BLOCKCHAIN: LEVERAGING A TRUST TECHNOLOGY IN EXPEDITIONARY ECONOMICS

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By now, the rule of law is universally considered a critical prerequisite for helping an undeveloped nation emerge with a self-sustaining, expanding economy. While an uncontested element of development theory, establishing the rule of law is so difficult in practice that it is seldom attempted.

An example: Frustrated with the difficulties of post-conflict pacification, the second Bush administration turned to establishing the rule of law as the central step in restarting the Iraqi economy.[1] U.S. development officials, however, did not consider its implementation possible. While visiting a farm on the outskirts of Tikrit in 2010, I asked how the farmer could prove his ownership of the land on which we stood. A USAID official deflected my inquiries by invoking the dogeared formula that informal traditions of access to the nearby stream for irrigation operated as a de facto claim to the land. The idea of a written deed recorded with the local government was dismissed as pie in the sky.[2]

Instead of pursuing a workable redevelopment plan that focused on establishing property ownership as a fundamental first step on the road to creating a credit-based economy, the U.S. found itself inventing a makeshift economic development strategy on the fly. Unlike past situations, where Army doctrine anticipated having to rebuild and temporarily administer the governments and economies of defeated nations, U.S. forces deployed in Iraq and Afghanistan had no such remit and no institutional memory of performing these roles, let alone contemporary training in managing such responsibilities.[3]

The military instead looked principally to USAID, a civilian development agency, under a newly devised approach referred to as "whole of government."[4] Without authority to engage in civilian state-making, the military trusted that USAID, as well as several executive departments and independent agencies,

could provide field commanders with an effective strategy to rekindle Iraq's economy.[5]

USAID's competency with large-scale economic development in post-conflict situations was, unfortunately, nonexistent.[6] The agency had been created early in 1961 to counter Soviet efforts during the Cold War to draw developing nations into its ideological orbit, including state planning of economies, by funding major infrastructure projects.[7] America's copycat policy, conceived by Walter Rostow, was known as the take-off theory.[8]

Ironically, Rostow saw central planning as necessary to the five stages of growth that every modern economy must traverse.[9] Beginning with subsistence agriculture, any nation's achievement of what Rostow described as a mass consumer economy could be hurried along if a rich nation built the predicate institutions (roads, bridges, electrical grids, hospitals, schools, banking systems, etc.) necessary to achieve "take-off" velocity, his third stage of economic growth. Once some growth had been realized, he argued, a maturation process would enable the nation to transition into the final stage—a growing free market economy that provided modern goods to its citizens. Democracy, Rostow argued, was sure to follow.

After several decades of attempts to make take-off happen, it was clear that USAID didn't know how to cold-start an economy. When confronted with the need for a strategy to restart the Iraqi economy, the agency turned to extramural consultants. The roadmap provided, "Moving the Iraqi Economy from Recovery to Sustainable Growth," rehearsed Rostow's view that formal institutions must be in place for take-off to occur.[10] Not surprisingly, the plan justified spending enormous sums to build various governmental agencies that mimicked our federal system, institutions thought necessary to support a functioning economy.[11] An Iraqi equivalent of the U.S. Securities and Exchange Commission to regulate nonexistent stock trading is one example, efforts to build local chambers of commerce another.

EXPEDITIONARY ECONOMICS

Notwithstanding its contemporary embrace, Rostow's theory had been suspect for decades. Reality presents a

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powerful critique. In more than six decades, USAID could not claim a single example of a modern economy that emerged as a result of its ministrations.[12.] Worse yet, contemporary examples of cold-start economies, unaware of Rostow's required stepwise prescription, were at hand. Modern Singapore, founded in 1965, began as a fishing village with no natural resources, insufficient farm production to feed its population, and virtually no manufacturing.[13.] Fifty years later, what its founder described as "a tiny Chinese island in a large Malay sea" was a flourishing first-world finance and trade-centered economy.[14.]

A third challenge to Rostow's thesis arose when a group of respected economists proposed a new "cookbook" for development. Endorsed by the International Monetary Fund, the World Bank, and the U.S. Treasury, it became known as the Washington Consensus.[15.] Again, there is no evidence that the consensus formula—"stabilize, liberalize and privatize"—has ever worked in practice.[16.]

Expeditionary economics was proposed as a situation-specific approach to economic development to guide action in the wake of wars and catastrophic natural disasters.[17.] This model serves a larger purpose, namely, a more actionable and effective approach to economic development than Rostow's five-stage model, which continues to be the default guide to U.S. government aid.

