data these pathways have proved difficult to isolate empirically. Because of this, these hypotheses pertaining to geoeconomic favouritism should permit researchers the possibility to test related hypotheses on data with greater variation. In particular, the analysis of how American military victories influences inflows into US financial markets permits variation in the dependent and independent variables. As I shall show later in this chapter, this is something that is restricted with the second

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<sup>316</sup> See Barry Posen, *Restraint: A New Foundation for U.S. Grand Strategy* (Ithaca: Cornell University Press, 2014)

<sup>317</sup> Stephen Brooks & William Wohlforth, *America Abroad. The United States’ Global Role In The 21st Century* (Oxford: Oxford University Press, 2016)

<sup>318</sup> Norrlof, *America’s Global Advantage*, Chapter 6

<sup>319</sup> Richard Maass *et al.* “Correspondence: The Profitability of Primacy” *International Security* 38:4 (2014) pp, 188-198

<sup>320</sup> The White House, “National Security Strategy” February 2015. p, 23.

[https://www.whitehouse.gov/sites/default/files/docs/2015\\_national\\_security\\_strategy.pdf](https://www.whitehouse.gov/sites/default/files/docs/2015_national_security_strategy.pdf) ; Stephen Brooks *et al.* “Don’t Come Home, America: The Case Against Retrenchment” *International Security* 37:3 (2012/13) pp, 7-51

hypothesis regarding FDI.

An important claim in this literature suggests that

“American military might has facilitated America’s capital intake. Funds have more readily flowed to the United States when she has been on the winning side of a military contest and have conversely dried up when she has been on the losing side of a military contest.”<sup>321</sup>

Whilst this assertion is not directly linked to military primacy or defense outlays in and of themselves, it is nonetheless prescriptive, if true, of the influence that American military force may have upon global economic interactions.

Whilst the causal logic underpinning the argument is somewhat vague, Norrlof makes mention of the fact that “the United States has collected a huge security premium by capitalizing on the ability to secure its home base both militarily and legally.”<sup>322</sup> Implying the rather intuitive, yet limited, notion that some level of military capacity is needed to assure the stability of a state and the safety of the investments therein. Because of this, the relationship that is then drawn between military victories and financial inflows remains somewhat unclear. Does winning a war or military engagement somehow demonstrate domestic stability or security? And if so, why would a military victory indicate to investors that they could expect a safer or higher return than in another comparable market? There isn’t much answer to this.

Norrlof’s dataset consists of annual observations, detailing a binary yes/no for a year in which a military victory did or did not occur. In addition to this, and central to the argument, the dataset also records the ‘sign’ of financial inflows for each year - that is, whether financial inflows were positive or negative. The intuition here, understandably, is to link years in which there was a victory to positive financial inflows in the next year. The rationale behind lag selection, however,

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<sup>321</sup> Norrlof, *America’s Global Advantage*, 171

<sup>322</sup> Norrlof, *America’s Global Advantage*, 172



is left unaddressed. While this is not ideal, this is common practice in time series forecasting, and the suitability of a such modelling can nonetheless be assessed through forecast and robustness testing. Norrlof gets her data on foreign financial inflows from the BEA, and creates her own dataset of militarized military disputes, recording their outcomes, from a combination of Correlates of War (CoW) data and reporting by the *Economist*.<sup>323</sup> Regarding the definition of a 'win', she has the following to say,

“Although there is bound to be some ambiguity about what counts as a ‘decisive’ win, I have tried to narrow the scope of disagreement by relying on the Correlates of War (COW) database whenever possible.”<sup>324</sup>

The model maps the basic correlation between the two variables, expressed as a ratio rather than a coefficient. Specifically, it is claimed that “in 77 percent of the COW cases, military successes are positively correlated with reduced financial flows, and military defeats positively correlated with reduced financial flows.”<sup>325</sup>

Seventy seven percent, as I demonstrate below, is a rather strong correlation between the two variables, but for a number of reasons I have significant concerns about this model. The first point, reiterated from earlier, is that lag selection has not been fully addressed in either theoretical or empirical terms. That is, we do not know how sensitive the model is to choices in lag structure, nor much about the causal mechanism at play. While we can somewhat circumvent the need for theoretical modelling by focusing on model performance, this too has not currently been addressed which leads to questions of the resolution of the data, in this case annual. Annual data doesn't give us very much information about how the series in question has moved, and therefore responded, to stimuli. All we can ascertain from it is the sign and magnitude for the year, which drastically curtails our ability to test the model's predictive capacity and its statistical power. Finally, and as a consequence of these issues, no information is or can be made available

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<sup>323</sup> Norrlof, *America's Global Advantage*, 173

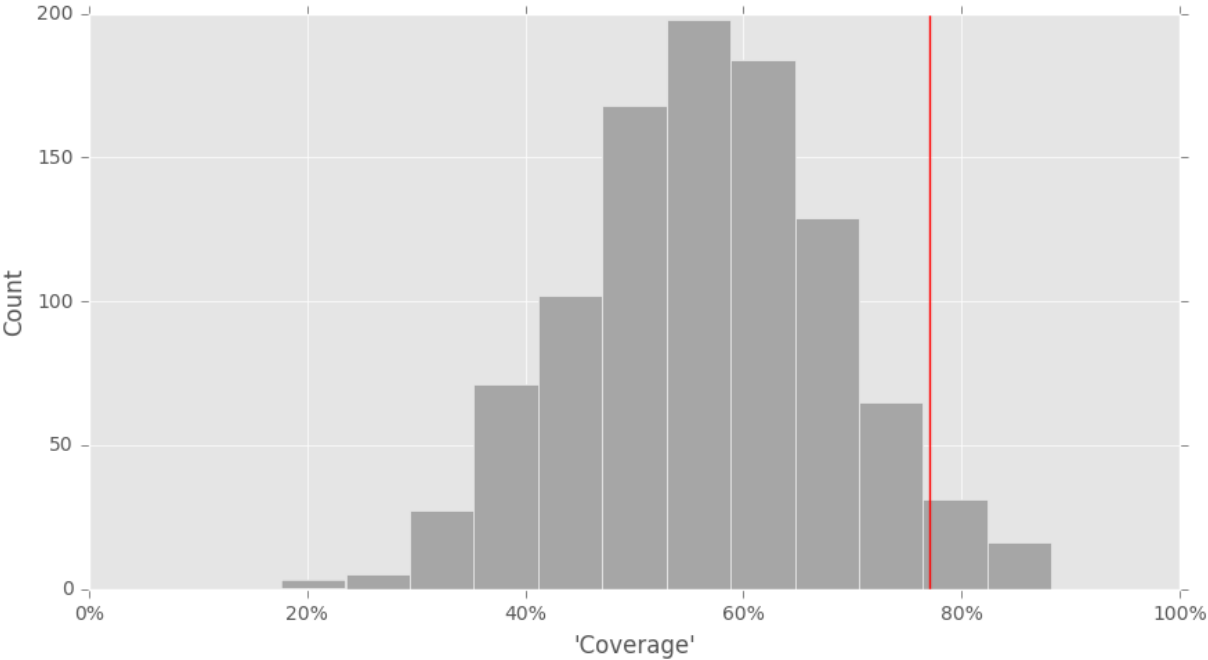
<sup>324</sup> Norrlof, *America's Global Advantage*, 173

<sup>325</sup> Norrlof, *America's Global Advantage*, 179

on the relative importance of military victories in explaining financial inflows as compared to other factors. Therefore for scholars to be confident that a robust relationship exists between these variables these concerns need first be addressed.

To see why this is so pertinent, we need only see how ‘fine-tuned’ the model is to see that only small changes in specification can drastically change the results. For example, we can back out a distribution of values under the null hypothesis with a ‘permutation test’ to get a measure for how significant the correlation found by Norrlof is. By randomly generating sequences of ones and zeros and then testing if they match up with the dependent variable, we can get an understanding of how sensitive the result is to this particular coding of ‘victories’ and this specific lag structure (see Appendix 4:1). In figure 29 I display the results of a thousand runs of this test, in this case what I term ‘coverage’, that being the ratio of the simulated series which match up with Norrlof's financial inflows data.

**Figure 29 – Permutation Tests of Norrlof's Data**



As we can see in the above, just through random simulation alone we can achieve rather respectable 'coverage' rates. Despite this, Norloff's specific result (marked in red) can certainly be deemed 'significant' in that the value for the empirical cumulative distribution function (ECDF) at this point marked as 0.98, what would equivalently be within the bounds of a 0.05 p-value. Yet, this also implies potential sensitivity to the specification of the model in that this result is dependent on a certain coding of victories and a specific lag selection, essentially posing a 'fine tuning' problem, and begging questions as to forecast performance and robustness. So is it possible to improve on this?

### ***Do Financial Inflows Correlate with Military Victories?***

To more robustly evaluate the connection between financial inflows and American military victories I have collected quarterly data on US financial inflows data from the Federal Reserve Economic Database (FRED) from the first quarter of 1979 up until the first quarter of 2007. The reason that the model is not extended to new data is that the original coding was rather unique and the data set used by Norrlof ends in 2007. Moreover, the underlying dataset involves a rather larger set of observations than Norrlof accounts for, with at least 84 recorded within the timeframe she records 13.<sup>326</sup> This implies that there could be a wide range of differing indices of military victories according to the magnitude of event a researcher considers important enough to include - a source of significant potential bias. This should further remind us of issues regarding 'fine tuning' mentioned earlier. Despite this, to enable a fairer but more rigorous assessment of the original victories dataset I have nonetheless chosen to use the original coding which can be converted to this greater level of granularity with only minimum modification, which will help retain comparability between the results. That is insofar as the victory can be recorded for specific quarter rather than a specific year, which is more in keeping with the original coding which is detailed to the month and day. If there is a connection an analysis of this more granular

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<sup>326</sup> The Correlates of War Project, "MID-level data and documents - MIDB\_4.01" Militarized Interstate Disputes (v4.1)  
<http://cow.dss.ucdavis.edu/data-sets/MIDs>

data should permit us an opportunity to detect a significant difference in the relevant time series between periods in which there are victories and those in where there are not.

I choose to estimate an ARMA (AutoRegressive-Moving Average) model for this process, a powerful and utilitarian method which will permit testing of broad range of facets of the data and their interdependencies (please see Appendix 4:2 for details). In particular, ARMA modelling will tell us if there is any granger causality between the variables in question, the magnitude of the relationship, and the variables in contribution it makes to the model's forecast performance. I begin by fitting an ARMA model to univariate inflows data that has been logged and converted to period-to-period percentage changes, removing time trend and heteroscedasticity in variance. After this initial modeling the a model is re-estimated with the military victories dataset included as an exogenous variable. Autocorrelation and partial autocorrelation functions indicate that an MA(1) model is a good initial candidate, removing major autocorrelation from the model's residuals. Moreover, an MA(1) model produces an optimal fit compared to other specifications, as shown in table 12. I proceed to model the military victories variable in a similar manner, relying on information criteria to choose the optimal lag length, displayed in the lower section of table 1. However, as shown in column 4, lag length specification demonstrates sensitivity to sign, magnitude and significance of the coefficients.

**Table 12 – US Financial Inflows and Military Victories, Parameter Search**

Specification/ Lag length	AICc	BIC	Mil. Vic. Coefficient
ARMA(0,1)	-399.92	-391.87	
ARMA(1,0)	-374.45	-366.41	
ARMA(1,1)	-397.82	-387.17	
ARMA(1,2)	-395.72	-382.50	
ARMA(2,1)	-396.17	-382.95	
ARMA(2,2)	-394.05	-378.31	
Lag 1	-393.89	-383.28	0.00 (0.01)
Lag 2	-388.57	-378.00	0.00 (0.01)
Lag 3	-385.06	-374.53	0.00 (0.01)
Lag 4	-382.50	-372.00	-0.01 (0.011)

More importantly, as the information criteria results suggest, the model performance drops with the inclusion of the variable. As the coefficients allude to, this is in response to poor explanatory power and the punishment of additional parameters by the information criteria calculations. I undertake further subset testing in an attempt to corroborate this. However, due to the limitations of the military victories index, we cannot extend the model to new data. Instead the original dataset is split 70:30 into training and test sets, with the model fit on the former and tested on the latter.

**Table 13 - US Financial Inflows and Military Victories, Model Fit**

	Trained Model	Test Model	Excluded Test Model
MA(1)	-0.80*** (0.07)	-0.80*** (0.07)	-0.80*** (0.07)
Mil. Vic.	0.00 (0.01)	0.00 (0.01)	
AICc		-97.03	-97.18
BIC		-96.36	-96.08
RMSE		0.052	0.053

As table 13 communicates, the inclusion of the military victory variable is neither significant nor is the coefficient of any magnitude, furthermore it fails to improve the forecast performance in any significant way.

However, the above tests have attempted to explore a generalized relationship between the variables, but what about specific cases? As mentioned earlier, it is likely that there is a 'category mistake' involved in analysing military victories as a generic whole, that is insofar as the lumping together of a wide range of conflicts into a generic category for the analysis of the influence of a 'victory' on US financial inflows and markets may be misleading. In turn, this may help to explain why the model above is not robust to more rigorous forecast performance testing. For example, as I explore below, conflicts that may have global economic implications are more likely to influence financial market performance than more minor conflicts, inviting an investigation of these dynamics - it is for this reason that I demarcate between conflicts which are economically critical and those which are not. What does the data show?

## **Economically Critical Conflicts and Financial Inflows**

To help develop the more systemic elements of American primacy, I build upon ‘macro-structuring’ arguments developed by Brooks *et al* by introducing a disaggregation of international conflict between ‘economically critical’ conflict and non-economically critical conflict. These are major interstate wars that occur in regions that hold critical importance to the global economy either through their strategic importance within global financial or production networks or because of their possession of resources considered vital to the advanced economies. Examples of the former would be major interstate war in Western Europe, North America or East Asia. Examples of the latter would be significant interstate conflict in major oil producing regions. I suggest that analyzing the response of financial market participants to conflicts that are deemed critical to the global economy provides an opportunity to evaluate the ‘core logics’ of systems defense and maintenance associated with US military primacy. If there is a positive economic effect associated with military primacy we should be able to detect this throughout periods in which systemic logics are theorized to be in operation. This stands in important contrast to much of the current literature which attempts to isolate empirical effects in economic metrics which do not invoke core systemic logics.

Importantly, analyzing investments also helps alleviate the ‘cheap talk’ problem by examining what market actors actually value instead of what they *say* they value through the investments and bets they make. This data helps explore how major stakeholders respond to the threat and resolution of economically critical conflicts in which US power is involved. By doing so we can evaluate the expectations of these actors leading up to the conflicts in question or how the ‘value’ of the state or region in question is perceived. Likewise, isolating and examining these conflicts can also shed light on the importance of rapid victories or overwhelming military power as opposed to victory in and of itself. This is an important difference. Because financial communities are generally adverse to conflict due to a “basic disposition in favour of macroeconomic stability”,<sup>327</sup> the speed and completeness of victory will likely be important. For example, given

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<sup>327</sup> Jonathan Kirshner, *Appeasing Bankers: Financial Caution on the Road to War* (Princeton: Princeton University Press, 2007) p, 9

financial communities are generally pre-disposed to be conflict adverse, it is therefore likely that when a conflict does or is certain to occur they would (on average) prefer that the conflict is concluded both quickly and in their favour. In turn, this provides an opportunity to examine how overwhelming US military advantages factor in to market participant's investment decisions.

Importantly, my claim is not that this analysis provides a specific 'sum' which offsets the costs of military primacy. But rather that it allows an empirical assessment of how military primacy interacts with global economic activity more generally. As discussed earlier, the core logics associated with military primacy are systemic in nature rather than specific, and so the more important effects are likely to be indirect and their assessment imprecise. The two major indices assessed are stock market indexes and crude oil futures markets. The reason for this is that stock market indexes give us an accessible way of quantifiably identifying market sentiment, whereas analysis of oil futures allows us to analyze market perception of how disruptive they deem the conflict likely to be. This is because futures contracts embody average market sentiment of future price levels and therefore reveal how events impact upon the market. Consequently, in both cases we can provide some empirical measure of how major stakeholders reacted to before, during, and after conflict.

Analysis of measures such as the dollar index or US treasury yields are omitted due to the ambiguity of their movements. For example, declining treasury yields may result from investors seeking safe assets during market turmoil, yet rising yields may result from investors diversifying out of bonds back in to stocks when market sentiment picks up again. As a result, both signals could be deemed 'beneficial' depending on context, making quantitative evaluation difficult and the results less clear and intuitive. Likewise, a similar mechanism is at play in currency markets whereby risk appetite heavily influences investment behavior, and what relative currency value is considered beneficial is highly subject to context. Take China, a state that spent a large part of the first few decades of the 21<sup>st</sup> century targeting an exchange rate which actively sought to undervalue the renminbi with respect to the dollar. Consequently, movements in these indices are less informative to our analysis than the clearer cut indicators we have settled on. In terms



of case selection, the only conflicts involving the United States in the post-Cold War period (post Malta Summit) that satisfy this criteria are the First and Second Gulf Wars. This gives two cases to examine, and allows conflicts to be subsetting in order to examine quantitatively if there is a difference in market response to those deemed 'critical' and those deemed 'non-critical'.

### **War and the Stock Market**

The George H. W. Bush administration was unequivocal as to the threat the Iraqi invasion of Kuwait posed to American and international economic activity. In now declassified documents, then President Bush consistently highlighted the economic threats of Iraqi action and the necessity for American and allied military power to assuage this. For example, in a National Security Directive dated August 20th 1990, the President clearly outlined how the United States, "as a result of the current crisis, could face a major threat to its economy." Continuing to note that "much of the world is even more dependent on imported oil and more vulnerable to Iraqi threats."<sup>328</sup> By the eve of Operation Desert Storm this logic had become even clearer. In the first line of National Security Directive 54, dated January 15 1991, the President declared that "access to Persian Gulf oil and the security of key friendly states in the area are vital to U.S. national security."<sup>329</sup> With initial U.S. military planning emphasizing the protection of Saudi oil facilities and ports rather than population centers.<sup>330</sup>

However, this perception of Saddam's Iraq as a regionally destabilizing force failed to be mollified by the decimation of Iraq's military forces and weapons programmes in the First Gulf War. Indeed, regime change in one form or another was widely discussed and analysed soon after the

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<sup>328</sup> William Burr and Jeffrey Richelson, eds. "Document 2: George Bush, *National Security Directive 45, U.S. Policy in Response to the Iraqi Invasion of Kuwait*, August 20, 1990." National Security Archive Electronic Briefing Book No. 39. January 17, 2001

<sup>329</sup> William Burr and Jeffrey Richelson, eds. "Document 4: George Bush, *National Security Directive 54, Responding to Iraqi Aggression in the Gulf*, January 15, 1991." National Security Archive Electronic Briefing Book No. 39. January 17, 2001

<sup>330</sup> William Burr and Jeffrey Richelson, eds. "Document 6: United States Central Command, *Operation Desert Shield/Desert Storm*, July 11, 1991." National Security Archive Electronic Briefing Book No. 39. January 17, 2001. p, 7

first conflict, being formally codified by President Clinton in the Iraq Liberation Act of 1998. More importantly, it is evident that concerns over weapons of mass destruction (WMD) were only a partial factor in the decision for war. A memorandum from the British Embassy in Washington, dated March of 2002, details how then Deputy Secretary of Defense, Paul Wolfowitz, “took a slightly different position from other in the [U.S.] Administration, who were focussed on Saddam’s capacity to develop weapons of mass destruction.” Instead Wolfowitz reportedly “thought it indispensable to spell out in detail Saddam’s barbarism.”<sup>331</sup> This is interesting for a number of reasons, but particularly as it alludes to the instrumental use of the WMD threat to achieve other aims. Indeed, what is abundantly clear is that it was Saddam’s Iraq, with conventional or unconventional weapons, which was deemed a threat to U.S. security interests in the region. More importantly for our argument however, and regardless of the motivations of the antagonists, major interstate war at the heart of the world’s primary oil producing region had the latent potential to cause severe disruption to global economic and financial markets in the event that military objectives were not readily achieved.<sup>332</sup> How did financial markets react to these economically critical conflicts?

I explore the S&P 500 index, a stock market index recording the performance of 500 of the United States’ largest, most important companies. In the first instance I use daily data from 1985 onwards, allowing the analysis of over 8000 observations including the two aforementioned conflicts. Examining this index for an effect should inform the question over the economic influence of American force posture decisions insofar as an analysis of changes in the index may provide evidence of either increased/decreased private confidence in U.S. financial markets and/or increased/decreased inflows into them. For example, a financial market rally occurs because of increased inflows into the market’s constituent stocks or derivatives, increasing prices and therefore the level of the index itself. If the given military victories are to have had a

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<sup>331</sup> John Prados and Christopher Ames, eds. “Document 6: United Kingdom, Washington Embassy, Memorandum, Christopher Meyer-David Manning, “Iraq and Afghanistan, Conversation with Wolfowitz,” March 18, 2002.” National Security Archive Electronic Briefing Book No. 328. October 1, 2010.

<sup>332</sup> For more analysis on how Saddam Hussein’s attempt at regional hegemony was seen as a direct threat to the global economy see H. W. Brands, ‘George Bush and the Gulf War of 1991’, *Presidential Studies Quarterly*, vol. 34, no. 1, pp. 113–131, Mar. 2004.

perceptible positive effect on the indices then we should expect that the average increase when victory is priced in should be higher than the unconditional average.

In both cases I investigate the time period around and after victory. In the case of the First Gulf War, the air campaign begun in late January of 1991 demonstrating American superiority in very short order, indicating February as a strong candidate for analysis. Likewise, it was rapidly apparent in the Second Gulf War that American and coalition armed forces far outclassed their opponents very early on. The campaign began in late March, quickly capturing major oil fields and routing much of the Iraqi military within three weeks, indicating April 2003 as a candidate for analysis. As an exploratory evaluation of the data I assess whether these victories actually resulted in additional inflows into U.S. financial markets through comparing whether month on month increases in the S&P 500 were greater after markets 'price in' the outcome of these events than on average over the entire sample. To do this I compare the unconditional median increase in the logged S&P 500 series between the period 1985 and 2017 with increases from when victory is 'priced in' at one month and three month time horizons. The median is used as a measurement of central tendency due to the heavy tails of the S&P 500 returns distribution, which exhibits significant kurtosis and negative skew.

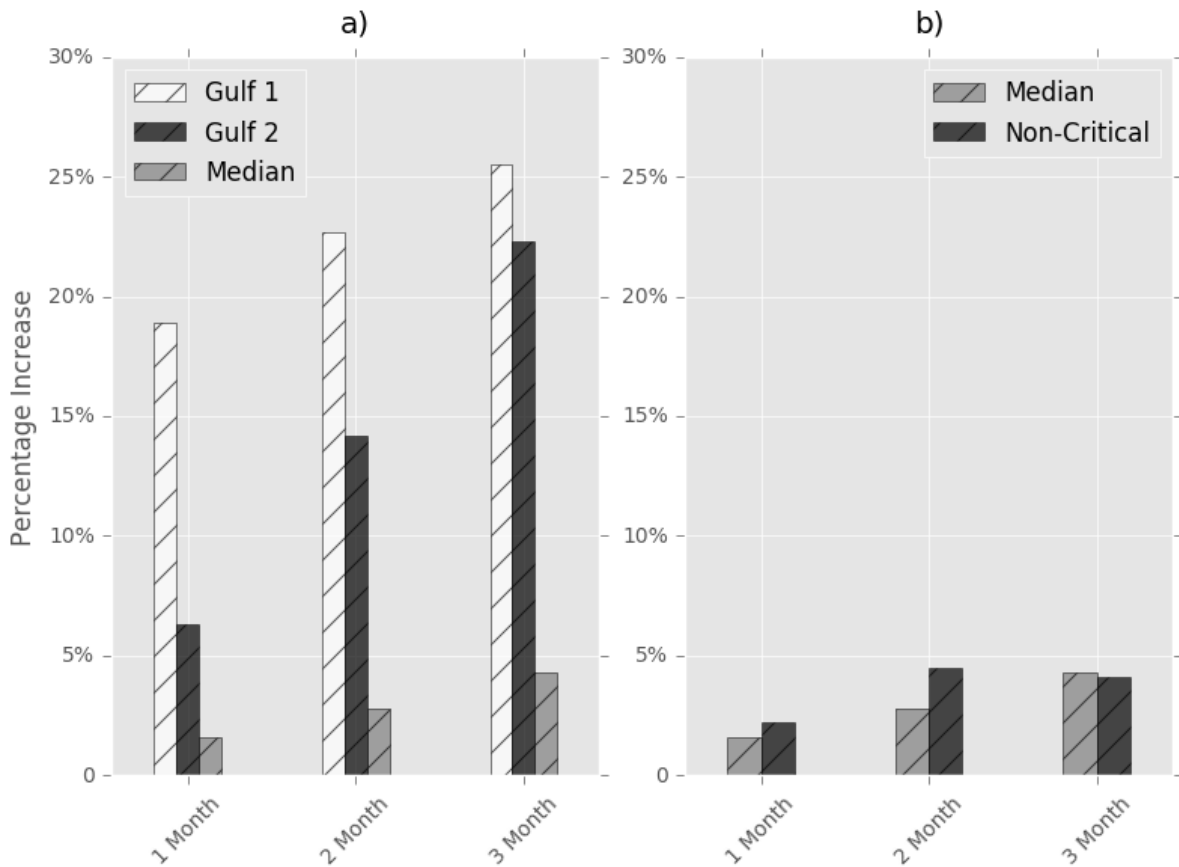
Panel 'a' of figure 30 displays one two, and three month changes in the S&P 500 for the First and Second Gulf Wars, using the month stated above as the base date. As it demonstrates, all averages were considerably higher after both Gulf Wars. Indeed, when the full empirical distribution of such month on month increases is backed out, we can see that in both cases all averages were within the upper ten percent of returns seen throughout the 30 year sampling period.<sup>333</sup> A proviso to this is that the magnitude of these events and their persistence is hard to measure exactly, particularly given the poor predictability of the macroeconomy more broadly.<sup>334</sup>

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<sup>333</sup> Please see appendix 3 for details.

<sup>334</sup> Board of Governors of the Federal Reserve System, "Updated Historical Forecast Errors" Division of Research and Statistics. April 98th, 2014. <https://www.federalreserve.gov/foia/files/20140409-historical-forecast-errors.pdf> ; David Hendry and Grayham Mizon, "Unpredictability in economic analysis, econometric modeling and forecasting" *Journal of Econometrics* 182 (2014) pp, 186-195

**Figure 30 – Changes in the S&P500 and US Conflicts**



In addition, we also display the averaged one, two, and three month increases for a range of ‘non-economically critical’ conflicts (smaller scale regional conflicts that have less to no impact on the global economy as a whole) in the post-Cold War period specifically; Bosnia, Kosovo, Afghanistan, and Libya. As we can see in panel b, the increases are either barely distinguishable or indistinguishable from the median return. Running this analysis on Dow Jones Industrial Index (DJIA) data produced similar results. This is perhaps unsurprising given both are weighted indices of major stocks in the United States, intended to be representative of the range of companies across the economy. The difference between the two relates to the number of stocks that are tracked (30 for the DJIA and 500 for the S&P 500) and different weighting processes. The above provides initial support for our decision to disaggregate the conflicts, inviting further statistical analysis.

In order to ascertain whether these conflicts register statistically significant increases in S&P 500 activity I estimate an ARMA model for the mean with a generalized autoregressive conditional heteroskedasticity (GARCH) model for the error variance. In the literature on financial time series, models of financial market returns are mainly based on such autoregressive models and most often without the types of control variables found in political science (Tsay, 2010). The reason for this is that these models focus on forecast performance, not quasi-causal explication. Likewise, in our case, we only wish to see whether stock market returns throughout the conflict in question were significantly higher than the baseline, leaving the tracing of causal mechanisms to qualitative investigation in a later section. Nonetheless, to adhere more closely with scholarship on international politics I also estimate a second model with control variables, including lagged oil prices, treasury yields, and changes in the dollar index. Not only do these cover major financial indicators, but more conventional measures such as GDP are not available at the required frequencies. Finally we estimate a third model with our military victories variable added exogenously. In table 14, we display the results of baseline model in the first column, a control model in the second, and the model with our exogenous variable in the third. The order of the ARMA-GARCH terms were determined by a cross-validation algorithm to reduce the chance of overfitting the model.

**Table 14 - Changes in the S&P500 and US Critical Conflicts, Model Fit**

	Baseline Model	Control Model	Full Model
ARMA Constant	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)
AR(1)	0.801*** (0.031)	1.626*** (0.009)	1.634*** (0.006)
AR(2)	-0.121*** (0.023)	-0.613*** (0.005)	-0.618*** (0.006)
AR(3)	0.000 (0.044)	-0.030*** (0.005)	-0.031*** (0.002)
MA(1)	-0.951*** (0.043)	-1.779*** (0.000)	-1.792*** (0.000)
MA(2)	0.166*** (0.024)	0.793*** (0.000)	0.805*** (0.000)
'Critical Conflicts' (lagged)			0.013*** (0.003)
Dollar Index (lagged)		-0.038 (0.054)	-0.041 (0.039)
3-month Treasury yield (lagged)		0.002*** (0.000)	0.002*** (0.000)
Brent price (lagged)		-0.008 (0.014)	-0.006 (0.013)
GARCH Constant		0.000 (0.000)	0.000 (0.000)
Alpha(1)	0.147 (0.119)	0.144** (0.066)	0.140** (0.057)
Beta(1)	0.836*** (0.026)	0.841*** (0.019)	0.845*** (0.011)
Log Likelihood	3979.21	3983.332	3985.465
AIC	-4.9789	-4.9803	-4.9818

\*Statistically significant at p <0.1, \*\*Statistically significant at p <0.05, \*\*\*Statistically significant at p <0.01  
Robust standard errors reported.

As we can see, not only is the coefficient for our conflict variable positive and significant, but it also increases the model's likelihood in raw terms as well as after accounting for the penalty term in the AIC. This demonstrates that US financial markets responded positively to successful military action in conflicts of economic importance. But what about the other major advanced economies? To test this I also re-run the model using stock market data from four other major advanced economies. As shown in column 2 of table 15, in three out of four of these cases we find a positive and significant effect on the state's main financial index. Corroborating the fact that *international* not just American economic actors reacted positively to military developments.

**Table 15 – Changes in the S&P500 and US Critical Conflicts, Model Extension**

State	'Critical Conflicts' Coefficient
United Kingdom	0.018*** (0.001)
France	0.012*** (0.002)
Germany	0.019*** (0.005)
Japan	0.004 (0.006)

\*Statistically significant at  $p < 0.1$ , \*\*Statistically significant at  $p < 0.05$ , \*\*\*Statistically significant at  $p < 0.01$   
Robust standard errors reported

In turn, this provides confirmatory evidence for our conjecture that only specific 'economically critical' conflicts would elicit noticeable, and positive, reactions from financial markets.

