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Abstract: Has the emergence of global financial markets brought with it global financial warfare? This article discusses the canon of financial warfare and how one might wage it across both the strategic and tactical realms.

Imagine warfare waged in financial cyberspace: electronic, remote, fought in hypervelocity with millions of engagements per second, and with nations forced to construct redundant systems, sacrificing billions in economic efficiency for survival capacity. Financial warfare strikes can blockade vital industries; delink countries from the global marketplace; bankrupt sovereign economies in the space of a few days, and cause mass exoduses, starvation, riots, and regime change.

Financial warfare can support US policy objectives by attacking regime elites, collapsing trade, draining foreign currency reserves, decreasing economic production, spiking inflation, driving unemployment, increasing social and labor unrest and accelerating population migration. Financial warfare can assist the warfighter by halting an enemy's capability to produce and distribute war materials, fund training, operations, or proxies. Financial warfare can amplify and accelerate the damage inflicted by economic warfare. Financial warfare spoofing operations can assist intelligence collection by isolating and mapping crisis response patterns of individual adversaries, organizations, nations, and regime elites.

The aim of financial warfare is, quite literally, to disarm opponents by reducing their ability to finance production or distribution, complete transactions, or manage the consequences of a transaction failure. If precisely employed, financial warfare can reduce a targeted society's will and cohesion by forcing upon it, in stark terms, the daily necessity to choose between "guns" or "butter." This dilemma highlights and magnifies the real, immediate, and personal consequences of resource allocation. Deployed within an indigenous society's political framework, financial warfare can deepen the divide between rival constituencies, reducing societal cohesion and inciting civil unrest.

Financial warfare is not a new concept. While many individual policy actions had financial aspects, perhaps the first pure financial warfare campaign in United States history occurred in the Eisenhower administration. It was prompted by the Soviet invasion and suppression of the Hungary Revolution on 4 November 1956 and sparked by the seizure of the Suez canal by NATO allies, Britain and France, in Operation Musketeer on 5 November.[1] President Dwight Eisenhower determined he could not effectively oppose Soviet military intervention

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1 Malcom Byrne, Csaba Békés, János Rainer, eds. *The 1956 Hungarian Revolution: A History in Documents*, (New York, N.Y., Central European University Press, 2002): 1, http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB76/

in Hungary, while allowing European military intervention in Egypt.[2] Diplomacy had not convinced the British or the French to withdraw.[3] The United States was hesitant to intervene with military force against NATO allies. As an alternative, Eisenhower employed financial warfare. With just three offensive strikes, the United States achieved its immediate policy aims of forcing Britain and then France to withdraw from the Suez Canal. The three financial warfare strikes were: (1) blocking the International Monetary Fund (IMF) from providing Britain with $561 million in standby credit; (2) blocking the US Export-Import Bank from extending $600 million in credit to Britain; and (3) threatening to dump America's holdings of pound-sterling bonds unless Great Britain withdrew from the Suez.[4] The credit blockade froze Britain's ability to borrow and forced it back onto its negative cash flow, effectively bankrupting it. The pound-sterling threat significantly raised the perceived risk of dealing in British currency. That threat, if executed, would have directly affected British ability to trade internationally.

By 1956, Britain was grossly overleveraged and dependent on further international borrowing to maintain its standard of living. The United States owned $3.75 billion in British debt as a result of the Anglo-American Loan Agreement of 1945, while the entire foreign currency reserve of Britain in October 1956 was equivalent to $2.2 billion.[5] To finance its WW II efforts, Britain had borrowed extensively from Commonwealth members and by 1945 owed roughly £14 billion, chiefly to India, Argentina, and Egypt. Unable to repay in full, Britain froze the principal balances in these accounts.

