Prediction Markets and World Peace

Michael Strong

Part I: Economic Freedom and Peace

Recent work by Erik Gartzke shows that economic freedom, as defined by the Fraser Index of Economic Freedom of the World (EFW), is fifty times more effective than democracy at reducing violent conflict. As Montesquieu said two hundred and fifty years ago, "Peace is the natural effect of trade."

The belief that global commerce would lead to a peaceful world was widespread prior to WW I. Then France and Germany, each of which was the other's largest trading partner, went to war with each other and destroyed the belief in peace through commerce. Subsequently the disillusionment with capitalist democracies caused by WW I combined with the Soviet Revolution led many idealists to place their hopes for world peace in communism. The revelation of the Stalin-Hitler pact in 1939 provided yet another disillusionment. Then the Cold War dominated international relations for the next fifty years; most peace efforts were focused on reducing Cold War tensions or resisting U.S. military involvement in Cold War proxy wars.

Since the collapse of communism, peace has been breaking out all over:

> The Human Security Report, an independent study funded by five countries and published by Oxford University Press, . . . reveals that after five decades of inexorable increase, the number of armed conflicts started to fall worldwide in the early 1990s. The decline has continued. By 2003, there were 40 percent fewer conflicts than in 1992. The deadliest conflicts -- those with 1,000 or more battle-deaths -- fell by some 80 percent. The number of genocides and other mass slaughters of civilians also dropped by 80 percent, while core human rights abuses have declined in five out of six regions of the developing world since the mid-1990s. International terrorism is the only type of political violence that has increased. Although the death toll has jumped sharply over the past three years, terrorists kill only a fraction of the number who die in wars.[1]

Although wars still take place, and another world war remains a possibility in the future, it is important for us to take note that we are, at present, facing a window of opportunity for creating lasting peace. Before we once again find ourselves in a world of Cold War-scale military polarization, we should do everything that we can to create a solid foundation for lasting peace.

---

[1] Andrew Mack, "Peace on Earth? Increasingly, Yes," *Washington Post*, December 28, 2005, http://www.washingtonpost.com/wp-dyn/content/article/2005/12/27/AR2005122700732.html

Immanual Kant's essay on "Perpetual Peace," proposed that there were three legs of a tripod, each crucial to lasting peace. They are often interpreted today as:

1. International institutions
2. Democratic governance
3. International commerce

The idea of a three-legged tripod implied that each element must be in place in order to ensure that peace would be perpetual.

Both the failed League of Nations and the stumbling United Nations have been attempts to create a foundation for peace based on international institutions. But it is clear that one leg of the tripod alone is inadequate. More recently, especially since the end of the Cold War, the concept of the Democratic Peace has become widespread. Although there appear to be partial exceptions, for the most part two democracies are unlikely to go to war with each other. But, of course, a tripod has three legs, not merely two.

This is the point at which Gartzke's research becomes relevant:

- When measures of both economic freedom and democracy are included in a statistical study, economic freedom is about 50 times more effective than democracy in diminishing violent conflict.

- The impact of economic freedom on whether states fight or have a military dispute is highly significant (at the 1% level) while democracy is not a statistically significant predictor of conflict.

- Nations with a low score for economic freedom are 14 times more prone to conflict than states with a high score.

- The overall pattern of results does not shift when additional variables, such as membership in the European Union, nuclear capability, and regional factors, are added.

Gartzke's results appear to offer robust evidence that the third, and least appreciated, leg of the Kantian triangle may be the most important one.[2]

Thus the appropriate way to understand the apparent counter-evidence offered by the French-German conflict in WW I is that, as important as the third leg is, Kant was correct that the other two legs are also necessary conditions. Germany was essentially a military dictatorship in 1914 rather than a democracy, and instead of transparent international

---

[2] See "Executive Summary," *Economic Freedom of the World: 2005 Annual Report*, Fraser Institute, http://www.freetheworld.com/2005/Executive_Summary.pdf, and also Erik Gartzke, "Economic Freedom and Peace," *Economic Freedom of the World: 2005 Annual Report*, Fraser Institute, http://www.freetheworld.com/2005/Chapter_2.pdf.

organizations there were a network of secret alliances. Moreover, WW I started in the Balkans, the least economically integrated region in Europe. Once the conflict started in a region that was not economically integrated, and it then triggered the set of secret alliances among military dictatorships, then the economic integration of France and Germany was not sufficient to stop the catastrophe. But this set of circumstances, in which the two of the three legs of the tripod were entirely absent, should not be understood as counter-evidence to the thesis that economic integration is the strongest leg of the tripod when the other two are in place.