### **War and the Oil Market**

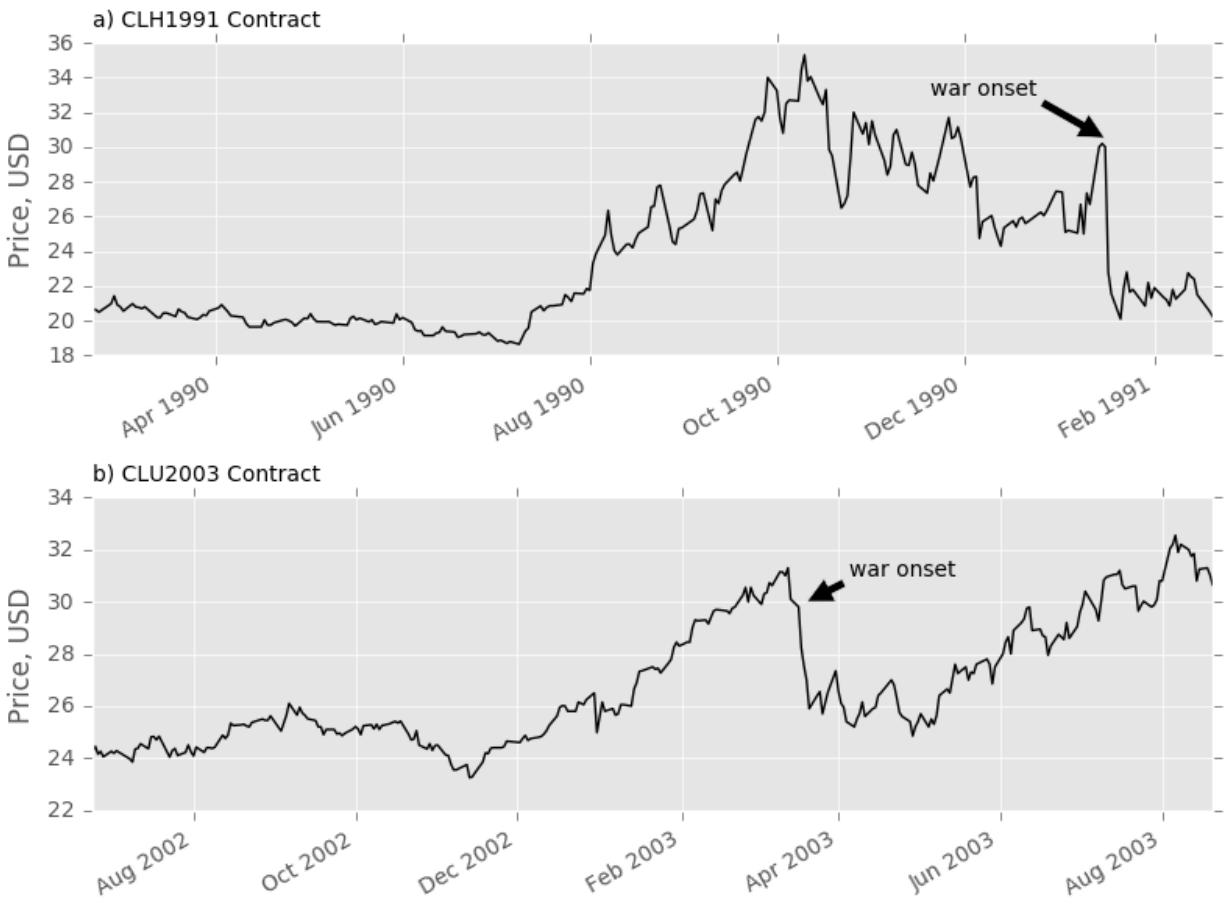
In addition to the general financial market rallies witnessed after these conflicts, the behavior of the oil markets throughout the various phases also merits attention. Oil markets are deep, liquid, and trade a wide array of assets which can be easily accessed for analysis. In particular, futures

contracts provide an accessible way of monitoring market sentiment over a range of time horizons, providing dynamic information on market perceptions of price changes and are therefore capable of providing information on market responses to specific events. Analysis of which can therefore offer information on market's perception of potential disruption to supply and expectations of future market developments. More importantly, analysis of these contracts can be combined with actual investments made after the conflict to paint a fuller picture of the threats and opportunities related to the risk and resolution of the conflict in question. In short, if there is a systemic logic to US military primacy we should be able to observe it here.

In keeping with expectations, the lead up to these conflicts saw rather steep increases in oil prices, reflecting the obvious fear of imminent or further supply disruptions. While there are a number of other events which placed further pressure on oil prices leading up to the conflicts in question, war in a key oil producing region has evident ramifications for production and disruption. However, what is more important is market perception to the commitment of military force on these occasions. Figure 31 displays the price of a representative futures contract around the time of the conflict, showing a sharp price decline immediately following conflict onset. This is important to observe as it relates to the onset of conflict rather than any individual event that may more specifically and concretely effected oil supply directly. The reason for this is observing an effect here allows us to parse between what could be merely attributed to the fortuitous unfolding of events and responses to the application of US military force.



**Figure 31 – Futures Prices, First and Second Gulf Wars**



In addition to this, analysis of futures contracts over a range of dates following the conflict shows that the market expected supply disruptions to be rather transient, with the data (see table 16) showing price declines swiftly after both conflicts. The reasons for this are difficult to isolate exactly, and are likely context dependent. But a large factor in the First Gulf War would be the fact that price increases associated with conflict had already been 'priced in', and further damage was likely to be limited. Consequently, the onset and alleviation of this conflict would likely only present an upside to production and distribution pressures. Likewise, the Second Gulf War was fought in full knowledge of US military superiority, particularly after a decade of damage to Iraq's military and economic capabilities, leading to expectations that the conflict would be over swiftly. One would presume this would lead to expectations that damages could be repaired in shorter time and that potential investments opportunities or liberalizing reforms could be implemented in a shorter time frame.

**Table 16 – Futures Contract Prices in the Months After Conflict**

Months After Conflict	Futures Price at Conflict Start Date (USD)	
	First Gulf War	Second Gulf War
Spot	21.48	28.62
1	22.79	28.81
2	24.95	28.00
3	20.30	27.60
4	19.50	27.30
5	19.40	27.00
6	19.25	26.90

To investigate these dynamics further, and to elaborate on the logics driving stock market rallies, in the next section I investigate in greater detail the posited causal mechanisms. In particular, the effects of victory and the events immediately following it in order to establish how and whether what is observed fits with the posited logics of key deep engagement theorists.

### ***Causal Pathways***

I suggest that the process associating victory in systemic conflicts to increased inflows into US financial markets is suggestive of the causal mechanisms described by advocates of primacy. Namely, through 1) preventing or eliminating interruptions to the stability of the international economic order, and 2) by helping to further embed the prevailing economic order post-conflict. I argue that a precondition for the first is military primacy. As is explained below, military superiority is a necessary condition for attempting to deter both major and minor regional powers from attempting to alter the status quo by force. This occurs because a credible capability to either defend and/or roll back offensive action raises the costs associated with potential military action. A caveat to this, as I explore below, is how credible this use of countervailing force is presumed to be. Primarily this regards whether forces are actually forward deployed in the region.

In this sense, military supremacy is important not just because it facilitates the defeat of a major regional state such as Iraq, which could be achieved (hypothetically, at least) with a lesser level of military capability, but because it may deter and defeat potential aggression in the first place. Indeed, after the First Gulf War the United States implemented a policy of 'dual containment' to maintain a favourable balance of power on the Gulf via a more direct, larger footprint than had been in place before the 1991 conflict.<sup>335</sup> Now, while it has been argued that "the light footprint would have been enough to deter Iraq if accompanied by a harder line from Washington,"<sup>336</sup> the salient point is that a footprint itself is indeed a prerequisite condition to deter. This manner of upholding the status quo is even more important when we consider threats of a potentially larger magnitude than the Iraq conflicts. For example, managing changing power dynamics in East Asia, mainly China's rapid and profound economic and military growth. Raising the costs of revision is an important component of negotiating the rise of a great power. Although, as many a historical example tells us, in itself is not a sufficient condition to maintain peace.

In addition to this, it is also apparent that military supremacy is important to economic actors in the way that it facilitates the 'swiftness' of victory. For example, as Drezner has argued, "financial markets are concerned with the minimization of risk", which leads to a general aversion toward conflict.<sup>337</sup> Indeed, as empirical analysis has demonstrated, "increases in war risk [has] caused considerable declines in Treasury yields and equity prices, a widening of corporate yield spreads, a fall in the dollar, and a rise in oil futures prices."<sup>338</sup> For these reasons, as Kirshner has documented, "financial communities within countries will be among the most cautious elements when it comes to waging war or supporting foreign policies that risk war."<sup>339</sup> Because of this, the removal of the threat of war, or its rapid conclusion, is likely to precipitate rallies in these depressed markets, a conjecture corroborated in figure 30. While this can be considered a

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<sup>335</sup> Anthony Lake, "Confronting Backlash States" *Foreign Affairs* 73:2 (1994) pp, 45-55.

<sup>336</sup> Joshua Rovner and Caitlin Talmadge, "Hegemony, Force Posture, and the Provision of Public Goods: The Once and Future Role of Outside Powers in Securing Persian Gulf Oil" *Security Studies* 23:3 (2014) p,571

<sup>337</sup> Drezner, "Military Primacy Doesn't Pay," 60

<sup>338</sup> Roberto Rigobon and Brian Sack, "The effects of war risk on US financial markets" *Journal of Banking and Finance* 29 (2005) p, 1770

<sup>339</sup> Kirshner, *Appeasing Bankers*, 9

caution against activist foreign policy it also alludes to the why and how American military primacy produces beneficial economic outcomes, also speaking to the reason that American victory elicits rallies in financial markets. A rapid and comprehensive victory can either limit much of the potential threat for economic dislocation or, if significant damage occurs, permit it to be repaired or alleviated more readily.

We can find extensive and granular evidence for financial markets acting in just this way leading up to and after the Second Gulf conflict. For example, research has shown that major financial indicators and economically important commodities are averse to changes in the perceived likelihood of a large war. Data on changes in financial markets in the lead up to the Second Gulf War indicates that increased war risk was negatively correlated with equity prices and positively correlated with oil prices.<sup>340</sup> Wolfers and Zitzewitz' analysis of derivatives pricing leading up to the onset of war shows that markets had priced in significant negative fallout from conflict in the case that the invasion did not proceed smoothly.<sup>341</sup> Such an analysis works by using the prices of derivatives at different strike prices (the price at which an option can be exercised) to give an indication as to the probability investors place on different outcomes in the market in question occurring at a given time.<sup>342</sup> Wolfers and Zitzewitz' paper then adjusted these probabilities for changes in the perceived probability of war, revealing different distributions according to this perceived level of risk. Understandably, higher levels of war risk were associated with a lower mean and higher kurtosis in the distribution in question,<sup>343</sup> implying that increased war risk significantly raised the perceived possibility of a substantial negative decrease in the S&P 500. In effect then, this analysis gives an insight into how market participants were seeking to insure against the threat of a substantially negative outcome, and by doing so allow us to get a sense of the value placed upon the successful resolution of this conflict.

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<sup>340</sup> Justin Wolfers and Eric Zitzewitz, "Using Markets to Inform Policy: The Case of the Iraq War" *Economica* 76:302 (2009) p,226 ; Andrew Leigh *et al.* "What do Financial Markets Think of War in Iraq" NBER Working Paper Series, Working Paper 9587. *National Bureau of Economic Research* (2003)

<sup>341</sup> Wolfers and Zitzewitz, "Using Markets to Inform Policy," pp, 234-236

<sup>342</sup> For an overview, see Allan Malz, "A Simple and Reliable Way to Compute Option-Based Risk\_neutral Distributions" Staff Report No. 677, Federal Reserve Bank of New York, June 2014.

[https://www.newyorkfed.org/medialibrary/media/research/staff\\_reports/sr677.pdf](https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr677.pdf)

<sup>343</sup> Wolfers and Zitzewitz, "Using Markets to Inform Policy," p, 236

In addition to this, American success in such economically critical conflicts may also permit an expansion of the extant international economic order. While the First Gulf War defended an ally against attack and so upheld the *status quo*, the Second Gulf War presented an opportunity to further expand the system. It was widely reported in the lead up to the war that Iraq was likely to have far greater oil reserves than the sizeable amounts that had already been proven,<sup>344</sup> and that were already under-producing due to economic sanctions and under exploration. Indeed, just prior to the conflict, *The Economist* noted that most major investment banks and think-tanks maintained that,

“...the likeliest scenario is a short, successful war. Oil prices would spike briefly at around \$40 a barrel, but then plunge as the war ends. In turn, share prices and the dollar will rally, and confidence will revive, spurring a strong economic recovery. Several economists reckon that a war might actually be good for the world economy: it will eliminate today's mood of uncertainty, boost government spending, and push oil prices lower in the medium term as new Iraqi production comes on stream.”<sup>345</sup>

Moreover, these investment banks (along with other financial market participants) ‘put their money where their mouth was’ and actually took positions in futures markets which were representative of the expectation that oil prices would quickly reverse any initial price increases before declining further in the longer term.<sup>346</sup>

These suspicions were confirmed after the invasion. Not only was it established that Iraq's oil reserves were far higher than previously thought, but only seventeen out of eighty oil fields were

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<sup>344</sup> Gal Luft, “How Much Oil Does Iraq Have?” *Brookings Institute*, May 12, 2003.  
<https://www.brookings.edu/research/how-much-oil-does-iraq-have/>

<sup>345</sup> “War and Iraq: The Economic Risks” *The Economist*, February 20th, 2003.  
<http://www.economist.com/node/1592210>

<sup>346</sup> Richard Anderson and Michelle Armesto, “Does Uncertainty about Oil Prices Slow Down the Economy?” *The Regional Economist*, October 2003. p, 12  
[https://www.stlouisfed.org/~media/Files/PDFs/publications/pub\\_assets/pdf/re/2003/d/oil\\_prices.pdf](https://www.stlouisfed.org/~media/Files/PDFs/publications/pub_assets/pdf/re/2003/d/oil_prices.pdf) ; Wolfers and Zitzewitz, “Using Markets to Inform Policy,” p, 233

sufficiently developed that implied room for substantial growth in production.<sup>347</sup> Since then Iraq's oil production has rapidly increased, reaching all time highs of four million barrels per day in mid-2016, and expected to increase further still.<sup>348</sup> Just as importantly, in keeping with the norms of the international economic order, Iraq's oil infrastructure was indeed 'internationalised'.<sup>349</sup> A brief investigation of major partners in Iraq's largest oil projects reveals a multiplicity of foreign investors. For example, the Rumaila field is operated by a consortium of Chinese, British and Iraqi firms,<sup>350</sup> whereas the West Qurna fields are run principally by Russian and American firms.<sup>351</sup> Both of these aspects of victory, the defense of the *status quo* and the extension of the contemporary order, are advantageous to investors, helping to explain the changes in market indices seen above.

With that said, as we can see, even within these instances of economically critical conflicts there is considerable scope for variation in the response of markets to victory. Nonetheless, such evidence helps us to appraise the core logics posited by leading deep engagement theorists, particularly as they pertain to the counterfactual regarding what would happen in the case of US retrenchment. One need only consider alternative outcomes to such conflicts to see that they risk actually closing off investment opportunities, or reversing and undermining the contemporary international political-economic environment. For example, the aforementioned internationalisation of the Iraqi oil sector was a consequence of it having been the United States who initiated and won that conflict, a reflection of its political-economic interests. However,

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<sup>347</sup> Lawrence Kumins, "Iraq Oil: Reserves, Production, and Potential Revenues" CRS Report for Congress, Congressional Research Service. April 13, 2005.  
<https://fas.org/sgp/crs/mideast/RS21626.pdf>

<sup>348</sup> U.S. Energy Information Administration, "Country Analysis Brief: Iraq" April 28, 2016.  
[https://www.eia.gov/beta/international/analysis\\_includes/countries\\_long/Iraq/iraq.pdf](https://www.eia.gov/beta/international/analysis_includes/countries_long/Iraq/iraq.pdf)

<sup>349</sup> Doug Stokes and Sam Raphael, *Global Energy Security and American Hegemony* (Baltimore: The Johns Hopkins University Press, 2010)

<sup>350</sup> Rumaila Operating Organisation, "Our Partners" <http://www.rumaila.iq/english/our-partners.php> ; British Petroleum, "Rumaila oilfield achieves 3 billion barrel production landmark," December 20th, 2016.  
<http://www.bp.com/en/global/corporate/media/press-releases/rumaila-oilfield-achieves-3-billion-barrel-production-landmark.html>

<sup>351</sup> Reuters Staff, "Iraq approves Statoil sale of oil field stake to Lukoil" *Reuters*, March 7, 2012.  
<https://af.reuters.com/article/commoditiesNews/idAFL5E8E714T20120307> ; Rania El Gamal and Aref Mohammed, "Exxon ups oil target for Iraq's West Qurna Phase 1" *Reuters*, November 28, 2010.  
<http://uk.reuters.com/article/us-iraq-oil-westqurna-interview-idUSTRE6AR1W520101128>

retrenchment proposes to encourage multipolarity, forcing current US allies to absorb the cost of their own defence. As Christopher Layne has noted, this is the exact inverse of contemporary strategy which requires that “the United States retains the primary responsibility for defending German and Japanese security interests both in the core and in the periphery” in turn this thereby “negates German and Japanese incentives to renationalize their foreign and security policies.”<sup>352</sup>

A good example would be NATO, without which there would be considerable pressure for European nations to construct independent defense capabilities. In turn, these capabilities would permit independent power projection based upon European rather than American interests. A similar logic applies to American strategic competitors, whose power projection capability and desire to engage in substantial foreign conflicts are constrained by forward deployed American strategic power. Considerable American forces are stationed in all of the globes most economically and politically important regions, therefore other forces wishing to intervene in these regions require permission or US acquiescence to operate. Not only would the absence of such implicit or explicit permission complicate or forestall operations in the region concerned, but potentially cause trouble nearer to home.<sup>353</sup> However, without such constraints foreign powers would be freer to operate in these regions and consequently shape post-conflict political and economic relationships in their own interests. Indeed, the extent of Chinese mercantilism already proves an issue within the contemporary international economic order, particularly China’s predilection toward corporate espionage and strategic trade policies.<sup>354</sup>

In short, American victories in conflicts of economic import not only only assuage market fears over disruption to economic activity but may also increase market sentiment by further entrenching and expanding economic norms favorable to investors. Correspondingly, America’s military preeminence also prevents other states from similarly promoting their own interests,

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<sup>352</sup> Christopher Layne, “From Preponderance to Offshore Balancing: America’s Future Grand Strategy” *International Security* 22:1 (1997) p, 96

<sup>353</sup> T.X. Hammes, “Offshore Control: A Proposed Strategy for an Unlikely Conflict” *Strategic Forum: National Defense University* No. 278, June 2012. pp, 1-14

<sup>354</sup> Wayne Morrison, “China-U.S. Trade Issues” *Congressional Research Service*, April 24, 2017. <https://fas.org/sgp/crs/row/RL33536.pdf>

which are likely to be far less 'positive-sum' than American preferences for open, and relatively free, international economic exchange.

### ***Does FDI correlate with 'military primacy'?***

In a similar style to Norrlof, Richard Maass has suggested that American military primacy has resulted in increased foreign direct investment inflows (FDI) since the end of the Cold War. Rather than focusing on how military victories may influence his given measure of financial inflows, Maass instead posits an argument pertaining to 'military primacy' in general, that is the position of the United States as the world's preeminent military power. Maass does not actually articulate a causal narrative for why this is the case, rather he instead suggests, in response to criticism, that "the burden is on Drezner [his interlocutor] to invalidate this correlation between primacy and FDI."<sup>355</sup> The evidence that Maass provides is limited to some basic descriptive statistics of American FDI inflows at different 'snapshots' just before the Cold War and throughout the period thereafter,

"Foreign direct investment (FDI) in the United States rose gradually during the Cold War to \$68 billion in 1989, but skyrocketed after the onset of unipolarity, growing to more than \$321 billion in 2000. From 2001 to 2003, it plummeted back to 1989 levels before rebounding to more than \$340 billion in 2007. Not only do these data show an explosion of FDI in the hegemon under unipolarity, but they also show FDI dropping after a homeland attack destabilized the domestic economy (September 11) but rebounding beyond previous levels during an episode of overseas adventurism (the Iraq War)."<sup>356</sup>

Notwithstanding the context of the claim, that is written in the *Correspondence* section of an issue of *International Security*, there are nonetheless some significant problems that I shall explore in due course.

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<sup>355</sup> Richard Maass *et al.* "Correspondence: The Profitability of Primacy" *International Security* 38:4 (2014) p,192

<sup>356</sup> Maass *et al.* "Correspondence: The Profitability of Primacy" 192



For instance, in order to confirm his hypothesis, Maass would need to illustrate that American FDI inflows are qualitatively discernible from increases in other nations FDI in the post-Cold War period. Luckily, this should be reasonably easy to achieve. Firstly, we would need establish that there was indeed a significant change in FDI inflows occurring - importantly - after the Cold War. This should be easily discernable from a graph scaling inflows as a percentage of GDP. Which, in itself, demonstrates an issue with the original claim in that it was in raw dollar amounts rather than scaled to a percentage of GDP. This matters because, as I mentioned in the last chapter, there are price level differences between the periods in question, not to mention growth in GDP to account for. For this reason, converting inflows into a percentage of GDP normalises across the years. Without this, the mean and variance of a series will expand as a function of time, making comparisons less and less relevant.<sup>357</sup>

Equally, if American military primacy was to generate specific financial benefits for the United States we would expect that American FDI inflows should be significantly larger than those of other states in the system. That is, once again, when scaled to size of GDP. The reason for this, is that without a significant relative difference we cannot be show that it is merely the size of the economy alone that is generating increased demand for investments. This, too, could presumably be achieved with some relatively simple statistical tools, in this case a 't-test' similar to those conducted earlier. Without this evidence, it would be difficult to justify the claim military primacy caused any additional inflows in the post-Cold War period, as all other states in the system experienced similar inflows. In short, there wouldn't be a correlation to explain in the first instance.

To test Maass' assertion I collected annual data on FDI inflows from 1970 up until 2014 from the United Nations Conference on Trade and Development (UNCTAD), expressed as a percentage of GDP to scale the flows proportionate to the economies in question. This series omits a number of important 'outliers', specifically,

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<sup>357</sup> For an informal proof see Tsay, *Analysis of Financial Time Series*,72-73

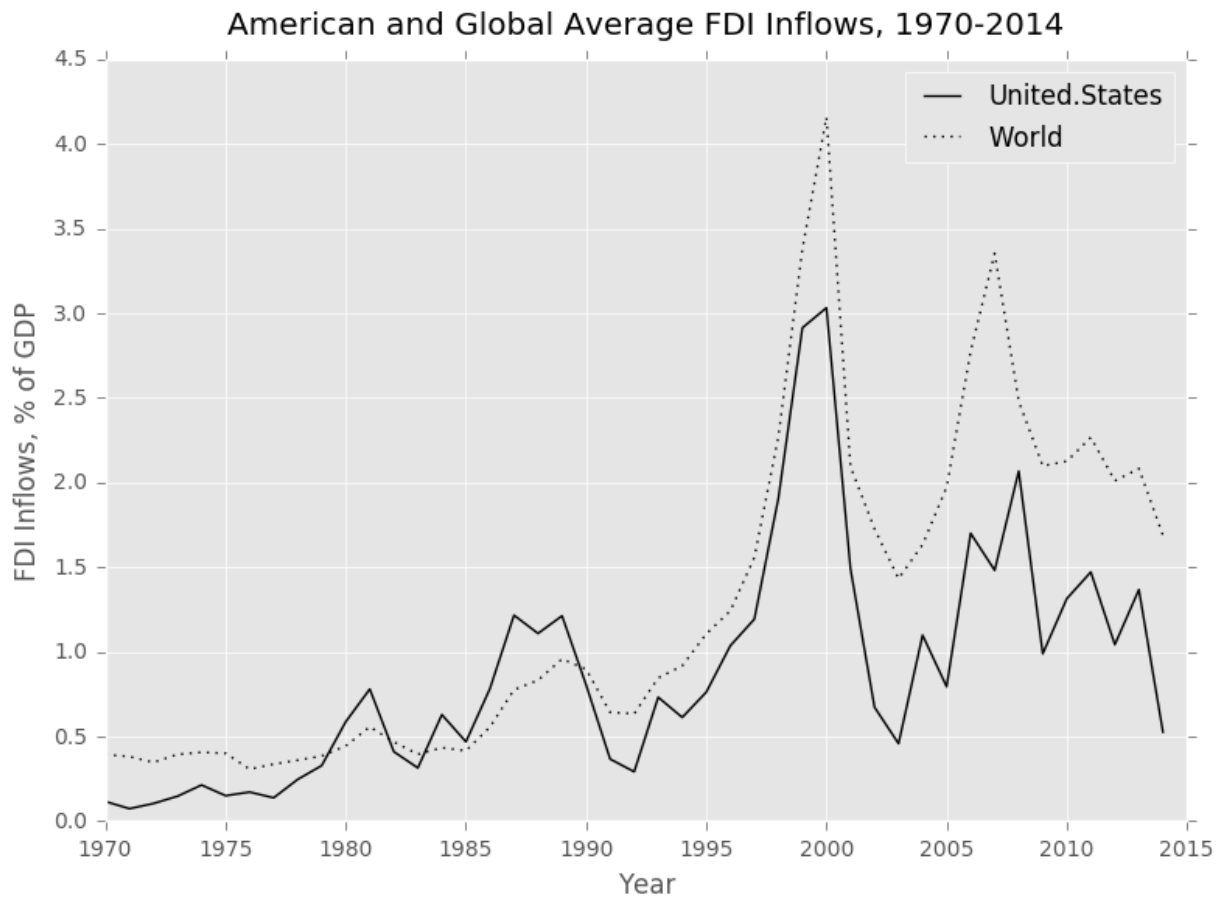
“the offshore financial centres in the Caribbean: Anguilla, Antigua and Barbuda, Aruba, the Bahamas, Barbados, the British Virgin Islands, the Cayman Islands, Curaçao, Dominica, Grenada, Montserrat, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Sint Maarten (Dutch part) and Turks and Caicos Islands.”<sup>358</sup>

The reason for this is that there are a number of economies (such as those listed) whose inflows are many times their GDP, often reflecting their role in facilitating tax avoidance. Because of this, their inclusion significantly skews the global ‘average’ FDI flows, making it all but useless for comparison. I display the data below,

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<sup>358</sup> United Nations, “Summary: Foreign direct investment” United Nations Conference on Trade and Development” <http://unctadstat.unctad.org/wds/TableViewer/summary.aspx>

**Figure 32 – FDI Inflows, 1970-2014**



As is clearly visible, American FDI flows are not disproportionate to the global average nor an average of major powers of this time frame, suggesting that there is not an anomaly to explain in the first instance. Furthermore, not only does the data not support the hypothesis, but nor do we have a causal narrative underpinning why and how we should see the posited effect. Because of this, it is difficult to support the proposition that FDI inflows map onto military primacy using the existing data.

## **Geopolitical Favoritism**

Another set of hypotheses exploring the relationship between American military strategy and international economic interactions has been termed 'geopolitical favoritism'. Geopolitical favoritism suggests that the United States "receives economic benefits from other states as a

quid pro quo for making their states secure.”<sup>359</sup> Therefore, instead of investigating the relationship between American military strategy and private financial inflows, as the geoeconomic hypotheses intended, geopolitical favoritism aims to assess if states in receipt of American security guarantees in some way or another ‘subsidise’ the United States in acknowledgment of this fact. As one would imagine, this could refer to a very wide number of different processes, requiring various methodological approaches. Likewise, some hypotheses are intuitively more plausible than others. For instance, we could investigate whether states in which US troops are stationed subsidise the United States for this, and what ways. Not only is it a rather intuitive question, but it is easily explored. All we would need to do is check the relevant documents.<sup>360</sup> Alternatively, we may believe that American military strategy decisions encourage monetary cooperation, or that security guarantees underwrite specific monetary arrangements themselves, such as ‘petrodollar recycling’. Implying the need for varying degrees of skepticism and different methodological approaches to validate the claims in question. In this section I focus on two main pathways. The first concerns ‘offset costs’ for basing and/or operations whereas the second focuses on the relationship between trade (and FDI) and alliances.

### *Basing and ‘Offset’ Costs*

One of the least novel forms of geopolitical favoritism, as well as widely documented, have been the payments and deals American allies have made with the United States with respect to the stationing of its forces on their territory. Understandably, and uncontroversially, if you wish another power to offer you protection, you likely have incentives to offer them concessions to do so. With that said, in practice this hasn’t been quite as simple as one may suspect. Indeed, Hubert Zimmermann’s comprehensive study of the negotiations between the United States/United Kingdom and Germany over reimbursing some of the costs associated with the deployments of troops on German soil throughout the Cold War provides important examples. The importance of the issue surrounded the fact that,

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<sup>359</sup> Richard Maass *et al.* “Correspondence: The Profitability of Primacy” *International Security* 38:4 (2014) p,199

<sup>360</sup> For example, see Committee on Armed Services, “Inquiry into U.S. Costs and Allied Contributions to Support the U.S. Military Presence Overseas” United States Senate. April 15, 2013.

“Military expenditures abroad, of which troop stationing was a major component, were a conspicuous negative factor in the British and the American balances of payments during this era.”<sup>361</sup>

Raising tensions between the countries committing to forward deploy troops in contested regions and those that hosted the, in this case Germany.

The animating tension in this particular case seemed to revolve around the legal grounding for the British and American requests for ‘offset payments’, with the German finance minister at the time, Dr Shaffer, declaring the request to be “quite unacceptable to the Federal Republic”, that “there was no legal basis for it, and it was open discrimination.”<sup>362</sup> This was particularly insofar as ‘offset payments’ had not been requested of other NATO member states. However, with the worsening of the Anglo-Saxon nations’ balance of payments, and their concerted insistence, this position changed within a year. After US Ambassador, James Conant, accused “the Germans of leaving it to others to pay for their defense” and the French and British Prime Minister’s appealing directly to the German Chancellor, ‘offset payments’ were successfully negotiated.<sup>363</sup> Whilst this issue was to be recurrent throughout the Cold War, with a number of heated exchanges, they were generally resolved. Indeed, “as long as it was not able to defend itself the Federal Republic saw the best guarantee of its survival in the specific security structure that emerged in 1955.”<sup>364</sup> Prompting concessions when this core interest came under serious threat.