The sell-off of US-held pound-sterling bonds, if executed, would have been catastrophic. The resulting increase of British currency in circulation would have deflated the value of the pound-sterling. This deflation would, in turn, have required Britain to drain its foreign currency reserves to buy pound-sterling bonds to maintain its currency's parity against the US dollar. If it broke parity, and allowed the devaluation of its currency, Britain would not have the purchasing power or the foreign reserves to cover its food and energy imports. Additionally,

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2 Peter L. Hahn, "Significant Events in U.S. Foreign Relations: 1900-2001," *EJournalUSA* (Washington, D.C.: US Department of State, 2006): 26-30, www.america.gov/media/pdf/ejs/ijpe0406.pdf; "Interview with General Andrew J. Goodpaster," George Washington University's National Security Archive, http://www.gwu.edu/~nsarchiv/coldwar/interviews/episode-8/goodpaster1.html. Eisenhower's aide, General Andrew Goodpaster, recalled that Eisenhower's staff thought NATO could not present a united front to Soviet aggression in Hungary while Britain and France were occupying Suez; Byrne and Békés, *Hungarian Revolution*.

3 "Memorandum of a Conference with the President, White House, Washington, October 29, 1956, 7:15 PM," Office of the Historian, US Department of State, http://history.state.gov/historicaldocuments/frus1955-57v16/d411; "Message from President Eisenhower to Prime Minister Eden," US Department of State, Office of the Historian, Washington, October 30, 1956, http://history.state.gov/historicaldocuments/frus1955-57v16/d436;

4 James M. Boughton, "Was Suez in 1956 the First Financial Crisis of the Twenty-First Century?" *Finance and Development* 38, no. 3 (September 2001): 1, http://www.imf.org/external/pubs/ft/fandd/2001/09/boughton.htm; Rose McDermott, *Risk Taking in International Politics* (Ann Arbor, MI: University of Michigan Press, 2001), 162, http://www.press.umich.edu/pdf/0472108670-06.pdf .

5 Nicholas Miller Trebatk, "The United States, Britain and the Marshall Plan: An analysis of Anglo-American relations in the early postwar era," Paper presented at XII Conference on Contemporary Capitalism and the National and Political Economy of Brazil and Latin America on Contradictions and Perspectives, Rio de Janeiro, Brazil, 2007. The author was a doctoral student at the Instituto de Economia, Universidade Federal do Rio de Janeiro (IE-UFRJ); Adam Klug and Gregor W. Smith, "Suez and Sterling, 1956," *Working Paper No. 1256* (Kingston, Ontario, Canada: Queen's University Economics Department, 2nd Quarter, 1999), Figure 3: Britain's reserves: 36, http://www.econ.queensu.ca/working_papers/papers/qed_wp_1256.pdf

Commonwealth account holders would probably have withheld further credit until all prior debts were settled. Without credit, Britain would have faced a prolonged liquidity crisis and insolvency.

In his response to the Suez Crisis, Eisenhower waged a modern financial warfare campaign. Without credit-fueled deficit spending, Britain could not import needed oil and food. It would also have destroyed Britain's trade and its ability to form capital through trade surpluses, and collapse its ability to import goods at a deficit to maintain its standard of living. These financial strikes operated beyond US legal jurisdiction and where informal US influence had failed. Eisenhower's actions were outside conventional or irregular war. Financial warfare thus supplanted traditional warfare in countering the British and French seizure of the Suez Canal.

This Suez Crisis example illustrates the importance of understanding the offensive capabilities and defensive necessities of financial warfare. The United States successfully waged financial warfare against the third most powerful nation on the planet at that time; it is likely the United States will be targeted by financial warfare in the future.

What is Financial Warfare?

Historically, financial depredation has been at best a subsidiary effect of economic warfare. That has changed. With the emergence of integrated global financial markets, financial warfare has become a viable, distinct, and independent means of projecting power. As Yale Professor Paul Bracken explained: "*The economic system deals with the hard and soft outputs of the economy–that is, goods and services. The financial system deals with money and credit.*"[6] Accordingly, economic warfare is circumscribed to attacks on the enemy's ability to produce and distribute goods and services; financial warfare is confined to attacks on the credit and monetary foundations that underlie production and distribution. Financial warfare is a potent means of power projection because precluding a nation's ability to price and to exchange; to form capital and manage risk; causes production and distribution to cease. Without production and distribution, the economy grinds to a halt and the adversary is disarmed. Financial warfare thus uses money and credit to attack (defend) an opponent (or a friend).

