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The Storm after the Calm

Macro context of the 20th Century

Some periods seem like eternities, but often only when you are living through them. The current period of heightened volatility and uncertainty is a case in point. While it may appear an enduring time of tribulation with nominal US equity returns marginally positive and negative on a real basis, it has persisted for only twelve years, compared to much longer historical cycles. Its protraction should not come as a total surprise.

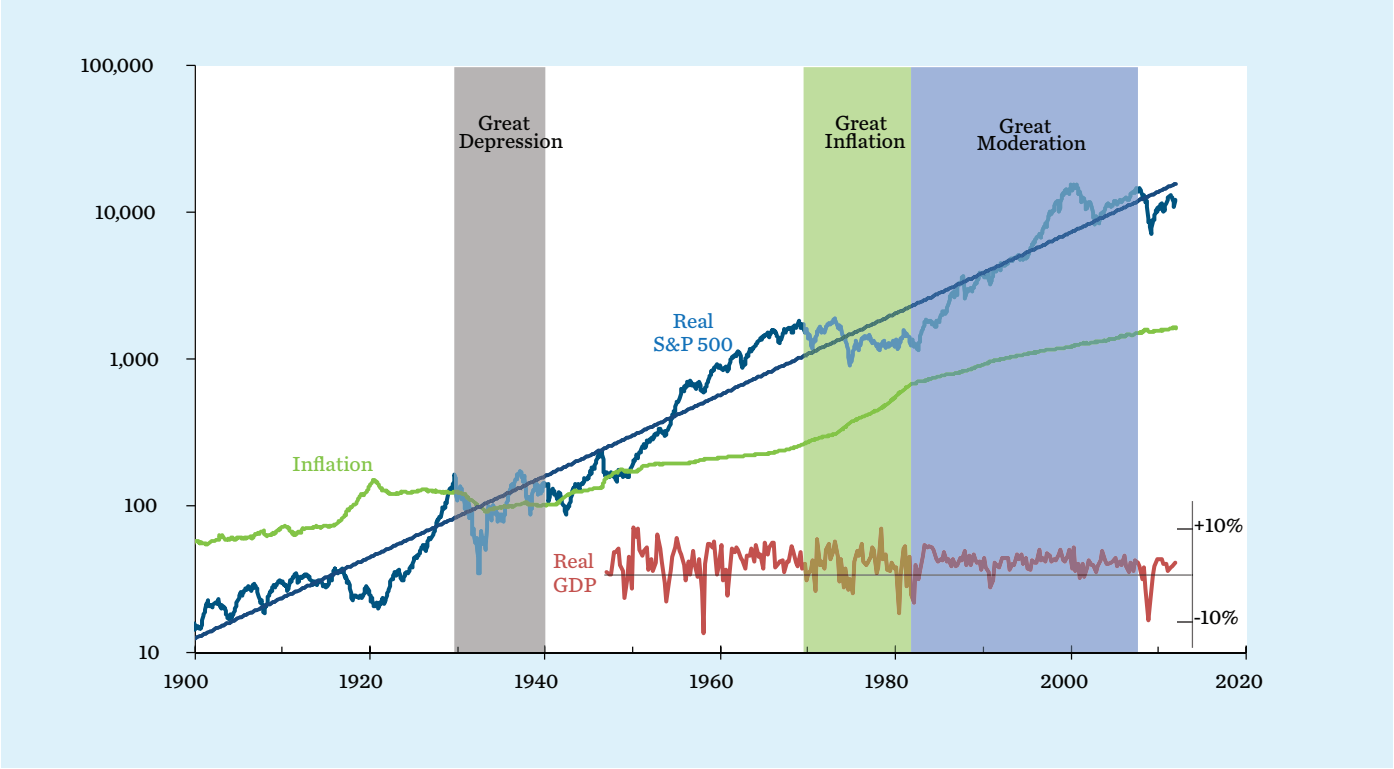
The first half of the twentieth century was an epoch characterized by continual transformation of the geopolitical landscape – two World Wars, the Russian revolution, the Italo-Ottoman war, and Indian independence, to list a few. Clearly, geopolitical alignments were ever changing, from the Allied and Central powers (Italy shifting from the latter to the former) during World War I to the World War II Allied powers (including France, the UK, and the US, but ranging from Brazil through Ethiopia to China) and Axis powers (with Germany and Italy at the core, but reaching to Japan). During World War II, the Soviet Union and Germany, which had previously been hostile, signed a secret protocol dividing the Baltic States, Poland, and Romania into spheres of interest.

The economic landscape was no more stable. The Great Depression stands as a prominent feature of that landscape, but almost two decades earlier the US created the Federal Reserve. The two Wars intermittently diverted resources globally between productive private sector deployment and less productive wartime efforts. Harsh German reparations after World War I and unemployment reaching 25% led to the Weimar inflation. The Deutschemark collapsed from a value of about five marks to the US dollar in 1914 to one trillion marks per dollar. In Japan, the Meiji restoration that began near the end of the nineteenth century shifted to a government-directed economy in service of the states interests. As is often the case, government-directed economies can advance quickly in the short-term and Japan industrialized rapidly into World War II. Japan's war effort and economic collapsed in 1945 perpetrated more instability.

This turbulence was problematic for global economies and asset returns. In the first half of the century, real equity returns reached 5% per year and considerable disruption through the two World Wars and the Great Depression. However, the second half witnessed equity returns of 9% in real terms. There were enumerable contributors to higher returns, and it is interesting to consider those factors that may be changing today in order to peer into coming decades with increased clarity. First, the second half of the century started on a low note and ended on a high note. Trend growth rates, correcting for these effects, results in first and second half total returns of 5.2% and 6.1%, respectively. It may be inappropriate to dismiss either a low point at the end of several turbulent decades or a high end point subsequent to several stable decades, still a one percent annual growth differential is significant.

Second, the Cold War, beginning around 1950, contained geopolitical upheavals like those of the prior half century. Although few look back nostalgically at the Cold War, it

The Modern Era



Source: US Federal Reserve, Online Robert Shiller Data, Bureau of Economic Analysis, Bureau of Labor Statistics, William Blair.

provided a stable three-decade respite from the preceding years and opened multiple avenues of global economic expansion.