However, to see why these negotiations may have been somewhat harder than we may have imagined it is apt to consider a few simple points. Firstly, to the states that pay for defence these payments reinforces a sense of ‘semi-sovereignty’ to their citizens, particularly in nations like Germany and Japan. Yet, more generally, and more importantly, threatening to remove troops from a forward defensive position due to disputes over offset payments brings strategic

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<sup>361</sup> Hubert Zimmermann, *Money and Security: Troops. Monetary Policy, and West Germany’s Relations with the United States and Britain, 1950-1971* (Washington: Publications of the German Historical Institute, 2002) p,5

<sup>362</sup> Zimmermann, *Money and Security*, 22-23

<sup>363</sup> Zimmermann, *Money and Security*, 34-35

<sup>364</sup> Zimmermann, *Money and Security*, 240

credibility into question. For instance, it would be hard to credibly suggest that an adversary that you are willing to defend a given nation or territory only to threaten to withdraw over a few billion dollars. Whilst these sums are not inconsequential, if something is truly of important strategic interest to a state, it wouldn't sacrifice it lightly by definition. Relatedly, to only offer protection to another state on condition of payment is not a strategic decision but a protection racket. In context to the Cold War, the containment of the Soviet Union was the overriding priority, *necessitating* some form of forward deployment. Thus complicating discussions over offset costs.

Likewise, in more recent times, Japan and South Korea have also paid the United States support funds to offset some of America's basing costs. Whilst the United States has long had disputes with Japan over defence expenditures, these particular costs involve payments regarding offsetting American force posture costs. Since 1978, Japan has paid offset costs in the form of the 'Facility Improvement Program' (FIP) and 'Special Measures Agreements' (SMA), paying some degree of staffing and utility costs for US bases on Japanese soil.<sup>365</sup> With the latest agreement committing the Japanese to fund 23,178 workers and pay an upper limit of ¥24.9 billion in utility costs, covering a projected 72% of American annual utilities costs of the period 2016-2020.<sup>366</sup> South Korea has a similar program which started in 1990, likewise known as 'Special Measures Agreements'. With most recent estimates suggesting that the Korean SMA "provides roughly 505 of the total non-personnel stationing costs for the U.S. troop presence."<sup>367</sup> With annual payments pegged to inflation from 2014.

A further, and final case, reflecting a similar logic concerns the burden sharing payments the US received for the First Gulf War. According to Andrew Bennett *et al* the United States paid out

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<sup>365</sup> Committee on Armed Services, "Inquiry into U.S. Costs and Allied Contributions to Support the U.S. Military Presence Overseas" United States Senate. April 15, 2013. pp. 41-45

<sup>366</sup> Ministry of Foreign Affairs of Japan, "Signing of the New Special Measures Agreement (SMA)" January 22, 2016. [http://www.mofa.go.jp/press/release/press3e\\_000056.html](http://www.mofa.go.jp/press/release/press3e_000056.html)

<sup>367</sup> Mark Manyin, "U.S.-South Korea Relations" *Congressional Research Service*. April 26, 2016. p,21 <http://www.fas.org/sgp/crs/row/R41481.pdf>

somewhere between \$35 and \$45 billion whilst receiving \$53.5 billion in allied contributions.<sup>368</sup> Yet this amount was only gained after “U.S. officials used their allies’ dependence to pressure them.” In particular, it appears Congress made some rather forceful moves to pressure certain allies. Specifically Japan,

“...unhappy with the extent of Japan’s contribution, in September the House voted 370 to 53 to pass an amendment, which did not become law, requiring Japan to pay all costs of U.S. troops stationed there (in Japan).”<sup>369</sup>

Once more, providing strong support for some form of political favoritism. Albeit, as suggested earlier, one that is neither controversial nor that revealing. That is, insofar as these funds contribute to offset certain strategic decisions rather than making them ‘pay’ *per se*.

#### *Does Trade (and FDI) Follow the Flag?*

A far more contested claim, and one that would provide evidence for a stronger political favoritism effect, is the hypothesis that security alliances may increase trade between the participants. As Drezner himself acknowledges, “statistical tests in the international political economy literature strongly suggest that trade follows the flag - that is, trade flows are likely to be higher within a security alliance than without one.”<sup>370</sup> Now, as one could imagine, this argument is likely to be highly historically contingent. As we know, for instance, during the period between the two World Wars the global trading system broke down into closed trading blocs. Themselves built around political and/or security relationships.<sup>371</sup> Likewise, severe geostrategic dislocation after the Cold War, combined with divergent economic systems also resulted in closed trading blocs formed largely around security alliances. Manifesting itself in rather low trade levels between the East and the West throughout this time.<sup>372</sup>

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<sup>368</sup> Andrew Bennett *et al.* “Burden-sharing in the Persian Gulf War” *International Organization* 48:01 (1994) p,50

<sup>369</sup> Bennett *et al.* “Burden-sharing in the Persian Gulf War”,51

<sup>370</sup> Drezner, “Military Primacy Doesn’t Pay,” 63

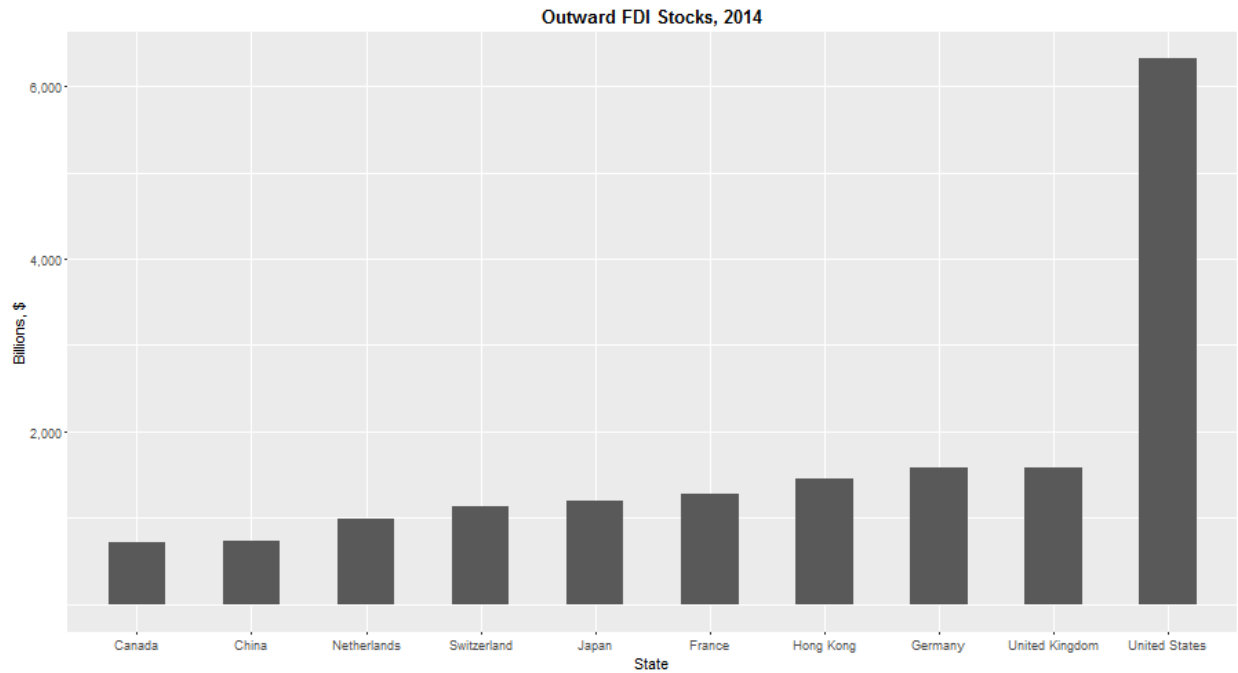
<sup>371</sup> Kerry Chase, *Trading Blocs, Firms, and Regions in the World Economy* (Michigan; University of Michigan Press, 2005) Chapter 3

<sup>372</sup> Abraham Becker, “U.S.-Soviet Trade in the 1980s,” *RAND Corporation*. November 1987.

In which case, the argument is not so much about military primacy, but more about alliance networks in and of themselves. Nonetheless, the question has applications to this thesis insofar as the United States uses its large military power to maintain a large alliance network. So does this increase trade between the US and these partners? It's hard to tell. As ever, there are some important caveats and context involved. Moreover, the answer is contingent on the particular question that is tested and/or investigated. This is further compounded by the fact that it is difficult to unwind certain relationships that confound the analysis of the 'variables' in question. For instance, an obvious problem in the analysis of trade flows and alliance networks is that the main alliance on the planet today, NATO, happens to also be comprised of most major advanced economies. Meaning that their trade flows will likely be higher anyway. Indeed, as I discussed in the first chapter, trade will be high between countries with similar products due to intra-industry trade. Likewise, due to their wealth and investment opportunities, FDI stocks and flows will also likely be rather high. For instance, if we look at stocks of outward FDI in figure 32 we can see that most of the top ten countries are allies of the United States,



**Figure 33 – Outward FDI Stocks, 2014**



Outward FDI is important as it looks at who *supplies* capital in the system, thus illuminating key players.

Now, this problem is not entirely insurmountable, but it surely makes things more complex, particularly if regression style models were the preferred methodology. Now, as was mentioned above, the fundamentals of the systems in question are often readily observable, so these forms of tests seem somewhat perfunctory. For instance, alliances ‘increased’ trade in the interwar period by definition - they were designed that way. Likewise, in the Cold War trade would obviously be (and was) higher within NATO than outside of it due to extreme geostrategic pressure, not to mention the relative economic advancement of the member states. Nevertheless, a review of some empirical studies is worth exploring.

In the main part, most of the studies undertaken do not assess data past, approximately, the year 2000. Even those papers that have been published rather recently.<sup>373</sup> However, as mentioned above, the vital animating characteristic of these studies is the question they address. This may sound obvious, but it seems that the question over whether ‘alliances cause trade increases’ is rarely directly addressed. For example, one of the more recent papers on the subject of international trade and military alliances investigates “probability that two countries are at war with each other in a given year as a function of the level of trade between the two countries” over the period between 1950-2000.<sup>374</sup> Not only does this not really tackle the question at hand, but it also ‘tests’ data in which there has been no great power war. And where we do find more direct analyses of the original data, the results are not all that clear cut.

Firstly, it depends, as ever, on the specific hypothesis under analysis. In the only paper cited by Drezner to use post-Cold War data two distinct, albeit connected, hypotheses are tested. The first concerns the manner by which security dynamics (such as the existence of an alliance) influence bilateral trade dynamics,<sup>375</sup> whereas the second evaluates how the trade influences the onset of conflict.<sup>376</sup> While these may seem very similar, the subtle difference is very important. The first tests if there is a significant relationship between alliances and overall trade flows, whereas the second tests how trade flows correlate with conflict between a specific dyad. The results of this paper, perhaps surprisingly, reject the notion that alliances increase trade within a dyad.<sup>377</sup> Yet, given the wide range of control variables included in the equation, this isn’t entirely surprising. As I suggested earlier, most members of NATO (for instance) share many other economic characteristics with one another, meaning that after controlling for these variables, the ‘alliance’ variable will struggle to offer additional information to the regression analysis.

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<sup>373</sup> Matthew Jackson and Stephen Nei, “Networks of Military Alliances, Wars, and International Trade” *PNAS* 112:50 (2015) pp, 15277-15284

<http://www.pnas.org/content/112/50/15277.full.pdf>

<sup>374</sup> Jackson & Nei, “Networks of Military Alliances,” 15282

<sup>375</sup> Omar Keshk *et al.* “Trade Still Follows the Flag: The Primacy of Politics in a Simultaneous Model of Interdependence and Armed Conflict” *The Journal of Politics* 66:4 (2004) pp, 1160-1164

<sup>376</sup> Keshk *et al.* “Trade Still Follows the Flag,” 1165-1167

<sup>377</sup> Keshk *et al.* “Trade Still Follows the Flag,” 1170

With respect to the second equation, regarding how the conflict between a dyad maps with trade dynamics, the paper in question reports no significant connection.<sup>378</sup> That is, trade levels between two states did not influence the likelihood of conflict between the dyad in question. On the other hand, when a conflict had occurred the study found that trade levels (unsurprisingly) declined.<sup>379</sup> So, as we can see, the specification of the particular hypothesis under evaluation is vitally important to the answer we receive. Nonetheless, what we can tell is that whether 'trade follows the flag' is highly contingent upon the time period under examination. For instance, as mentioned, in the interwar period there was a definitive connection through the establishment of protectionist trading blocs. Likewise, before this period, alliances were only linked with increased trading when explicit provisions were provided for such in the relevant alliance agreements.<sup>380</sup> Whereas in the post-Cold War period we only need refer to major trade dynamics to see that alliance membership does not define a nation's major trading partners.

For instance, table 16 below I list the top ten major trading partners of the European Union for the year 2015. As we can see, Russia, a geostrategic competitor of NATO and EU member states, is a major trading partner. As are a large number of non-aligned, albeit mainly friendly, states. In the post-Cold War era of a global, open trading system, alliances are unlikely to be a major determinant of trade flows.

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<sup>378</sup> Keshk *et al.* "Trade Still Follows the Flag," 1171

<sup>379</sup> Keshk *et al.* "Trade Still Follows the Flag," 1170

<sup>380</sup> See Andrew Long and Brett Ashley Leeds, "Trading for Security: Military Alliances and Economic Agreements" *Journal of Peace Research* 43:4 (2006) pp, 433-451

**Table 17 – European Union Trading Partners, 2015**

State	Total Trade, Million Euros	Share (%)
USA	619,660	17.6
China	520,909	14.8
Switzerland	253,199	7.2
Russia	209,622	6.0
Turkey	140,714	4.0
Norway	123,128	3.5
Japan	116,318	3.3
South Korea	90,248	2.6
India	77,589	2.2
Brazil	65,666	1.9

Source: [http://trade.ec.europa.eu/doclib/docs/2006/september/tradoc\\_122530.pdf](http://trade.ec.europa.eu/doclib/docs/2006/september/tradoc_122530.pdf)

Indeed, in the contemporary trading system, for security to make a large difference it is likely that rather severe geostrategic dislocation would be needed. Even then, it would itself be contingent upon certain path-dependencies. That is, if bilateral trade flows were exceedingly high, say between the US and China, then unwinding or ceasing them would require a rather high threshold of animosity so as to justify the suffering incurred. As of 2016, for instance, 15.1% of total American trade was conducted with China.<sup>381</sup> To severely curtail this would be rather damaging, and so would presumably only occur under a significant rupture in the bilateral relationship.

With that said, this does not suggest that American security commitments do not generate economic benefits, but merely that alliances in themselves seem not to be a major determinant of large trading partners. With that said, alternative ways of exploring this question may produce

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<sup>381</sup> United States Census Bureau, “Top Trading Partners,” Foreign Trade, July 2016. <https://www.census.gov/foreign-trade/statistics/highlights/top/top1607yr.html>

different results. For example, a recent RAND report exploring the estimated trade value-added generated by America's overseas security commitments.<sup>382</sup> The primary research contribution of the piece is to suggest that a 50 percent reduction in US overseas security commitments would result in a projected \$577 billion decline in trade, calculated as approximately 18 percent of America's 2015 nominal trade.<sup>383</sup> Offering results pertaining to the role of American military strategy in generating economic benefits, whilst also attempting to offer policy specific advice on the potential costs of changes in such strategy. This report differs to the earlier scholarship insofar as it is not the existence of an alliance network that is tested for a relationship with trade dynamics, but rather the level of security commitment the United States offer to the trading partner in question - that is either the number of troops and/or the number of security treaties with partner countries. The purpose of this is to attempt to isolate the marginal benefits of American security commitments, in this case proxied by the aforementioned measures.

The report specifies a number of different models based around variations of the equation found in Appendix 4:3. In essence, a linear equation focused on evaluating the influence of specific measures of 'security commitment' on bilateral trade levels, controlling for a range of variables and fixed effects. Not only is the study of rather considerable scope, but the modelling of the sample data has been very thoughtfully constructed to attempt to correct for sources of potential bias. The figure itself is then arrived at as a 'counterfactual' which essentially posits the reduction in trade as the marginal effect of the given reduction in security commitments calculated via the fitted linear model.<sup>384</sup> The problem, however, is that *no* measure of the model's in and out of sample fit is reported in the entire report. That is, we have no indication of whether the model actually fits the process well, nor the reliability of its forecasts.

More importantly, and emanating from this omission, the report does not provide any details of the importance of the individual variables in the regression. Because of this, we are unable to

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<sup>382</sup> Daniel Egel *et al.*, "Estimating the Value of Overseas Security Commitments" Santa Monica: *RAND Corporation*, 2016.

[https://www.rand.org/pubs/research\\_reports/RR518.html](https://www.rand.org/pubs/research_reports/RR518.html)

<sup>383</sup> Daniel Egel *et al.*, "Estimating the Value of Overseas Security Commitments" Chapter 8

<sup>384</sup> Daniel Egel *et al.*, "Estimating the Value of Overseas Security Commitments", 69

assess the validity of the forecast they offer, particularly as it relates to the effect of a variable that has not been tested in this way elsewhere in the literature. This is troubling because the core of their model is based around the ‘gravity model’ of trade which has rather high explanatory power.<sup>385</sup> Because of this, we should like to know exactly how much the security commitments variable/s contributes to the model's accuracy, without which the aforementioned forecast is extremely tentative. In short, we need more evidence to confirm this hypothesis using the data and methodology given. An omission that also unfortunately appears in another similarly designed and executed study on the topic.<sup>386</sup>

In short, whether ‘trade follows the flag’ in terms of either security commitments specifically, or military alliances more generally, is difficult to detect and likely to be highly contingent. At present, and from the available evidence, it seems to be a minor factor in determining trade relationships, at least when assessed via statistical methods. Which, once more, is not to say that a relationship does not exist, but rather that it is difficult to empirically detect. For example, the contemporary international economic system is built upon decades old economic and security arrangements centered around the United States and its Western allies,<sup>387</sup> implying that a large rift in the said arrangements would be likely to have sizable effects on the operation of such a system. As Nuno Monterio argues, “[military] disengagement opens the door to regional competition,”<sup>388</sup> raising the likelihood of revision to global economic and political relationships alongside competition over military affairs. Therefore, military strategy is likely to be important to trade insofar as it upholds the contemporary international economic order, or at least mediates the revision thereof. However, as we have seen above empirically assessing this relationship is difficult. Indeed, an analysis of the the more fundamental logic of military force in upholding international economic arrangements is severely curtailed by lack of substantial

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<sup>385</sup> Edward Leamer and James Levinsohn, “International Trade Theory: The Evidence” NBER Working Paper No. 4940, *The National Bureau of Economic Research*, November 1994.

<sup>386</sup> Vincenzo Bove *et al.* “US Security Strategy and the Gains from Bilateral Trade” *Review of International Economics* 22:5 (2014) pp, 863-885

<sup>387</sup> John Ikenberry, *Liberal Leviathan: The Origins, Crisis, and Transformation of the American World Order* (Princeton: Princeton University Press, 2011)

<sup>388</sup> Monterio, *Theory of Unipolar Politics*, 174

variation in American military strategy over the timeframe concerned. Limitations I shall discuss in more detail below.

## **Operationalizing ‘Military Strategy’ - Some Limitations**

Throughout this chapter I have covered a number of different geoeconomic and geopolitical favoritism arguments, that is the literature exploring how American military strategy may generate positive economic outcomes for the United States. As I have demonstrated, a number of the existing hypotheses are either not sustained by the methodologies and data provided, highly tentative, or of uncertain effect size. Despite this, I have nonetheless shown that it is possible to rather rigorously assess some relationship between these variables, demonstrating that even rather simplistic methods can provide workable hypothesis tests that may aid in resolving extant debates. With that said, the analysis above also alludes to a number of issues that appear to be rather common throughout this literature, reflecting underlying characteristics of the processes themselves, as well as limitations with available data.

In general, the fundamental factor circumscribing our ability to quantitatively assess the relationship between America’s decision to seek military preeminence and certain economic inflows is the fact that it is essentially a zero-sum game - you either have it or you do not. Because of this, you cannot test for it across countries. However, what you can do, as somewhat illustrated above, is to specify a more specific hypothesis derived from this and then test that on appropriate data. One way I demonstrated this was via specifying a regression equation with an appropriate dummy variable to allow an examination as to whether certain events offered statically useful information in modeling and forecasting specific forms of economic and financial inflows into the United States.

Alternatively, as David Lake demonstrates, it is also possible to construct indexes to attempt to represent phenomena related to force posture and military primacy.<sup>389</sup> With a focus on hierarchy

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<sup>389</sup> For example, see here. David Lake, “Anarchy, Hierarchy, and the variety of International Relations,” *International Organization* 50:1 (1996) pp, 1-33.

in international relations, Lake's work has a natural dovetail with interactions between economic and strategic variables, and this conceptual framework of hierarchy itself is interesting insofar as it can help provide a more nuanced measure of military and or economic dominance than the aforementioned dummy variables may. Whilst the measures he used may be somewhat disputable, the idea of creating an index is itself a potentially interesting development. Lake uses two measures to construct his index of security hierarchy; the number of US forces forward deployed in a country's territory and the number of independent alliances the country in question is a member of.<sup>390</sup> Lake uses his indexes to assess hypotheses pertaining to economic and security relationships between the United States and its alliances partners. For example, he estimates the relationship between security hierarchy and the trade openness of alliance partners.<sup>391</sup> Finding a positive relationship between both with respect to measures of security hierarchy.

However, as demonstrated earlier, financial and economic processes often prove difficult to model and predict, circumscribing the inferences which can be drawn from such analyses. Moreover, both of these approaches ultimately leave researchers unable to quantitatively explore the influence of military strategy *per se*, but rather derivative hypotheses for related variables that actually exhibit the necessary temporal and spatial variation. This is due to the fact, as I have mentioned above, that American military primacy exhibits no temporal variation over relevant time frames. For example, American military primacy has been constant since the end of the Cold War, as has its economic primacy (to an approximation at least), creating significant endogeneity problems for researchers. A related case study demonstrates these difficulties rather well.

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<sup>390</sup> David Lake, *Hierarchy in International Relations* (Ithaca: Cornell University Press, 2009) pp, 68-69

<sup>391</sup> Lake, *Hierarchy in International Relations*, 155



## ***Military Spending as a Proxy***

With co-author Nancy Hite-Rubin, Drezner investigates the hypothesis that “military spending is an attractor for private capital.”<sup>392</sup> That is, they assess Maass’ argument that I myself investigated earlier. Despite this, their approach was very much different from what I undertook. Not only do they use a large-n dataset, but they also operationalize ‘military primacy’ in a specific and crucially important way.

In their analysis, the authors use two different versions of the dependent variable (FDI inflows) for robustness, controlling for a rather wide range of variables, including population, energy consumption, foreign indebtedness, the government budget balance, a measure of ‘law and order’, an economic risk variable, and finally a variable indicating the number of ‘active bilateral investment treaties’ in force at the time.<sup>393</sup> Their analysis is conducted across 92 countries from 1990-2007, suggesting that “our analysis leads us to reject the hypothesis that increasing US military spending attracts inward foreign direct investment.”<sup>394</sup> They get to this result by way of ‘residual analysis’, the crux of which is to check the residuals of the model (those elements that are not captured by the regression line) and ascertain if there are any patterns, as well as whether any key countries (such as the United States) have a positive or negative residual. Which is where their finding is generated from,

“The residuals are relatively small for emerging market states, indicating that these data points fit the model specification well. The average residual for the US is large and negative, indicating that the historical variation in US military expenditures does little to explain fluctuations in attracting foreign capital.”<sup>395</sup>

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<sup>392</sup> Daniel Drezner and Nancy Hite-Rubin, “Does American Military Power Attract Foreign Investment?” in Jeremi Suri and Benjamin Valentino eds. *Sustainable Security: Rethinking American National Security Strategy* (Oxford: Oxford University Press, 2016) p,1

<sup>393</sup> Drezner and Hite-Rubin, “Does American Military Power Attract Foreign Investment?” 9-10

<sup>394</sup> Drezner and Hite-Rubin, “Does American Military Power Attract Foreign Investment?” 10

<sup>395</sup> Drezner and Hite-Rubin, “Does American Military Power Attract Foreign Investment?” 13

That is despite their analysis more generally indicating “that the relationship between logged military spending and logged net foreign direct investment is *significantly and positively correlated*.”<sup>396</sup> So whilst the coefficient for military spending itself is positive and significant, the individual observation for the United States (and other major developed economies) was strongly negative.

Results aside, the first important difference between my evaluation of Maass’ argument and Drezner and Hite-Rubin’s is the manner in which they operationalise the question and key variables. Firstly, instead of addressing if ‘military primacy’ implies higher inflows, they instead test an entirely different hypothesis, namely,

*“Ceteris paribus, military power will be positively correlated with greater inflows of foreign direct investment.”*<sup>397</sup>

Whilst in some ways this appears similar to the original argument, this hypothesis has actually little to do with whether the United States’ benefits from greater inflows as a result of military preeminence. That is because military preeminence is a zero-sum game - you have it at the expense of all other actors in the local or global system. Because of this, you cannot test for it across countries.

Moreover, instead of ranking military power in and of itself (not a simple task, admittedly) they rely on using military spending as a proxy. In their own words, they choose such a measure because “there is considerable variation in military spending and FDI inflows across time and space, enabling us to test our hypotheses.”<sup>398</sup> Now, this may seem reasonable, but this particular operationalization is actually rather problematic. As stated earlier, the hypothesis they test actually bears little resemblance to the core claim put forward by Richard Maass’. Whereas

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<sup>396</sup> Drezner and Hite-Rubin, “Does American Military Power Attract Foreign Investment?” 12. Emphasis added.

<sup>397</sup> Drezner and Hite-Rubin, “Does American Military Power Attract Foreign Investment?” 7

<sup>398</sup> Drezner and Hite-Rubin, “Does American Military Power Attract Foreign Investment?” 8

Maass states refers to an “ explosion of FDI in the hegemon under unipolarity”<sup>399</sup> Drezner and Hite-Rubin instead assess whether “*Ceteris paribus*, military power will be positively correlated with greater inflows of foreign direct investment.”<sup>400</sup>

Whilst seemingly a simple difference, the operationalization of ‘military power’ as military spending does not permit the regression estimator to pick up on the differences in absolute size of military spending, but instead tracks how *changes* in military spending correlate with *changes* in FDI. In short, Drezner and Hite-Rubin haven’t analysed how military power correlates with FDI inflows, they have instead modelled how changes in military spending correlates with changes in FDI inflows. To demonstrate why an OLS estimation will fail to detect the intended relationship it is trivial to see that the standard OLS estimator detects how changes in the series move together, scaled by their standard deviations (see Appendix 4:4). Alternatively, another way of looking at this is to consider what happens to variables when they are standardised - that is, dependence on magnitude is removed. Either way, the relative power of the countries included in such a regression is not assessed at all.

As we can see then, even where we can generate measures in relating to military power the main object of study may still remain very much elusive. With that said, and despite the above poor applicability of the above model, we saw in figures ## a powerful, yet simple, way of addressing the question as to the relationship between FDI inflows and military spending. This is because, in essence, the question is a set-theoretic one. That is, it seeks to answer the question as to whether states with high military spending are a subset of states with large FDI inflows. The answer to this, fortunately, is rather easy to deduce. The top five military spenders in 2015 were the US, China, Saudi Arabia, Russia, and the UK.<sup>401</sup> Whilst the highest FDI inflows were received by the US, Hong Kong, China, Ireland, and the Netherlands.<sup>402</sup> In fact Saudi Arabia was not even in the top twenty recipients for 2015. No formalism is needed here to show that there is not a

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<sup>399</sup> Maass *et al.* “Correspondence: The Profitability of Primacy” 192

<sup>400</sup> Drezner and Hite-Rubin, “Does American Military Power Attract Foreign Investment?” 7

<sup>401</sup> “SIPRI Military Expenditure Database”, Stockholm International Peace Research Institute, 2017

<sup>402</sup> UNCTAD Statistics, “Foreign direct investment: Inward and outward flows and stock, annual, 1970-2015”, United Nations Conference on Trade and Development.

generalized and deterministic relationship between military spending and FDI inflows (nor surprisingly). More importantly, even if there were, it would not tell us anything about the original research question posed by the range of studies we have covered - does the United States receive additional financial inflows due to its military primacy?

To answer such a question with regards to data would be very difficult to disentangle from the fact that the United States is the world's largest economy, with deep, open, and liquid financial markets. A problem which is exacerbated by the fact, mentioned earlier, that there does not seem to be an anomaly in American FDI inflows to explain in the first place. As we have seen above, the types of dependent variables that are amenable to regression analysis tend to be forms of financial inflows rather than the more consequential concerns identified in the relevant theoretical literature. A limitation imposed by data constraints and limited variation in important dependent and independent variables. For example, the 'big' events which are often of principle interest to researchers in this field are few and far between. That is, major economic adjustments (for instance) rarely occur, meaning that most of the quantitative models we could use will be of little use in analysing relationships between the variables in question. This is not to say, however, that some of the methods I have referred to are not useful, but rather they have to be used in specific contexts under the acknowledgement of certain constraints.

### ***Chapter Summary***

This chapter has demonstrated that we can detect positive, albeit tentative, relationships between variables relating to military strategy and major economic indicators. The tentative nature of these results fundamentally relates to the fact that most financial and macroeconomic variables are inherently difficult to model accurately, which places an extra onus on robustness checks, such as some of the methods I demonstrated earlier in this chapter. By doing so, the empirical evidence presented in this chapter contributes to directly answering the key research question of this thesis.

However, this still leaves us with a question as to how we may assess some of the more consequential analytical pathways through which it has been proposed that the United States gains economic benefit from strategic decisions. For example, Stephen Brooks *et al* note that American military power “figures in the creation, maintenance, and expansion of the [global economic] system”, principally by, “support[ing] the global economic order by reducing the likelihood of security dilemmas, arms racing, instability, regional conflicts and, in extremis, major power war”<sup>403</sup> but also via generating “security leverage over its allies” on economic issues.<sup>404</sup> All of which are essentially unquantifiable issues. So how can we explore some of these more consequential, albeit ‘low-n’, events? And what are the associated limitations? It is to this question the next chapter turns.

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<sup>403</sup> Stephen Brooks *et al*. “Don’t Come Home, America: The Case against Retrenchment” *International Security* 37:3 (2012/13) pp, 40-41

<sup>404</sup> Brooks *et al*. “Don’t Come Home”, 45

## Chapter 5 - Linkage and Positional Advantage

This chapter explores qualitative arguments relating to the direct and indirect advantages US strategic commitments are hypothesized to offer the United States in shaping the international political-economy. More commonplace than quantitative studies, these claims are integral to the extant literature on the economic benefits deemed generated by US military power. They therefore form central proposed mechanisms through which political-economic influence is conveyed, and are consequently pivotal mechanisms the research question of this thesis requires are explored.