In practice, financial warfare identifies systemic areas of opacity, agency and asymmetry in information, risk and reward; focuses on those areas with a high relative degree of centralization and leverage; and determines the ranges of integration and diversification that offer the greatest susceptibility to contagion and cascade failure.[7] Offensive financial warfare seeks to engineer outcomes from altering adversary capabilities to creating "Black Swans," which are large-scale events of massive consequence that occur far from the means of statistical

6 Paul Bracken, "Financial Warfare*," Foreign Policy Research Institute* (2007): 4, http://www.fpri.org/enotes/200709.bracken.financialwarfare.html;Text is paraphrased from "Financial Warfare," page 4. as originally published in *Orbis*, Fall 2007 edition.

7 Constantine Sandis and Nassim Taleb, "The Skin in the Game Heuristic for Protection Against Tail Events," *Social Science Research Network*, July 30, 2013, 1, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2298292 ; Nassim Taleb, Antifragile: Things that Gain from Disorder (New York: Random House, 2012); Matthew Elliot, Benjamin Golub, Matthew Jackson, "Financial Networks and Contagion," *Social Science Research Network*, January 1, 2013, 2-5, 16-26, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2175056

distributions (fat-tailed events) and accordingly are unpredictable and irregular.[8] Defensive financial warfare seeks to decentralize; de-lever; reduce opacity, asymmetry, and skewness; or construct extra capacity, strength, and layers of redundancy to negative outcomes. The intent of financial warfare is to extend the strategic and tactical engagement of the enemy from the kinetic battlespace to the financial marketplace. It engages an opponent's financial structure, or operations, by using the three principal functions of finance: capital formation, capital liquidity, and risk-management:

- Capital formation is the accumulation of real capital surpluses through public and private savings and borrowings to create or expand future economic activity.
- Capital liquidity is the transaction of capital assets at volume, rapidly without loss of value, between buyers and sellers and among its forms, e.g., commodities to currencies, dollars to yen, stocks to bonds, etc.
- Risk management is the process of optimizing exposure to financial volatility.[9]

Financial warfare engagements occur at both the tactical and strategic levels. Tactical wins, losses, and draws must be used coherently to advance strategy. In financial warfare, there is an added dimension best articulated through the concept of micro and macro. A micro financial engagement is the singular use of one functional avenue, capital liquidity, capital formation, or risk management, to affect a single transaction. Macro financial engagements typically occur at system integration points between an adversary and the global, bilateral, or multilateral markets. For example, terminating Protection and Indemnity (P&I) insurance for one ship precludes its use for hauling third party cargo internationally. This is a micro risk-management engagement. Removing an entire country's P&I insurance uses a macro risk-management engagement to shut down a nation's international, commercial maritime cargo industry. The difference lies in whether the exploitation of vulnerabilities is individual or systemic, and whether the exploitation occurs within a system or at the interface between systems.

If global finance is an inescapable component of global trade, then its corollary—global financial warfare—is equally inescapable. Every country involved in the global markets has, by necessity, harmonized in some degree at both the micro and macro levels with global financial standards and structures. These harmonized international standards are vital to the proficient and efficient functioning of global trade, which, in turn, is crucial to most national economies. The flipside of that coin is that these harmonized standards offer avenues of approach to wage financial war.

Waging Financial War

The recent and enormous growth of global financial markets illustrates the reach of purely financial actions. For example, the average

8 Sandis and Taleb, "The Skin in the Game Heuristic for Protection Against Tail Events," 1; for a more detailed explanation of "Black Swans" see Nassim Taleb, *The Black Swan: The Impact of the Highly Improbable* (New York*:* Random House, 2007).

9 Philippe Jorion, *Value at Risk* (New York, NY: McGraw Hill, 1997), 3-15.

daily turnover in the foreign currency exchange markets (Forex) is over $4 trillion.[10] As such, the Forex *daily* turnover is greater than the *annual* domestic product of 215 of the world's 220 countries.[11] Financial warfare's capabilities and impact will only increase as global financial markets grow. With its high-speed, complex interconnectivity, and the volume of capital moving daily, warfare in the financial marketplace possesses the capability to operate separately from and at speeds far beyond economic, conventional, or irregular warfare.