Moreover, by emphasizing economic freedom rather than merely trade or economic integration, Gartzke has most likely discovered a deeper and more reliable underlying manifestation of the third leg. Economic freedom is more likely to produce a broadly entrepreneurial economy in which numerous individual entrepreneurs and their companies have a vested interest in peaceful trade. Government-controlled economies, by contrast, are likely to result in a few large firms that dominate the economy; thus if a few of those firms happen to have some interest in gaining from warfare, or even if their trade is merely not effected by war with a particular nation, then the peace-enhancing effects of trade are apt to be muted.

Finally, insofar as resource capture was a former motivation for territorial conquest, insofar as a much higher percentage of today's economies are based on manufactured goods and services, and raw materials provide a small fraction of the total economic value produced, the "peace through commerce" rationale of mutual interest should be ever more powerful. Oil is the one significant exception; quite aside from U.S. military action, a number of observers have noted the geo-political strategic interests in securing a long-term supply of oil being taken by the Chinese. This last major resource-based obstacle to lasting peace is yet another rationale for moving away from an oil-based economy sooner rather than later.

In addition to the direct benefits of economic freedom, it also provides a crucial foundation for democracy, the second most important leg of the tripod. Economic freedom is highly correlated with economic growth; a 1-point increase in the index rating is associated with approximately a 1% increase in the annual growth rate.[3] And economic growth is highly correlated the stability of democracies

> "Political scientist Adam Przeworski examined the experience of 139 countries over four decades . . . the probability that any individual democracy would be overthrown by a dictatorial regime was nearly four times as great if the country's per capita income was falling than if its income was rising." [4]

In Przeworski's own language,

---

[3] Gwartney, James, Robert Lawson, and Randall Holcombe (1999). "Economic Freedom and the Environment for Economic Growth," *Journal of Institutional and Theoretical Economics*, 155, pg. 9.
[4] Benjamin Friedman, *The Moral Consequences of Economic Growth*, pgs. 323-324.

> "There is no doubt that the probability that a democracy survives increases with per capita income. You can control it for everything from the kitchen sink to the grandmother's attic. That relationship will survive anything. It's monotonic, and it's strong, unbelievably strong."[5]

And Przeworski conducted much of this research as a Marxist. Again, Przeworski:

> "I think that democracy becomes more stable in more developed societies because as people become wealthier, too much is at stake in attempting to subvert democracy. Intense political mobilization is risky in general, and in wealthy democracies it is even more risky because people have too much to lose. For example, if the American presidential election of 2000 had occurred in a country with one-third the income of the United States, it would have ended in a coup d'etat or a civil war, as it did in Costa Rica in 1948 under very similar circumstances. These outcomes did not occur because people in the United States have too much to lose. They eventually said 'Well, we are going to be governed by a government that probably stole the election, has no legitimacy, and that we don't like. But so what? We will survive. We have our homes, our cars, and our TV's. So, why bother? There is too much at stake to go into the street and build barricades or whatever.' . . . This is why democracies survive in wealthy countries."[6]

Given the history of military coups and civil wars throughout much of the developing world, the need for stable democracy based on economic growth is non-trivial. For instance, the recent Congo civil war, 1998-2002, is the deadliest conflict since WW II, and almost as many people have died in African wars in the past fifty years as in all wars in all other parts of the world combined. The absence of sustained economic growth in most African nations since Independence has resulted in intermittent violence on such a scale that it would have been described as WW III had European peoples been involved.