Central to the theory of expeditionary economics is the notion that indigenous entrepreneurial activity is the key to development. While U.S. foreign policy has adopted the veneer of promoting entrepreneurship, positive results, as measured by newly formed firms that survive five years and create significant numbers of new jobs, are hard to find. There are many reasons that U.S. efforts aimed at forming new firms in developing countries have failed.[18.] Prime among them is that, in most countries where economic development efforts are of particular importance to the U.S., the absence of formally articulated rules that establish property rights for the physical and intellectual assets of existing and new businesses are woefully inadequate or nonexistent. Without them, the risks of starting new firms or reestablishing preexisting ones are so high that it is unlikely that a modern economy can take shape.

RULE OF LAW

As suggested, the foundation of expeditionary economics rests on studies showing that the salient force in development is indigenous innovation that leads to increased levels of entrepreneurial risk-taking.[19.] As American history demonstrates, the nation's early, unprecedented, and unequalled economic success depended on individual inventors and entrepreneurs who created new technologies and, importantly, new business firms. This occurred in a past that to a modern observer would seem chaotic; for one thing, there was virtually no government regulation of market practices or products. In retrospect, it is clear that the transition from a mercantile economy to capitalism is nothing if not messy.

Critical to the success of the early American economy, however, was English common law. While the predictability that a fair and efficient legal system provides has been regarded as necessary to economic growth since the initial observations of Adam Smith, Rostow failed to appreciate the centrality of legal rules to the modern development of commerce. He was not alone; among the Washington Consensus' ten broad policy objectives, the last in order of importance

was "legal security for property rights." This phrase was a modern articulation of John Locke's rule of law, which in turn is a restatement of Aristotle's view of law as central to an efficient and virtuous society. The U.S. Constitution explicitly linked the hoped-for success of American democracy to specific, clearly articulated property rights.[20.]

In attempting to encourage the growth of foreign economies, however, the U.S. commitment to installing the rule of law has been selective. In post-invasion Iraq, for example, establishing the rule of law meant imposing a formal constitution, defining a corpus of criminal law and procedure, and establishing a system of trial and appellate courts.[21.] These efforts were driven in large part by concerns over corruption among Iraqi officials as reconstruction was under way.

Attempts to impose legal standards relating to real property or establish a commercial code, however, never were embraced with enthusiasm.[22.] Development practice, as the opening anecdote illustrates, pays lip service to the importance of formalized systems of land tenure and the need for contract law, even while erecting largely anthropological reasons why they cannot be expected to work.

Thus, the fundamental first element of a modern economy, where credit is based on formalized ownership of land and buildings, is essentially treated as irrelevant.[23.] Further justifying why USAID's plan ignored the importance of constructing Western systems of property registration was the view that existing prewar systems of recording claims to land ownership were so overwhelmingly corrupt that efforts to overcome inbred societal norms would prove fruitless. Titles could be lost, found, or changed with a bribe. The absolute ban on interest in Sharia law further discouraged reformers hoping to establish a system of collateralized credit as a way to kickstart the economy. It is hardly surprising that fewer than 3 percent of homes in Iraq were financed by mortgages.[24.]

BLOCKCHAIN TECHNOLOGY: A NEW TOOL FOR EXPEDITIONARY ECONOMICS

History is marked by technical innovations that changed everything—the wheel, sailing, bicycles, electricity, telephones, cars, airplanes, television, air conditioning, atomic weapons, the Internet, and cell phones. Readers of these pages know that Blockchain technology has the same potential. By recording specific transactions as a "block" of digitized information, the making and executing of contractual agreements can be instantaneous, irreversible, and immutable, due to being chained together to compose an identical ledger stored on an enormous distributed network of participating computers.

More than any other factor, the absence of incorruptible systems of property rights conceived of in the broadest way (real estate, equity interests in businesses, contractual obligations, judicially determined interests, and intellectual property) has frustrated decades of well-intended efforts to bring about self-sustaining growth in poorer nations. Applied widely as a mandated keystone in a development strategy, Blockchain technology can serve as a foundational element of a free market economy based on honesty and trust, which is critical to indigenous credit-based capital expansion. Many applications can be imagined, some of which are already in experimental use.

From the perspective of donor nations and international agencies such as the International Monetary Fund and the

World Bank, as well as multinational corporations making direct investments in developing nations, perhaps the most important contribution of a system of Blockchain records is its ability to greatly reduce corruption. Blockchain ledgers provide traceability of funds and assure their application to the intended uses. The ability of corrupt officials to siphon off government-to-government transfers for their own purposes can be reduced drastically.[25] One unintended but altogether positive result may be that donor nations' political resistance to foreign aid will decline.