The United States possesses a discrete and immense capacity for financial warfare. As the provider and guarantor of the world's reserve currency, the United States occupies a unique position in global financial markets. The reach of US currency is global. The Federal Reserve estimated that 60 percent of total US currency in circulation, roughly $450 billion, is held outside the United States.[12] Accordingly, the United States is the preeminent market for raising as well as investing capital. By 2010, foreign borrowers had $2.1 trillion in debt outstanding from US sources.[13] In the period 2003 to 2007, 55 percent of all highly rated US securities, treasuries, agencies, and AAA-rated private debt issued, $4.5 trillion, were purchased by foreign entities.[14]

From a policy perspective, financial warfare makes sense because it makes policy options available through finance that were previously obtainable solely through armed force; for example, these options could include ending effective and efficient Saudi financial support to international jihad; reducing Iranian defensive capability; and constraining Chinese economic penetration into Africa.

For uniformed military leaders, preparation of the battlespace now includes informational, cyber, economic, and financial actions. War plans can and should substitute financial-based risk for manpower-based risk when more efficient or effective. For example, uniformed military leaders may consider the use of structured analytics like Critical Factors Analysis (CFA) to identify the centers of an adversary's defensive capabilities and target them as well as supporting components of the adversary's military-industrial base with financial strikes prior to airstrikes. The warfighter now has the choice whether to bankrupt, bomb, or both. Lastly, commanders in Unconventional Warfare (UW) and Stability Operations (SO) wield enormous financial clout within their area of operations. They must use financial warfare to erode adversary

10 Bank for International Settlements, "Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity in 2010 - Final Results," December 1, 2010, 6.

11 Central Intelligence Agency, 2011 World Factbook, "Country Comparison: GDP (Purchasing Power Parity)," https://www.cia.gov/library/publications/the-world-factbook/rankorder/2001rank.html?countryCode=xx&rankAnchorRow=#xx

12 United States Department of the Treasury, The Federal Reserve Board. "The Use and Counterfeiting of United States Currency Abroad, Part 3, The Final Report to the Congress by the Secretary of the Treasury, in consultation with the Advanced Counterfeit Deterrence Steering Committee, pursuant to Section 807 of PL 104-132," September 2006, 4, http://www.federalreserve.gov/boarddocs/rptcongress/counterfeit/default.htm

13 Board of Governors of the Federal Reserve System. "Z.1 Financial Accounts of the United States, Flow of Funds, Balance Sheets, and Integrated Macroeconomic Accounts, D3 Credit Market Debt Outstanding by Sector," (Washington, DC:The Federal Reserve Board, March 10, 2011), 9, http://www.federalreserve.gov/releases/z1/current/z1.pdf

14 Ben S. Bernake et al., "International Capital Flows and the Returns to Safe Assets in the United States, 2003-2007," *Board of Governors of the Federal Reserve System, International Finance Discussion Papers, Number 1014* (Washington, DC: The Federal Reserve Board, February 2011), 8, http://www.federalreserve.gov/pubs/ifdp/2011/1014/ifdp1014.htm

capacity, build capacity of adversary competitors, and ensure that benefits of association with the United States only flow to indigenous parties who actively share risk, comparable in intensity and duration, with the United States. To neglect the use of some US capabilities in execution of policy is to overuse, rely on, and risk other capabilities.

If the intent of financial warfare is to extend the battlespace into the financial marketplace, then the operational question becomes how to do it? The answer is through macro and micro engagements or strikes across the three principal areas of finance initially targeting the interface between the adversary and the global marketplace.

Capital Formation Strikes

Inflating or deflating an adversary's currency, or any medium used to store real capital surpluses, is one way to conduct a capital formation strike. A prior requirement for successfully attacking an adversary's capital formation capability is to map how he moves capital and where he aggregates it. This mapping provides, in both broad manner and at a precise point, the adversary's current financial capacity for funding military, paramilitary, or proxy operations, as well as providing significant intelligence on their war-sustainment capability. Feints and spoofing operations can provide insight on how and where an adversary forms capital normally and under duress, as well as uncovering potential targets.