The fact that U.S. wars with relatively small death counts are highly controversial shows the extent to which democracy acts as a break on the war-making impulse. The U.S.-Iraq war is highly controversial and polarizing, yet the 3,000 American fatalities are a drop in the blood bucket compared to the millions sent to their battlefield deaths by Saddam Hussein and various African and Asian dictators. The absence of democracy in China, in particular, has led to extraordinary disregard for human life.[7]

---

[5] Adam Przeworski, "Capitalism, Democracy, and Science," Interview with Adam Przeworski by Gerardo L. Munck, February 24, 2003, http://www.nyu.edu/gsas/dept/politics/faculty/przeworski/przeworski_munck.pdf, pg. 17.

[6] Przeworski, op. cit., pgs. 18-19.

[7] Although most of these are not battlefield deaths, in the twentieth century alone diverse Chinese governments have distinguished themselves for their disregard for human life: R. J. Rummel estimates that three different Chinese rulers qualify as the first (Mao, 77 million), fourth (Chiang Kai-shek, 10 million), and sixth most murderous regimes (Chinese Soviets prior to ruling the entire country in 1949, 3.5 million) in the 20th century, for a total of over 90 million human beings killed. See R. J. Rummel, Power Kills, http://www.hawaii.edu/powerkills.

Thus even with a relatively ineffective U.N., there are strong reasons to believe that a world of democracies deeply integrated by means of economically diverse, economically free, societies, will be a world in which lasting peace becomes a real possibility.

The problem, of course, is that democracy, one key leg of the tripod, is not necessarily correlated with economic freedom, the other key leg of the tripod. Often democracies, especially in low-income countries, elect populist politicians who actually reduce economic freedom and thereby reduce their nation's long-term stability and well-being. How can we untie this Gordian knot?

Part II: The Fraser Institute Economic Freedom of the World Index and Prediction Markets

If we could develop a system that encouraged countries to increase their economic freedom, we could increase global prosperity and create a lasting foundation for world peace. We know that we do not want to force change from the outside: The "neo-liberal" policies of the IMF and World Bank have been widely and rightly resented as undemocratic intrusions by wealthy nations. Moreover, in many cases the coerced neo-liberal policies of the IMF and World Bank have, in fact, backfired and increased poverty. How can we increase the probability that voters in democracies better understand the connection between long-term peace and prosperity, on the one hand, and economic freedom, on the other?

But what if there were a means to make a more direct and explicit connection between harmful economic policies and future impoverishment? The more widely that voters, activists, and business leaders understand the connection between economic freedom and prosperity, the more they will support economic freedom. But what, exactly, does it mean to support economic freedom?

The EFW is largely based on objective measures, constructed from five components:

1. Size of Government: Expenditures, Taxes, and Enterprises
2. Legal Structure and Security of Property Rights
3. Access to Sound Money
4. Freedom to Trade Internationally
5. Regulation of Credit, Labor, and Business

These components are themselves constructed from 38 distinct pieces of data. For instance, one of four components of the measure of sound money is "Average annual growth in the money supply in the last five years minus average annual growth of real GDP in the last ten years."[8] The EFW rating for a nation, on a ten-point scale, provides a

[8] "Explanatory Notes and Data Sources," *Economic Freedom of the World: 2005 Annual Report*, Fraser Institute, http://www.freetheworld.com/2005/Appendix_1.pdf.

concise summary of a wide range of data that are not easily accessed even by a corporate research department, less alone by the average investor or voter.

And yet in nations that have experienced dramatic growth as a consequence of increased economic freedom, there is growing awareness of the source of their good fortune. Ireland and Estonia, in particular, are two recent economic growth success stories due to deliberate increases in economic freedom. Irish press accounts recognize this fact.[9] Estonia's successful reforms are even more directly linked to increases in economic freedom than are Ireland's, in part because the case of Ireland is confused by EU subsidies, in part because Estonia has rapidly become the most free of the former USSR Republics, and in part because Estonia's first post-communist prime minister, Mart Laar, has said explicitly that he learned his economic policy directly from Milton Friedmans' *Free to Choose*.[10] What if this awareness become more widely reported and more frequently updated?