A second valued application relates to enforcing the effectiveness of fledgling governments. As discussed above, the rule of law is the critical first step in establishing a credit-based economy that leads to indigenous wealth creation and growth. Early systems of Blockchain-based property registration already are in use in Brazil, Dubai, and Georgia. They improve the speed of recognizing ownership rights and improve systems for managing escrow funds. In time they will be able to support complex property transactions, including disaggregated ownership, fractional rights, and non-brokered peer-to-peer transactions.[26]

Once in place, such uses of Blockchain ledgers will hold real promise for encouraging democratic institutions. The technology allows for much more complete and up-to-date census data, not just of citizens but of the numbers and types of firms, of workers by occupation and skills, of students, and of social overhead assets including hospitals and clinics. Elections can of course be legitimated using Blockchain for voter registration and proof of identity, thereby mitigating political disputes that can spill over into civil upheavals that are injurious to economic progress.[27]

Social welfare initiatives also could be administered more equitably and efficiently with Blockchain. For example, income-support programs could automatically adjust public contributions to enforce incentives to work. Furthermore, local governments could operate more efficiently by posting municipal needs such as road repairs in an auction market, where bidders could be qualified, monitored (invoice verification that appropriate materials were used), and paid using Blockchain ledgers. Transparency of such transactions would enhance confidence among taxpayers.

Healthcare could also benefit in several ways. Most obvious is that patient records could be securely stored. Diagnostic information aggregated on entire populations would improve the ability to detect epidemics and help control communicable diseases. Moreover, the supply of medicine in developing countries presents risks unknown in the developed world: the World Health Organization estimates that more than 40 percent of medical products in some African countries are substandard or falsified.[28] Blockchain would enable trace-and-track systems of medical products from manufacturer to patient.

Food security has enormous implications for population health as well. Blockchain is widely seen as the solution to providing a precise description of the supply chain for every product.[29] This would allow processed foods, as well as fruits and vegetables, to be followed backwards from the middle-market negotiators to the producers and, ultimately, to the specific fields they were grown in to ensure safety at every step.

Of course, Blockchain gained its notoriety by supporting the invention of non-government currencies. Bitcoin, the best known, along with many other cryptocurrencies, is used as a medium of exchange on the Internet and is seen by many as an alternative store of wealth, one insulated from the vicissitudes of

state-managed monetary policy. This application is useful in situations anticipated by the doctrine of expeditionary economics. In the post-conflict pacification of Iraq, for example, the U.S. established a Commander's Emergency Response Program (CERP) that put enormous sums of cash at the disposal of American troops who used it to fund a wide range of initiatives, including building factories and schools, restoring water and sewage systems, and encouraging entrepreneurs to establish new businesses.[30.] The opportunity for corruption was enormous.

A future post-invasion CERP program might employ a temporary Blockchain-based currency specific to a geography and limited in its life. A forerunner to this idea can be found in the World Food Programme's experiment with Blockchain in Jordon's Azraq refugee camp. Refugees using Blockchain grocery vouchers are identified at the point of sale using retina scanning.[31.] Savings of around 90 percent of the administrative costs related to controlling the secondary marketing of relief supplies within the refugee population have been realized as a result.

CONCLUSION

Building post-conflict competency among American military and civilian relief agencies remains a critical need, as the U.S. and its allies continually face challenges that might require eventual reconstruction. America will continue to use foreign aid for humanitarian purposes and to help poorer nations create economies that can improve living standards for their people and sustain growth. The many tasks involved in reconstruction and economic development should be made significantly easier with the development of Blockchain technologies. It is important for the U.S. to develop applications that will promote global welfare. Democracy may be strengthened in the process.

CODA: AN INNOVATION IN EFFICIENT TRUST AND THE NATURE OF THE FIRM

In the future, Blockchain will have an unforeseen impact on development policy by making the formation of new firms a somewhat easier process. Ronald Coase's theory of the firm, for which he won the Nobel Prize, rests on his observation that corporations optimize efficiency by reducing transaction costs through uniform rules that govern bargains within the firm that are implicitly contractual in nature.[32.] Blockchain technology is certain to disturb this paradigm by stretching the boundaries that have traditionally defined the efficient firm, including a firm's capacity to innovate. The prevailing view of how and why firms are formed, what constitutes their optimum size, how firms function within an efficient ecosystem, and their expected longevity, is likely to change dramatically.

Coase's theory one day will be challenged by a perspective that replaces transactional efficiency as a firm's raison d'etre with one that sees a successful firm's advantage in how it extracts value from innovation, that generated within the firm and that acquired from other firms, including startups.