Soldiers returned from economically "unproductive" World War II wartime activities to boost private sector production in countries around the world. The workforce surge carried global production higher until the post-war global baby boom powered growth further. The 1944 Bretton Woods conference tied currencies to the US dollar that contributed to a period of high real economic growth and subdued inflation.

The late 1960s and 1970s were more challenging; however, as developed countries struggled to deal with lingering fiscal burdens built during the wars. In particular, central banks tended to monetize the Arab Oil Embargo oil price increase sparking double-digit general price inflation, the "Great Inflation." Moreover, the Vietnam War, Watergate, the Yom Kippur War, and UK and US recessions from 1973 to 1975, further marred the 1970s.

The experiences of Japan, Germany, and the US during the 1970s era of oil price shocks ushered monetary policies focused, in most countries, on price stability and away from attempts to engineer real economic activity.[1] Subsequent to the US "Great Inflation," these monetary policy lessons contributed to economic cycles that were significantly less volatile than previously encountered. The "Great Moderation" became the period's designation owing to moderate fluctuations in the business cycle.

The "Great Moderation" period of pro-growth monetary and fiscal policies (this primarily meant stable and secondarily meant unencumbering to the private sector), the post-Cold War peace dividend, and the protraction of elevated workforce growth lead to superior equity and bond returns, real economic growth, and stable inflation.

Throughout the last century, we can deduce a couple important notions, geopolitical uncertainty and inflation, both high and unstable, hinder equity returns. While the Great Inflation contributed to weak equity returns, the

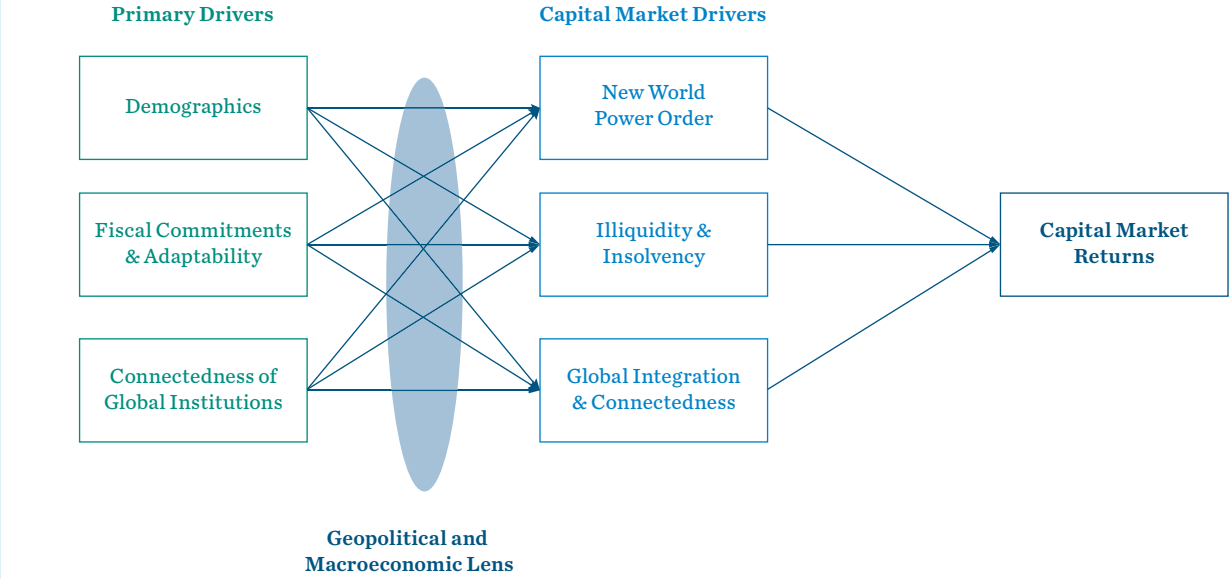
[1] The 1973 oil crisis was monetized by the US and Japan, but not Germany. Resulting macroeconomic disturbances in the US and Japan convinced the Bank of Japan to join the Bundesbank and not monetize the 1979 oil crisis energy price increase. The US Federal Reserve was the last of the three to learn the limits of monetary policy to buffer the real economic impact of a relative price change. The lessons gleaned from these oil crises have endured through the following decades and contributed to low and stable inflation across the developed world.

subsequent twenty-years of lingering post-Cold war stability and the Great Moderation accompanied strong returns.

The first decade of the twenty first century has reintroduced asset return volatility and economic volatility. Ironically, many issues that are driving the present volatility are rooted in decisions made in prior periods; specifically a tidal wave of social, economic, and political change was put in motion with the Great Depression and the subsequent World War, and that tidal wave that is now beginning to recede and leave the developed world highly encumbered. Health insurance and social security were the locus of implementation. Specifically, the Universal Declaration of Human Rights in 1948 was behind health care reform and the adoption of public solutions over the rest of the century. In the UK, action was immediate with the creation in 1948 of the National Health Service. In the US, President Roosevelt commenced huge and unprecedented government spending and social welfare policies. Garet Garrett observes of this period that "the welfare of people became a direct responsibility of government, whereas always before government was a responsibility of people, and the people minded their own welfare."

Primary Fundamental Drivers and their Capital Market Corollaries

In the same way that our understanding of historical economic periods is inexorably tied to our experiences as a society and a species, peering into the future requires clear definitions of the factors that are observable in driving capital markets and the primary fundamental forces that are, in turn, driving them. Unfortunately, the typical investor's myopic shift toward ever-shorter investment horizons makes it challenging for him/her to see clearly the primary drivers which are long term and systematic in nature. These primary drivers are (1) demographics, (2) fiscal commitments and adaptability, and (3) the connectedness of global institutions and economies. We use geopolitical and macroeconomic perspectives to understand capital market drivers and potential investment opportunities. While demographics, fiscal commitments and adaptability, and connectedness are indirect drivers, the three capital market drivers are direct influencers of capital market returns.