Capital formation strikes encompass the physical, cyber, and informational. Physical strikes can range from general to selective attacks against the telecommunications infrastructure which facilitate financial information flow. For example, interdicting the automated teller machine (ATM) communications system could preclude interbranch and interbank retail capital formation. Capital formation strikes can target and delegitimize the investment sponsor, the investment, or those channels used to evaluate, price, transact, and own it. Strikes directed against a channel itself can be used to deter, retard, or preclude the use of that channel by the investment or its sponsor.

Capital Liquidity Strikes

Capital market liquidity, for example, is systematic aggregation of capital transactions which are the individual exchange of capital and financial assets between buyers and sellers at volume, rapidly, without loss of value, and among its forms, e.g., commodities, currencies, equity, debt, etc. Deconstructing or reversing the historic arc of capital market liquidity's upward progress is a blueprint for systematically waging financial warfare utilizing capital liquidity strikes. The intent of capital market liquidity strikes, in aggregate, is to target markets and disrupt their drivers of upward efficiencies, speed, volume, and scale, to create a downward spiral of inefficiencies driving markets to a measurable policy objective or collapse. The separation between macro and micro in capital liquidity strikes mirrors that of capital formation. Macro capital liquidity strikes target markets. Micro capital liquidity strikes target individual transactions.

Micro capital liquidity strikes directed at a specific transaction can include: precluding a buyer from meeting a seller; interfering with or spoofing that transaction's price; preventing title transfer; breaching legitimate market behaviors, or introducing unwarranted regulatory requirements into a specific transaction. Macro capital liquidity strikes can target market capabilities such as transaction speed. Transaction speed is limited by the speed at which information flows through market channels. Reduce channel speed and transaction speed will accordingly reduce. Reduce transaction speed and market throughput will reduce. Likewise, market consistency, transparency and uniformity can be targeted through discrete strikes reducing channel speeds only for specific buyers. When the bid ask spreads are small, discrete channel speed reductions may preclude specified buyers and sellers from transacting within a timeframe available to other market participants. The targeted buyer loses the transaction to other, faster buyers. Eventually, targeted buyers exit, eroding trust in the market's fairness. Trust underlies every market. Erode trust and participants will exit. The competitive margins between markets are typically thin. Affect those margins and disadvantaged participants will exit to seek other, more consistent, transparent, and uniform markets. Additionally, spoofing market participants or deliberately implanting misinformation can attack market transparency, consistency, and the uniform diffusion of data.

Risk Management Strikes

Risk management is the process of optimizing exposure to financial volatility.[15] Providers or facilitators of risk management include insurance companies, audit and accounting firms, rating agencies and credit bureaus, and underwriters of collateral, warranties, and hedges. Removal or reduction of an adversary's financial risk management activities can constrain its ability to project power at the granular level (micro) or comprehensively at a systemic level (macro). Eroding or interdicting specific financial risk management mechanisms among adversaries and their commercial enablers can delay or preclude their ability to produce and distribute war materials, project power internationally, support foreign operations or favorably prepare their battlespace through commercial means.

For example, Iran's crude oil sales accounts for 80 percent of Iran's hard currency reserves and for 50 percent of its national budget.[16] Iran's continued ability to ship oil, a strategic commodity, to Asia gives it significant economic and diplomatic leverage as well as the financial means to support military operations. However, Iran's ability to ship crude, and for that matter to maintain shipping overall, is dependent upon maritime insurance. Without 3rd party Protection and Indemnity (P&I) insurance, ships cannot enter most international commercial ports. On February 18, 2011, "Iran's biggest crude oil tanker operator NITC said on Friday its ship insurers had declined to renew policy cover for the coming year due to the impact of tightening sanctions in the European

15 Philippe Jorion, *Value at Risk*, 3 -15.

16 Kenneth Katzman, *Iran Sanctions,* Congressional Research Service, June 13, 2013, 53; "Iran Oil Exports Top 844mn Barrels*," PressTV.com*. June 10, 2010, http://previous.presstv.com/detail.aspx?id=130736&sectionid=351020102

Union."[17] The ability to disaggregate Iran from the global oil market by using a simple risk-management mechanism, in this case P&I insurance, illustrates the leverage financial warfare offers.