Increased competence at extracting value from innovation will be both caused and enabled by Blockchain technology in two ways. Both reflect the technology's value in creating trust in transactions in disruptive ways. First, Blockchain allows the building of open innovation processes within existing firms. Total transparency

within a firm for every contractual relationship will allow greater structural efficiencies to emerge, particularly in large firms with experience in generating innovation internally. One such efficiency is increased knowledge leverage that allows for optimizing the distribution of innovation efforts between central research hubs and related division-level activity. Apple, P&G, J&J, Intel, and Microsoft are currently using Blockchain to improve their innovation productivity by balancing their internal discovery and development processes.

Second, a new kind of trusted collaboration can be realized with the application of Blockchain technology. Blockchain has the potential to expand the conventional concept of open innovation among firms with intellectual property by creating symbiotic potential. The outcome may be leveraged growth using common innovations, a solution that does not require concentrating capital through mergers and acquisitions.

Blockchain already is having disruptive effects in transaction-based industries, including banking and insurance, by allowing control functions such as internal accounting and auditing to be done automatically in real time. Professional service firms (e.g., law, surveying, forecasting) are similarly affected by Blockchain applications that apply rule-based intelligence to recurring fact patterns. Transactional savings will be realized by every firm as decision making becomes increasingly automated by artificial intelligence that is tied to data stored and authenticated in Blockchain ledgers.

Finally, Blockchain has significant potential to assist the startup process in developing countries and is pioneering ways to make the process more efficient and less dangerous in highly developed countries, including the U.S. No country keeps records of innovations that led to startups and what becomes of them. Blockchain could help create new approaches to complying with first-to-discover and/or first-to-file rules meant to protect newly developed intellectual property, and could provide inventors, entrepreneurs, and investors more security than existing systems. Blockchain startup records could be used by early stage innovators to explore whether their discoveries have already been registered and applied commercially, thus allowing them either to focus on advancing their idea or to move on. The ability of Blockchain technology to routinize and automate "backroom" functions also holds the promise of efficient outsourcing for startups. Apple provides a working example of how innovators can delegate bookkeeping and related functions to its App Store. Finally, a census of new startups that allow third parties to see the thesis of every new firm—its intellectual property and the solutions that it promises to specific customer markets—could greatly improve the efficiency of capital markets for venture funding and improve the process of forming partnerships between startups and established firms.

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1. In the aftermath of the Iraq invasion, the U.S. military was unprepared to build a functioning economy, the necessary precedent condition for American troops to withdraw. The U.S. had executed a retributive strike against a nation involved in an act of war against the United States but had not contemplated what would be required in its aftermath.

2. This conversation took place four years after the centrality of instituting the rule of law thesis was declared.

3. Unlike past post-conflict situations, where Army doctrine anticipated having to rebuild and temporarily administer the economies and governments of defeated nations, U.S. forces deployed in Iraq and Afghanistan had no such remit and no institutional memory of performing these roles, let alone contemporary training in

managing such responsibilities. This was not always the case. See Paterson, Rebecca. Revisiting a School of Military Government: How Reanimating a World War II-Era Institution Could Professionalize Military Nation Building. Kauffman Foundation Research Series: Expeditionary Economics No. 3, 2011.

4. See both National Security Presidential Directive 44 (NSPD44) and Department of Defense Directive 3000.05, issued in 2005.

5. The phrase is from Chivvis, Christopher S., Olga Oliker, Andrew M. Liepman, Ben Connable, George Willcoxon, and William Young. Initial Thoughts on the Impact of the Iraq War on U.S. National Security Structures. RAND Corporation, 2014.

6. Easterly, William. "The Utopian Nightmare." Foreign Policy, September-October 2005.

7. Currently, both Russia and China are pursuing much the same strategy.

8. Rostow, Walter W. Stages of Economic Growth: A Non-Communist Manifesto. Cambridge, UK, 1960. Rostow's thesis continues to serve as the urtext of USAID policy.

9. Ironically, devised as a response to the Soviet program of building public works in newly freed and impoverished former colonial nations to lure them into the Russian orbit, Rostow's prescription was in every respect a central planning, big government solution.

10. King, Neil. "Bush Officials Draft Broad Plan for Free-Market Economy in Iraq." Wall Street Journal, May 1, 2003; also see Looney, Robert. The Neoliberal Model's Planned Role in Iraq's Economic Transition. Naval Postgraduate School, Center for Contemporary Conflict, August 1, 2003.