The following sections address the capital market drivers – (1) "New World Power Order," (2) "Illiquidity and Insolvency," and (3) "Integration and Connectedness." We will use disciplines outside the tool set that has been traditionally sufficient, indicating what will be sufficient in coming decades.

New World Power Order

From the 1950s through the fall of the Berlin Wall on November 9, 1989, the world geopolitical scene was dominated by the Cold War and the interaction of two players, the US and the USSR. Game theory and the behaviors players evidence to demonstrate power afford important insights into the Cold War period and, more importantly, the post-Cold War period.

The Cold War was a two-player game – decision problem – of nearly complete information. That is, the strategies of both players were common knowledge to the players. The best US strategy was to acquire and build a nuclear warhead stockpile *given that it knew the USSR's optimal strategy* of acquiring nuclear warheads. Conversely, the best USSR strategy was to acquire warheads *given the known US strategy*. Neither player could improve its position by changing strategy. Mutually assured destruction (MAD) while frightening was a stable and predictable solution to the geopolitical problem.

After a lingering lull of post-Cold War stability, the world evolved into the multi-player game of today and, we suspect, the coming decades. The tenets of game theory still apply, but a straightforward two-player game of nearly complete information no longer applies. Now, the game-theoretic analysis required is a much more complex multiplayer game of incomplete information. The immediate consequences of miscalculation may have diminished, but the probability of miscalculation has mushroomed. The players change continually, information opacity pervades, and strategies seem to shift with each new sovereign administration. Core players include North America, anchored by the US, and the Euro zone (variously assembled as the European Union and European Economic and Monetary Union), anchored by a small number of countries. Coalition players themselves are not stable, involved in their own games, as the North America Free Trade Agreement (NAFTA) pulled Mexico into closer orbit with the US and the European Economic and Monetary Union's (EMU) expansion is stymied and peripheral countries consider abandoning the mechanism.

Currently, the EMU is dominating headlines as German Chancellor Merkel, French President Sarkozy, the PIIGS (Portugal, Italy, Ireland, Greece, and Spain) and others strategize and vie for advantageous outcomes. This European sub-game is part of the larger global game, one that is more dimensional than the primarily military game of the Cold War.. Samuel Huntington's 1993 article "The Clash of Civilizations?" captures the essence of the new global game:[2]

> *" It is my hypothesis that the fundamental source of conflict in this new world will not be primarily ideological or primarily economic. The great divisions among humankind and the dominating source of conflict will be cultural. Nation states [the players] will remain the most powerful actors in world affairs, but the principal conflicts of global politics [the game] will occur between nations and groups of different civilizations. The clash of civilizations will dominate global politics. The fault lines between civilizations will be the battle lines of the future."*

Outside of the global game's core players are a number of countries, regions, cultures, and religious sects that are out of orbit and coalescing into evolving coalitions that may or may not stabilize into enduring players. It is important to consider and ultimately determine how the former Soviet bloc, China, India, and Latin America will align. The BRIC acronym is attention grabbing, but not terribly useful in understanding alignment potential. Russia has shredded basic property rights to such a degree that it can no longer be a major player. China's tremendous economic power and growing military power make it a strong potential partner. Moreover, its resources and need for resources have spawned and will spawn immediate trade and capital flows and long-term partnerships with other sovereigns. Yet, while its authoritarian rule, somewhat similar to that of Japan during the Meiji restoration, has marshaled tremendous short-term growth, its impenetrable policy environment and culture are barriers to progress. India, on the other hand, is a democracy, having abandoned socialism in the early 1990s; however, it suffers from a culture of corruption, a declining education system, and cultural barriers to entrepreneurialism and economic advancement. Middle Eastern countries, precluded by deep

[2] "The Clash of Civilizations?", *Foreign Affairs*, Samuel Huntington, Summer 1993.

religious prejudices, may align unilaterally with Russia, China, or any other emerging player. Brazil seems to be an important hub for Latin America, but this is a difficult region with diverse attributes.

The global game is increasingly played on a regional field. Ian Bremmer and Douglas Rediker observed at Davos in 2012, "There is general agreement that the unbridled pursuit of individual national interests would produce suboptimal results; in order to provide some leadership that extends beyond the national stage, there is a growing reliance on regionalism to stopgap this shortage of effective global decision-making."[3]

A regionally centered global game holds many challenges. First, Barbara Tuchman starts *The March of Folly* by saying, "Mankind, it seems, makes a poorer performance of government than of almost any other human activity." She proceeds to identify four kinds of misgovernment: 1) tyranny or oppression; 2) excessive ambition; 3) incompetence or decadence; and 4) folly or perversity. Each it seems has a role to play in the coalitions and power demonstrations of the global post-Cold War game of survival, appeasement, and domination.[4] During the Cold War, only two parties could make mistakes and each party had huge incentives not to err. Today, any one of many players may discount the global ramifications a regional strategy. The Middle East seems particularly prone to such miscalculation. As observed through World Wars I and II, apparently regional actions and occasional miscalculations can have astounding ramifications.

Second, complex societies are difficult to support and costly to maintain. As regional networks grow and multiplayer coalitions emerge, hierarchies materialize to control the complexity. This is the natural order of bureaucratic progress. Confirming this proclivity and speaking longingly of the benefits of a new global hierarchy, the Bremmer and Rediker writing in the *Financial Times* about their Davos article observe, "A world where regional groupings and organizations address regional, and sometimes wider issues, is clearly second-best to a world of effective global governance. But it is nevertheless preferable to raw nationalism and reflects the broader diffusion of international power away from a pure 'might-makes-right' system."[5]

The EMU is a powerful example of complexity and the hierarchy imposed to manage or regulate regional interaction. Initially, complexity emerges in response to social network needs, increasing the ability of society to function in legal, economic, political, and social dimensions. Subsequently, complexity becomes an unbearable burden. Recent machinations associated with peripheral European country deficit and debt service challenges demonstrate acutely the difficult decision processes of a regional bureaucratic hierarchy. It is likely that the initial market panic in response to the European funding crisis grew from an inability to fathom viable functioning of such a complex bureaucratic structure. For a few months, this suspicion received almost daily affirmation. The costs of complexity rise as information processing costs, specialist education costs, technocratic specialists, and hierarchy maintenance costs increase. Ultimately, the marginal benefit to increased complexity falls below the marginal cost.