Whether these studies have been carried out as projects of historiography or through more formalised case study methodologies, the onus of these studies is the evaluation of the specific relationships, and interconnections, between events, variables and actors which occur in the given cases they analyse. In political science we often call this ‘process tracing’, but it essentially serves the same purpose as historiographic research insofar as the aim is to analyse the salient causal, explanatory, or constitutive elements of a specific case or set thereof. The main difference between historiographic research and political science methodology is arguably its formalism, including the adoption of scientific nomenclature and the methodical analysis of ‘causal mechanisms’ running throughout cases.<sup>405</sup>

In the literature regarding the economic influences of military strategy the main conceptual pathway that has been explored revolves around the notion of foreign policy ‘linkage’. The term, popularized by Henry Kissinger, describes a form of diplomacy used by the United States throughout the Cold War. In his own words, Kissinger referred to linkage as a “network of incentives and penalties to produce the most favourable outcome” in order to actively link security and non-security issues in diplomatic negotiations.<sup>406</sup> That is, one’s military assets,

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<sup>405</sup> Gary King *et al.* *Designing Social Inquiry: Scientific Inference in Qualitative Research* (Princeton: Princeton University Press, 1994) pp, 85-87

<sup>406</sup> Henry Kissinger, *Diplomacy* (London: Simon & Schuster, 1994), p.717.

presence, or pressure would be used to elicit cooperation on other non-security related issues. Therefore linkage takes advantage of pre-existing security dynamics to explicitly further non-security goals.

Separate to linkage foreign policy, it is possible to further identify another form of economic effect related to strategic considerations - a form of 'positional advantage'. A positional advantage differs from linkage foreign policy insofar as it does not necessarily entail active or explicit actuation by the actor in question - in this case, the United States. Positional advantages are intimately related to notions of structural power, and so shares a great number of parallels with Susan Strange's definition of the phenomena, particularly insofar as it,

"can be effectively exercised by 'being there', without intending the creation or exploitation of privilege or the transfer of costs or risks from oneself to others ... In relations with others, it is much harder to think of power being exercised by one party over another unconsciously, without deliberate intent."<sup>407</sup>

To unpack this somewhat, structural power refers to the fact that "'structures' allocate differential capacities, and typically differential advantages, to different positions."<sup>408</sup> Meaning, somewhat intuitively, that certain actors can benefit merely from their position within a given system. That is, they have 'positional advantages'.

Applied to security dynamics, and interpreted through this notion of leverage, we can hypothesise that American military strategy will likely influence the calculus of American allies when making decisions on international agreements or arrangements. I suggest that positional advantage influences others' behaviours in a few key ways. Firstly, it allows the hegemonic state the potential to block the operation of existing international structures, institutions or attempts

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<sup>407</sup>Susan Strange, *The Retreat of the State: The Diffusion of Power in the World Economy* (Cambridge: Cambridge University Press, 1996) pp.26-27.

<sup>408</sup> Michael Barnett and Raymond Duvall, 'Power in International Politics', *International Organization* (2005), Vol.59. No. 1, p.53.

by other states to change current structures. And secondly, it also permits such a state to offer positive incentivisation when attempting to create new international structures and institutions, or when amending existing structures and institutions. Both will implicitly change the calculus of other states operating within these institutions and structures inasmuch as states who value them must take hegemonic preferences into account when making decisions that could negatively affect the hegemon. In this case, we would expect states in receipt of US security guarantees to alter their behaviour in non-security related areas so as to maintain security support, presuming they wish to retain it.

In what follows I detail and assess both pathways, focusing on a number of already chronicled cases as well as expounding on a number that have not. In doing so, I aim to demonstrate examples in which military force has elicited economic advantages and benefits for the United States. More importantly, I intend to demonstrate the way in which detailing causal mechanisms and narratives aids in interpretation and inference. Particularly insofar as identifying specific configurations of causal factors and elements helps to identifying the validity of inference between specific cases and contexts. I start by presenting evidence toward foreign policy linkage before detailing some specific examples of 'leverage'. The final section then brings both together in a comparative case study built around the 'most similar systems design' outlined in the introduction. Specifically, a study of East Asia which touches on many of the dynamics and anomalies observed in the analysis of US-Japan economic diplomacy described in the first chapter.

## Linkage

One of the more theoretically developed accounts of 'linkage' in US foreign policy can be found in Robert Art's account of the 'fungibility of force'. Taking aim at the "mistaken belief that force no longer serves America's interests well"<sup>409</sup> Art explores the manner in which "force influences politics."<sup>410</sup> The basis for this claim is the intuitive and familiar notion that the anarchic nature of

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<sup>409</sup> Robert Art, "American foreign policy and the fungibility of force" *Security Studies* 5:4 (1996) p,7

<sup>410</sup> Art, "the fungibility of force," 8



international politics places an emphasis on force, albeit modulated by the prevailing geostrategic environment. In the main part this can be reduced, he argues, to the fact “that force is fungible because of the central role that coercion plays in politics in general and in foreign policy in particular.”<sup>411</sup> The main example used in his article is centered around the formation of the International Energy Agency after the 1973 Oil Crisis, demonstrating an instance in which American allies agreed and contributed to the formation of an international institutional despite rather profound individual reservations.

For some brief context, the 1973 Oil Crisis has its roots in American support for Israel during the 1973 Yom Kippur War, whereby the OPEC nations imposed a retaliatory oil embargo on a number of Western states. Now, as Art observes, most of America’s allies responded through a “rush to bilateralism,” which innately undermined a cooperative response to the crisis.<sup>412</sup> That was, “each nation feared that it would lose in the short term if it cooperated with the United States, and all believed they could do better by making their own deals.”<sup>413</sup> Understandably, this gave OPEC a rather great deal of negotiating power, particularly as their embargo caused considerable increases in world oil prices, with some US price indexes registering approximately 150% increases between late 1973 and early 1974.<sup>414</sup> Understandably, this troubled the Americans greatly, undermining the economic vitality of its alliances as well as undermining America’s capacity to act as an oil supplier of last resort in a contingency, whether economic or strategic. As President Nixon explained to the European nations at the Washington Energy conference, “security and economic considerations are inevitably linked and energy cannot be separated from either.”<sup>415</sup>

Art argues that the United States “had to force cooperation on energy by linking that issue to one where the United States still retained strength. Nixon tied the continued provision of American

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<sup>411</sup> Art, “the fungibility of force,” 9

<sup>412</sup> Art, “the fungibility of force,” 32

<sup>413</sup> Art, “the fungibility of force,” 33

<sup>414</sup> Federal Reserve Economic Data, “Spot Oil Price: West Texas Intermediate”  
<https://fred.stlouisfed.org/series/OILPRICE>

<sup>415</sup> Henry Kissinger, *Years of Upheaval* (New York: Little Brown & Company, 1982) p,961

security to the Europeans and Japanese to their acceptance of a united consumers' energy front,"<sup>416</sup> recounting some evidence in the memoirs of Henry Kissinger. Declassified archival documents further attest to this connection. For instance, in a conversation with Kissinger, Nixon recounted how "in Congress there is a dangerous attitude: if Europe wants to go it alone, we will. *This is true in several areas.*"<sup>417</sup> Nixon continued, "tell them [America's allies] they can't do this and expect us to hold our military role in Europe - Congress won't let us." Kissinger, agreeing with this, chipped in to argue that "our forces give Europe the security to bitch at us."<sup>418</sup> Even proposing a partial drawdown of forces to incentivise the Europeans into action.<sup>419</sup> Whilst the IEA was to have a limited influence on oil market dynamics over that decade, the episode nonetheless demonstrates the successful linkage of security and economic relationships as a way to cajole allies into cooperating. Yet, as Art himself notes, "America's exercise of its military muscle was not sufficient to create the IEA, but it was necessary."<sup>420</sup> As ever, the use of these tools is inherently based upon configurational arrangements, rather than representing a more simplistic 'A therefore B' notion of causality. "The relative effectiveness of a given instrument can vary across different historical eras, being high in one and lower in another, without losing its utility."<sup>421</sup>

A similar, albeit far more widely reported case of linkage is often attributed to US relations with Saudi Arabia. The starting point for which is often considered to be the meeting of President Roosevelt and King Ibn Saud upon U.S.S. Quincy in February of 1945. This notwithstanding, and perhaps unsurprisingly, available archival material does not reveal all that much detail on what was said. In fact, the memorandum of the meeting is extremely banal and brief, albeit smattered with occasional anti-semitic remarks from the Saudi monarch - "His Majesty thanked the

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<sup>416</sup> Art, "the fungibility of force," 35

<sup>417</sup> *Foreign Relations of the United States, 1969-1976, Volume XXXVI, Energy Crisis, 1969-1974*, eds. Linda Qaimmaqami and Edward Keefer (Washington: Government Printing Office, 2011), Document 314. Emphasis added.

<sup>418</sup> *Foreign Relations of the United States, 1969-1976, Volume XXXVI, Energy Crisis, 1969-1974*, eds. Linda Qaimmaqami and Edward Keefer (Washington: Government Printing Office, 2011), Document 314.

<sup>419</sup> *Foreign Relations of the United States, 1969-1976, Volume XXXVI, Energy Crisis, 1969-1974*, eds. Linda Qaimmaqami and Edward Keefer (Washington: Government Printing Office, 2011), Document 314.

<sup>420</sup> Art, "the fungibility of force," 35

<sup>421</sup> Art, "the fungibility of force," 41

President for promoting agriculture so vigorously, but said that he himself could not engage with any enthusiasm in the development of his country's agriculture and public works if this prosperity would be inherited by the Jews."<sup>422</sup> With that said, a note sent from the US minister to Saudi Arabia to the Secretary of State reminds us that it was not for a chat about agriculture that President Roosevelt was to visit King Ibn Saud. As William Eddy (then Minister to Saudi Arabia) recalls, "it is not my place to report on the confidential conversations between the President and the King," reminding us that the aforementioned memorandum was merely "an agreed memorandum of conversation on certain specific subjects."<sup>423</sup>

This problem, that pertaining to secrecy and selective recordings of facts and events, is recurrent in most historical research and particularly so in this line of inquiry. Understandably, most diplomats are likely to be cautious about revealing and describing information and arrangements that are secretive, sensitive, or contentious. Particularly if they know that they may be declassified within either their individual lifetimes or the expected duration of the deal in question. Nonetheless, and thankfully, the most important evidence we can ascertain in our analyses of international politics is not necessarily knowledge of what people have said, but rather what they have done. Indeed, a Congressional Research Service primer on US-Saudi relations explicitly mentions that the meeting was preceded by "the construction of a U.S. military airfield at Dhahran and the provision of U.S. military planning and training assistance" which was to form "the basis for bilateral military cooperation during the early postwar era."<sup>424</sup>

Further evidence for a tight coupling between US-Saudi economic and security relationships can also be found in the negotiation and formation of the process of 'petrodollar recycling' after the 1973 Oil Crisis. Petrodollar recycling was the process by which Gulf states 'recycled' their large

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<sup>422</sup> *Foreign Relations of the United States, 1945, Volume VIII, The Near East and Africa, 1945*, eds. Herbert Fine *et al.* (Washington: Government Printing Office, 1969), Document 2.

<sup>423</sup> *Foreign Relations of the United States, 1945, Volume VIII, The Near East and Africa, 1945*, eds. Herbert Fine *et al.* (Washington: Government Printing Office, 1969), Document 6.

<sup>424</sup> Christopher Blanchard, "Saudi Arabia: Background and U.S. Relations" *Congressional Research Service*, December 16, 2009. P,4  
<http://fpc.state.gov/documents/organization/135931.pdf>

and growing trade surpluses back into Western, primarily American, markets to fund their purchases of oil. As I mentioned earlier, the price of oil shot up in 1973 due to the oil embargo, meaning that Western states were now paying two to three times the price for oil than they had the year before, forcing many to run a current account deficit. This was made worse by the fact that the OPEC nations could not increase their imports commensurate with this increase, thus making these current account deficits a structural feature of the international trading system. The OPEC nations therefore needed to recycle these funds back into Western states in order to permit them to continue buying oil.<sup>425</sup>

This particular concern also dovetailed with talk from OPEC of pegging the price of oil to the IMF's 'special drawing right' (SDR) instead of the dollar, a result of the dollar's weakening as well as its earlier suspension from gold convertibility. To cut a long story short, the United States got what it wanted on both issues, getting OPEC to retain the dollar as the reference and invoice currency for oil exports, as well as securing considerable petrodollar recycling into US markets. In particular, the Americans were keen to set up a semi-formal system of recycling to enable OPEC surpluses to be directed into US markets and back out to other oil consuming nations that would need it, helping to circumvent the fear that private markets may do this inefficiently.<sup>426</sup> From what evidence is available the Americans offered the Saudis a number of incentives to agree to such a deal, focused on *both* economic and military factors. On the economic side, the Saudis were offered greater institutional influence with IMF in the form of a quota increase (as they had desired), in addition to tailored and special access to US government debt markets in the form of a special agreement that circumvented the bidding process.<sup>427</sup> With further motivation to invest derived from the establishment of the U.S.-Saudi Arabian Joint Commission on Economic Cooperation in 1974, which, alongside a number of formal meetings, helped to promote Saudi investment in US infrastructure and industrial expansion.<sup>428</sup>

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<sup>425</sup> For a fuller primer on this see David Spiro, *The Hidden Hand of American Hegemony: Petrodollar Recycling and International Markets* (Ithaca: Cornell University Press, 1999) Chapter one.

<sup>426</sup> Spiro, *The Hidden Hand of American Hegemony*, 105-106

<sup>427</sup> Spiro, *The Hidden Hand of American Hegemony*, 109

<sup>428</sup> Blanchard, "Saudi Arabia," 4

In addition to his, however, all sources make mention of a definitive defence component to these myriad arrangements. For instance, a state department memo detailing a Treasury visit to Saudi Arabia in 1974 noted that “the two countries are prepared to expand and give more concrete expression to cooperation in the field of economics...*and in the supply of the Kingdom’s requirements for defensive purposes.*”<sup>429</sup> Likewise, the aforementioned CRS report also suggests that “in the wake of the embargo, both Saudi and U.S. officials worked to re-anchor the bilateral relationship on the basis of shared opposition to Communism, renewed military cooperation, and through economic initiatives...”<sup>430</sup> But much like before, there is little direct mention of what was actually said or arranged. Nonetheless, the available data is certainly indicative of a substantially enhanced defense relationship. In 1974 Saudi weapons imports inflected upward, effectively quadrupling, a move that was sustained throughout the decade.<sup>431</sup> Likewise, the main source of these goods was from the United States. With \$1.8 billion of the \$3.6 billion of arms imported from 1975-1979 having been supplied by the United States, with the next largest chunk, \$900 million, supplied by the United Kingdom.<sup>432</sup> Moreover, a large proportion - approximately 40%, - of this was reputedly in “the non-weapons category” particularly military construction projects.<sup>433</sup>

Whilst these details are somewhat scant, and certainly not as solid as we would like, there is nonetheless an evident and significant military linkage underlying this particular case. Despite the fact that the economic factors may have provided a strong incentive for Saudi investments, given the inflection in arms sales between the dyad, the pervasive mention of defense elements in these agreements, and a strong continued security relationship, the deployment of a security linkage is hard to dismiss. At the same time, however, the case also reminds us of the importance

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<sup>429</sup> Quoted in Spiro, *The Hidden Hand of American Hegemony*, 107. Emphasis added.

<sup>430</sup> Blanchard, “Saudi Arabia,” 4

<sup>431</sup> United States Arms Control and Disarmament Agency, “World Military Expenditures and Arms Transfers 1970-1979” Washington DC, 1982. p, 117

<http://www.state.gov/documents/organization/185663.pdf>

<sup>432</sup> United States Arms Control and Disarmament Agency, “World Military Expenditures,” 129

<sup>433</sup> United States Arms Control and Disarmament Agency, “World Military Expenditures,” 29

of specific configurations of variables and contexts in the deployment and effectiveness of foreign policy tools and assets.

## **Positional Advantages**

Whereas linkage focuses on instances in which the United States has actively and consciously linked security matters to the achievement of other foreign policy goals, it is conceptually unable to deal with a number of important cases in which America's military power has influenced international economic outcomes. As I discussed earlier, the reason for this is that linkage focuses on the *intentional* and active linking of defense relationships to non-security issues, which in other cases has proved unnecessary. That is, we have a number of instances in which American military power has proved instrumental to promoting and reproducing certain economic processes.

### ***Security and East Asian Dollar Accumulation***

Referring back to the previous chapter, Drezner noted that a particular pathway through which geopolitical favoritism is deemed to have operated is via playing a supporting role in foreign official dollar asset accumulation. Summarizing, Drezner notes that a key claim in the literature suggest that,

“... a reason for the dollar's continued standing as the world's reserve currency has been the strong security relationship between the United States and key capital exporters, Japan and the Gulf Cooperation Council states. *These actors have been willing to buy dollar-denominated assets even when their financial returns have not been extraordinarily high.*”<sup>434</sup>

The argument is that American security relationships act to buttress the existing monetary system, further suggesting that states actually purchase securities where they otherwise would

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<sup>434</sup> Drezner, “Military Primacy Doesn't Pay,” 63-64. Emphasis added.

not have for security related reasons. That is, that strategic concerns may influence the day-to-day investment decisions of major states.

Having presented this argument, Drezner proceeds to dismiss it, citing the large scale dollar purchases of China as invalidating a security linkage. After all,

“If the United States’ biggest potential rival was engaged in the same kind of dollar-supporting role as close allies, then it suggests that U.S. bilateral security relationships did not play a causal role in preserving the dollar’s standing as the world reserve currency.”<sup>435</sup>

Indeed, there are a number of reasons that states would be incentivised into supporting the US dollar despite low returns on the assets in question. This is particularly so when one holds a large proportion of their portfolio in dollar denominated assets, or in fact a large proportion in absolute terms. As we saw in the financial crisis, China’s large scale dollar investments were a source of considerable ‘buyer’s remorse’ in that they were effectively stuck with supporting the dollar despite growing risks, and temporary losses, to some parts of their portfolio.

As I covered in the first and second chapters, states like China in part base their economic growth strategies on managing the price of their currency with respect to the dollar. In addition, and in a large part due to this very fact, a large number of actors also invest large amounts of money into dollar denominated assets. This means that any sudden or sustained movement out of such assets would negatively impact both the value of their portfolios and the value of the currencies, potentially messing with their economic growth strategies. Following this logic, and in reference to Japan’s willingness to continue buying dollars despite a sustained drop in its value throughout the mid-2000s, Taggart Murphy observed that,

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<sup>435</sup> Drezner, “Military Primacy Doesn’t Pay,” 67

“in strictly economic terms, Japan would seem to have only one compelling reason for its dollar support operations: as the world’s largest holder of dollars, Japan stands to lose the most in any general dollar crash...”<sup>436</sup>

This unenviable position now belongs to China, compounded by the aforementioned fact that manages its currency with respect to the dollar. Thus emplacing potent incentives to support a relatively stable value of the dollar and dollar denominated assets, particularly treasury bills.<sup>437</sup>

In fact, we now know that China was actually approached by Russia during the financial crisis with the view to dumping assets in order to aggravate America’s financial distress. As Hank Paulson, then Secretary of the Treasury, recalled some years later,

“I was meeting with someone... This person told me that the Chinese had received a message from the Russians which was, 'Hey let's join together and sell Fannie and Freddie securities on the market'.”<sup>438</sup>

Now, as we know, this sell-off did not in fact occur, and in no large part because of the factors identified earlier. Why, for instance, would the Chinese want to 1) drive down the value of their reserve assets, and 2) prompt a potential attack on the currency to which their own is pegged? As we can see then, these economic logics are very powerful motivations in and of themselves to play some role in regulating fluctuations in the value of the dollar, a factor that Drezner rather correctly points to as a significant counterweight to arguments over geopolitical favoritism. Nonetheless, at the same time as this, such an analysis is a ‘thin’ reading of the pressures at play.

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<sup>436</sup> Taggart Murphy, “East Asia’s Dollars,” *New Left Review* 40 (2006)  
<https://newleftreview.org/11/40/r-taggart-murphy-east-asia-s-dollars>

<sup>437</sup> For a more comprehensive overview see Daniel Drezner, “Bad Debts: Assessing China’s Financial Influence in Great Power Politics” *International Security* 34:2 (2009) pp, 7-45.

<sup>438</sup> Robert Peston, “Russia ‘planned Wall Street bear raid’” *BBC News*, March 17 2014.  
<http://www.bbc.co.uk/news/business-26609548>



As was alluded to in Paulson's quote, there could be a number of other factors motivating the sale or retention of certain assets. Russia's attempted economic sabotage is evidence in itself of the manner in which states do not always think (unsurprisingly) with their wallets. Applied to dollar asset accumulation a not insignificant factor will likely be the manner in which potential diversification could affect broader political and security dynamics. This may sound like a bold claim, but given what we have seen above, it would definitively fit with dynamics we have already discussed. For example, an interesting and easily accessible instance in which we have seen such a relationship in a related area of concern is the negotiation of the Trans-Pacific Partnership (TPP), an advanced trade deal between a number of American and East Asian states. The most interesting aspect of which was the late entry of Japan into these negotiations, a state that has been somewhat opposed to opening up politically sensitive areas of its economy. When we look into statements by leading Japanese officials we see that much of the rhetoric surrounding the TPP reflects as much of a strategic rationale as it does an economic one. Japanese Prime Minister, Shinzo Abe, explicitly emphasised such a connection when he delivered the first address by a Japanese Prime Minister to a joint meeting of Congress in April of 2015. In this meeting Abe suggested that Japan's entry into the Trans-Pacific Partnership (TPP) negotiations "goes far beyond just economic benefits. It is also about our security. Long-term, its strategic value is awesome. We should never forget that."<sup>439</sup>

Equally, we also saw earlier in this chapter that the United States began to question its military support for Europe when it seemed as though they were refusing to cooperate on other non-security issues, in this case on collective bargaining in global energy markets. Applied to the international monetary system, a similar dynamic can be argued to exist insofar as states in which the stability of the regional security system is reliant (perceived or otherwise) on the projection of American military force face incredibly strong incentives to maintain the prevailing status quo upon which this stability relies. That is, if states wish to maintain this stability, revisions of

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<sup>439</sup> "Toward an Alliance of Hope' - Address to a Joint Meeting of the U.S. Congress by Prime Minister Shinzo Abe, Wednesday, April 29, 2015" Speeches and Statements by the Prime Minister, Prime Minister of Japan and His Cabinet, April, 2015.

[http://japan.kantei.go.jp/97\\_abe/statement/201504/uscongress.html](http://japan.kantei.go.jp/97_abe/statement/201504/uscongress.html)

regional or global institutions have to in some way 'square' with American preferences, or these sets of relationships and/or bargains would begin to unravel. As Brooks and Wohlforth note, "since the US preference is simply for these countries to continue doing what they have already been doing, the incentive is not to disrupt the existing set of relationships that sustain this status quo."<sup>440</sup>

If we look to East Asia this would imply that there are strong non-economic incentives for states not to disrupt global monetary arrangements, or at least not significantly. For example, Doug Stokes notes that,

"the complex balance between US strategic mediation in East Asia and the ebb and flow of forms of regional interdependence and security competition act as a major incentivization for the largest purchasers of US debt to work within a broader US-centred global system, including US monetary regimes."<sup>441</sup>

Suggesting that by virtue of its military presences alone, the United States benefits from economic and monetary advantages without actually needing to directly promote defence linkages to achieve them. Indeed, in this way they are 'structural' features of the international relations of the region in question. This phenomena has elsewhere been referred to as a 'positional advantage'<sup>442</sup> and is therefore a part of the typology of 'structural power', a conception of power which emphasizes "the power to shape and determine the structures of the global political economy within which other states, their political institutions, their economic enterprises... have to operate."<sup>443</sup>

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<sup>440</sup> Stephen Brooks and William Wohlforth, *America Abroad: The United States' Global Role in the 21st Century* (Oxford: Oxford University Press, 2016) p, 177

<sup>441</sup> Doug Stokes, "Achilles' deal: Dollar decline and US grand strategy after the crisis" *Review of International Political Economy* 21:5 (2014) p,1089

<sup>442</sup> Norrlof, *America's Global Advantage*, Chapter 1

<sup>443</sup> Susan Strange, *States and Markets*, 2nd Edition (London: Continuum, 1994) p, 25

We therefore have a scenario in which states alter their investment decisions with respect to American strategic considerations, just without having been directly coerced into doing so, which is an intriguing enrichment of our understanding of the manner in which military strategy may affect non-security relationships. But can we demonstrate this more concretely and systematically?

## **Linkage and Positional Advantage**

In many cases, rather understandably, linkage and positional advantages are processes that reinforce one another, predicated on the fact that where a positional advantage exists, linkage will likely also be of utility. The reason for this is rather intuitive insofar as the existence of a positional advantage implies that the United States is militarily involved in a region, and therefore likely to have allies there that rely on American forces to augment their security which suggests avenues for 'linkage' diplomacy. This implies that we may see the operation of both forms of influence at the same time insofar as the United States may link a particular negotiation to security affairs at the same time as it is already perceived as an important element of decision making by the party in question. As a way of demonstrating this, in the following section I set up a comparative case study to enable a process tracing of these mechanisms in recent American diplomacy.

### ***Case Study: Military Force and International Economic Adjustment***

As a way of demonstrating the relative utility of these forms of influence we need to establish some form of comparative analysis that allows us to sift through the mechanism under operation whilst controlling for changes in relevant and pertinent factors. To achieve this, and in order to enable this process, I first need to isolate a type of event and a specific region or country to investigate. It would seem to me that an important class of events to compare and contrast would be financial crises or economic adjustment periods because they are occasions in which some form of systemic disequilibrium needs to be resolved. As we saw earlier, the OPEC crisis necessitated American use of linkage diplomacy to attempt to achieve a resolution to the crisis which best reflected US interests. Similarly, financial crises and economic adjustment periods

such as the OPEC crisis are instances in which specific interests are, by definition, locked in or out of the institutional settlements that resolve the relevant disequilibria.

With respect to which region or country to focus on, there are specific criteria which would make one more preferable than another. By 'preferable' I mean a case which best enables the most comprehensive analysis possible rather than one which encourages confirmation or selection bias. Regionally speaking, and with reference to the contemporary grand strategic literature, we know of three key regions which are of most importance to the United States. As Christopher Layne observes, American planners have long identified "Europe, East Asia, and the Persian Gulf as regions in which the United States has vital security interests," this is because,

"Europe and East Asia (the zone of peace and prosperity) are important because they are the regions from which new great powers could emerge and where future great power war could occur; central to the functioning of an interdependent international economic system; and vital to U.S. prosperity. The Persian Gulf is important because of oil."<sup>444</sup>

So how do these regions fare with respect to crises and events between which to compare? Well, before we can assess this, we first need to pick a relevant time period. An important factor, if not the important factor, is to pick a period in which we can control for major systemic changes, and one in which specific fundamentals are similar enough for comparison. What I mean by this, is that major alterations in systemic context will affect how specific factors influence the outcomes of specific types of events, or at least has the potential to do so. This is because, as we shall see in greater detail in the next section, the influence of specific factors may depend rather intrinsically on the configuration of the others in the cases analysed.

With respect to our analysis we therefore will want to control for changes in systemic polarity; that is the shift from bipolarity to unipolarity which occurred due to the ending of the Cold War.

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<sup>444</sup> Christopher Layne, "From Preponderance to Offshore Balancing: America's Future Grand Strategy" *International Security* 22:1 (1997) p, 94

In effect then, our sample period is near enough the entire period after the Second World War. Unfortunately for this analysis, but fortunately for the world's population, we have seen very few financial crises or economic adjustment periods throughout this time. More specifically, we want events which call into question American interests, given that events which do not are not of immediate, intrinsic interest. More importantly, we can then see if the United States is able to benefit from either linkage or leverage effects. Finally, the definition of such an event must entail that the crisis has an extraregional dimension, i.e. that the event influences nations in other regions.

In table 17 I display such events with respect to the three regions identified earlier, including information on whether the security aspect of these cases has been covered before as well as other pertinent factors.

**Table 18 – Case Study Selection**

<b>Region</b>	<b>Main Event</b>	<b>Year</b>	<b>Covered before?</b>	<b>Notes</b>
Europe	'Nixon Shock'	1971	No	Unilaterally 'resolved'
	Oil Crisis	1973/74	Yes	Included Japan
	Plaza Accord	1985	No	
	Global Financial Crisis	2008	No	
East Asia	'Nixon Shock'	1971	No	Unilaterally 'resolved'
	Plaza Accord	1985	No	
	East Asian Crisis	1997/98	No	
	Global Financial Crisis	2008	No	
Middle East	'Nixon Shock'	1971	No	Unilaterally 'resolved'

'Petrodollar  
Crisis'

1973-75

Yes

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As we can see most cases that I have not analysed before appear in East Asia, and whilst we could in theory compare between regions we run into a few problems. Firstly, with respect to the availability of archival resources, those available that reference Europe are extremely limited, particularly for the Plaza Accord. Moreover, at Plaza, as we shall see, the key partners involved were Japan and the United States, placing further focus on East Asia.

Finally, what makes East Asia the most attractive region to sample from is that all relevant aggregate measures of power have shown considerable change since 1991, enabling us to analyse one constant factor, US security presences, whilst another varies - that is the relevant economic power of East Asian states. For example, in 1991 the US economy was thirty one percent larger than the countries that now make up the ASEAN+3 grouping, but by 2013 it was, on aggregate, nearly seven percent smaller. More importantly, Chinese GDP was seven percent of the United States' in 1991 but has grown to fifty six percent as of 2013.<sup>445</sup> Providing substantial variation in important factors which would otherwise potentially explain the effects we are looking to analyse. In the following section I assess the cases sequentially, attempting to isolate and 'process trace' positional advantages and linkage mechanisms through the episodes in question.

### *Economic Adjustment in the 1980s*

In the first chapter I covered American negotiations with Japan over trade access and currency valuations, demonstrating that the United States deployed a number of trade protection and retaliation tools to achieve these goals. At the same time, however, I noted that it was not until 1985 that serious steps were taken to rectify this, posing a question as to what caused such an

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<sup>445</sup> "World Economic Outlook Database, April 2015" Data and Statistics, International Monetary Fund, April 2015. Gross domestic product, current prices (U.S. dollars)

<http://www.imf.org/external/pubs/ft/weo/2015/01/weodata/index.aspx>

inflection. We know that at first the Americans entered into a number of bilateral negotiations in order to attempt to open up access to Japanese markets, but we also know that the perceived lack of progress made in these talks (by some parts of the US government at least) led to greater pressure from the Americans, culminating in the Plaza Accords of 1985 as well as some other more advanced negotiations under the MOSS framework.

Conventional wisdom would suggest that the economic motivations should seem a sufficient reason in themselves to resolve this dispute, especially Congressional threats of protectionist retaliation. However, a number of details surrounding the case (not least the inflection in US pressure) and a number of declassified documents point to other confounding factors. Of appreciable significance was the fact that the entire episode was innately tied up within the broader confines of the interlocking political and security relationships shared between Japan and the United States. While this may have, as Norrlof argues, been in acknowledgement of how the “weakening of the [American] economy, the fountain of the United States’ military might, would be dangerous for Western Europe and East Asia”<sup>446</sup> there also seems to have been a growing concern relating more directly to US security guarantees. Not only was there growing concern in Japan over Soviet military activity to the country’s North,<sup>447</sup> but we now know from archival evidence that the American’s were aware of more general security fears emerging in Japanese debates over economic adjustment.