Prediction markets are similar to futures markets in commodities, but instead of buying and selling hog bellies a year hence, prediction markets allow traders to trade bets on empirical outcomes about reality.[11] There have, for instance, been various individual bets proposed regarding the future extent of global warming: will average global surface temperatures increase .2 or .4 degrees in the next twenty years? Unlike political or even scientific debate, prediction markets are non-partisan: the future will happen in a particular manner, and everyone involved in a prediction market has a strict interest in predicting the future accurately. Prediction markets are a reality: Goldman Sachs and Deutsche Bank launched a set of prediction markets on basic economic indicators in May of 2003; demand for these "economic derivatives" has exceeded expectations as a way to hedge other market predictions.

A prediction market in EFW futures would most likely be based on predicting the official annual Fraser Index rating for each nation one or more years in advance. The annual EFW ranking comes out in September, nearly two years after the end of the rated year. For instance, Mexico received a rating of 6.6 in the 2006 Fraser Index. Will Mexico receive a higher or lower score on the 2007 index? The prediction market for 2007 data would have closed on December 31st, 2007. The results would then be announced in September of 2009, and the winners, those whose predictions most closely approximated the actual rating, would win whatever amount had been bet on the market.

---

[9] See, for example, *The Irish Examiner*, "Ireland's Economic Freedom Score Falls for the Second Year," July 9, 2003, and "Ireland Ranks Fifth in World's Liberal Economies," January 10, 2004, a letter to the editor in The Korean Times, January 13, 2006, recommending that Korea follow Ireland's example of increasing economic freedom, http://eirepreneur.blogs.com/eirepreneur/2006/week2/index.html, as well as the many lectures of Mart Laar, former Prime Minister of Estonia.

[10] For an Armenian account of Estonia's success, see "Armenia 53rd in Economic Freedom Rating," http://www.panarmenian.net/news/eng/?nid=19165, for an account from an African paper, see, "African Politicians Imposed 'Economic Apartheid' on Africa," *Mmegi The Reporter*, September 13, 2006.

[11] The seminal paper is Robin Hanson's "Could Gambling Save Science? Encouraging an Honest Consensus" *Social Epistemology* 9 (1) (1995) 3--33.

Of the 38 data components, 30 are objective trade statistics generated by the World Bank and IMF. There are long-established procedures for generating this data and, for most nations, the objectivity and integrity of the data are reasonably secure. Sixteen additional data components are generated by means of *The Global Competitiveness Survey*, random surveys of business executives in each nation. In larger nations the integrity of the random survey procedure could be adequately safeguarded; each nation's prediction market might be limited to low dollar amounts until the integrity of the survey procedure had been certified. The remaining two data components are produced by The PRS Group through their in-house experts; those two components could be excluded until the prediction markets had been adequately satisfied regarding the integrity of PRS data.

Most importantly, the aggregated information would be tremendously valuable to investors and business people. Marshall Stocker has shown that nations that increase their economic freedom ranking average double-digit equity market returns.[12] This seems to be a fairly robust result which, as it becomes better known, will be of great interest to investors (Stocker is running an investment fund based on his predictions of increases in economic freedom now). Advance information on the direction and magnitude of a change in ranking would influence significant flows of capital. This information would be responsive in real time just as other markets are; if a politician was proposing a new restriction on economic freedom, or a bureaucrat was loosening a regulatory ruling, or even if the judiciary were systematically demanding higher bribes, the actions would be incorporated into the EFW futures.

Although some of these movements would be small, in other cases the feedback would be dramatic and immediate. Gradually the media would catch on, and at least some media outlets would report to the public the ways in which a given political proposal or administrative decision was reducing the nation's future standard of living, essentially in real time. At present, active investors in the U.S. pay acute attention, and therefore markets immediately respond, to Federal Reserve Bank decisions regarding interest rates, changes in the exchange value of the dollar, quarterly reports on economic growth, and other key bits of information. An EFW futures market would attract investors, but also a broader spectrum of the general public. There would be a more direct connection between public policy debate and anticipated future well-being of all.