When this occurs, the regional players' behaviors can become incongruous and they can shift focus toward internal protection of the bureaucratic entity and its global legitimization and defense. What was rational and understandable can become incomprehensible and occasionally imprudent. Tuchman observes that we often observe power with a sense of immense but unwarranted respect. Powerful people are often normal men and women "walking into water over their heads, acting unwisely or foolishly or perversely as people in ordinary circumstances frequently do."[6] As society becomes more complex, the opportunity for and probability of unwise behaviors grows. Meir Statman would argue that the decisions of these powerful people are generally not irrational; rather, he opines that people are simply normal, but in the midst of complexity beyond their skills, people who are "normally smart" have greater potential to become "normally stupid."[7]

In the maw of the game theory, complexity, and normal-stupidity maelstrom, it is quite appropriate to ask whether investment tools such as fundamental analysis of the past are less valuable today. They matter, but where they were once necessary and sufficient tools, they are now only necessary. Whereas twenty years ago there were a few well-trained fundamental analysts, the CFA Institute and numerous MBA and finance programs have produced multitudes. These newly minted analysts join a broad swath of analysts and portfolio managers whose experiences have been molded by worldviews that may not contemplate the important structural and systematic complexities of today.

[3] "Global Agenda Council on Geopolitical Risk, *World Economic Forum*, Ian Bremmer and Douglas Rediker, Davos-Klosters, Switzerland, January 25-29, 2012.

[4] *The March of Folly*, Barbara Tuchman, pp. 4, 5.

[5] "Decline of Global Institutions Means We Best Embrace Regionalism," *Financial Times, Ian Bremmer and Douglas Rediker*, January 26, 2012.

[6] The March of Folly, Barbara Tuchman, p. 23.

[7] Meir Statman identifies people as normal, neither rational nor irrational. Normal investors are mostly normal-smart, but occasionally normal-stupid. Normal people make mistakes because they are occasionally normal-stupid, not because they are irrational.

Illiquidity and Insolvency[8]

"Liquidity" refers to the ability to meet current and short-term cash payments. A liquidity crisis would mean that an entity would be unable to acquire enough cash to make upcoming debt interest or principal payments. Sometimes this is referred to as a funding or credit crisis because the entity cannot procure short-term funding (credit) to meet upcoming cash flow obligations.

Typically, insolvency is a longer-term situation in which an entity's liabilities (debt, loans, and other obligations) exceed its assets. Insolvency involves a total debt burden (liability) that is too large to extinguish by liquidating all of the entity's assets at current market prices.

A liquidity crisis can quickly produce a solvency crisis. Conversely, a solvency crisis can engender a liquidity crisis if creditors decide it is prudent to restrict credit. This dynamic can result in a vicious cycle of liquidity and solvency getting out of control. The more connected an entity is to others, the more likely a liquidity or solvency issue can compound, leading to a more rapid loss of control and a larger burden on a broader society.

As the 2008 credit crisis showed, a lender of last resort can play a crucial role in breaking the vicious liquidity/solvency cycle. Any institution that can extend enough credit, such as JP Morgan in the Panic of 1907, can ensure the liquidity of the market. Currently, central banks fulfill this role for financial institutions and sovereigns. The 2008 crisis obliged the US Federal Reserve to expand its balance sheet to $3 trillion, triple its previous size, and the US Treasury's Troubled Asset Relief Program (TARP) to authorize $700 billion of asset purchases from financial institutions to stanch the liquidity and solvency transmission mechanisms.

The following table provides outcomes from liquidity provision by governing authorities to liquidity crises and to solvency crises. Note that providing liquidity in a liquidity crisis results in positive outcomes, whereas it is negative in a solvency crisis because illiquidity is not the problem, it is a symptom. Solvency crises require the adoption of strong growth and debt-management policies.

Successes and Failures from Prior Crises

	Provide Liquidity	Do NOT Provide Liquidity
Liquidity Crisis (Outcome)	2008 Credit Crisis (+ +)	1930s Great Depression (- - -)
Solvency Crisis (Outcome)	1990s Japan Lost Decade(s) (- -)	1992 Swedish Bank Insolvency (+ +)

While illiquidity and insolvency are not mutually exclusive, most of the immediate crisis in Europe is primarily an acute liquidity or funding event, one that the ECB moved aggressively on December 21, 2011, to mitigate by initiating a Long-Term Refinancing Operation (LTRO) that injected over $0.5 trillion into the European banking system,. Another LTRO scheduled in February is likely not to be the last of this new monetary policy tool. While leadership dithering suggests limited understanding of the acute liquidity crisis that poses an immediate problem, upcoming LTROs will act as a bridge until debt can be socialized across nations in the form of Eurobonds. In the interim, Chancellor Merkel's posturing for fiscal solutions to the chronic solvency issue are appropriate and expected, but only if the acute liquidity issue is resolved adequately along the way.

Lessons from the Great Depression early in the last century and the Swedish bank insolvency near the end provide perspective and guidance for our contemplation of the world today.[9,10,11] The Great Depression provides a rough window into the outcome of restricted liquidity during a liquidity crisis. During the Great Depression, the contraction of credit was so large that insolvency swiftly followed. Monetary aggregates, due to policy-

[8] Some of this analysis was available in our November 2011 Antecedent Analysis and Strategy Counsel.

[9] Following the financial deregulation in the mid-1980s, Sweden embarked on a rapid expansion of credit. Real estate speculation culminated in a bubble that burst in 1990, with prices falling more than 50% in 1990 alone. The banking system was effectively insolvent. Key elements of the Swedish solutions' success are:

1. *unlimited guarantee* of losses by depositors and counterparties to Swedish credit institutions
2. mandate for support policies given to new agency, the *Bank Support Authority,* operating at arm's length from the political sphere
3. common framework for deciding which banks to reconstruct and to liquidate
4. strict valuation rules to restore confidence; bank *assets had to be marked-to-market* even if the market was exceptionally weak
5. *no measures to rescue or reconstruct nonfinancial companies*
6. splitting an ailing bank into good and bad parts and transferring the *bad assets to asset management corporations at carefully assessed market values for subsequent sale*

[10] The Swedish Banking Crisis: Roots and Consequences, Peter Englund, *Oxford Review of Economic Policy*, Vol. 15, 1999, pp. 84, 85.