Indeed, a State Department memorandum dated July 26, 1985 entitled ‘Growing Entanglement of US-Japan Trade and Defense Issues’ declares that,

“The increasing confluence of trade and defense issues in US-Japan relations highlights the inevitable broad impact of chronic trade friction between the world’s two largest economies. The US-Japan trade problem, if unchecked, will continue to place severe

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<sup>446</sup> Carla Norrlof, *America’s Global Advantage: US Hegemony and International Cooperation* (Cambridge: Cambridge University Press, 2010) p.186.

<sup>447</sup> Mastanduno, “US power and the international political economy”, 162-63

strains on overall bilateral relations and has potential serious consequences for Western security.”

The document demonstrates the State department's fear that Congressional (U.S) trade retaliation was becoming tied up with defence commitments, and while there had been defence related tensions before, relevant diplomatic documents do not mention anywhere near the level of tension mentioned here. For instance, previous discussions over cost-sharing and technology transfer, whilst exhibiting varying degrees of strain, didn't involve major threats of retaliation or fundamental rifts in the bilateral relationship.<sup>448</sup>

In the early eighties, for example, Presidential memoranda make no mention of potential coercive action nor exceptional levels of aggrievement, rather they merely reiterate somewhat mundane comments similar to the following,

“as we protect Japanese interests by our forces in the Indian Ocean, we believe it is in both our interests if Japan assumes a greater share of the burden.”<sup>449</sup>

However, when tensions rise later in the decade, particularly with respect to the large trade deficit, the perception of U.S. policymakers changes dramatically. Not only do they recall that the Japanese flirted with the idea to “replace the one-percent [defense spending] ceiling to give the executive branch a “weapon” to convince Congress and the American public of Japanese good faith.” But these documents also demonstrate knowledge that the Japanese expressed “serious

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<sup>448</sup> The following document provides an illustrative background to this beginning in the late 1970s: ““Memorandum of Conversation: The 11th SSC, 29 July - 2 August 1979” Document 2, National Security Archive Electronic Briefing Book No. 382, The National Security Archive.

<https://www.documentcloud.org/documents/370380-19790802a.html>

<sup>449</sup> “Talking Points on Japanese Defense Efforts for Meeting with PM Suzuki, April 20, 1981” Document 5, National Security Archive Electronic Briefing Book No. 175

<http://nsarchive.gwu.edu/NSAEBB/NSAEBB175/japan2-05.pdf>



concern that the US will begin soon to step up defense pressure in concert with trade demands.”<sup>450</sup>

As we can see, it is only after the perception that defense commitments were likely to be tied up with calls for economic adjustment that an exceptional attempt to deal with American demands is made. As far as it is possible to tell, this occurred *without* the explicit coercion of American diplomats, pointing toward leverage mechanisms at play. Equally, and indicative of the synergy between the two, it would not be at all surprising to find out that the American’s used their knowledge of Japanese fears of the mixing of security and economic factors to pressure them into specific actions. Indeed, we have seen such discussions in other episodes of American diplomacy, particularly with regard to the IEA.

However, what is missing from the analysis of this case, is an evaluation of the importance of the security contexts surrounding the period, along with the resultant effects this may have had on the negotiations. That is, the bipolar geostrategic setting of the time could explain why the effectiveness of these mechanisms, begging the question as to how changes in polarity may affect this. For instance, Norrlof argues that it was the fear that “a weakening of the [American] economy, the fountain of the United States’ military might, would be dangerous for western Europe and East Asia”<sup>451</sup> which motivated allies to concede on certain issues. A scenario which would be enhanced, presumably at least, under bipolarity. With this being the case, an evaluation of a case during unipolarity should help to assess the importance of geostrategic configurations in the utility of both of these mechanisms.

### *The East Asian Crisis*

The East Asian crisis begun in late 1997 following repeated speculative attacks on the Thai Baht, eventually forcing the Thai central bank to abandon its currency peg and float the currency,

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<sup>450</sup> “Memorandum: Growing Entanglement of US-Japan Trade and Defense Issues, July 26, 1985” Document 7, National Security Archive Electronic Briefing Book No. 175, The National Security Archive.

<http://nsarchive.gwu.edu/NSAEBB/NSAEBB175/japan2-07.pdf>

<sup>451</sup> Norrlof, *America’s Global Advantage*, 186.

dramatically reducing its value and substantially destabilising the domestic financial system. In common with the rest of the 'Asian 5' - the Philippines, Malaysia, Korea, and Indonesia - Thailand had taken on large dollar-denominated debts in the run up to the crisis. By mid-1997, they collectively held \$274 billion in total outstanding foreign currency denominated debt,<sup>452</sup> driven in a large part by the twin effects of capital account liberalisation and the perceived foreign exchange stability provided by their currency pegs. Consequently, after the Baht was floated in late 1997, and fearing similar dynamics in neighbouring economies, foreign investors refused to roll over short terms loans and moved to pull money out of the rest of the Asian 5. At the time Japan had the largest foreign exposure to these economies, sitting at \$97 billion in assets outstanding as of mid-1997, not to mention a broader interest in the recovery of some of its closest trading partners. Moreover, experiences of the Mexican bailout a few years earlier had revealed glaring holes in the IMF's procedural and quantitative capacity to resolve economic and financial distress in economies far larger than they had anticipated, significantly undermining confidence in the institution.

Partly as a consequence of this, in September of 1997, at the height of the Asian financial crisis, Japanese financial authorities had confidentially sent a proposal for an Asian Monetary Fund to a number of East Asian governments. The proposal suggested establishing an institution with \$100 billion of financial resources, able to act independently of the IMF.<sup>453</sup> Not only had the Americans been left uninformed, but they had legitimate concerns regarding the proposals' potential threat to international financial stability, let alone a more precise self interest regarding hegemonic influence. A separate regional organisation that didn't coordinate with the IMF threatened the unity of the global financial architecture and coordination in crisis response. If the AMF had supplanted the IMF as East Asia's financial firefighter it was feared that "regional political influence would make the Asian fund's programs less credible in the eyes of

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<sup>452</sup> Steven Radlet and Jeffrey Sachs. "The Onset of the East Asian Financial Crisis" in Paul Krugman ed. *Currency Crises* (Chicago: University of Chicago Press, 2000) p, 113

<sup>453</sup> Lipsy, Phillip, "Japan's Asian Monetary Fund Proposal" *Stanford Journal of East Asian Affairs* 3:1 (2003) p, 95.

investors.”<sup>454</sup> In short, that the conditionality of the loans would be compromised, and so threats to the financial system may have been swept under the carpet rather than solved.

Conditionality is important, however, not just because it seeks some form of resolution to the perceived structural causes of the relevant causes, but it also ensures that the organisations member states actually cash their money in up front. IMF quotas, for example, are fully paid in upon joining; indeed, at its founding this actually went so far as to require 25% was paid in as gold.<sup>455</sup> Having this capital paid in up front is intended to allow these funds to be disbursed, by and large, without political consideration. In turn, this trust is partial predicated upon the understanding that there will be sufficient conditionality attached to any loans that they will eventually be repaid. This explains why the IMF is unable to loan money to states that are perceived as insolvent. However, as Timothy Geithner – former US Treasury secretary, then working in its international affairs office - has indicated, American opposition also reflected the very basic fact that they didn’t want to be excluded from future crisis responses.<sup>456</sup> The United States saw the proposal as a threat to its broader influence in Asia, if not also a potential, if not likely, threat to the further liberalisation of the East Asian economies. Indeed, Japan’s Sakakibara was well known for his distaste toward American free market ideology.<sup>457</sup>

With Japanese exposure to the affected economies being as great as it was, the creation of a supplementary regional financial institution seemed like a logical step forward, and in many ways a rather uncontroversial one. In particular, Japan’s suggestion was to create an Asian Monetary Fund (AMF) to provide rapid liquidity support to the affected economies. Indeed, in recent years the Europeans have constructed a wide array of institutional mechanisms for providing liquidity support and economic restructuring to troubled Eurozone members. For instance, the European Stability Mechanism (ESM) has a €500 billion lending capacity and is staffed and run exclusively by Europeans. However, the AMF proposal differed from this in a number of significant ways,

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<sup>454</sup> Geithner, Timothy. *Stress Test: Reflections on Financial Crises* (London: Random House, 2014) p, 63.

<sup>455</sup> International Monetary Fund, “Fact Sheet: Gold in the IMF,” September 21, 2016.  
<https://www.imf.org/external/np/exr/facts/gold.htm>

<sup>456</sup> Geithner, *Stress Test*, 63

<sup>457</sup> Blustein, *The Chastening*, 163

most importantly in that “the original policy memo suggested that the AMF would not necessarily act in unison with the IMF”.<sup>458</sup>

The ESM, on the other hand, is intended to complement the IMF, not circumvent it. Indeed, the treaty establishing the ESM declares that the “active participation of the IMF will be sought” and that “A euro area Member State requesting financial assistance from the ESM is expected to address, wherever possible, a similar request to the IMF”.<sup>459</sup> With this being the case, the AMF proposal was considered a threat to the broader global financial system, as well as, more obviously, American economic preferences.<sup>460</sup> In particular, it would seem likely that after nearly two decades of efforts to open up the Japanese economy to foreign capital, the proposal for an institution that locked-out US influence and was contrary to its economic interests was deemed particularly dangerous.

To some extent, the proposal could also be seen to justify the earlier assumption that the dissipation of geostrategic pressures would be likely to diminish America’s capacity to shape global economic arrangements. Yet, ultimately, the AMF proposal didn’t take off, and there appears to have been a number of strategic concerns influencing the later objections of regional states. In this case, however, the manner in which this occurred was substantially different from what was witnessed during the 1980s. In this case Japan was largely unaffected by concerns regarding American security presences. Rather it was other regional states - particularly China and the smaller ASEAN states - that were responsive to perceived concerns of American policymakers, especially the emphasis made of potential ‘Japanese hegemony’.<sup>461</sup> Indeed, then Under Secretary of the Treasury for International Affairs, Tim Geithner, recalled that this fear of hegemony resonated well with “Asian countries that still viewed the U.S. security presence as an

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<sup>458</sup> Phillip Lipsky, “Japan’s Asian Monetary Fund Proposal” *Stanford Journal of East Asian Affairs* 3:1 (2003) p, 95

<sup>459</sup> “Treaty Establishing the European Stability Mechanism” Legal Documents, European Stability Mechanism, February 3rd, 2015.

<http://www.esm.europa.eu/about/legal-documents/index.htm>

HYPERLINK

"http://www.esm.europa.eu/about/legal-documents/index.htm"

<sup>460</sup> Timothy Geithner. *Stress Test: Reflections on Financial Crises* (London: Random House, 2014) p, 63

<sup>461</sup> Lipsky, “Japan’s Asian Monetary Fund Proposal” p, 96

important part of regional stability.”<sup>462</sup> In this sense, we can see a broader facet of American structural power in the region; namely, as Evelyn Goh identifies, “that there is a significant coincidence of preferences between Southeast Asian states and the United States for retaining a forward U.S. military presence and U.S. economic and political engagement in the region.”<sup>463</sup>

In particular, as Yuen Foong Khong notes, this was heavily influenced by the fears of many smaller East Asian states, specifically those of ASEAN, that with the end of the Cold War “the United States would have strong incentives to withdraw militarily from East Asia.”<sup>464</sup> As he continues on to argue, many Southeast Asian nations feared that American withdrawal would dramatically destabilise the region, with larger states, specifically Japan, moving to fill the power vacuum, likely prompting other regional actors into action.<sup>465</sup> Making sure that the United States was firmly committed to the region, and the Japanese were sufficiently constrained, has therefore been a priority since (and indeed before) the end of the Cold War.

In this sense, American military strategy has effects in East Asia that are not solely reducible to its security guarantees with allies, rather the presence of US forces helps to provide a broadly stable regional security system in which the majority of regional actors have a stake. Reflecting, as I mentioned earlier, that “since the US preference is simply for these countries to continue doing what they have already been doing, the incentive is not to disrupt the existing set of relationships that sustain this status quo.”<sup>466</sup> A logic which is operative, albeit asymmetrically, on allies and non-allies alike. Moreover, and compounding this, America’s presence conforms to East Asian anti-hegemonic preferences insofar as the projection of extra-regional power contributes to pacify conflicts between East Asian states, and helps to reinforce

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<sup>462</sup> Timothy Geithner, *Stress Test: Reflections on Financial Crises* (London: Random House, 2014) p, 63.

<sup>463</sup> Evelyn Goh, “Great Power and Hierarchical Order in Southeast Asia: Analyzing Regional Security Strategies” *International Security* 32:3 (2007/08) p, 152

<sup>464</sup> Yuen Foong Khong, “Coping with Strategic Uncertainty: The Role of Institutions and Soft Balancing in Southeast Asia’s Post-Cold War Strategy” in J.J. Suh *et al* *Rethinking Security in East Asia: Identity, Power, and Efficiency* (Stanford: Stanford University Press, 2004) p, 177

<sup>465</sup> *Ibid.*, 182

<sup>466</sup> Stephen Brooks and William Wohlforth, *America Abroad: The United States’ Global Role in the 21st Century* (Oxford: Oxford University Press, 2016) p, 177

the values of 'non-interference', 'sovereignty', and 'independence' at the core of the ASEAN treaties.<sup>467</sup> In this way, the projection of American military power contributes to the attainment of favourable outcomes not through the direct threatening of consequences or the promise of rewards, but rather by influencing decisions through structuring the utility of certain outcomes. Whilst the Americans lobbied many nations throughout the East Asian crisis, the dynamics that led to the rejection of the AMF proposal had developed well before that. In short, some of the more salient factors at play did not, in themselves, necessitate the United States to attempt to directly influence the states in question.

### *The 2008 Financial Crisis*

With the 2008 financial crisis starting in the global financial system's core the effects were far more severe than in previous cases of financial crisis. Not only did many foreign banks have large subsidiaries in the United States, but because the American financial market all but seized up, dollar funding, the lifeblood of the global financial system, did too. As William Winecoff has demonstrated, America is the dominant node in the global financial system, connected to more financial systems, and exchanging higher levels of funds, than any other state on the planet.<sup>468</sup> Because of this, the seizing up of US financial markets led to widespread, systemic illiquidity. As to illustrate this, the majority of the \$3.3 trillion of emergency liquidity supplied to America's domestic economy by the US Federal Reserve was taken up by subsidiaries of foreign banks.<sup>469</sup>

More interestingly, however, was the absence of a Japanese or South Korean request to open up a dollar line with the existing regional institutions that had been forming throughout the 2000s. Established in 2000 at a meeting in Chiang Mai in Thailand the finance ministers of the ASEAN +3

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<sup>467</sup> "Treaty of Amity and Cooperation in Southeast Asia, Indonesia, 24 February 1976" Association of Southeast Asian Nations.

<http://www.asean.org/news/item/treaty-of-amity-and-cooperation-in-southeast-asia-indonesia-24-february-1976-3>

<sup>468</sup> William Winecoff, "Structural power and the global financial crisis: a network analytical approach" *Business and Politics* 17:3 (2015) pp, 495-525

<sup>469</sup> Lawrence Broz, "The Federal Reserve as Global Lender of Last Resort, 2007-2010" Paper presented at the International Political Economy Society (IPES), University of Virginia, November 9-10, 2012.

[http://ucrpolicaleconomy.ucr.edu/wp-content/uploads/2013/09/Broz\\_Fed.pdf](http://ucrpolicaleconomy.ucr.edu/wp-content/uploads/2013/09/Broz_Fed.pdf)

announced a plan to establish a regional financial support mechanism to complement international institutions such as the IMF. This proposal involved expanding an existing small scale regional swap arrangement whilst establishing a corresponding and complementary network of bilateral swap facilities.<sup>470</sup> This arrangement was known as the 'Chiang Mai Initiative', and reflected a response to what Paul Bowles has referred to as the animosity that developed toward the 'deep conditionality' imposed upon East Asia states by the IMF during the East Asian crisis.<sup>471</sup>

Ordinarily, IMF adjustment packages would demand a mixture of austerity and tightened interest rates to strengthen perceptions of domestic credibility with foreign investors and governments, attaching conditions on the adoption of new regulations and standards. In East Asia, however, the IMF went much further, requesting far reaching 'structural reform'. Whilst it may be argued that these reforms were necessary, they were not pressing components of the crisis at hand, rather they reflected more broadly the views and interests of the US Treasury and the IMF. Resultantly, they were widely perceived as an "unjustified loss of sovereignty."<sup>472</sup> Yet, as we know, despite these programmes, the region had already rejected a far reaching proposal for monetary regionalism in the form of the AMF. The question, therefore, is why did large nations like China reject this proposal, yet accept the CMI? The answer, it seems, can be found in the organisational constitution of the institutions and the broader foreign policy preferences of the main East Asian states. In particular, it is notable that the CMI was distinctly and resolutely an intergovernmental organisation that left the discretion and disbursement of funds firmly, if not entirely, within the hands of the member states. In particular, there was to be no pooling agreement, and, further to this, the overwhelming majority of funds were *bilateral* swaps.

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<sup>470</sup> "The Joint Ministerial Statement of the ASEAN+3 Finance Ministers Meeting (6 May 2000, Chiang Mai)"

Accessible at the website of the Ministry of Finance Japan,

[http://www.mof.go.jp/english/international\\_policy/convention/asean\\_plus\\_3/20000506.htm](http://www.mof.go.jp/english/international_policy/convention/asean_plus_3/20000506.htm)

<sup>471</sup> Paul Bowles, "Asia's Post-Crisis Regionalism: Bringing the State Back in, Keeping the (United) State Out" *Review of International Political Economy* 9:2 (2002) p, 237.

<sup>472</sup> Jagdish Bhagwati, "Why Free Capital Mobility may be Hazardous to Your Health: Lessons from the Latest Financial Crisis" Speech prepared for the NBER Conference on Capital Controls in Cambridge, Mass., November 7, 1998.

<http://econ.ucdenver.edu/beckman/Econ6410/bhag-asia.pdf>

Fundamentally, this form of organisation reflected a “preoccupation with national sovereignty and non-interference in the internal affairs of member states”<sup>473</sup> that has become the defining feature of East Asian regional relations, especially those between the ASEAN nations.

This notwithstanding, the CMI has gradually expanded since its inception in 2000. By 2004, the arrangement had expanded to a count of 16 bilateral swap arrangements totalling \$36.5 billion,<sup>474</sup> with the multilateral swap arrangement component remaining at an operationally insignificant \$1 billion.<sup>475</sup> The largest, and perhaps most important, step was instituted in 2009, whereby the arrangement was ‘multilateralized’ to form the Chiang Mai Initiative *Multilateralization* (CMIM).<sup>476</sup> This organisation, in the words of the press release, aimed to create “a self-managed reserved pooling arrangement governed by a single contractual agreement.”<sup>477</sup> However, this description is somewhat misleading, reflecting once again the regional value placed upon national sovereignty. The key phrase here is ‘self-managed reserved pooling’ which in practice isn’t actually a pool, rather a commitment. Official documentation sheds some light on this:

“Activation of swap transactions under the CMIM may be initiated by any CMIM Party by submitting to the CMIM Coordinating Countries a request for the purchase of US dollars under the CMIM arrangement with its local currency. The Coordinating Countries, in turn,

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<sup>473</sup> David Martin Jones and M.L.R. Smith. “Making Process, Not Progress: ASEAN and the Evolving East Asian Regional Order” *International Security* 32:1 (2007) p, 178.

<sup>474</sup> “The Joint Ministerial Statement of the ASEAN + 3 Finance Ministers Meeting (15 May 2004, Jeju)” Ministry of Finance Japan, May 15, 2004  
[http://www.mof.go.jp/english/international\\_policy/convention/asean\\_plus\\_3/20040515.htm](http://www.mof.go.jp/english/international_policy/convention/asean_plus_3/20040515.htm)

<sup>475</sup> “Memorandum of Understanding on the ASEAN Swap Arrangements, Kuala Lumpur, 5 August 1977”  
[http://www.asean.org/images/2012/Economic/AFMM/Agreement\\_on\\_Finance/Memorandum%20of%20Understanding%20on%20the%20ASEAN%20Swap%20Arrangement%20\(1978\).pdf](http://www.asean.org/images/2012/Economic/AFMM/Agreement_on_Finance/Memorandum%20of%20Understanding%20on%20the%20ASEAN%20Swap%20Arrangement%20(1978).pdf)

<sup>476</sup> “The Joint Media Statement of The 12<sup>th</sup> ASEAN+3 Finance Ministers’ Meeting 3 May 2009, Bali, Indonesia” May 3, 2009.  
[http://www.mof.go.jp/english/international\\_policy/convention/asean\\_plus\\_3/20090503.pdf](http://www.mof.go.jp/english/international_policy/convention/asean_plus_3/20090503.pdf)

<sup>477</sup> “The Joint Ministerial Statement of the 11<sup>th</sup> ASEAN+3 Finance Ministers’ Meeting (4 May 2008, Madrid)” May 4, 2008.  
[http://www.mof.go.jp/english/international\\_policy/convention/asean\\_plus\\_3/20080504.htm](http://www.mof.go.jp/english/international_policy/convention/asean_plus_3/20080504.htm)



will deliver the swap request notice and other relevant information to the Executive Level Decision Making Body (ELDMB) and convene a meeting to decide on the swap request. Upon approval, CMIM Parties will proceed with the activation of *bilateral swap transactions* between each of the swap providing parties and the relevant swap requesting party.”<sup>478</sup>

This definition of ‘pool’ and indeed of ‘multilateral’ seeks to underline what has been called the “ASEAN Way” of diplomacy, as opposed to the better known Western practice. CMIM was and remains a “contractual arrangement under which participating economies agree to certain collective principles and procedures” rather than a pooling of authority or resources.<sup>479</sup>

The puzzle as to why Japan and South Korea did not call on these arrangements to provide liquidity to their domestic banking systems is therefore somewhat clearer than it otherwise may have been. Compared to the alternatives, the ASEAN arrangements had greater stringency and were of considerably lower volume. For instance, in this case the US federal reserve established a wide range of dollar swap lines with other central banks after the onset of the crisis, which were to offer recipient states unlimited dollar liquidity.<sup>480</sup> In addition to this, the Federal Reserve also provided foreign bank subsidiaries domiciled in the United States with unlimited access to its discount window, accounting (as mentioned before) for a large proportion of liquidity that found its way to foreign banks. So what are the ramifications of this?

In the main part, as Daniel Drezner argues, it means that ‘The System Worked’.<sup>481</sup> Now, this may need a little clarification, but what I mean is that the financial crisis did not morph into a depression, nor did it cause the collapse of a major state's economy. As I have covered above, states in need of dollar liquidity were quickly disbursed it, and it was made available in unlimited

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<sup>478</sup> “Chiang Mai Initiative Multilateralization” Banco Sentral ng Philipinas, September, 2014. Emphasis added. <http://www.bsp.gov.ph/downloads/publications/faqs/cmim.pdf>

<sup>479</sup> John Ciorciari. “Chiang Mai Initiative Multilateralization” *Asian Survey* 51:5 (2011) p, 936.

<sup>480</sup> “Central Bank Liquidity Swap Lines” Regulatory Reform, Board of Governors of the Federal Reserve System, January 12, 2010. [http://www.federalreserve.gov/newsevents/reform\\_swaplines.htm](http://www.federalreserve.gov/newsevents/reform_swaplines.htm)

<sup>481</sup> Daniel Drezner, *The System Worked: How the World Stopped Another Great Depression* (Oxford: Oxford University Press, 2014)

amounts. Among other factors, these effectively meant that the institutions in question performed as needed, foreshadowing the need for substantial revision, therefore removing the necessity for the United States to use additional diplomatic tools in the first place. With that said, as I covered earlier, there would likely have been incentives for regional states to support aspects of the American economy if it had in fact faced greater pressures. That is, inasmuch as they would not have wanted to undermine the main external provider of security. Indeed, recent agreements such as the TPP remind us that America's role in the region is as important as ever, and is likely to be increasingly so given growing discontent in the South and East China Seas.

### ***Chapter Summary***

I have been able to demonstrate that military factors have featured prominently in many of the cases of economic adjustment or crisis covered in this chapter. Providing evidence that directly supports arguments linking US strategic commitments to beneficial political-economic outcomes. Security relationships and strategic decisions can be demonstrated to act as either permissive contextual factors, as in instances of positional advantage, or more direct causal elements in diplomatic exchanges, as we see with 'linkage' strategies.

With that said, this chapter has also identified what appear to be two rather intractable problems. Firstly, that the cases of most importance to strategic analysis have a very low number of observations given that the events are often rare. Secondly, and related to this, the important elements of these cases are the specific mechanisms at play, which in many cases are obscured by lack of access to the relevant information. Whilst we can deduce a lot of the key factors merely from observation, linkage diplomacy demands access to archival resources which themselves are circumscribed in their usefulness by the fact that much diplomacy is secret, with states presumably somewhat unwilling to directly record sensitive aspects of their relationships with one another. These two problems, as I shall go on to illustrate, have a number of important consequences for studying strategic matters, both theoretical and practical.

As the above case illustrates we can trace the influence of American strategic decisions through a number of important cases of economic adjustment, inclusive of changes in systemic polarity. Moreover, by digging down into the individual cases we can also see what configuration of factors may have been necessary to support the successful use of these mechanisms. What is clear is that the operation of these mechanisms is messy and contingent, and not unsurprisingly so. Despite the importance of security matters, the outcome of any event in international politics is going to depend on the relative importance of a number of factors which are themselves ascribed importance by contextual circumstances. Moreover, as I will describe in detail in the final chapter, the events we analyse and compare themselves operate in specific path-dependent, structures of international relations. More commonly, we call these 'orders', sets of relationships that are often established in the aftermath of hegemonic conflicts.

One implication that can be drawn from the cases described above is that the relationships under analysis are not necessarily appropriately described as correlational relationships, but as sets of permissive and/or causal configurations and factors. More importantly, given the limited number of cases in any one given 'order', the onus is to extract as much information as possible from each observation. Equally, where we do believe we can draw historical parallels we first need to analyse them for true similarity before we do so, requiring reasonably extensive qualitative research. A caveat to this, however, is that there may be 'separation of scales' between different levels of international relations analysis that is sufficient to demarcate between them and establish more generalizable theories of behaviour. An example from the International Relations literature would be the scholarship on 'balancing', where it is often claimed that recurrent balances of power are in fact a law of international politics, with original understandings only making reference to *systemic* variables to explain why this would be so.<sup>482</sup> The key here, then, would be to establish that unit level variables do not affect systemic level variables. Yet, as we have seen, this has not been the case in the examples we have analysed, being heavily reliant on idiosyncratic factors.

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<sup>482</sup> For an overview of the state of the literature, see Joseph Parent and Sebastian Rosato, "Balancing in Neorealism" *International Security*

## Chapter 6 - Political Economy, Probability Theory, and Classical Realism

This chapter provides simulation evidence offering a practical and theoretical explanation for the tentative nature of many of the results found in the literature relating to the main research question. This is central to understanding and drawing implications from any of evidence presented and discussed in this thesis.

In this chapter I argue that there are mathematical and statistical properties common to the relevant data that explain widespread generalizability issues. As was mentioned in the introduction, analysis suggests that several key probabilistic characteristics are absent in many of the variables analyzed in the international political economy literature, which has profound implications for our inferences from both case study investigation and statistical analysis. Linked to this, many of the more fundamental phenomena that are of interest to scholars of international security, whether focused on economic or strategic factors, are either rarely observed or hard to quantify. That is, we have a 'low-n' problem of an insufficiently small sample of cases to infer from and often an onus on descriptive detail. These factors have rather notable parallels with core tenets of classical realist theory, which has important consequences for drawing implications and interpretation from research regarding strategy generally and its influence on economic relationships more specifically.

In what follows, I cover these factors in more detail, demonstrating some of the key mathematical and practical limitations associated with the data. I start first with a discussion over model sophistication, and why increasingly powerful methodologies may still offer limited purchase over the given research question. I then proceed to address mathematical and practical issues that explain this, before concluding with an attempt at theoretically reconciling my findings with our understanding of international security, particularly as it pertains to the economic factors which are my main analytical focus.

## Could Greater Model Complexity Help?

A potential, if not likely, response to the above could be that some of the limitations identified throughout this thesis are the result of either using wrong or underspecified models and methodologies. As I will demonstrate, this is unlikely to be the case, but it is nonetheless necessary to cover these objections and explain why they will likely also offer limited analytical purchase. As we have seen, many of the models in use can be shown to exhibit a wide array of inferential and descriptive limitations. Yet a common feature of a large number of them is that they have been characteristically rather 'simple', that is to say that they do not contain a large number of terms nor require higher order polynomial fits. In many cases this is not a bad thing, but there are a large number of scholars who devote considerable time and effort with developing ever more complex and intricate statistical models and methodological approaches. Therefore it would seem necessary to first apply a more advanced treatment in order to assess the nature of the inadequacies found in more simplistic models.

As mentioned in Chapter three, the considerably more complex mathematical models used to attempt to forecast major macroeconomic variables, dynamic stochastic general equilibrium (DSGE) models, do not perform particularly well. Especially at times when you want them to. They are at their worst, for example, in the midst of a financial crisis, or indeed just before it. As I mentioned earlier, from their own calculations, the Federal Reserve has shown that the average error for their GDP projections starts at  $\sim \pm 1.3\%$  at a one year time horizon, growing to  $\sim \pm 1.9\%$  at a two year time horizon, and  $\sim \pm 2.1\%$  at a three year time horizon.<sup>483</sup> Equally, the confidence intervals placed on forecasts rapidly grow to be rather useless. For instance, the New York Federal Reserve forecast for GDP growth four quarters away has a 95% confidence interval covering -4 to 8%, a huge range in values.<sup>484</sup> Near enough to saying 'it may go up, or it may go down'.

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<sup>483</sup> Board of Governors of the Federal Reserve System, "Updated Historical Forecast Errors" Division of Research and Statistics. April 98th, 2014. p, 2

<https://www.federalreserve.gov/foia/files/20140409-historical-forecast-errors.pdf>

<sup>484</sup> Federal Reserve Bank of New York. "The FRBNY DSGE Model" Staff Report No. 647. October 2013. p,49

For illustrative purposes I display two out of the seven pages detailing some of the main features of the Federal Reserve Bank of New York’s DSGE model.

Figure 34 – Excerpt from FRBNY DSGE Model

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subject to the budget constraint (2), the labor demand equation (4), and the indexation rule

$$W_{t+1}(j) = (\pi_t \epsilon^j)^{\eta} \bar{W}_t(j), \quad (7)$$

for  $s = 1, \dots, \infty$ .