Although there may well be speculative bubbles in which the predictions are distorted by speculative feedback in which speculators are betting on how others respond, these effects are likely to be limited by the existence of a definite settlement date. Unlike open-ended equity markets, speculators in futures markets with a definite settlement date face a time-sensitive incentive to approximate the final price as accurately as possible. Hedgers who try to manipulate such markets merely increase the pay-offs available to investors who make accurate judgments. Indeed, Robin Hanson has shown that "Manipulators Increase Information Market Accuracy" ("Information Market" is another name for "Prediction Market").[13]

---

[12] Marshall Stocker, "Equity Returns and Economic Freedom," *Cato Journal*, Fall 2005.
[13] Robin Hanson, "Manipulators Increase Information Market Accuracy," http://hanson.gmu.edu/biashelp.pdf, for the theoretical analysis and Robin Hanson, "Information

At present, the volatility of capital markets is used as a rationale to restrict capital flows in the developing world. Certainly dramatic volatility can be damaging. But if it became widely known that capital outflow was the direct result of damaging policies for which specific politicians were responsible, it would become more difficult for politicians to win elections based on bad policies. At present there is an uncertain lag time and uncertain causal chain between foolish economic policies and harmful economic results. An EFW futures market would reveal a more direct connection between the negative policies and negative outcomes.

As a consequence, it would become more difficult for politicians to promote populist economic programs that had long-term destructive effects, or for bureaucrats to make quiet decisions that were similarly destructive. Although linkage would not be perfect, and the public would not be perfectly attentive, this added bit of information would accelerate the global understanding of and acceptance of economic freedom. Thatcher and Reagan set of a wave of privatizations that spread even to "socialist" governments. Estonia's flat tax has spread throughout much of Eastern Europe. Even without an EFW futures market we see evidence of the imitation of successful policies gradually moving in the direction of greater economic freedom. On a global level, the international average level of economic freedom has increased every year since the index was first published in 1996.

There would be some nations who would further restrict capital because of the added capital market volatility resulting from such a market. But the ones who left their markets open would force very strong forces to increase the level of freedom in their nations. And their markets would be abundantly rewarded. In ten years Ireland has moved from its position as one of the poorest countries in the EU to the richest. In the case of Ireland, EU subsidies and free market reforms are both given credit for the transformation. But there would be small countries that consistently implemented policies resulting in greater economic freedom and thereby experienced rapid growth from poverty to riches – Bulgaria? Lesotho? Panama? Ghana? Vietnam?

At present, nations often implement "free market policies" that are partial, mixed, or counterproductive. When this occurs, as it did in Argentina, the reputation of "free market reforms" is damaged. But steady increases in economic freedom as measured by the EFW would move public attention away from the realm of political rhetoric and towards the reality of concrete results.

An EFW futures market, by its very existence, would serve to market and advertise existing robust empirical findings, such as the connection between increases in EFW and economic growth and increases in EFW and double-digit equity returns. Initially, perhaps, only a few leaders and electorates around the world would pay attention to the EFW futures markets for their nations. If those leaders and/or electorates cooperated to

---

Aggregation and Manipulation in an Experimental Market," http://hanson.gmu.edu/biastest.pdf, for experimental evidence. Hanson more comprehensively addresses issues concerning the integrity of prediction markets in "Foul Play in Information Markets," http://hanson.gmu.edu/foulplay.pdf.

use the EFW futures market to increase economic freedom even more in a conscious and public manner, the probable result would be a fairly rapid increase in foreign direct investment because of the record of double-digit equity market returns associated with increases in EFW rankings.

Although this linkage would not be perfect, it would be far more rapid and direct than it is at present because four key constituencies (voters, politicians, media, and investors) would have real time access to:

- The expected future EFW one or more years in advance
- Directional trends in the movement of the expected EFW value, and
- Market estimates of the impact of various policy changes and proposed changes on the expected EFW value.

The fact that these four constituencies would be reacting in real time to the impact of minute changes in the 38 underlying data sets would provide far more direct information regarding the extent to which economic freedom and national wealth were likely to be on the increase or not, and the magnitude of the increase or decrease, than can possibly be estimated even by the best investment banks in the world today.