[11] *Financial Crisis – Experiences from Sweden*, Lars Heikensten, July, 15 1998, speech at seminar arranged by the Swedish Embassy, Seoul, Korea.

makers' dedication to preserving the gold standard and their attachment to policy guides that gave erroneous information about monetary conditions, declined by about one-third from the late-1920s peak to the early-1930s trough.[12]

The noise of Europe's recent multiplayer liquidity and solvency games blur perception of the inexorable pull of fundamental values on asset prices. Absent miscalculation, we suspect that the current path of European liquidity problem resolution — not full resolution of solvency problems — will induce higher equity prices.

As the liquidity crisis is resolved and equity markets strengthen on the renewal of certainty, a much larger solvency problem will loom in the offing. Who will be the solvency victims as the demographic passenger train continues its slow motion collision with the social welfare freight train? Reinhart and Rogoff's seminal research identified an "important marker," gross public debt-to-GDP above 90%, of when growth and stability can be at risk.[13] This specific number is more arbitrary than current media and market dialogue are willing to acknowledge; there is no strong relationship below 90% and there is surely danger to heed as debt-to-GDP ratios exceed 100%.

Moreover, debt-to-GDP measures in 2010 mask bigger problems; at issue is not as much current as it is future debt that arises from fiscal commitments. Focusing on the US, University of Chicago professor John Cochrane observes that the current $14 trillion Federal debt vastly understates the true fiscal burden.[14] To this, he would add future, unfunded entitlements such as Medicare, Medicaid, Federal pension, and Social Security payments, all of which are the economic equivalent of debt. Cochran estimates entitlement commitments of approximately $60 trillion. Second, he would include "off balance sheet" contingent liabilities such as $5 trillion of mortgage-backed securities issued by Fannie Mae and Freddie Mac (US government agencies), backing of banks that are "too big to fail," state and local government commitments, and that portion of private defined benefit pension exposures guaranteed by the Pension Benefit Guaranty Corporation (a US government agency.) Debt and unfunded liabilities of approximately $80 trillion relative to annual GDP of $15 trillion can be considered problematic – 500% is somewhat higher than the 90% debt-to-GDP threshold identified by Reinhart and Rogoff.

Solvency looms large across developed economies, but fiscal profligacy does not solely determine the problem's magnitude. The ability of each economy to adapt is critical to consider. The Center for Strategic and International Studies (CSIS) has intensively researched this issue and developed "The Global Aging Preparedness Index" (GAP Index).[15]

The CSIS GAP Index includes two sub-indices, a Fiscal Sustainability Index and an Income Adaptability Index. Fiscal sustainability assesses the projected commitment that will accumulate for each country as of 2040. For both indices, high scores are good, representing both fiscal sustainability and income adaptability. The Fiscal Sustainability Index comprises three indices for each country:

1. *PUBLIC BURDEN:* A measure of the magnitude of projected public old-age dependency burden.
2. *FISCAL ROOM:* A measure of the ability to accommodate growth in public old-age dependency burdens by raising taxes, cutting other spending, or borrowing.
3. *BENEFIT DEPENDENCE:* A measure of how dependent the elderly are on public benefits and thus how politically difficult it may be to reduce those benefits.

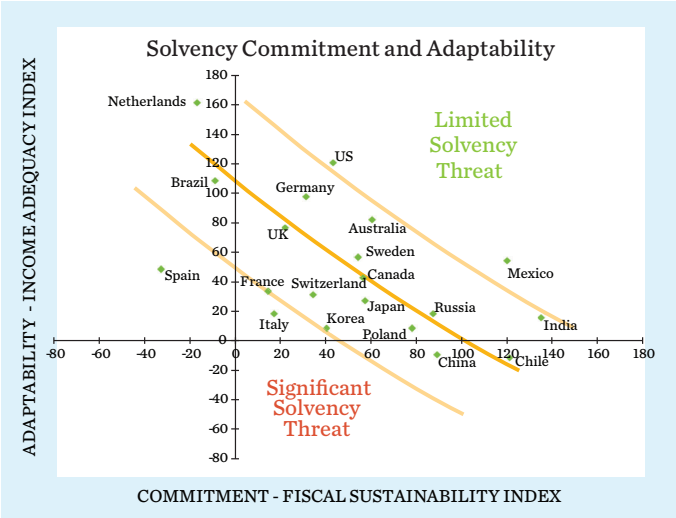
The Income Adaptability Index comprises three indices for each country as well:

1. *TOTAL INCOME:* A measure of the overall level of and trend in the income of the elderly relative to the nonelderly.
2. *INCOME VULNERABILITY:* A measure of income adequacy for "middle class" elders and of the extent of elderly poverty.
3. *FAMILY SUPPORT:* A measure of the robustness of family support networks.

Depicting the two indices as a scatter plot affords perspective on each country's solvency threat. The yellow lines represent insolvency lines assuming that fiscal sustainability and income adaptability are equally important. It is likely that fiscal sustainability is the more important of the two, especially in the short run. Moreover, the market is likely to focus more on fiscal sustainability than on income adaptability. If anything, the isosolvency lines could be steeper.

[12] "Monetary Policy in the Great Depression: What the Fed Did, and Why," David C. Wheelock, St. Louis Federal Reserve Research Publication, March/April 1992.
[13] Reinhart, Carman and Kenneth Rogoff, "Growth in a Time of Debt," paper prepared for the *American Economic Review Papers and Proceedings*, January 7, 2010.
[14] "Inflation and Debt," *National Affairs*, John H. Cochrane, Fall 2011, pp. 56 – 78.
[15] "The Global Aging Preparedness Index," *Center for Strategic and International Studies*, Jackson, Richard, Neil Howe, and Keisuke Nakashima, 2010.