**Final good producers.** The competitive final good producing firms combine intermediate goods  $Y_t(i)$  using the technology

$$Y_t = \left[ \int_0^1 Y_t(i)^{\frac{\sigma-1}{\sigma}} di \right]^{\frac{\sigma}{\sigma-1}}. \quad (8)$$

Profit maximization implies that the demand for intermediate goods is

$$Y_t(i) = \left( \frac{P_t(i)}{P_t} \right)^{-\frac{\sigma}{\sigma-1}} Y_t. \quad (9)$$

Combining (9) with the zero profit condition, yields the price of the composite good is obtained as

$$P_t = \left[ \int_0^1 P_t(i)^{-\frac{\sigma}{\sigma-1}} di \right]^{-\frac{\sigma-1}{\sigma}}. \quad (10)$$

We indicate by  $\lambda_{jt}$  the net mark-up that intermediate goods producers would like to charge over marginal costs. This desired mark-up varies exogenously over time and we refer to the innovations to this process as mark-up shocks. A higher  $\lambda_{jt}$  corresponds to a more inelastic demand, which leads optimizing firms to charge a higher markup, and hence higher prices.

**Intermediate good producers.** A continuum of firms indexed by  $i$  produce differentiated intermediate goods by combining capital and labor via a common Cobb-Douglas production function with capital elasticity  $\alpha$

$$Y_t(i) = K_t(i)^\alpha (Z_t L_t(i))^{1-\alpha}, \quad (11)$$

where  $Z_t$  represents exogenous technological progress, which we assume to be non-stationary. We model the growth rate of productivity  $z_t = \ln(Z_t/Z_{t-1})$  as a stationary exogenous process with mean  $\gamma$ , and refer to the innovations to this process  $z_t^j$  as productivity shocks.

The intermediate goods producers hire labor and rent capital in competitive markets and face an identical nominal wage,  $W_t$ , and rental rate for capital,  $R_t^k$ . The profit function for each firm  $i$  is therefore

$$\Pi_t(i)Y_t(i) - W_t L_t(i) - R_t^k K_t(i). \quad (12)$$

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Following Calvo (1983), we assume that in every period a fraction  $(1 - \zeta_d)$  of the intermediate goods producers optimize their prices and the remainder  $\zeta_d$  adjusts prices to steady state inflation  $\pi^*$ . The firms that are able to optimize choose prices  $\hat{P}_t(i)$  to maximize the expected discounted sum of future profits:

$$\mathbb{E}_t^i[\hat{P}_t(i) - MC_t(i)Y_t(i) + \beta \sum_{s=1}^{\infty} \zeta_d^s \mathbb{E}_t^i[\hat{P}_{t+s}(i)\pi_{t+s}^* - MC_{t+s}(i)Y_{t+s}(i)]]$$

subject to

$$Y_{t+s}(i) = \left( \frac{\hat{P}_t(i)\pi_{t+s}^*}{P_{t+s}} \right)^{-\frac{\sigma}{\sigma-1}} Y_{t+s}. \quad (13)$$

where  $\pi_t = \frac{P_t}{P_{t-1}}$ ,  $MC_t$  is firms' nominal marginal cost, and  $\beta^s \mathbb{E}_t^i$  is a discount factor ( $\mathbb{E}_t^i$  is the Lagrange multiplier associated with the household's nominal budget constraint).

**Capital producers.** Capital producers are competitive firms that purchase an amount of capital  $x$  from entrepreneurs at the beginning of the period. During the period, they buy an amount  $I$  of general output from the final goods producers, and transform it into new capital via the technology:

$$x' = x + \mu \left( 1 - S \left( \frac{I}{K_{t-1}} \right) \right) I_t, \quad (14)$$

so that  $x'$  is the new stock of capital, which they sell back to entrepreneurs at the end of the same period.  $I_t$  is investment spending and  $S(\cdot)$  is the cost of adjusting investment, with  $S'(\cdot) > 0$ ,  $S''(\cdot) < 0$ . The exogenous process  $\mu$  affects the efficiency by which a foregone unit of consumption contributes to capital accumulation, and its innovations are labeled "marginal efficiency of investment" (MEI) shocks. Capital producers choose investment to maximize their profits, expressed in terms of consumption goods,

$$\Pi_t^k = \frac{Q_t^k}{R_t} (x' - x) - I_t, \quad (15)$$

where  $Q_t^k$  is the price of capital.

**Entrepreneurs and Banks.** There is a continuum of entrepreneurs indexed by  $e$ . Each entrepreneur buys installed capital  $\bar{K}_{t-1}(e)$  from the capital producers at the end of period  $t-1$  using her own net worth  $N_{t-1}(e)$  and a loan  $B_{t-1}^e(e)$  from the banking sector, so that:

$$Q_{t-1}^k \bar{K}_{t-1}(e) = B_{t-1}^e(e) + N_{t-1}(e), \quad (16)$$

As is readily apparent, the mathematical foundations of the model are considerably more intricate and extensive than the models mentioned throughout this thesis. Yet, as a Federal Reserve research paper notes,

“We find that Greenbook [Federal Reserve] forecasts generally outperform our simple benchmarks in the very short forecasting horizon. However, typically by the one-year

*forecast horizon, the accuracy of Greenbook forecasts is comparable with or worse than at least one of our benchmarks.”*<sup>485</sup>

And what were these benchmarks? They were “a random walk, a first-order autoregressive (AR) model, and a Bayesian model averaged forecast from a pool of univariate time-series models taught in first-year economics graduate courses,”<sup>486</sup> variants of the very models described and used throughout this thesis.

More heuristically perhaps these DSGE models fail what could be called ‘the market test’. That is the fact that financial firms do not seem to use them. This is problematic because if they were effective in predicting specific economic variables then presumably profit making companies would use them to inform their analyses. However, as prominent economic blogger Noah Smith has noted,

“As far as I’m aware, private-sector firms don’t hire anyone to make DSGE models, implement DSGE models, or even scan the DSGE literature...I’ve called and emailed everyone I could think of who knows what financial-industry macroeconomists do, and they’re all unanimous - they’ve never heard of anyone in finance using a DSGE model.”<sup>487</sup>

Given what else I have covered, and what more I will in the following section, this could be considered a pretty damning critique.

As it turns out, much simpler methods tend to be equally effective at most timeframes for predicting quarterly economic series, and in most case *more* effective for higher frequency data.

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<sup>485</sup> Andrew Chang and Tyler Hanson, “The Accuracy of Forecasts Prepared for the Federal Open Market Committee” Finance and Economic Discussion Series, Divisions of Research & Statistics and Monetary Affairs, Federal Reserve Board. Washington, 2015. p,11. Emphasis added.

<https://www.federalreserve.gov/econresdata/feds/2015/files/2015062pap.pdf>

<sup>486</sup> Chang and Hanson, “The Accuracy of Forecasts Prepared for the Federal Open Market Committee,” 2

<sup>487</sup> Noah Smith, “The most damning critique of DSGE” *Noahpinion*, January 10, 2014.

<http://noahpinionblog.blogspot.co.uk/2014/01/the-most-damning-critique-of-dsge.html>

In the main part due to the fact that these models can in fact handle higher frequency data than DSGEs, but also because they do not rely on any explicit theoretical premise, instead they merely aggregate and average out what data is deemed to most effectively reduce forecast error. For instance, recently there has been a rapid growth in the popularity of ‘machine learning’ models which tend to favour more parsimonious parameterizations over the complex<sup>488</sup>, which begs the question as to why DSGE style models are used in the first instance. In the main part it seems to be because they are deemed resilient to policy changes, what in economics is known as the ‘Lucas critique’. In his own words, that,

“...the features which lead to success in short-term forecasting are unrelated to quantitative policy evaluation, that the major econometric models are (well) designed to perform the former task only, and that simulations using these models can, in principle, provide no useful information as to the actual consequences of alternative economic policies.”<sup>489</sup>

In plainer English, while we can use certain models for short term forecasting performance they cannot tell us about the influence of alternative policy choices. These models merely weight the aggregate of information and return another value, meaning that they have no policy or theoretical interpretation. Whilst on the other hand (in theory), you can introduce a specific change in a given variable into a DSGE and come to a ‘rough’ approximation of the effect of such a change on a given macroeconomic aggregate. Permitting some form of counterfactual analysis. That is, after all, the point of the extensive formalisation of the DSGE displayed above.

In one way, this shows us that the aforementioned DSGE models may have some practical usage, mainly insofar as they act as well reasoned ‘thought experiments’. Moreover, it also demonstrates specific trade-offs between certain alternative intentions and objectives. That is,

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<sup>488</sup> *The Economist*, “Economists are prone to fads, and the latest is machine learning,” November 26, 2016. <http://www.economist.com/news/finance-and-economics/21710800-big-data-have-led-latest-craze-economic-research-economists-are-prone>

<sup>489</sup> Robert Lucas. “Econometric Policy Evaluation: A Critique,” in Karl Brunner and Allan Meltzer, *The Phillips Curve and Labor Markets* (New York: American Elsevier Publishing Company, 1976) p.20. Emphasis added.



more accurate forecast performance may come at the expense of policy predictive capability. More importantly, it also shows that complexity does not translate into predictive accuracy; something which is true for a wide range of models. For example, let us evaluate the performance of some of the ‘machine learning’ methods mentioned earlier, in this case the increasingly popular neural network models. For readers who are not familiar with machine learning, an alternative name is artificial intelligence, which may make it somewhat clearer what these models actually do. That is, they iterate over the dataset given to them and ‘learn’ how to best fit the given function/output by attempting to minimize some type of error function.

For a number of applications such as facial recognition,<sup>490</sup> language recognition,<sup>491</sup> and marketing<sup>492</sup> they have proved to be rather (in fact, very) successful. But for time series forecasting they can suffer from many of the same problems other methods do. In doing so, they provide an interesting example of the limitations associated with the statistical modelling of certain phenomena, particularly with respect to ‘over-parameterization’ - the addition of redundant and/or counter-productive parameters to a model. In what follows, I will briefly show two statistical models, one of which similar to that mentioned above as being as accurate over medium timeframes to the aforementioned DSGE. Namely, a generalization of the AR1, an ARMA model. These Autoregressive Moving Average models model both the series and the error itself according to a lag specified by the researcher. In this example both lag lengths are set at one time step, that is an ARMA(1,1). I then compare this to one of the aforementioned machine learning models, a neural network to be precise. However, first off, let us go through the working of the models. Not only do we need to see how they work, but in doing this I hope to demonstrate that the results I have presented throughout this thesis are not attributable to underspecified models, nor to ignorance of more sophisticated modelling techniques.

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<sup>490</sup> Henry Rowley *et al.*, “Neural Network-Based Face Detection” *IEEE Transactions on Pattern Analysis and Machine Intelligence* 20:1 (1998) pp, 23-28.

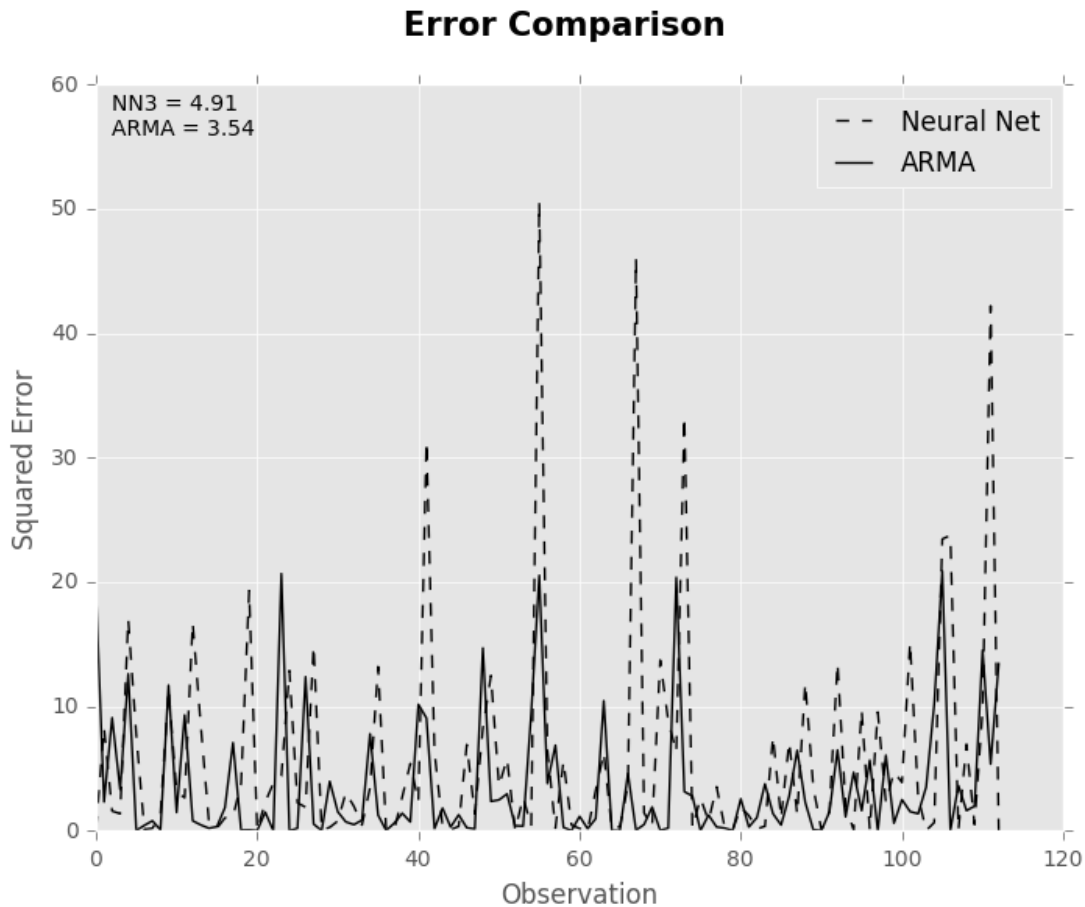
<sup>491</sup> Fred Richardson *et al.* “Deep Neural Network Approaches to Speaker and Language Recognition” *IEEE Signal Processing Letters* 22:10 (2015) pp, 1671-1675

<sup>492</sup> Bruce Curry and Luiz Moutinho, “Neural Networks in Marketing: Modelling Consumer Responses to Advertising Stimuli” *European Journal of Marketing* 27:7 (1993) pp, 5-20

To simplify somewhat, neural networks take some form of input, then run it through a number of 'hidden nodes' which are essentially functions which map the input data onto an output value. These output values are then aggregated and run through a final function to return the value we require. Normally this process is 'trained' on a dataset of known outputs in order that the model's error is minimized. This is achieved simply by comparing the model output to the desired training output in order to obtain the error, the model then alters the parameters and recalculates, doing this until the error no longer declines. It is then ready to be used out of sample. Already readers may be able to see that there are ample opportunities to customize this process, which is exactly what makes the model so versatile. However, as we can see in Appendix 6:1 even in a relatively spartan formulation these are rather heavily parameterized models. So how does it compare to the aforementioned ARMA?

For one the ARMA model rather simple, a generic univariate ARMA(1,1) can be found in Appendix 6:2. As we can see it has at most three parameters, and in the model I actually estimated just two. Therefore one may imagine that all the extra parametrization and computation in the neural network may yield significantly superior results. But does it? So as to compare their forecast capability, I trained and tested both models on twelve months of the Federal Reserve's daily 'dollar index' data. To do so I split the dataset in half, using the first half as 'training' data to fit the models to and the second half as 'testing' data. That is, data the model has not seen or been explicitly fitted to. I parameterized the neural network via an iterative search for optimal hyper-parameters focused on reducing overall model error. That is, the number of nodes and layers of nodes in the neural network were iterated, and the neural net subsequently trained, until out of sample model error could not be further improved. The process settled on a two layer system of two and four nodes respectively. I then compared the error between the neural network and ARMA models, as shown in the figure 34 below.

Figure 35 – Neural Net/ARMA Model Error Comparison



In the upper left hand corner of the graph I display the mean squared error for each model. As you can see, they are both similar albeit with the notable fact that the ARMA model actually performed *better* out of sample than the neural network model. That is, the two term ARMA model performed better than the highly parameterized neural network. Indeed, the basic neural networks I fitted have twice as many parameters as hidden nodes, compared to just two parameters in the ARMA(1,1). Moreover, and because of this, these neural network models are at a far greater risk of 'overfitting' than the ARMA model - the effect of having being overly fit to the training data and so modelling noise rather than the underlying signal (to the extent there exists one). In short, more complex models are no guarantee of superior results. Indeed, the last major international forecasting competition, a process pitting different time series models

against one another, found that “*statistically sophisticated or complex models do not necessarily produce more accurate forecasts than simpler ones.*”<sup>493</sup>

In essence, and somewhat intuitively, forecast performance (and general inference) relies on a number of factors, but particularly the type of variable is being forecast, when the forecast is made, and the horizon of such a forecast. For instance, forecasting GDP growth at some time  $t$  for the following eight quarters will likely have a drastically different forecast error profile than predicting the movement in a given stock price at a given time  $t$  for the next day. This is also true of case study research, whereby specific hypotheses rarely fit well outside of the cases they have been analysed on, and where they do, the inference gained tends to be rather general. For example, my earlier discussion over positional advantage and linkage applied across a number of cases, but the actual causal mechanisms were in each case rather idiosyncratic. That notwithstanding, this breakdown in predictive ability can be attributed in both instances to rather similar phenomena (as I shall continue to argue), and is certainly more a reflection of the underlying processes than it is limitations associated with specific methods. As I shall explore in the following section.

## **Underlying Mathematical Issues**

The reasons for these failings are rather diverse, and ultimately related to fundamental differences between physical and social systems, but they can be shown to have some specific commonalities. In short, it is the underlying phenomena that is problematic, not necessarily just the modelling. But what are these problematic underlying features? In the main part, I suggest that two types of intimately related problem are recurrent in the phenomena relevant to the analysis of variables in the international political economy; 1) unanticipated shifts in the distribution of variables, and 2) a lack of ergodicity in the observed processes.

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<sup>493</sup> Spyros Makridakis and Michele Hibon, “The M3-Competition: results, conclusions and implications” *International Journal of Forecasting* 16 (2000) p,458. Emphasis in original.

### *Problem 1 - Shifts in Distribution*

One of the most important of these, particularly as it pertains to the studies mentioned above, are shifts in the unconditional and conditional means of the distributions of the variables. What Hendry and Mizon term 'extrinsic unpredictability'.<sup>494</sup> To see why this is important, consider the following example. Imagine we fit a statistical model which aims to predict the value of some variable, say  $X$ , using an information set from the time period just prior to it. To do this we need some knowledge, or estimate, of the conditional and/or unconditional distributions of this variable, which offers us information on the variables' mean, variance, and so on. More importantly, we wish this characteristics to remain constant (see Appendix 6:3).<sup>495</sup> Yet, if this distribution changes then our model will be off, and therefore bias. For example, if we take a mean stationary model which estimates our data as generated by a given mean plus or minus some form of error, this model will only work if this mean remains constant. Because of this, if the mean of the data changes, say by dropping, the model will permanently overestimate the series in question (see, for an example, Appendix 6:4). But why is this important?

Principally, this is because both rapid and gradual shifts are regularly apparent in a large number of social-scientific variables. Whereby such shifts cause intractable inferential problems with prior estimated models. For example, if the mean changes unexpectedly it will not something we could not have known about in advance if said shift occurs at some time, say  $\lambda$ , which is  $t < \lambda < t+1$ . That is, any time after the forecast is made. So what are the implications of this? In connection with many of the aforementioned limitations, this phenomena will affect all of the time series variables, and all of methods used for inference, mentioned above. For instance, an illustrative example, as I outline below, can be explored through analysing inflation rates. As is widely known, the 1970s saw dramatic increases in inflation throughout the Western world, driven in no small part by oil price increases. However, in the early 1980s this was dramatically

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<sup>494</sup> David Hendry and Grayham Mizon, "Unpredictability in economic analysis, econometric modeling and forecasting" *Journal of Econometrics* 182 (2014) pp, 186-195.

<sup>495</sup> Hendry and Mizon, "Unpredictability in economic analysis," 190

reversed under the Volcker Federal Reserve, leading to a prolonged period of declining and stabilising inflation rates and volatility levels now known as ‘the great moderation’.<sup>496</sup>

The data shown in figure 35 is from the Federal Reserve Economic Database, specifically its University of Michigan Inflation Expectations index, and covers the years 1978 through until 2016, recorded at monthly intervals.<sup>497</sup> The two plots below this series are estimations of the distribution of the series over specific subsets of time, produced by kernel density estimation (KDE). As we can see, the distribution of the data at different intervals is fundamentally, and considerably, different. The distribution for years 1978 through until 1984 has a mean far higher than years 1994 through until 2001, and just as importantly also demonstrates considerably higher variance.

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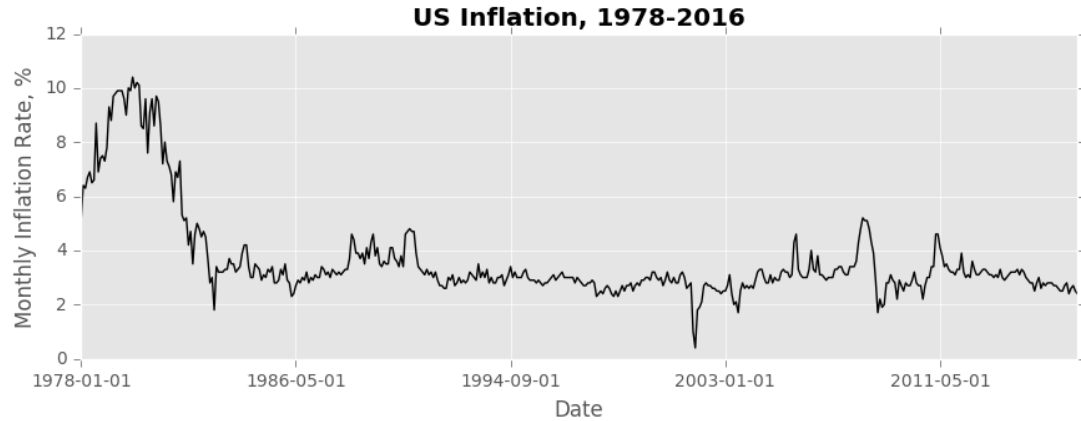
<sup>496</sup> Ben Bernanke, “The Great Moderation” The Federal Reserve Board, February 20, 2004.

<https://www.federalreserve.gov/BOARDDOCS/SPEECHES/2004/20040220/>

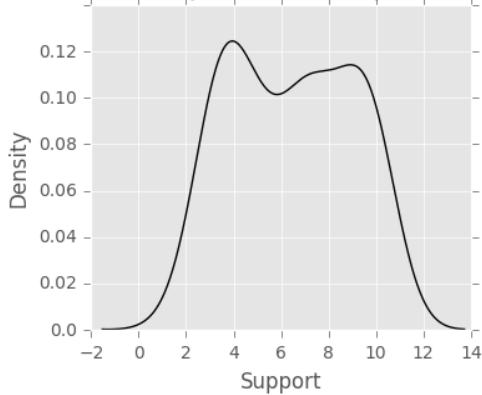
<sup>497</sup> Federal Reserve Economic Database, “University of Michigan: Inflation Expectation” Federal Reserve Bank of St. Louis.

<https://fred.stlouisfed.org/series/MICH>

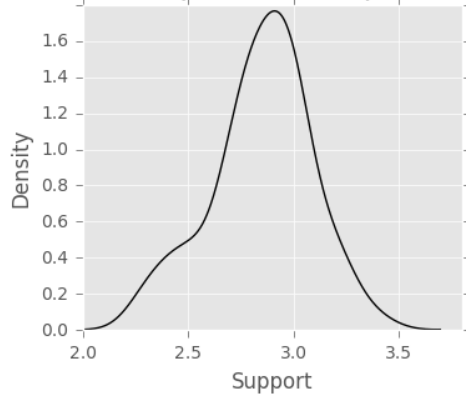
**Figure 36 – US Inflation, 1978-2016**



**Distribution, US Inflation, 1978-1984**



**Distribution, US Inflation, 1994-2001**



This matters for a number of reasons, but two are of particular importance. First, if we were to calculate an econometric projection under the assumption that the mean and variance of inflation were to stay constant we would obviously have been wrong. As demonstrated formally earlier, a forecast made at some time, say  $t$ , regarding an outcome at time  $t+1$ , relies on these distributions staying the same to be accurate. Second, and perhaps more importantly, these rapid shifts are indicative of the fact that we have not actually factored in some of the most important causal 'variables' or events. Ones, such as the above, that are often unquantifiable, unpredictable, and historically highly contingent, pointing to complex and evolving causal 'mixtures'. As strategic activity aims to mitigate risk, and therefore may wish to understand, anticipate, or plan for the effect of unexpected change, we would find these to be the very events and factors of principal interest.

### *Problem 2 - Ergodicity*

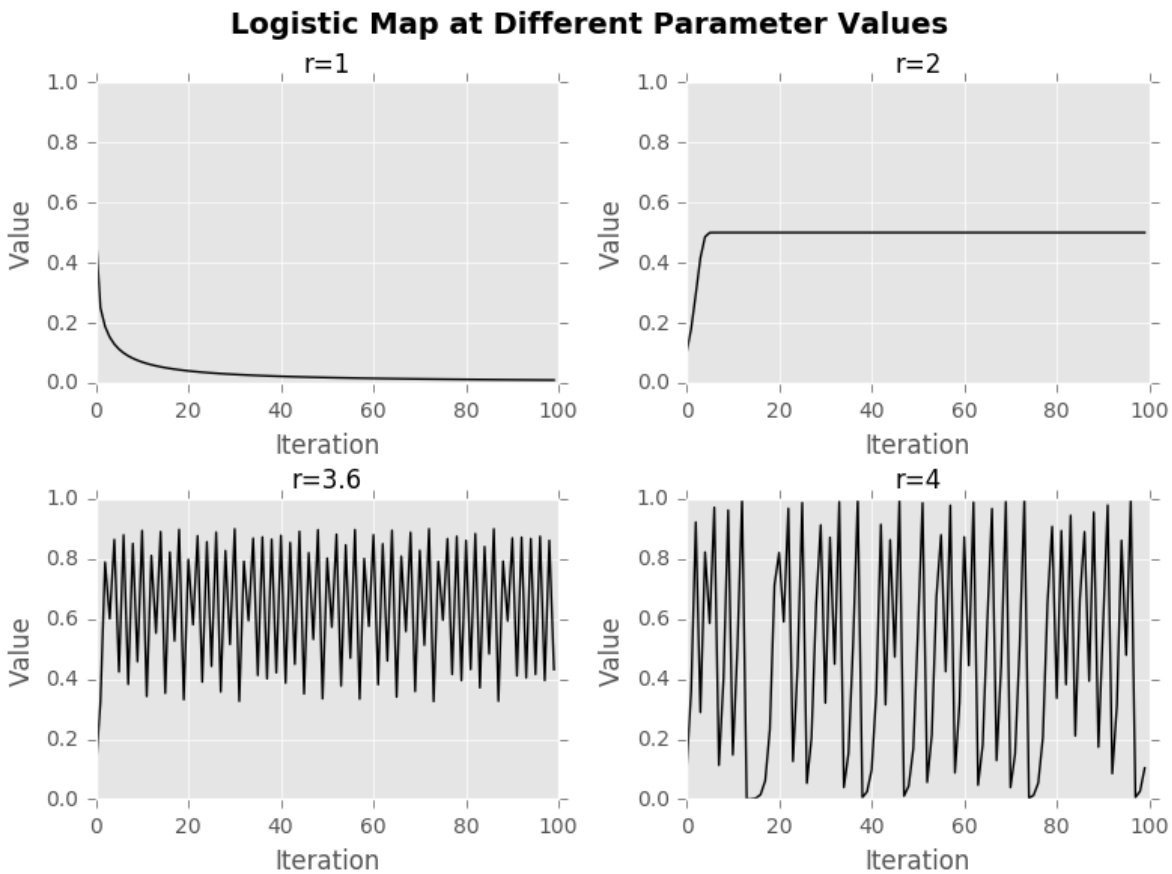
More fundamentally, and intimately relate to the above, we should also like to deduce the statistical properties of the underlying phenomena through observing a relevant time series or collection of events. That is, in addition to stationarity we would also like to observe a characteristic known as ergodicity. Ergodicity, informally for now, can be considered the property by which we can relate the ensemble distribution to the temporal distribution of a specific realisation of a process. A concept used in statistical mechanics, dynamical systems theory, and signal processing, ergodic processes generalize properties across different observations. That is, if our sequence of observations is ergodic then we can deduce all of its relevant statistical properties. In short, ergodicity allows us to *learn* about a process by either observing a singular sequence, or through observing an ensemble, which has significant implications for inference and even causation. This may sound cryptic, but an easy way to see the importance of this property is to consider the behaviour of a series of coin tosses, particularly in that there is a specific relationship between flipping one coin a thousand times in a row and flipping a thousand coins once. This relates to the analyses covered in this thesis insofar as this property is implicitly assumed to apply in *both* the analysis of times series and case study research, particularly in how we may assume that we can both learn and infer from past realizations of certain variables and processes.

To see how and why this property is important an example will be useful. In this case, we can refer to one of the more basic dynamical systems models used to illustrate the utility of ergodicity, a model originally used in biology to demonstrate changes in animal populations but which was later to be found to exhibit 'chaotic' behaviour - the logistic map. The logistic map can be defined as in Appendix 6:5. As we can see the model is rather simple, yet it is nonetheless able to produce a chaotic behaviour. It models the value of  $x$  at time  $t$  as a function of its value the time period before and can be iterated as long as we wish it to be. The parameter  $r$  is constrained



to the interval  $(0,4]$  whereas variable  $x$  takes on values on the interval  $[0,1]$ . The interesting aspects of this mapping is that changes in the parameter  $r$  result in drastic changes to the behaviour of a given sample path.