11. See Beer, Sam. The United States' Program for Agriculture in Post-Invasion Iraq. Lulu Press, 2014.

12. For a discussion of how economies start see Landes David S., Joel Mokyr, and William J. Baumol (Eds.). The Invention of Enterprise: Entrepreneurship from Ancient Mesopotamia to Modern Times. Princeton, NJ: Princeton University Press, 2012.

13. Lee, Kuan Yew. From Third World to First: The Singapore Story 1965-2000. Singapore: Times Media Private Limited, 2000.

14. This resulted from what was seen as an unconventional, even chaotic approach devised by the country's first post-colonial leader, Lee Kuan Yew. In conversation with the author, Lee related that he had been influenced by Alexander Hamilton and Benjamin Franklin, who saw human ingenuity as the critical ingredient of economic success. Singapore's development resembled the spontaneous order that the Austrian school argued was how all economic activity begins, rather than the hyper-rational approach characterized by neo-classical economists. See Hayek, F. A. The Fatal Conceit: The Errors of Socialism. Chicago: University of Chicago Press, 1991, p. 6.

15. See "What Washington Means by Policy Reform." In Latin American Readjustment: How Much Has Happened, ed. John Williamson. Washington, DC: Peterson Institute for International Economics, 1989.

16. This approach is now largely discredited. Rodrik, Dani. Goodbye Washington Consensus, Hello Washington Confusion, 2006. Available at http://j.mp/2o4og7K.

17. Schramm, Carl J. "Expeditionary Economics: Spurring Growth After Conflicts and Disasters." Foreign Affairs, May/June 2010.

18. The U.S. State Department and USAID often appear to see the promotion of entrepreneurship as an unconnected, separable approach to development. In fact, federal efforts to promote entrepreneurship overseas look very much like misguided domestic efforts. Thus, programming is aimed at youth, particularly college-age populations, despite evidence that the average American is 39 when starting a first business. Similarly, while there is no evidence that business incubators and localized venture funds have any significant impact on the number of new firms starting in failing

American cities, we support foreign efforts to start incubators and establish venture capital pools. Perhaps of great importance is the falling number of newly formed American firms, in steady decline for 20 years. Exporting the American model of stimulating entrepreneurship is proving futile for good reasons. See Schramm, Carl J. Burn the Business Plan. Simon and Schuster, 2018, pp. 195-199.

19. Romer, Paul M. "The Origins of Endogenous Growth." The Journal of Economic Perspectives, 1994, pp. 3-22. doi:10.1257/jep.8.1.3. JSTOR 2138148.

20. See Amendments 2, 3, 4, 5, 8, 9, 10 and 11, which pertain to protecting private property, as well as the Patent Clause in Article 1, which recognizes what we now refer to as intellectual property.

21. Williamson, John C. "Establishing the Rule of Law in Post-War Iraq: Rebuilding the Justice." Georgia Journal of International and Comparative Law, 2004; also see Yoo, John. "Iraq Reconstruction and the Law of Occupation." U.C. Davis Journal of International Law & Policy 7, 2004-2005.

22. Weingast, Barry R. "Why Developing Countries Prove So Resistant to the Rule of Law." Working paper 382, Stanford Center on Global Poverty and Development, March 2009.

23. de Soto, Hernando. The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else. New York: Basic Books, 2000.

24. RTI International. Land Registration and Property Rights. USAID Contract Number: EDG-C-00-03-00010-00. 2005.

25. The scandalous corruption that characterized redevelopment efforts in Haiti after the 2010 earthquake serve as a vivid example. See Lundahl, Mats. The Political Economy of Disaster: Destitution, Plunder and Earthquake in Haiti. New York: Routledge, 2013, p. 236. Also, for an account of missing aid intended for the education of Syrians, see "Following the Money: Lack of Transparency in Donor Funding for Syrian Refugee Education." Human Rights Watch, 2017.

26. Graglia, J. Michael, and Christopher Mellon. "Blockchain and Property in 2018." Innovations 12, no. 1/2 (2018).

27. Wang, Zheng. "Tiananmen as the Turning Point: China's Impossible Balancing Act." Time, April 29, 2014.

28. See Pisa, Michael. "Reassessing Expectations for Blockchain and Development." Innovations 12, no. 1/2 (2018).

29. Yiannas, Frank. "A New Era of Food Transparency Powered by Blockchain." Innovations 12, no. 1/2 (2018).

30. Center for Army Lessons Learned, Commanders Guide to Money as a Weapons System. USA Handbook 09-27, 2007.

31. Lubin, Joseph et al. "Blockchain for Global Development." Innovations 12, no. 1/2 (2018).

32. Coase, Ronald. "The Nature of the Firm." Economica 4, no. 16 (1937), 386-405.