Solvency Threat



Source: "The Global Aging Preparedness Index," *Center for Strategic and International Studies*, Jackson, Richard, Neil Howe, and Keisuke Nakashima, 2010.

Whether or not countries have the leadership, will, and ability to respond to the threat of insolvency is complicated. It would appear that current leaderships are challenged in this charge and may be prone to "dis-affectation" or separation from their subjects served. Gideon Rachman of the *Financial Times* indicates that last year Chancellor Merkel said, "There is a kind of battle over what power the financial markets have and how much room for policymaking the politicians have." It was vital, she added, to assert the "primacy of politics."[16] Mr. Rachman cogently counters Chancellor Merkel's assertion:

> *" The markets are not the enemy of European politicians. They are their friends. In fact, they are all that stands between political leaders and angry citizens. If the markets will not lend money to governments, politicians can only get it from one other place – the voters. As Europe is discovering, that means either higher taxes or cuts in public spending."*

In *The Rise and Decline of Nations*, Mancur Olson argues persuasively that popular disaffection is a natural consequence of stable societies, counter intuitively like that which prevailed during the Cold War. "Countries that have had democratic freedom of organization without upheaval or invasion the longest will suffer the most from growth-repressing organizations and combinations."[17] He bases this statement of nine "implications" derived in a previous book, *The Logic of Collective Action*. Three of the implications more relevant to the topic at hand are:[18]

1. Stable societies with unchanged boundaries tend to accumulate more collusions and organizations for collective action over time.
2. Distributional coalitions slow down a society's capacity to adopt new technologies and to reallocate resources in response to changing conditions, and thereby reduce the rate of economic growth.
3. The accumulation of distributional coalitions increases the complexity of regulation, the role of government, and the complexity of understandings, and changes the direction of social evolution.

Olson pierces to the core concluding, "As I see it, in these days it takes an enormous amount of stupid policies or bad or unstable institutions to prevent economic development. Unfortunately, growth-retarding regimes, policies, and institutions are the rule rather than the exception."[19] Olson's research implies that even if developed countries have the leadership and the will, a powerful assumption indeed, they are unlikely to have the ability. Simply stated, *a democracy evolves to preclude the ability of democratic change that would limit growth of the large endowments of those who have benefited the most from each democracy's stability and duration.*

The coming decades will witness threats to both constitutional, parliamentary, and direct democracies as they respond to the existential threats of fiscal over-commitment. As a result, the coming period will very likely have a characteristic common to prior periods of high indebtedness and economic turbulence, especially when combined with weak leadership – inflation. Inflation is common because it is a form of taxation and sovereign default; like inflation, both alleviate or eliminate the burdens of heavily indebted countries. Paying off debt obligations with currency that is worth less than it was when the bonds were issued is advantageous to borrowers and disadvantageous to creditors. As such, inflation is like a tax on creditors to pay debtors. Equivalently, paying debt with currency worth half its original value is equivalent to a default with 50% recovery. Either way, *inflation alleviates a sovereign borrower's debt load, without any elected politician ever voting to raise taxes or speak of default.*

Inflation is a monetary phenomenon, the result of printing too much money. First, current liquidity crises have spurred massive expansions of central bank balance sheets in the US and Europe. These expanded balance sheets are

[16] *The Financial Times*, Gideon Rachman, November 21, 2011.
[17] *The Risk and Decline of Nations: Economic Growth, Stagflation, and Social Rigidities*, Mancur Olson, p. 77.
[18] Ibid, p. 74
[19] Ibid, p 175.

fodder for inflation when private sector lending activity begins to grow.

Second, currency devaluations could occur based on inflation expectations, prior to and engendering actual inflation. Expectations of higher prices can lead to currency liquidation in favor of goods and services sparking current inflation. John Cochrane argues that, as "a result of . . . enormous debt and deficits, substantial inflation could break out . . . in the next few years. If people become convinced that . . . government will end up printing money to cover intractable deficits, they will see inflation in the future and so will try to get rid of dollars today —driving up the prices of goods, services, and eventually wages across the entire economy. This would amount to a 'run' on the dollar. As with a bank run, we would not be able to tell ahead of time when such an event would occur. But our economy will be primed for it as long as our fiscal trajectory is unsustainable." [20]

Integration and Connectedness

Amidst the challenges of an evolving new world power order, acute illiquidity problems, and chronic sovereign insolvency predicament, it may seem difficult to envision a future that is not one of gloom and doom. In fact, the coming decades are likely to be quite turbulent. However, there is a reason to remain positive, or at least not to be despondent.

Integration of the 83% of the world's population that resides in developing economies has the potential to carry developed economies through these challenges as they strive for economic growth and achieve global influence. If so, the outcome would be a higher standard of living globally and tremendous increases across the developed world. It is worth recalling the truly game-changing effect of cooperation and interaction on human society that transformed existence from a largely zero sum competition into the positive-sum era of advancement that almost everyone alive knows to some degree. As Paul Seabright, Professor of Economics at the University of Toulouse writes: [21]

> *"Our teeming, industrialized, networked existence is not some gradual and inevitable outcome of human development over millions of years. Instead, we owe it to an extraordinary experiment launched a mere ten thousand years ago. No one could have predicted this experiment from observing the course of our previous evolution."*

Seabright notes that an apparent "historical accident" in the form of the discovery of gains from trading altered perceived incentive structures to give rise to beneficial cooperative social norms. This is self-reinforcing, but does not by itself vanquish the counter-incentives to fracture trust and reciprocity, such as in the case of bank runs. He thus regards human civilization as inherently fragile, noting that the ten thousand year revolution in cooperation and interaction would account for just two minutes out of a hypothetical twenty-four hour day that spanned all of mankind's existence.