International maritime P&I insurance requirements illustrate an interesting and under-appreciated aspect of financial risk management strikes. Financial risk management strikes can utilize established international regulatory schemas to attack adversary financial systems, components, or assets. Lacking P&I insurance, adversary commercial shipping fleets are precluded from many international ports. Insurance and credit problems can also attack the international operations of an adversary's commercial airline industry. Macro risk management strikes can utilize existing safety codes or operating rules to discover fraudulent behaviors or uncover systemic violations of international commerce standards by an adversary or their commercial enablers. Weaponizing and exploiting international commerce schemas can result in delinking entire industries from global trade. For example, increasing ramp inspections or targeting operating audits at adversary commercial enablers could discover violations of safety standards. Many international commercial systems, maritime, aviation, postal, etc. require and enforce safety and behavior standards, particularly where fraudulent behaviors can collapse the system. International commerce rule schemas can legitimately be used to limit or bankrupt an adversary's commercial enablers.

Lastly, on a cautionary note, just as the United States used financial warfare to alter British policy in the Suez, financial warfare may be used against the United States in the future. American vulnerability to financial strikes includes interruptions to highly centralized capital formation chokepoints like the Fedwire Funds Service and the Clearing House Interbank Payment System (CHIPS) which account for more than 858,000 daily interbank transactions totaling $973 trillion annually.[18] Levered derivative US financial products introduce vulnerabilities when risk is opaque and agency problems exist, as illustrated by the role Credit Default Swaps (CDS) played in the 2008 Mortgage Backed Security (MBS) collapse.[19] The result was bankruptcy and liquidation of major securities as insurance firms induced federal intervention to subsidize failed corporations. Ironically, the whole financial system became less robust rather than more robust. Lastly, deficit fueled (levered) federal spending increases vulnerability to financial strikes across the board by reducing capacity for managing negative outcomes such as errors in forecasting future revenues, constraining current policy due to undercapitalized past actions, and may incent actions such as

17 "UPDATE 2-Sanctions Hit Iran's NITC Ship Insurance Cover," ***Reuters***, February 18, 2011, http://af.reuters.com/article/energyOilNews/idAFLDE71H1ZC20110218?sp=true

18 Bank for International Settlements, "Payment, Clearing and Settlement Systems in the United States," *Committee on Payments Systems and Settlement Redbook 2012*, January 2013, 487-490.

19 Michael Lewis, *The Big Short: Inside the Doomsday Machine* (New York: W. W. Norton, 2010). The entire book chronicles how the opacity, agency, and asymmetric nature of the CDS market came back to impact both the writers of this form of insurance, chiefly AIG-FP, and the buyers to include Bear Stearns, Lehman Brothers, Morgan Stanley, among others.

nationalization of pension assets, forced loans to the government, or currency devaluations.[20]

Financial warfare is a new means of power projection that offers the United States significant capabilities in addition to its traditional repertoire. Financial warfare can support US policy objectives by directly attacking an adversary's sovereign financial structures, individual regime elites, or commercial industries and enablers. Financial warfare spoofing operations can assist intelligence collection through isolating, illustrating, and mapping adversary crisis response patterns. Employing financial warfare strikes within an indigenous society's political framework can provide leverage assisting the warfighter by reducing the enemy's capability to fund training, operations, or proxies. Lastly, with significant budget deficits and mounting national debt, the United States is highly susceptible to, and must consider study and defensive application of, financial warfare.

20 Nassim Taleb, *Antifragile: Things That Gain from Disorder* (New York: Random House, 2012); Alexei Barrionuevo, "Argentina Nationalizes $30 Billion in Private Pensions," *The New York Times*, October 21, 2008, http://www.nytimes.com/2008/10/22/business/worldbusiness/22argentina.html?; Niall Ferguson, *The Ascent of Money* (New York: Penguin Press, 2008), 69-73. The 15th century Italian city states of Florence and Venice both required wealthy citizens to loan money [Florence: Prestanze, Venice: Prestiti] to their respective governments; Hiroko Tabuchi, "Joining Switzerland, Japan Acts to Ease Currency's Strength," *The New York Times*, August 4, 2011. In 2010-2011, Brazil, South Korea, Japan, and Switzerland all intervened to preclude appreciation of their currencies in order to maintain exports.