The power of markets to aggregate information exceeds the ability of researchers of all kinds. Often key information is held by many diffuse, unidentified entities. Does a particular regulatory ruling have a small or a large impact? Although years later a researcher may be able to estimate the magnitude of the effect, the widely distributed individuals directly affected often have direct, immediate knowledge of the magnitude of the impact. Anyone who has access to information that is underappreciated by the mainstream has an incentive, and potential opportunity, to make a profit by betting on the fact that the underappreciated information will later be more widely recognized and thus move the market in the direction of his or her local information. Whether or not this is the case on an individual basis, cumulatively this incentive structure drives a grassroots process of information aggregation that is otherwise not available.

The linkages will not be perfect. An iterative process will take place in which the EFW is further developed as a measurement instrument, and prediction markets will arise in other measures as well, such as the Global Competitiveness Report (which combines The Global Competitiveness Survey data with other economic data in a formula which is different from the Fraser Index). Perhaps direct prediction markets in various prosperity measures in each nation will provide superior information than is available through any of the prediction markets in indices. Thousands of entrepreneurs might set up thousands of small prediction markets focusing on diverse information sets, most of which go nowhere. But a few will develop into major prediction exchanges.

Arbitrageurs will discover systematic flaws in each index or prosperity measure and corresponding prediction market and profit from the discrepancies between each index or prosperity measure and reality. And these flaws will then drive further refinements in the indices, prosperity measures and corresponding prediction markets. An entire prediction ecology will develop on the web with significant numbers of participants involved and dollars being exchanged, with various types of hedging, derivatives, conditional-on-policy bets, and combinations that we can't yet imagine. Academic research in global economic development will largely be superseded by an entrepreneurial prediction market industry in which millions of individuals are engaged in discovering more accurate means of predicting prosperity (and peace).

There will be aspects of the EFW that are controversial from the start. Although sound money and structure of property rights are increasingly recognized as important foundations for economic growth across political boundaries, the other dimensions remain more controversial. There are scholars who argue, for instance, that Sweden's large government does not impose a growth penalty. Because the Global Competitiveness Survey does not penalize a nation based on size of government, investors in that prediction market might do better than those investors in the EFW if these scholars are indeed correct.[14] Similar issues will be revealed with respect to the controversies regarding regulation and the degree of openness to trade. More likely than simple binary "right or wrong" results will be ever-more granular market analyses of the factors that do or do not affect growth.

Although the EFW prediction markets will be private entities, it is likely to be in their interest to use a specialized version of the EFW that does not incentivize the violation of major international treaties on the environment, public health, or other measures. In practice, these features of the global regulatory environment are apt to represent a very small aspect of EFW ratings. The vast bulk of governmental regulation, for instance, in most nations is likely to be the result of rent-seeking rather than international policy. In order to avoid the bad publicity received by the IMF and World Bank it would be best to ensure that the EFW used primarily incentivized the elimination of predatory government. Most of those concerned with environmental and public health issues are unaware of the scale of predatory government, and it would be most unfortunate for the cause of world peace and prosperity of the most promising initiative in history was wrecked on the rocks of unnecessary controversy (Incentiving the destruction of rent-seeking behavior will be controversial as well, but it is necessary controversy).

We know enough at present to know that there is a probable association between economic freedom, on the one hand, and peace and prosperity, on the other. We know enough about prediction markets to know that they are an unparalleled means of aggregating diffuse information. At present prediction markets are mostly based on play money in the United States due to regulatory uncertainty; the Goldman Sachs prediction markets in major economic indicators is about as far out as major financial institutions dare to go under the present regulatory environment. If the regulatory uncertainty were

[14] The Global Competitiveness Survey does include a survey question that asks "Is the composition of public spending in your country wasteful, or does it provide necessary goods and services not provided by the market?", Composition of the Growth Competitiveness Index, Global Competitiveness Report, World Economic Forum, http://www.weforum.org/site/homepublic.nsf/Content/Global+Competitiveness+Programme%5CGlobal+Competitiveness+Report.

to be removed, and real money prediction markets became legal, a global prediction market in EFW futures could be established. This could be the first step towards an ever-more sophisticated system that provided a solid foundation for a peaceful and prosperous future for all of humanity.