Political scientist Robert Axelrod, in *The Evolution of Cooperation* goes further. In a fundamentally more optimistic vein, Axelrod sets out mathematically, using an iterative "prisoner's dilemma" treatment, how cooperative strategies disrupt previously dominant non-cooperative ones, and ultimately outcompete them. In one of the tightest links between social evolution and mathematics,

A Personal Story of Investing

Many years ago, I acquired a small 20-gallon aquarium. Unfortunately, despite my best efforts, I was an aquatic serial killer. Each tiny mistake had devastating consequences for the aquatic microcosm. Years later, I upgraded to a 350-gallon mini-reef saltwater aquarium. The larger, integrated biosystem weathered nuisance anemones and parasites as well as exogenous contaminants, such as my children's dinner scraps and the occasional inadvertent toxin I introduced, all with much less traumatic consequences. Instead of each minor error wreaking havoc on a small, isolated environment, the expanded tank absorbed shocks with relative ease.

We call this the **"Aquarium Theory"** of investing. Integrated systems are more complex, but they are better able to absorb stress. Rather than consider countries to be isolated 20-gallon aquariums that are devastated by national policy errors, consider the globally integrated world to be a complex system that absorbs stress through numerous unappreciated and oblique transmission mechanisms.

–Brian Singer

[20] Inflation and Debt", John H. Cochrane, National Affairs, 2011.

[21] "The Company of Strangers", Paul Seabright, Princeton University Press, 2004

Axelrod writes:[22]

"Many of the benefits sought by living things are disproportionately available to cooperating groups. While there are considerable differences in what is meant by "benefits" and "sought", this statement, insofar as it is true, lays down the fundamental basis for all social life."

In 1997, we predicted greater integration of developed and developing economies and greater global growth and well-being than would otherwise be the case. Our contention remains:[23]

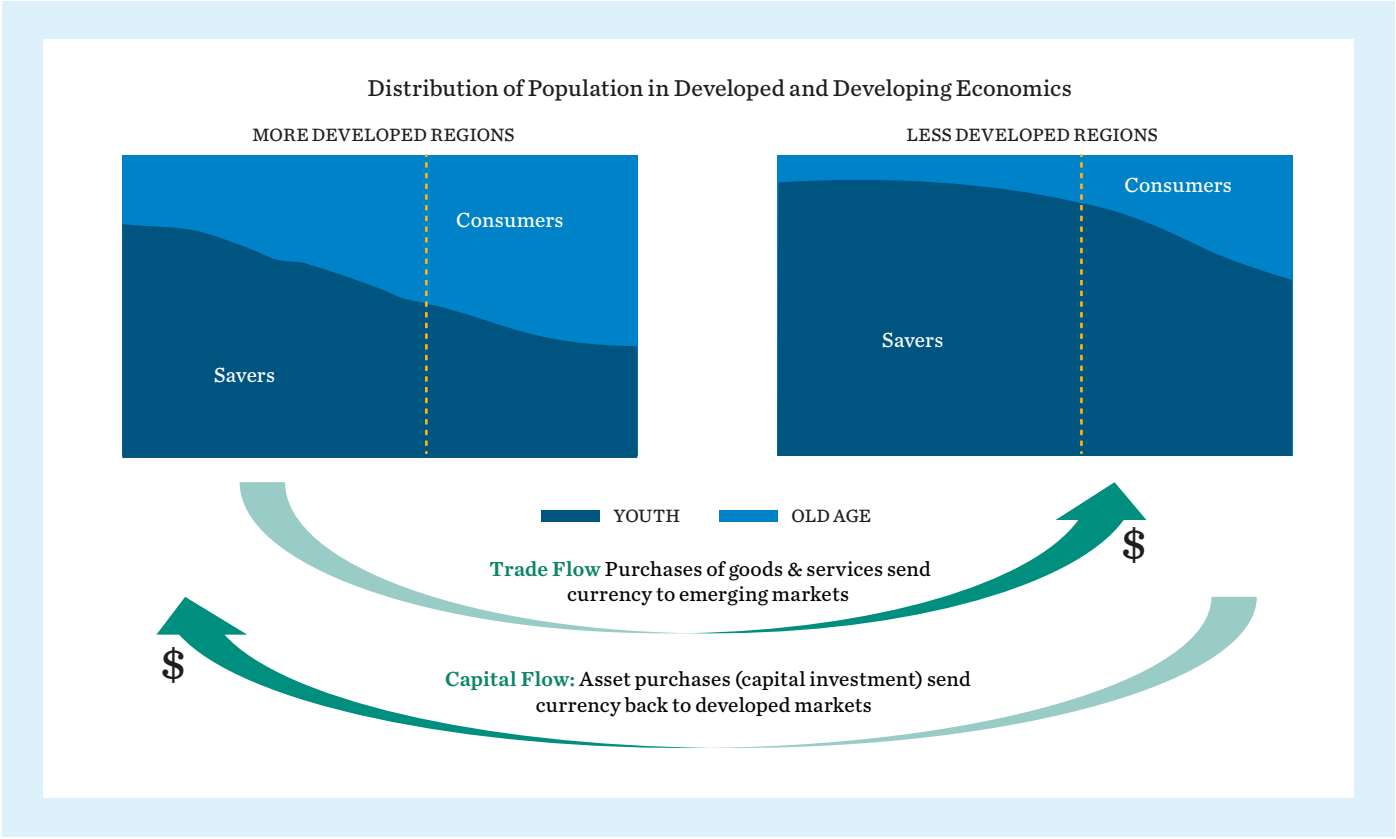
"Economic integration is likely to increase global productive capacity by rectifying suboptimal resource allocations. Congruent with the evolution in time preferences of consumption, the economy-wide production-possibilities frontier is likely to expand. The introduction of untapped resources of less-skilled labor form the developing markets enables all resources to be used more efficiently. The result is a more productive global economy."

In early modern history, imperialism, colonialism, and mercantilism described man's interest in interaction with external states. Today, more so than any time in modern history, the demographic incentive for the non-coercive trade and financial integration of developed and developing economies is tremendous. Further, knowledge and innovation are not something to seize as our imperialist ancestors conceived wealth acquisition, but to acquire through the mutually beneficial exchange of ideas. The ability of people to trade information across national, regional, cultural, and disciplinary boundaries yields new wealth and higher standards of living. Connectedness is transforming the private sector in ways that government bureaucrats cannot control. The buzzword is "knowledge management," but it cannot be managed on a societal scale.