**Figure 37 – Logistic Map Behaviour**

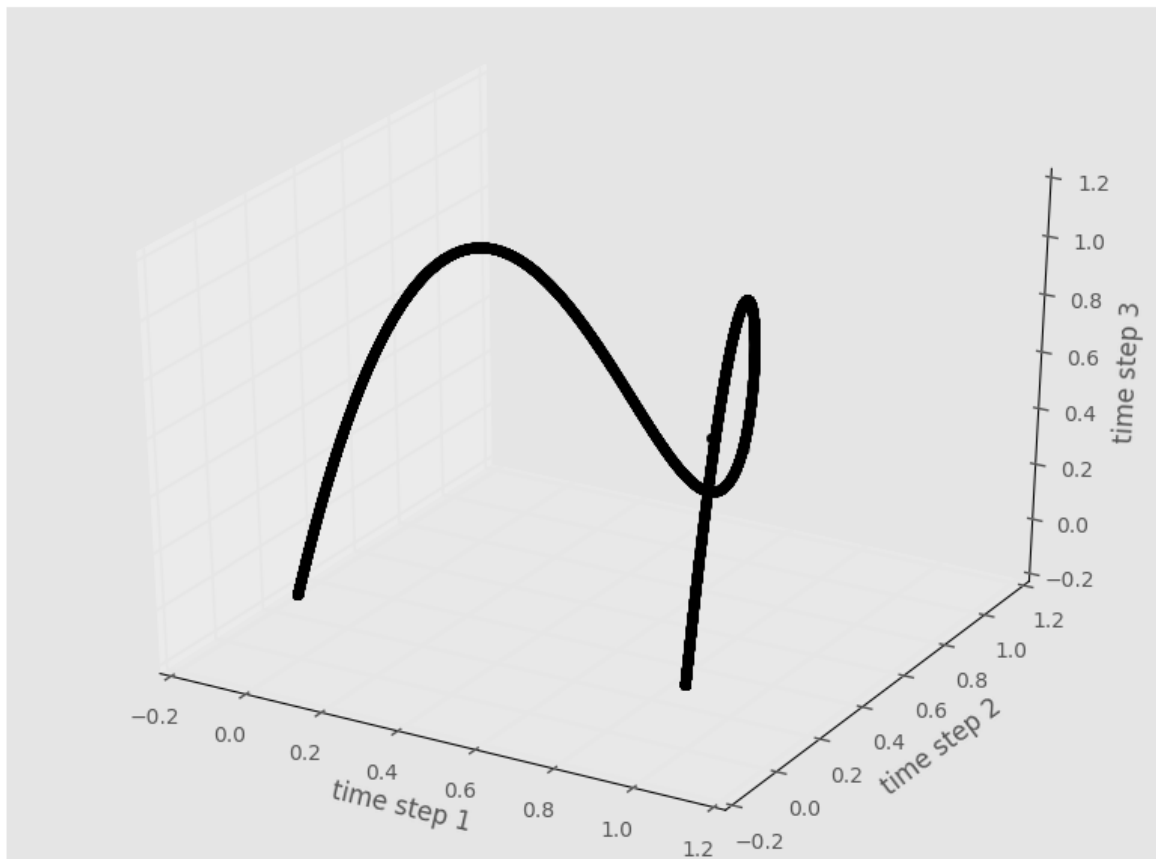


As we can see in figure 36, the behaviour of the logistic map changes dramatically when we alter the value of the parameter  $r$ . In the first case, where  $r$  equals one the sample path drops rather rapidly to zero, demonstrating a population collapse in the original usage of this mapping, whereas for a parameter value of 2 it stabilises to 0.5 just as quickly. Now, as we increase this parameter to its upper range the behaviour becomes very interesting. At first, as we can see at parameter value 3.6, the mapping exhibits periodic behavior, cycling through a few different values. However, when it heads toward its upper bound of 4, it demonstrates considerable

'chaotic' behaviour. What almost looks entirely random - that is, that there does not appear to be any discernible pattern in the oscillations of the path.

However, as the figure 37 demonstrates, this behaviour is in fact entirely deterministic. The 'poincare plot' merely plots the value at time  $t$  against its value one and two timesteps later, showing that the process is in fact deterministic. That is, if we see a given value at time  $t$  we will say a specific value at  $t+1$ . If this was random this wouldn't happen, and the plot below would display data points all about the multi-dimensional state space. This, as we shall see in due course, is just an important condition as requiring that estimated parameters stay constant as in the example earlier.

**Figure 38 – Poincare Plot, Logistic Map**



What therefore defines the chaotic nature of this map, and chaos more generally, is it is sensitive to changes in the initial value,<sup>498</sup> that is that if you take two values, say 0.112 and 01121, the specific behaviour of their paths would be highly divergent (see Appendix 6:6), meaning that estimating specific movements is next to impossible. So why is all this important? Well, despite having limited ability to accurately forecast the exact movement of a given path, it turns out that the property of ergodicity nonetheless allows us to know the *distributional* properties of a sample path; that is, the mean, its variance, and so on.

Because of this, ergodicity permits us to infer that observing the process over time is indicative of its underlying distribution; that like the coin example earlier, the observation of 1000 consecutive observations we tell us similar information to observing 1000 different paths at one point in time. In the aforementioned example, even observation and analysis of the distribution of just one sample path of the logistic map, given enough time, will come to represent the statistical distribution of all potential sample paths. This property is important because it allows us to accurately predict the long term, average behaviour of the system under study or, equivalently, the probability distribution of a large number of different sample paths at any given time. By definition, all ergodic systems exhibit this property (see Appendix 6:7).

Related back to our analysis of social scientific variables, if this property was to hold we could generalise from a collection of cases on to others, giving researchers both a descriptive and inferential understanding of the process under investigation. Likewise, in a statistical sense, ergodicity allow us to derive the probability distribution of said variables from a single long observation of the process, allowing us to predict (to a reasonable approximation) long term behaviours, or at least the distribution of the values. However, as I demonstrated above, in a number of the examples I have covered this does not appear to happen in practice. Distributions shift for a number of reasons, often considerably, and somewhat irrevocably, curtailing our predictive power over these processes. This makes many, if not most, of the social scientific

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<sup>498</sup> Michael Brin and Garrett Stuck, *Introduction to Dynamical Systems* (Cambridge: Cambridge University Press, 2002) p,23

models used in strategic and security studies difficult to use over anything other than short time frames.

For example, when a researcher takes a collection of cases in a comparative case study, one must assume something conceptually similar to ergodicity if we wish to infer to cases in the future. The fact is, however, that path dependence is a characteristic feature of such systems. And when we have path dependence, 'history matters', and therefore generalization from these factors will breakdown. Indeed, it is the lack of path dependence which defines an ergodic system. To see this, consider that for the time and space characteristics of our data to converge (and therefore the equation in Appendix 6:7 to hold), then the probability structure of the process under observation cannot be dependent on the initial condition selected (see Appendix 6:8). The reason for this is simple. If each sample path we observe is probabilistically dependent on the original condition, then observing one sample path will not give us information on the probabilities of the other sample paths with different initial conditions in the available sample space. Likewise, and perhaps more intuitively for strategic and security studies researchers, observing a large number of similar events at one time will not tell us about the probabilities associated with future events. For example, say we could hypothetically define probabilities for the occurrence of a range of conflicts in 2016, then path dependence would break the statistical relationship between this ensemble (space) distribution and the time distribution. In turn, this circumscribes our descriptive and inferential capabilities considerably.

In short, both properties (stationarity and ergodicity) combine to rather severely undermine many of the methodical tools we have available, circumscribing and delimiting what we can and cannot learn. This is particularly the case in strategic settings when even small differences in variables may have profound influences on outcomes, and whereby path dependence itself is an important characteristic of any given international system and the bilateral relationships within it.

## Practical and Conceptual Issues

Related to the above, one considerable limitation related to the quantitative studies I have examined is the type of phenomena they are limited to assessing. From what I have covered, we can see that many of these studies focus on rather minor features of international political-economic relations, attempting to link strategic factors to increases in various forms of financial flows. The problem with this, as Stephen Walt has noted, is that this situation lends itself well to 'methodological overkill', what he defined as "the tendency of some elaborate formal models to yield rather trivial theoretical results."<sup>499</sup> In this case, due to limitations on data, scholars analyse phenomena that tend to be of lesser importance to most other strategic scholars, and just as importantly, practitioners. For instance, you would be hard pressed to find a scholar of grand strategy, nor an implementer, who suggests that small increases in FDI flows are important factors in assessing strategic priorities or force posture allocations.

That is not to say that individual economic pathways are unimportant, but rather that more important factors concern the more fundamental organisation of the international economy, not individual elements of its operation. That is, for example, the use of military force to promote certain institutional and organisational principles, not, say, a quantitative target for gains in a specific financial variable. This is because it is military power which first embeds a specific international order, and also prevents or aids in negotiating its potential revision. As Robert Kagan aptly observes,

"International order is not an evolution; it is an imposition. It is the domination of one vision over others- in this case, the domination of liberal principles of economics, domestic politics, and international relations over other, nonliberal principles. It will last only as long as those who imposed it retain the capacity to defend it."<sup>500</sup>

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<sup>499</sup> Stephen Walt, "Rigor or Rigor Mortis? Rational Choice and Security Studies" *International Security* 23:4 (1999) p, 23

<sup>500</sup> Robert Kagan, *The World America Made* (Alfred Knopf: New York, 2012) p,97

So why do quantitative studies not focus on these forms of events? One important reason is that changes in organisational principles happen rather infrequently. For example, most fundamental changes to the organisational principles of international relations occur after hegemonic wars when sets of relationships and institutions are established by the winning, powerful states in the system.<sup>501</sup> However, this low-n problem is compounded by the fact that the important elements of individual cases are not readily generalizable (as discussed in the prior section). That is, the important factors in these cases are, in the main part, only qualitatively discernible and idiosyncratic. Generalizing about the *specific* processes underlying the establishment of international order after hegemonic contests is difficult largely because the ‘devil is in the detail’.

For example, let us take the formation of international order after hegemonic conflicts, events in which the main features and principles of a given international order are first challenged, destroyed, and re-established. As John Ikenberry observes,

“At rare historical junctures, states grapple with the fundamental problem of international relations: how to create and maintain order in a world of sovereign states. These junctures come at dramatic moments of upheaval and change within the international system, when the old order has been destroyed by war and newly powerful states try to reestablish basic organising rules and arrangements.”<sup>502</sup>

In his seminal work, *After Victory*, he recounts the formation of such international orders after the cessation of the major hegemonic conflicts, beginning with the Napoleonic Wars. The intent of his work is to investigate the contextual commonalities between these cases, particularly as to what explains the type and extent of international order established.

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<sup>501</sup> John Ikenberry, *Liberal Leviathan: The Origins, Crisis, and Transformation of the American World Order* (Princeton: Princeton University Press, 2011)

<sup>502</sup> John Ikenberry, *After Victory: Institutions, Strategic Restraint, and the Rebuilding of Order After Major Wars* (Princeton: Princeton University Press, 2001) p,3

Indeed, as he convincingly argues, the extent and form of settlement proceeding a hegemonic conflict can be seen to reflect a growing trend toward institutionalizing arrangements as a form of 'strategic restraint', the power disparities in evidence after the conflict, and the types of state party to the agreements in question.<sup>503</sup> To his mind, these contextual factors can be roughly generalized across cases, given that other factors at various levels of analysis seem to be 'washed out'. That is, that the main, broad explanations for the general nature of settlements are not due to idiosyncratic factors, rather they are based on macroscopic variables; power asymmetries and regime type. In a similar way, Robert Gilpin's work, *War and Change in World Politics*, also attempts to link changes in macroscopic variables to specific recurrent outcomes in international politics. However, in his work Gilpin evaluates the processes which lead to the events that Ikenberry describes - the nature of change which leads to the rise and fall of hegemonic order. Once again, rather convincingly separating of key variables that seem to generalise rather intuitively and accurately across historical observations. Unfortunately, however, this is not what would be of use to our investigation. But why?

Principally this is because, as Ikenberry's analysis reminds us, it is the specifics of these settlements that are of fundamental importance to the manner of their operation, and therefore the continuation of their operation in the instance of a fundamental change in a variable and/or commitment central to the aforementioned settlements. That is, while the general dynamics may have common explanatory characteristics, these are rather general and abstract, which prove useful only in contextualising the formation of order not describing its dynamics. Each one is characteristically different from the others, reflecting different eras, participants, and hegemonic powers. In which case, the generalizability we saw in Ikenberry and Gilpin's work breaks down. Now the idiosyncratic features dominate, meaning that generalizing between cases may be rather difficult to achieve.

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<sup>503</sup> Ikenberry, *After Victory*, 4-5

### *False Equivalence*

Another problem intimately related to the above is the prevalence of falsely equivalent case studies to infer about different eras, states, and orders. Let us take some research by Eugene Gholz and Daryl Press investigating American commercial advantages emanating from the First World War. This research paper often appears in the grand strategic literature as an empirical crutch for authors promoting retrenchment oriented strategic postures, illustrated by Christopher Layne in his book *The Peace of Illusions*.<sup>504</sup> Gholz and Press suggests that the United States benefited from selling weapons and loaning money to the allies despite the broader economic and physical damage the war wrought upon Europe and the globe.<sup>505</sup> The implication being that retrenchment may not only reduce federal outlays, but actually permitted the United States to benefit from such a situation. Yet, as I hope to demonstrate, this is likely a spurious comparison - a false equivalence.

My main contention, echoing the above point, is that the features of international order that inform us of how a hegemon benefits from the specific arrangement of international order are not readily generalizable. That is, the important elements are idiosyncratic. For instance, Gholz and Press' hypothesis is unlikely to make sense in relation to contemporary international order because the fundamental constitutive parts of the post-Second World War and post-Cold War orders entail specific obligations and duties. In particular, a constant feature of international order since the end of the Second World War has been the commitment and forward deployment of US forces to two, and now three, major regions of the globe. That is, Europe, East Asia, and now (since the early 1990s) the Middle East. How would broader sets of political-economic relations fare under a revision of these processes? We covered earlier, for example, that a significant component of 'petrodollar recycling' can be seen to have relationships with the provision of American weapons and security. Something that may be undermined if America withdraw such support.

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<sup>504</sup> Layne, *The Peace of Illusions*, 177

<sup>505</sup> Eugene Gholz and Daryl Press, "The effects of wars on neutral countries: Why it doesn't pay to preserve the peace" *Security Studies* 10:4 (2001) pp. 1-57



Now, this may not be a sufficient reason to maintain these guarantees, but it provides an interesting, illustrative example in the way it demonstrates the interconnection between military power and international economic relationships. That is, insofar as we must take account of the how altering important elements of post-war settlements may, and likely will, have knock-on effects. Once again, Ikenberry captures this logic flawlessly,

“The United States provided security, championed mutually agreed-upon rules and institutions, and led in the management of an open world economy. *In return, other states affiliated with and supported the United States as it led the larger order.*”<sup>506</sup>

These settlements are reciprocal, albeit asymmetrical, and necessitate some degree of continuity, or ordered change in the commitments involved. In such an order, Gholz and Press’ research would make little sense, given that its analysis would only seemingly apply to that given international order, or at least one of similar characteristics.

These circumscribes our capacity to infer and generalize between certain cases and examples, dependent on the phenomena under examination. So while we may be able to examine a number of different cases of order formation after hegemonic conflicts, inferring about specific modalities of economic advantages within such systems will be considerably more difficult. In which case we are therefore reminded that we must be somewhat cautious of spurious comparisons between cases and eras. Linked to this, a far more fundamental problem relates to some underlying differences between generalizability in the social versus natural sciences. In essence, and somewhat intuitively, most variables analysed in social science are not reflections of an objective underlying generating mechanism, that are instead inter-subjectively understood and measured. Equally, most social variables are ‘reflexive’, meaning that cause and effect is often circular. An accessible and consequential example is the macroeconomy. That is, how the manner in which it is perceived influences its performance. John Maynard Keynes touched on

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<sup>506</sup> John Ikenberry, *Liberal Leviathan: The Origins, Crisis, and Transformation of the American World Order* (Princeton: Princeton University Press, 2011) p,160. Emphasis added.

this when he invoked the role of ‘animal spirits’ in explaining economic cycles, particularly depressions and expansions.

The idea for readers that are not familiar is that optimism and pessimism play a very fundamental role in economic activity. And that such *perceptions* are not entirely nor necessarily grounded on a purely factual basis. For instance, when President Trump was elected, the head of the world’s largest and most profitable hedge fund, Ray Dalio, invoked just this logic to argue that US economic growth may accelerate under his Presidency. Specifically Dalio suggested that,

“This particular shift [in mindset] by the Trump administration could have a much bigger impact on the US economy than one would calculate on the basis of changes in tax and spending policies alone *because it could ignite animal spirits* and attract productive capital.”<sup>507</sup>

That is, the perception that Trump will be good for business (whether true or not) may be enough to encourage skeptical investors into making investments they would have otherwise avoided. As we have seen, this has practical implications for the utility of certain forms of statistical modelling specifically, and inference from them more generally. Why? Because these forms of changes are hard (perhaps impossible) to model *ex ante*.

Indeed, most modern social scientific *qualitative* methods borrow extensively from the concepts of statistical methodology and broader scientific nomenclature. After all, this is the professed point of social scientific research. As King *et al.* argue,

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<sup>507</sup> Ray Dalio, “Reflections on the Trump Presidency, One Month after the Election” *LinkedIn*, December 19, 2016. Emphasis added.

<https://www.linkedin.com/pulse/reflections-trump-presidency-one-month-after-election-ray-dalio>

“Our main goal is to connect the traditions of what are conventionally denoted ‘quantitative’ and ‘qualitative’ research by applying a unified logic of inference to both...*The same underlying logic provides the framework for each research approach.*”<sup>508</sup>

This arguably implies that many deficiencies identified above in the statistical literature may have been unwittingly carried across into qualitative research methodologies. As I have shown in the above, many of the assumptions used in the natural sciences do not often carry over into the analysis of social phenomena. Indeed, many of the processes we wish to observe are rather unstable and difficult to accurately predict and model. Now, this is not an epistemological problem but rather an empirical and methodological one. International politics is a very complex, changing system, and many of the ‘tools’ we have at our disposal to analyze it are not sufficient.

This critique is not necessarily all that controversial; in fact, Robert Jervis forwarded a similar argument for skepticism toward many social scientific methodologies back in the late 1990s.<sup>509</sup> Whilst this discrepancy between theory and practice warrants investigation of new methodological tools, it just as importantly demands a different approach to analysis and certainty than we are accustomed to in most mainstream IR theories. In the following section, I trace the social scientific turn in IR represented by Waltz’s structural realism. Describing particularly its origins, its development, and its departure from classical realist assumptions.

## **Theoretical Resolution**

Whilst Waltz’ neorealism is commonly espoused as marking the beginning of the ‘scientific turn’ in IR, the actual approach he utilized shares little in common with the forms of empiricism displayed in contemporary quantitative and qualitative literature. Just as importantly, the history of the development of neorealism reminds us what it ‘left behind’ - that is, the core of the classical realist approach.

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<sup>508</sup> Gary King *et al.* *Designing Social Inquiry: Scientific Inference in Qualitative Research* (Princeton: Princeton University Press, 1994) p,3

<sup>509</sup> Robert Jervis, *System Effects: Complexity in Political and Social Life* (Princeton: Princeton University Press, 1997)

Waltz's structural realism prompted a rather significant change in how international relations came to be analysed. Not only do his insights remain the benchmark to which other theories measure or place themselves, but they also continue to elicit considerable scholarly attention in and of themselves.<sup>510</sup> Waltz's contribution, to somewhat simplify, was to offer a rather powerful thought experiment. That is, to suggest that we imagine the world to be made up of undifferentiated states in a system devoid of central authority, whereby the distribution of power between such states tells us enough to explain the behaviour under analysis. This does not have to be true, per se, rather all that we require is that such minimal assumptions are sufficient. Or, to rephrase it, that we have only disregarded unimportant factors. For instance, it doesn't much matter that the world is made up of different regime types *if* they all behave the same.

However, it was Waltz' rather eclectic epistemological and ontological positions that seemed to have confused large numbers of observers into thinking that he was a generic positivist and empiricist, and that his work merely seemed to report pertinent correlations. As Ole Waever has noted, the move toward recording and assessing correlations between variables in International Relations, if so inspired by Waltz, was and is misguided,

“A majority of the American IR mainstream manage to act as if they were following Waltz's lead towards more scientific IR theory – thus borrowing legitimacy – while actually violating more and more consistently his warnings against inductivism and empiricism...”<sup>511</sup>

Partly this is because Waltz understanding of theory was rather unconventional. As the above quote suggests, Waltz was somewhat critical of empiricism and positivism as tools in and of themselves, and has been often regarded as so.<sup>512</sup>

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<sup>510</sup> For example, the journal *International Relations* had two issues devoted to his work in recent years. Volume 23, issues 2 and 3.

<sup>511</sup> Ole Waever, “Waltz's Theory of Theory” *International Relations* 23:2 (2009) p, 205

<sup>512</sup> See Jonathan Joseph, “Is Waltz a Realist?” *International Relations* 24:4 (2010) pp, 478-493

In fact, the more intriguing element of Waltz's work is his use, and faith in, 'scale separation'. That is, as described above, the belief that certain phenomena at a specific level of abstraction may be explained by a very small set of factors with reasonable, if not law-like, regularity. Now, this is not to say that by implication this will necessarily apply to other phenomena and at different levels of analysis, indeed, as Waltz himself professes, his theory only purports to explain "a few big and important things".<sup>513</sup> And it does so only at the most abstract, international level of analysis in reference to behaviours such as 'balancing'. However, increasing the detail of the phenomena we wish to describe often comes with the caveat that large numbers of complex mixtures of variables become involved. Unlike systems in which scale separation is possible, these complex causal mixtures are often seemingly important for a large number of phenomena we would like to explain in the international relations literature, particularly in strategic fields of study. One needs only think of the importance of different persons in conducting foreign policy (particularly foreign economic) to see this. That is, core material factors have to be modulated through a number of intervening 'variables' to be actuated for foreign policy purposes, some of which may be irredeemably idiosyncratic.

Waltz's method is therefore only applicable to certain (and abstract) levels of analysis (if at all), and for specific broad based phenomena. However, despite this issue, since Waltz' recasting of realism the field of IR has increasingly focused on drawing similar ahistoric generalizations from observations across a wide range of scales. Now, there is an obvious impetus for this insofar as generalization is regarded as the foundation of scientific inquiry, but really that is to miss the forest for the trees. This is because the purpose of modelling phenomena is to capture the fundamental processes at work, not impose a specific modelling process upon them. This is a rather important difference. When a process is stable and exhibits low volatility we can make rather accurate predictions about the evolution of the dynamics involved. This low volatility is at least in part attributable to the fact that all important parameters can be accounted for and

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<sup>513</sup> Kenneth Waltz, "Reflections on Theory of International Politics: A Response to My Critics" in Robert Keohane eds, *Neorealism and Its Critics* (New York: Columbia University Press, 1986) p, 329

modelled accurately. Or to put it another way, the contributions from the excluded parameters are small and inconsequential relative to the main variables in the model. However, when this does not occur our inferential and analytical capability breaks down.

To be able to offer such abstract, general laws as Waltz intended we therefore need to be able to assert that the effects of the variables we do not model are, to an approximation, inconsequential for the phenomena in question. That is, at the level of analysis we are engaged in the causal contribution of a given variable is 'washed out'. So what happens when this is not the case? For, as we know, this does not seem to occur in many of the IR related phenomena we wish to analyse. And what are the theoretical resolutions available for this problem? As I shall go on to argue, many a premise of classical realist thought remains pertinent for such problems today, particularly as to our approach to certainty and inference.

### *Uncertainty and Classical Realism*

Classical realism claims its lineage, or at least its inspiration, as far back as Thucydides. His *History of the Peloponnesian War* and, particularly the 'Melian Dialogue', is oft quoted for its observations on power politics. In fact, it contains one of the first references to balance of power politics, summarised in the rather famous observation that "what made war inevitable was the growth of Athenian power and the fear which this caused in Sparta."<sup>514</sup> More broadly, however, there are a number of common, core themes that permeate classical realist texts and their research concerns. Amongst the key classical realist texts of the 20th century, Carr's *Twenty Years Crisis* encapsulates all of these rather comprehensively. Equally, and although not commonly cited as such, Henry Kissinger's first book (in turn derived from his PhD thesis) recounts in lucid form nearly identical concerns and theoretical dispositions. An analysis of the Congress of Vienna proceeding the Napoleonic Wars, Kissinger's *A World Restored* is rather prescient of his later realist inclinations. Carr and Kissinger both define realism, in a general sense, as a disposition which aims to "distinguish the analysis of what is from aspiration about what should be."<sup>515</sup> That

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<sup>514</sup> Thucydides, *History of the Peloponnesian War*, Book 1:23, translated by Rex Warner. Revised edition (London: Penguin, 1972) p, 49

<sup>515</sup> E.H.Carr, *The Twenty Years' Crisis, 1919-1939* (London: Palgrave Macmillan, 2016) p, 9

is, a dispassionate look at the way the world works as opposed to the way one would wish it to work. As a consequence of this, realism often manifests itself as a scepticism toward utopianism as a basis for policy and practice, which one can see rather clearly in the commentary which runs throughout Carr's work.

Take his rather strident criticism of the League of Nations, for example. Whereby he expressed incredulity toward the fact that ,

“the metaphysicians of Geneva [the seat of the League] found it difficult to believe that an accumulation of ingenious texts prohibiting war was not a barrier against war itself.”<sup>516</sup>

Behind the barbed language is the basic truth that the reality is, and remains, that international law does not exist in the sense of domestic law. Not only has it “merely created certain special obligations for state *willing to accept them.*” But “international law has no agents competent to enforce observance.”<sup>517</sup> The implication of this is that it is a state's relative power that is central to our understanding of the operation of world politics, and it is only an international order that accounts for this that is capable of preventing conflict. Invoking the supposed universalism of the current order despite protestations from rising great powers is not going to resolve conflict, nor is any recourse to the institutional and legal structures of such a system. Realist's dispassionate focus on power realities consequently leads them into a number similar research areas and interests, coalescing around a few key themes. In particular, a focus on the ‘legitimacy’ of international order as well as assuring a semblance of ‘stability’ in transitions or modifications to this given order. This, of course, is the focus of Kissinger's *A World Restored*.

Indeed, this notion of legitimacy is rather central to classical realist scholarship and generally refers to,

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<sup>516</sup> Carr, *The Twenty Years' Crisis*, 31

<sup>517</sup> Carr, *The Twenty Years' Crisis*, 159. Emphasis added.

“an international agreement about the nature of workable arrangements and about about the permissible aims and methods of foreign policy. It implies the acceptance of the framework of the international order by all major power, at least to the extent that no state is so dissatisfied that, like Germany after the Treaty of Versailles, it expresses its dissatisfaction in a revolutionary foreign policy.”<sup>518</sup>

In such a world, as after the Napoleonic Wars, order is rebuilt so as to balance power and interests, prevent hegemony, and maintain order. Legitimacy, therefore, is central to order itself, a formative element to changes in such order, and *historically contingent*. This, of course, is where the notion of ‘status quo’ and ‘revolutionary’ powers comes from, insofar as “whenever there exists a power which considers the international order or the manner of legitimizing it oppressive, relations between it and other powers will be revolutionary.”<sup>519</sup> Which itself is a function of time, of resources, and perceived interests; often highly historically contingent ones at that.

It is therefore historical contingency and uncertainty that underpins vast tracts of classical realist scholarship. Carr, for instance, devotes a solid section of his critique of utopianism to describing ‘the relativity of thought,’<sup>520</sup> placing contingency at the core of his argument. Something that has generally been adopted by all realists, not just classical realists, in large part attributable to the shared importance placed upon the absence of a global central authority.<sup>521</sup> Although perhaps some more so than others.<sup>522</sup> In fact, Kissinger noted that it is often the misperception of inherent uncertainty that contributes to international crises, ‘lulling’ status quo powers into a sense of safety, stability, and complacency.<sup>523</sup>

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<sup>518</sup> Henry Kissinger, *A World Restored: Metternich, Castlereagh and the Problems of Peace 1812-22*. Reprint (Brattleboro: Echo Point Books, 2013) p, 1

<sup>519</sup> Kissinger, *A World Restored*, 2

<sup>520</sup> Carr, *The Twenty Years’ Crisis*, pp, 65-71

<sup>521</sup> Patrick Porter, “Taking uncertainty seriously: Classical realism and national security” *European Journal of International Security* 1:2 (2016) p, 251

<sup>522</sup> John Mearsheimer, *The Tragedy of Great Power Politics* ()

<sup>523</sup> Kissinger, *A World Restored*, pp, 2-3



To tie this back toward the main research question, it is now best to examine and codify the theoretical assumptions of this literature. A recent article by Jonathan Kirchner isolates these well, and is worthy of quoting at length,

“Classical realism is distinguished from its brethren, however, by four attributes: (1) structure matters but is irretrievably indeterminate; (2) aspects of domestic politics, including ideational variables, are essential keys to understanding state behavior; (3) great powers seek more than just security and are instinctively opportunistic; and (4) international politics - the choices made by states - *are uncertain, contingent, and consequential.*”<sup>524</sup>

As readers will be quick to note, nearly all of these assumptions violate key tenets of neorealism. Yet, and far more importantly they are also accurate descriptions of reality itself. That is, structure is important, but indeterminate with respect to certain state decisions. We know, for instance, that domestic concerns can often come to challenge perceived ‘structural’ constraints. This is manifest to an approximation in the recent growth in popularity of ‘neoclassical’ realist scholarship and methodology. What Gideon Rose defines as incorporating “both external and internal variables, updating and systematizing certain insights drawn from classical realist thought.”<sup>525</sup>

In some cases, these neoclassical scholars have argued (unsurprisingly) that conflict between great powers has been driven rather extensively by given domestic ideologies and interests, ‘intervening’ between changes in relative power dynamics. Indeed, this is the causal mechanism that Randall Schweller presents in his popular neoclassical realist text *Deadly Imbalances*.<sup>526</sup> What is interesting about neoclassical work, however, is that it still attempts to apply Waltzian scale separation. Although in this sense, by reference to an additional variable pertaining to the

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<sup>524</sup> Jonathan Kirchner, “The Economic Sins of Modern IR Theory and the Classical Realist Alternative” *World Politics* 67:1 (2015) p, 156. Emphasis added.

<sup>525</sup> Gideon Rose, “Neoclassical Realism and Theories of Foreign Policy” *World Politics* 51:1 (1998) p, 146

<sup>526</sup> Randall Schweller, *Deadly Imbalances: Tripolarity and Hitler’s Strategy of World Conquest* (New York: Columbia University Press, 1998)

'interests' of the state concerned. Specifically, whether they were a 'revisionist' or 'status quo' power; what I established earlier as a central concern of classical realist scholarship. In fact, at the cutting edge of neoclassical realist scholarship is currently the integration of the notion of 'status' into their analyses. For example, a prominent volume on the topic suggests that "the ongoing scholarly and public discussion reveals a level of anxiety about rising powers and world order that is hard to explain if people only care about economic prosperity and basic national security." Arguing that, "to an important degree, the worry is about the search for higher status by emerging powers and the conflict this quest may generate with reigning major power actors."<sup>527</sup> Yet, as we have seen, this exact issue is at the heart of classical realist scholarship, written explicitly in key texts over fifty years ago.

In this sense, taking classical realist assumptions seriously not only is arguably more accurate of reality, but also presents us with different ways of looking at and analyzing the world whilst still leaving the door open to generalization of certain elements of world politics. In particular, it reminds us that the past is not always a good guide to the future, nor is certainty and predictability a privilege we are granted much scope with. Equally, and because of this, classical realists also maintain a focus on the large and important factors which they can reasonably deal with, which resonates rather strongly with the strategic debates in which I am intervening. That is insofar as it may be better to focus upon the role of American military power as a *constitutive* component of broader international political-economic arrangements, rather than the analysis of smaller flows that operate within such arrangements. This is because, as I have argued, military strategy will have a more fundamental effect on the former which will in turn feed into the latter.

### ***Chapter Summary***

This chapter has shown that it is likely the mathematical and statistical characteristics of the underlying phenomena themselves that circumscribe the inferential and explanatory power of many of the methodological tools deployed in quantitative and qualitative analyses. The main

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<sup>527</sup> T.V. Paul, Deborah Welch Larson, and William C. Wohlforth, eds. *Status in World Politics* (Cambridge: Cambridge University Press, 2014) p,3

contribution this makes to the research question is to condition and circumscribe the interpretation and policy implications of empirical findings in this literature. Something that will be discussed at greater length in the conclusion.

In particular, I suggested that the underlying instability of many processes we observe severely curtails the applicability of certain quantitative methodologies. This can also be seen to generalize to qualitative research inasmuch as certain social scientific methods borrow underlying assumptions from statistical analysis to justify generalization. As I demonstrated, this was not a problem that was likely to be fixed by increasing the complexity of the statistical models used. Indeed, in many cases it may have decreased it as we saw with the performance of the DSGE models often used by central banks.

However, at the same time as this, we also saw that there is a potential for certain large-scale phenomena to be modelled using techniques which attempt to isolate key variables operational at separate scales of analysis, much as Waltz attempted to do in his original work. However, the success and applicability of these processes is not yet well known, nor empirically demonstrated. Moreover, for foreign policy decisions this may not be possible, as there are a wide range of variables which may not cease to be important at this level of abstraction. Indeed, as Trump's election has demonstrated, leadership can be vitally important to this process, particularly insofar as the manner by which economic and strategic factors may interact. Or in fact inasmuch as *perceptions* of others intentions may influence behaviour. One need only look at European reactions toward Trump's overtures regarding trade and the EU itself to see that perceived bellicosity could undermine their receptiveness toward certain forms of coercion or enticement.<sup>528</sup> More pertinently, I have suggested that only theoretical dispositions that place uncertainty and contingency at the core of their analytical frameworks will be of much use to the analysis of the consequences of given military strategies, whether economic or strategic.

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<sup>528</sup> Emmanuel Macron, "Europe holds its destiny in its own hands" *The Financial Times*, January 24, 2017. <https://www.ft.com/content/3d0cc856-e187-11e6-9645-c9357a75844a>

# Conclusion

This thesis set out to assess whether, and in which ways, the pursuit of US military strategy contributes to generate economic benefits for the United States. That is, the extent to which strategic decisions have positive 'spin-off' effects for American economic interests. With this being so, investigating the economic effects of the pursuit of American military strategy involved addressing domestic and international economic influences as well as the extent to which the pursuit of American military strategy affects financial market activity. To facilitate the exploration of this topic I made a demarcation between two methodologically distinct literatures on the topic. One literature focusing on direct attempts to detect and measure statistical relationships between economic variables (such as financial inflows and GDP) and strategic considerations, and another which seeks to explore the systemic logics of economic relationships through case study research and evaluation. That is, the contribution that military strategy makes to diplomatic leverage and the shaping of international bilateral, multilateral, formal and informal economic relationships.

Because of this, it was necessary to intervene in literatures involving qualitative, quantitative, and mixed methods research, spanning an equally wide range of hypotheses and arguments. The principal reason for this topic's importance rests upon the contributions it makes to the broader literature on U.S. grand strategy. This is particularly so in regards to ongoing debates concerning American relative decline and the effect this has on the optimality and continued feasibility of the contemporary grand strategic approach known as 'deep engagement'. As described earlier, deep engagement is a strategic approach which demands rather large fiscal outlays to fund the sizeable and capable armed forces it demands, and because of this debate regarding changes in strategic posture and approach innately involve the analysis of the financial and fiscal implications of competing military strategies. However, as I noted in the introduction, many of the proposed pathways through which military strategy may have effects on international economic relationships and financial markets remain underdeveloped. Just as importantly, many

of the quantitative claims remained contested, unreplicated, and in a number of cases, conceptually problematic. My research intended to account for these omissions.

## **Findings**

In this thesis I have offered a number of new research findings, which offer three main conclusions. Firstly, I have shown that there is significant evidence that the pursuit of U.S. military strategy, that is its objectives and approach, have influenced international economic relationships in ways beneficial to U.S. national interests. My argument suggests that there are both specific and general pathways through which this operates; a general 'status quo' logic which sees military power as both a guarantor and promoter of specific structural configurations of the international political economy. And secondly, a specific 'utility' logic operating on other states either bilaterally or multilaterally. Both are based on the common principal that American military strategy acts as a 'underwriter' for the extant international economic system. While the first talks to physically defending, and perhaps expanding the system, the second pathway assumes that US military strategy, particularly its security guarantees, act to alter the given utility of other states' political-economic decisions in America's favour, particularly with regard to adopting or changing international economic structures and relationships.

Secondly, despite some conceptual problems with other quantitative approaches, I have shown it possible to quantitatively isolate the influence of U.S. military victories - in conflicts I demarcated as 'economically critical' - on the performance of financial markets. Albeit with the necessity to qualitatively trace the causal mechanisms. Thirdly, and relating to both of these findings, I suggested a significant qualification to such results, indicating that that specific pathways often prove rather circumstantial and tentative. My argument is to suggest that the absence of two related scientific concepts, 'stationarity' and 'ergodicity', may explain this. The absence of which circumscribes our ability for inference.

I predicated these results on first having assessed American economic power as a way of attempting to understand the role which the United States' sheer economic size and centrality plays in international political-economic influence. In the main part, this was in order to

understand how influential these processes can be and so isolate anomalous elements of specific cases I explored. That is, in order to justify the examination of the role of U.S. military strategy in influencing the resolution of the economic adjustment periods I explored. Analogously, this is why whilst modelling the influence of American victory in the Gulf Wars on U.S. financial markets it was first necessary to account for the economic aspects before adding the relevant military dummy variables. Likewise, because of complex causal dynamics and potential omitted variable bias, it was then necessary to undertake qualitative research in order to explore the motivations and perceptions of key actors, including financial market participants. Below, I cover the key findings in more detail.

#### *Linkage and Positional Advantage in U.S. Foreign Policy*

In chapter five, I was able to demonstrate that military factors have featured prominently in many of the cases of economic adjustment or crisis since the 1980s. Specifically, I explored two different conceptual pathways through which this process may occur, 'linkage' and 'positional advantage'. Linkage, in this instance, refers to a specific policy approach developed by Kissinger which sought to create a "network of incentives and penalties to produce the most favourable outcome" in order to actively link security and non-security issues in diplomatic negotiations.<sup>529</sup> On the other hand, a positional advantage indicates a causal pathway which does not necessarily entail active or explicit actuation by the actor in question. Inspired by Susan Strange's conception of 'structural power' in which "'structures' allocate differential capacities, and typically differential advantages, to different positions."<sup>530</sup> Implying That certain actors can benefit merely from their position within a given social structure or system - what we could call 'positional advantages'. Applied to security dynamics, and as shown in the cases I covered, U.S. military strategy influenced the calculus of American allies when making decisions on international agreements or arrangements. In short, demonstrating that security relationships and strategic decisions can be demonstrated to act as either permissive contextual factors, as in instances of

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<sup>529</sup> Henry Kissinger, *Diplomacy* (London: Simon & Schuster, 1994), p.717.

<sup>530</sup> Michael Barnett and Raymond Duvall, 'Power in International Politics', *International Organization* (2005), Vol.59. No. 1, p.53.

'leverage', or more direct 'causal' elements in diplomatic exchanges, as we see with 'linkage' approaches.

### *The Effect of U.S. Military Strategy on Economic Aggregates*

The research presented throughout chapter four suggests that a number of the existing quantitative hypotheses not only were unsustainable by the methodologies and data provided, but often proved conceptually and theoretically difficult to justify. One considerable limitation was the fact that testing whether U.S. military strategy or power influences economic relationships essentially requires assessing a phenomena that is effectively binary - it is either there or it is not. Because of this, you cannot test for it across countries which therefore influences the manner in which you can assess it, particularly from a statistical perspective. However, what you can do, as I demonstrated, is to specify a more specific hypothesis derived from this and then test that on appropriate data. Indeed, by doing this I was able to detect and trace the manner in which U.S. victory in the Gulf Wars had a positive impact upon financial markets. In this case, representative of financial market participants preference for stability and expectation of investment opportunities.

Beyond this, however, it proved difficult to isolate specific quantitative instantiations of the influence of day-to-day U.S. military strategy directly influencing positive developments in economic relationships. Demonstrated in the easy dismissal of the FDI hypothesis - that is, that military power, or at least military spending, may map onto FDI inflows. Moreover, as I detail below, these results further demonstrated how contextual and tentative many of these pathways are.

### *Methodological Constraints*

The final chapter attempted to illustrate that specific probabilistic characteristics were absent from many of the variables analyzed in the literature on international political economy. In turn this has rather profound implications for what inferences we can draw from either case study investigation or statistical analysis. Compounding this, many of the more fundamental

phenomena that are of interest to scholars of international security, whether focused on economic or strategic factors, are either rarely observed or hard to quantify. That is, we have a 'low-n' problem of an insufficiently small sample of cases to infer from as well as a specific onus on descriptive detail. This not only helps to explain the contextual and tentative results, but also reminds us why the literature itself is so predominantly focused toward qualitative methodologies a wide range of the problems posed by scholars and practitioners. In addition, however, it also places considerable constraints upon generalising between cases in anything other than broad, non-specific ways.

I demonstrated that two foundational probabilistic properties, implicit or explicit to a wide range of methodologies, stationarity and ergodicity, often fail to apply to the phenomena we observe and analyse. Stationarity is the property that permits inference from one time period to another by virtue of keeping the statistical properties of a variable constant. A characteristic that we would also implicitly expect of case study research if it, too, was to have inferential utility. Conversely, non-stationarity often manifests itself as a discontinuity in the value of the average or variance of a given variable. What is known as 'structural change' or a 'structural break' in the economic literature. Similarly, ergodicity is the property that equates an ensemble distribution to a temporal distribution, indicating a lack of path dependence. This, in turn, is important because such a property permits us to generalize about behaviour between cases or, if you will, paths. The implications of these factors, as I discuss below, bear directly upon the research question, especially how we interpret the results.

## **Interpretation**

A particularly interesting aspect of these results is how closely they conceptually parallel many core tenets of classical realist scholarship, especially insofar as they reinforce the "uncertain, contingent, and consequential" nature of international politics.<sup>531</sup> Specifically, I suggest two core implications for policy making and analysis. Firstly, it is apparent that specific avenues and

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<sup>531</sup> Jonathan Kirshner, "The Economic Sins of Modern IR Theory and the Classical Realist Alternative" *World Politics* 67:1 (2015) p, 156. Emphasis added.



instances of U.S. military strategy influencing international economic relationships are not likely to be a reliable or prudent source of future policy making due to inferential problems in anything other than rather general terms. Secondly, given the centrality of U.S. military commitments and capacity to the founding and preservation of the contemporary U.S. led international order, substantial changes in the core strategic approach will innately undermine the 'constitutional' bargains and arrangements it underpins.

The effects of this are unpredictable, but by definition open up greater possibility of developments in international order that are adverse to U.S. political and economic interests as they are currently conceived. Indeed, as Kagan has observed,

“International order is not an evolution; it is an imposition. It is the domination of one vision over others- in this case, the domination of liberal principles of economics, domestic politics, and international relations over other, nonliberal principles. It will last only as long as those who imposed it retain the capacity to defend it.”<sup>532</sup>

As such, while specific pathways may not serve as sound fiscal or financial supporting justifications for forward engaged grand strategy, the broader systemic logics are significantly clearer. Indeed, they are demonstrably central to grand strategy itself. That is insofar as they form central strategic objectives on which the very approach of 'deep engagement' is based.

These strategic objectives, formed to achieve specific policy outcomes, are created at a number of levels and articulated to the public most clearly in the National Security Strategy (NSS), whose guidance is then used to form the National Military Strategy (NMS). For example, the aim of achieving “a strong, innovative, and growing U.S. economy in an open international economic system that promotes opportunity and prosperity” is listed among four 'enduring national interests' outlined in the NSS. This, in turn, is buttressed by a specific emphasis on the prevention and/or limiting the risk associated with “global economic crisis or widespread economic

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<sup>532</sup> Robert Kagan, *The World America Made* (Alfred Knopf: New York, 2012) p, 97

slowdown” as well as “major energy market disruptions.”<sup>533</sup> This means that whilst the NMS notes that “the U.S. military’s purpose is to protect our Nation and win our wars” it also distills more specific enduring interests down to additional national security interests, in this case listing “the security of the global economic system” as one of six for the U.S. military to prioritize.<sup>534</sup> Therefore, and rather explicitly, the U.S. military is committed to the defence of the contemporary political-economic order.

The utility and benefit of doing so is simply a *status quo* argument. As Kagan’s quote referenced above alludes to, the primary economic benefit of the extant military strategy is that it underpins the contemporary order, an order which the United States built and which it prefers. This problem mirrors Brooks and Wohlforth’s contention that in order to interrogate the economic benefits of ‘deep engagement’ we are forced to answer one vital question - “what would the world be like if America retrenched?”<sup>535</sup> That is, the potential effects of tearing up central elements of the international order. As I have demonstrated throughout this thesis, while it would be difficult to do this specifically and precisely we can begin to conceptually map out the problem via evaluating likely potential outcomes.

For example, conceptually speaking, we may think of the future as a collection of potential alternative trajectories, only one of which is actually realised. Figure 38 provides a visualisation of this, demonstrating a number of different trajectories of a hypothetical growth process. If we think of these as potential outcomes after a given event - such as retrenchment, for example - we can visualise a distribution of possible results. This acts as a simple monte carlo method, and doing so allows us to back out the distribution of values at termination, giving us a range of possibilities (the support) and their associated probabilities (the density).<sup>536</sup> Analogously, we can do something similar in our own assessments of international order. While far from perfect, it

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<sup>533</sup> The White House, “National Security Strategy” February 2015. p, 2.

[https://www.whitehouse.gov/sites/default/files/docs/2015\\_national\\_security\\_strategy.pdf](https://www.whitehouse.gov/sites/default/files/docs/2015_national_security_strategy.pdf)

<sup>534</sup> “The National Military Strategy of the United States of America 2015” Joint Chiefs of Staff, June 2015. p, 5.

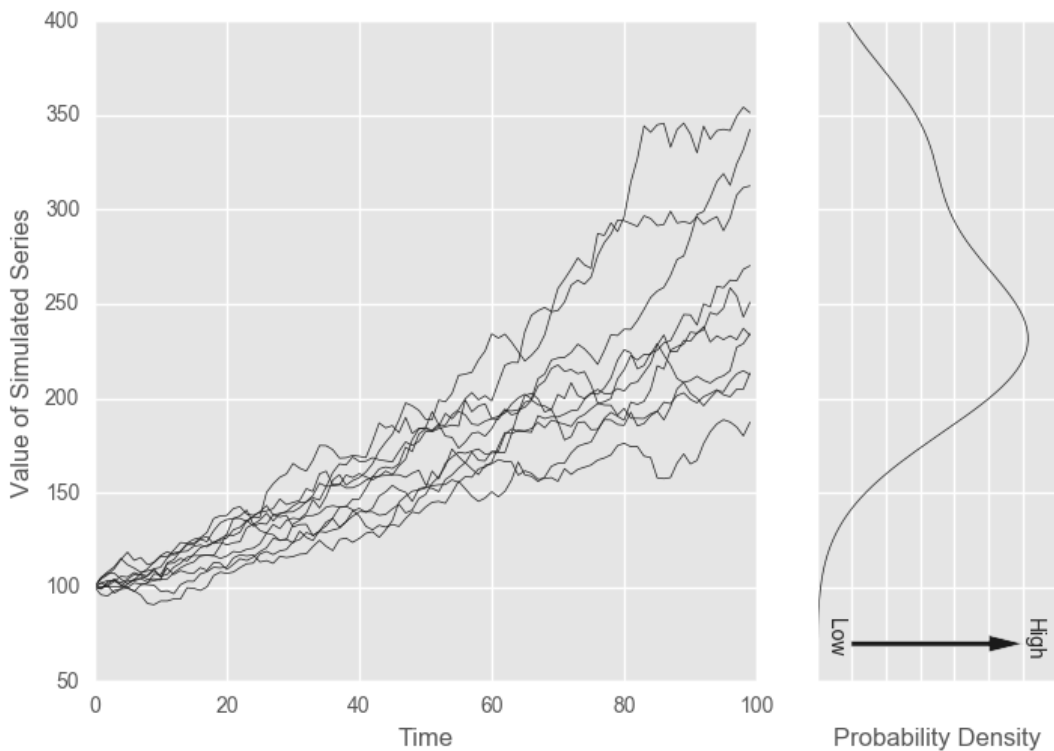
[http://www.jcs.mil/Portals/36/Documents/Publications/2015\\_National\\_Military\\_Strategy.pdf](http://www.jcs.mil/Portals/36/Documents/Publications/2015_National_Military_Strategy.pdf)

<sup>535</sup> Brooks and Wohlforth, *America Abroad*, 10

<sup>536</sup> In the case generated by running a gaussian kernel density estimator over the sample path data at termination.

rectifies some of the shortcomings of point prediction insofar as it permits an evaluation of a range of potential outcomes.

**Figure 39 – Sample Path Simulation**



In this case, the argument is that a fundamental change in an important aspect of the contemporary international order is unlikely to increase the density of the distribution in the positive tail, rather it is far more likely to open it up in the negative tail. In short, that it greatly increases the probability of negative developments for little to no systemic upside. Offering a distinctly realist rationale to maintain core defensive commitments. As an aside, this is also likely to lend caution toward unnecessary conflicts peripheral to this logic.

As we have seen, this preeminent position also gives the United States a capacity to negotiate developments in this order, whether that be opportunistically during times of crisis, or more generally throughout periods of structural change such as the rapid rise in non-Western economic power, particularly since the early 1990s. While I have argued that the specific pathways through which this occurs are both too circumstantial, and individually of generally too small a magnitude to warrant strategic consideration, the broader logic nonetheless fits under this 'systemic maintenance' logic.

## **Grand Strategy is not Military Strategy**

Definitions of 'grand strategy' abound but at the heart of all these definitions is an essential logic that links national resources to national objectives. In the case of the United States, it has been the primary contributor to the Western-centered international order which links Europe, the United States, and East Asia in an interconnected economic and political relationship. While part of a broader international, institutional architecture made up of the UN institutions and the international economic organizations of the WTO and IMF, it is this core which represents much of the United States' main alliance network and investment partners. Equally, it is this core which has allowed the expansion of parts of this international economic and political order to former ideological enemies such as China. Although at best a cautious recipient of American economic and political values, this reminds us that grand strategy (at least for great powers) encompasses more than a concern for physical security. It is a vehicle for expressing its political and economic ambitions, resulting in a great deal of interdependence between its various components.

In turn this makes grand strategy a balancing act, and one which innately involves factoring in non-security dynamics to the planning and implementation of national military strategy itself. While defence of US territorial integrity and the safety of its citizens are surely its paramount concerns, economic and political imperatives are never far behind. While a great power (or a superpower, for that matter) may not wish to extend permanent support or direct influence to a given region or regions, even a thinly constructed notion of the national interest will involve

likewise attempting to delimit the influence of other great powers in the international system. This, of course, is the entire idea of a 'sphere of influence'. Therefore, despite the fact that the United States is surrounded by two large 'moats' and equipped with a nuclear arsenal of sufficient destructive power to simultaneously deter, defeat or significantly degrade multiple opponents simultaneously, the manner in which its military power influences political and economic relations will remain of considerable importance.

As I have shown throughout this thesis, American military power not only underpins much of the constitutional bargains struck between the core states in the Western international economic system, yet it also appears in a number of specific cases to lend it leverage in diplomatic negotiations, whilst also providing a tool by which the status quo may be defended and, in some cases, expanded. Whilst this offers some lessons for strategy, it nonetheless leaves two important questions open for discussion: just how much of a role should the United States play in world affairs? And when would we consider the marginal costs to exceed the marginal benefits? Both of which are ultimately value judgments.



# Mathematical Appendix

## Introduction

### I.1

A simple example of Dahl's conception of power, borrowed from the text itself, is as follows.

$$M\left(\frac{A}{B} : w, x\right) = p_1(B, x | A, w) - p_2(B, x | A, \neg w) \quad (1)$$

Whereby we ascertain actor  $A$ 's power over actor  $B$ , with respect to outcome  $x$ , by means of action  $w$ , expressed as  $M$  (Macht - german for power). All this brief equation says is that the probability of actor  $B$  undertaking action  $x$  with respect to actor  $A$  undertaking action  $w$  is the probability of the event happening given the action ( $p_1$ ) minus the probability of the event without the action ( $p_2$ ).

## Chapter 1

### 1.1

The gravity model of trade suggests that a certain proportion of economic activity, say  $G$ , produced at some origin,  $Y$ , is attracted to a similar mass of economic activity at location  $E$ . Operating under the restriction that this potential flow may be reduced by distance or trade barriers between them,  $D$ . This therefore allows us to estimate aggregate trade between countries  $i$  and  $j$ , represented as  $X$ :

$$X_{i,j} = G \frac{Y_i E_j}{D_{i,j}^2}$$

### 1.2

Continuing with the example regarding the production of roses and computers, write unit labour as  $UL$ , overall quantity as  $Q$ , and total labour as  $TL$ , we therefore have the following relationship.

$$UL_R Q_R + UL_C Q_C \leq TL$$

### 1.3

Continuing with the example regarding the production of roses and computers, if it made sense to produce computers rather than roses the following expression should be true.

$$\left(\frac{1}{UL_C}\right)(P_C) > \left(\frac{1}{UL_R}\right)(P_R)$$

Whereby the term,  $\frac{1}{UL_X}$ , divides one by the total hours required for production of a single good. When multiplied by the price of a single good, we can retrieve the hourly compensation.

### 1.4

A monopolistic competitor will produce at the point in which marginal revenue (MR) equals marginal cost (MC) because producing at a marginal revenue above marginal cost would be indicative of spare capacity in some form or another, leading firms to maximise production until they are producing at or near cost. The firm's profit is therefore the difference between the average cost (AC) and the demand price (P1) at this point. The average cost is just the sum of the fixed costs divided by quantity plus the marginal cost.

$$AC = \frac{F}{Q} + MC$$

The fixed cost is divided by the quantity because as the number of products sold increases the fixed cost becomes lower per unit, i.e. if up-front investment for a product line is \$400 and each item costs an additional \$20 to make, selling twenty units would have lower average costs than ten.

## Chapter 2

### 2.1

Below is the notation returning the standardized excess kurtosis of a dataset.

$$\frac{\mathbf{E}[(x - \mu)^4]}{(\mathbf{E}[(x - \mu)^2])^{4/2}} - 3$$



## Chapter 3

### 3.1

The basic model distinguishes only between military output ( $M$ ) and civilian output ( $C$ ), with both employing labour ( $L$ ) and capital ( $K$ ) from the same sources. In addition, it is also assumed that military production may have external effects on civilian production:

$$Y = C + M$$

Where,

$$M = M(L_m, K_m), C = C(L_c, K_c, M)$$

All the above says is that the economy is made up of (in this model) military and civilian production. In turn, military production is a function of military employed labour and capital. The civilian production equation ( $C$ ) is similar although, as the reader will note, it is also a function of military expenditures. This ( $M$ ) term, in theory, should allow the estimation of an externality effect. From here we can derive the growth equation, and from that, we can then specify a model for econometric testing.

### 3.2

Below is a simple example of an equation that seeks to model a change in economic output ( $\Delta Y$ ),

$$\Delta Y = \beta_0 + \beta_1 \left( \frac{I}{Y} \right) + \beta_2 \Delta L + \beta_3 \Delta M + \epsilon$$

In this equation  $I$  represents investment, and therefore  $I/Y$  represents the capital ratio,  $L$  refers to labour, and  $M$  to military spending.

### 3.3

The neoclassical production function found in the Solow-Swan growth model may be written as follows.

$$Y_t = A_t K_t^\alpha L_t^{1-\alpha}$$

Where  $Y$  is output,  $K$  is capital,  $A$  is technology and  $L$  is labour. The alpha in the exponent is the 'output elasticity', which essentially means that a 1% increase in the relevant factor induces an  $\alpha$  size increase in output. If  $\alpha$  was 0.50, for instance, we would see a 0.50% increase in output.

### 3.4

Below is the basic econometric equation estimated by Dunne *et al.*

$$\Delta Y_t = \beta_0 + \beta_1 Y_{t-1} + \beta_2 S + \beta_3(n + g + d) + \beta_4 m_t + \beta_5 m_{t-1} + \epsilon_t$$

The equation stipulates that a change in output (GDP, for instance) at time  $t$ , can be modeled as the consequence of output at that prior time period, plus investment, minus capital depreciation, and inclusive of military spending, both current and lagged. The last two coefficients in the above, beta four and five, attempt to estimate the magnitude and sign of this relationship at time  $t$  and at a lag.

### 3.5

A formal representation of granger causality can be expressed as follows.

$$\Sigma_y(h | \Omega_t) < \Sigma_y(h | \Omega_t \setminus \{x_s | s \leq t\})$$

With  $\Sigma_t$  representing the 'information set' which contains all available information at time  $t$ , and  $\Omega_t \setminus \{x_s | s \leq t\}$  referring to the information set where the variable  $x$  is not present, the equation says that if  $x$  causes  $y$  then the  $h$  step forward forecast error for  $y$ ,  $\Sigma_y$  should be lower when all information is considered rather than when  $x$  is excluded.

### 3.6

Below is a VAR(1) model with constant,

$$Y_t = c + \beta_1 Y_{t-1} + \epsilon_t$$

The moving average representation is as follows,

$$Y_t = \mu + \sum_{i=0}^{\infty} \phi_i u_{t-i}$$

## Chapter 4

### 4.1

Below is a formal representation of Norrlof's method.

$$\frac{\sum_{i=1}^x \mathbf{1}_{Y_i}(X_i)}{n_y}$$

The numerator records a one for every observation  $i$  of the simulated series  $X$  which corresponds with observation  $i$  of the dependent variable  $Y$ . The denominator then divides the sum by the number of observation in the dependent variable to arrive at the 'coverage' which Norrlof returns. In this case, returning a distribution of values under the null hypothesis.

### 4.2

This is a general model of an ARMA model, with  $p$  lags in the AR term and  $q$  in the MA term. An iterative process, as used in the main text, may be used to select which paramterisation is most suitable. Initial search can be based on analysis of the autocorrelation function and the partial autocorrelation function.

$$y_t = \phi_0 + \sum_{i=1}^p \phi_i y_{t-i} + a_t - \sum_{i=1}^q \theta_i a_{t-i}$$

### 4.3

The relevant equation is as follows,

$$Y_{it} = \alpha S_{i,t-5} + \gamma X_{it} + \delta_i + \eta_t + \epsilon_{it}$$

Whereby  $S$  is the primary variable of interest, in this case various measures of security commitment, and the remaining terms are control variables, country fixed effects, and year fixed effects respectively.

### 4.4

The covariance of two variables,  $X$  and  $Y$ , may be written as follows,

$$\frac{\text{cov}(X, Y)}{\sigma_X \sigma_Y} \cdot \frac{\sigma_Y}{\sigma_X}$$

## Chapter 6

### 6.1

The following equations help to define a generic neural network model. Each hidden node may be generically described as follows,

$$h_j = f_j(a_{0j} + \sum_{i \rightarrow j} w_{ij} x_i)$$

Whereby  $f$  is some function chosen by the modeller, often some nonlinear function like the logistic function. Which renders the above somewhat like this,

$$h_j = \frac{\exp(a_{0j} + \sum_{i \rightarrow j} w_{ij} x_i)}{1 + \exp(a_{0j} + \sum_{i \rightarrow j} w_{ij} x_i)}$$

These hidden nodes then feed information forward to the output layer, which also weights and aggregates information from the other nodes. Again presenting us with (generically, at least) a linear equation of the following form,

$$o = a_{0o} + \sum_{j \rightarrow o} w_{jo} h_j$$

## 6.2

A generic univariate ARMA(1,1) is the following model,

$$x_t = \alpha + \beta x_{t-1} + \theta \epsilon_{t-1} + \epsilon_t$$

## 6.3

In order to accurately forecast the mean of a given variable  $X$ , we should like to assume that the expected value of this variable at time period  $t + 1$ , conditional on some prior information set  $\Sigma_{t-1}$ , expressed as a probability distribution  $f_t$ , is unbiased.

$$\begin{aligned} \mathbf{E}_{f_{X_t}} [X_{t+1} | \Sigma_{t-1}] &= \int X_{t+1} f_{X_t}(X_{t+1} | \Sigma_{t-1}) dX_{t+1} \\ &= \mu_{t+1} \end{aligned}$$

## 6.4

In the following example, our model has a deterministic term and a stochastic term, the error. Where the deterministic term is a constant term representing the mean of the variable in question, deduced from prior data, and so devoid of information on the future.

$$\begin{aligned} x_{t+1} &= \mu_{f_{X_t}} + \epsilon_{t+1} \\ \epsilon_{t+1} &\sim N(0, 1) \end{aligned}$$

Because of this, if the mean of the data changes, say by dropping, the model will permanently overestimate the series in question. To see this, consider the model in differences,

$$\Delta x_{t+1} = \mu_{f_{x_t}} - \mu_{f_{x_{t+1}}} + \Delta \epsilon_{t+1}$$

Now, if the mean is assumed to stay the same then the first term will reduce to zero leaving,

$$\Delta x_{t+1} = \Delta \epsilon_{t+1}$$

## 6.5

Below is the 'logistic map', one of the most simple mathematical models capable of demonstrating chaotic behaviour.

$$x_{t+1} = rx_t(1 - x_t)$$

The value at time  $t + 1$  is a function of its prior value at time  $t$  as well as a parameter  $r$ , which takes on values in the range  $(0, 4]$ .

## 6.6

Take an initial condition  $x$  in some domain  $D$ , and set  $\epsilon > 0$ , then a transformation  $T$  can be said to display sensitivity to initial conditions if in some region  $R$  of  $x$ , we have a  $y$  whereby,

$$|T^n(x) - T^n(y)| > \epsilon$$

## 6.7

If  $T$  is a measure-preserving transformation defined on the probability space  $(\Omega, \mathcal{F}, P)$ , then the probability distribution  $f$  of a sample path  $\omega_0$  converges to the probability distribution across all  $\omega \in \Omega$ ,

$$\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=0}^{n-1} f(T^k \omega_0) = \int_{\Omega} f(\omega) dP(\omega)$$

## 6.8

A simple way to see why path dependence breaks the relationship between time and space averages in ergodic systems is to consider the definition of an ergodic transformation,  $T$ . Using the probability space  $(\Omega, \mathcal{F}, P)$ , define the  $\mathcal{F}$ -set  $A$  as invariant under  $T$  if  $T^{-1}A = A$ . Such a set may be considered nontrivial if  $0 < P(A) < 1$ . The transformation  $T$  is then ergodic if there are in  $\mathcal{F}$  no nontrivial invariant sets. That is  $P(A) = 0$  or  $P(A) = 1$ . Now consider if there were a set such that  $0 < P(A) < 1$ , then a sample path from this set would get caught within a subset of the support of the distribution in question, removing the relationship between space and time averages.

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