The following diagram depicts sources and implications of the incentive for integration:

In more developed countries, populations are relatively old and getting older. Conversely, the populations of less developed countries are young. Older people tend to

Integration and Connectedness
Trade and capital flows can alleviate global stress



Source: UN Population Study, 2009.

[22] "The Evolution of Cooperation", Robert Axelrod, 1984
[23] "Economic Foundations of Captial Market Returns," *The Research Foundation of the CFA Institute*, Brian Singer and Kevin Terhaar, 1997, p.40.

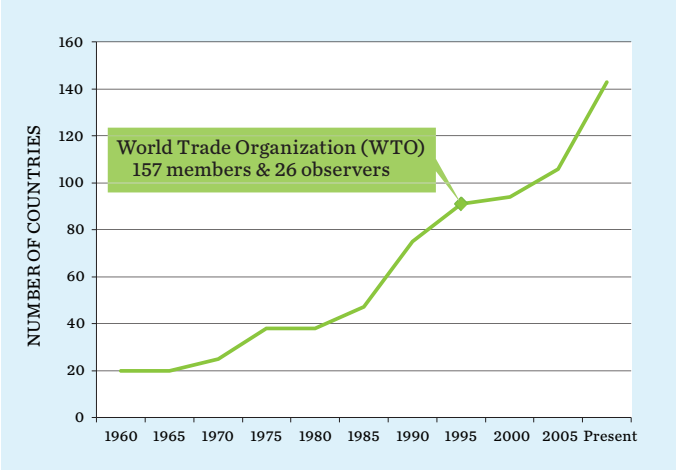
consume a larger portion of their income than do younger people. Retired individuals in the developed region will tend to consume goods and services provided by working age populations in less developed regions. Since the populations of less developed regions will be in their peak saving years, the foreign currency that flows to them through trade will be recycled back into the more developed economies as investment. Such capital flows are beneficial for heavily indebted developed countries looking to finance large sovereign debt burdens.

Markets responding to such incentives would be expected to develop connections to facilitate trade. Free trade agreements provide a basis for assessing the change in connectedness of countries over time. In 1990, the US had only one Free Trade Agreement (FTA) with one partner, Israel. NAFTA expanded agreements to include our largest trading partners, Canada and Mexico, in 1994. Today, the US is party to twelve FTAs with seventeen countries. As of 2010, forty-one percent of US goods exports went to countries with which the US has free trade agreements, with export growth to those countries faster than non-FTA countries.

Considering major FTAs, the number of member countries rose from a scant twenty in 1960 to over 140 today. The World Trade Organization further integrated 157 countries in 1995. Not surprisingly, the end of the Cold War ushered a period of rapid growth that continues unabated.

The integration among developing economies and between developed and developing economies on the shoulders of free trade connectedness and the internet provides the potential for economic growth to be an important solution to the problems materializing across the developed world. While people will engage in mutually beneficial exchange of goods, services, capital, and knowledge with the same inevitability that gravity ushers water down a hill, our concern is that nationalism, especially economic nationalism, sufficiently hinders international integration to preclude economic growth's contribution to the solution. As Mancur Olson argued, however, we should not be too sanguine; the natural course of bureaucratic action is self-preservation via nationalism. It is instructive to watch developed country attitudes toward immigration and emerging nationalism across the Euro zone evolve.

Member Countries of These Blocs



Source: William Blair & Company

Disciplines of Future Investment Success

The primary financial tools of the past sixty years were security valuation, pioneered by Graham and Dodd, diversification and efficiency, pioneered by Markowitz and Sharpe, and arbitrage-free, risk-neutral pricing models, pioneered theoretically by Arrow and practically by Black and Scholes. These tools were necessary and sufficient to allocate resources effectively and generate superior investment performance. In fact, these fundamental tools transformed and guided the investment industry.

What should investors expect as the last vestiges of the Cold War stability and the Great Moderation dissipate? Today's investment coterie learned its craft in a unique environment, one that will not extend into the coming decades. Investors need an augmented set of investment tools to allocate resources successfully. Today and in the future, the tools that formed our industry will remain necessary, but they will no longer be sufficient for success. While it is vogue to refer to "capitalism in crisis,"[24] the observation misses the point and focuses attention incorrectly on private sector decision-making and away from statism and public sector decision-making. More than capitalism, state governance is in crisis and the disciplines that enable insight into superior governance have increased in value. Disciplines that must be newly integrated into viable investment processes include game theory, macroeconomic theory, and geopolitical science. Renewed attention to these previously less imperative disciplines is requisite for investment competence.

[24] For example, *Financial Time: FT Series in Depth*, "Capitalism in Crisis," is a collection of articles published in December 2011 and January 2011.

Game Theory

As the previous Cold War analysis revealed, the discipline of game theory will be a critical tool for analyzing the emerging new world power order and the political machinations that will envelop international illiquidity and national insolvency challenges. Most game theory research, much like behavioral finance, focuses on the strategic interaction (the "game") of economic agents (the "players"). Behavioral finance focuses on inconsistent or ostensibly irrational behaviors and game theory posits mathematical frameworks for understanding behaviors through preferences, powers, and beliefs.

Classical game theory is predictive of strategies and outcomes when players with stable preferences maximize their satisfaction. Players evolve, however, and cognitive plasticity means that preferences and perceptions of satisfaction change. As a result, the outcome of any strategic interaction may be one that none of the game's players intended. This, of course, is the predicament for investors trying to understand these interactions. How does one anticipate an outcome that none of the players intends?

A brief introduction to game theory provides insight into its applicability to geopolitical and economic analysis. An important solution concept that can be used is the Nash equilibrium of games with complete information.[25] In a Nash equilibrium, each player adopts an optimal strategy based on knowledge of the other players' strategies. If game theory provides a unique solution to a game, then the solution must be a Nash equilibrium. Although most games do not satisfy the conditions for a Nash equilibrium, in particular one with multiple solutions, the framework is instructive for scrutinizing strategies and solutions.

To understand the power of the Nash framework, consider a multilateral bargaining game where each player devises a strategy and interacts with other players to achieve a desired outcome. Game theory suggests that the players' strategies require the demonstration of powers as they face each other in what is invariably a multi-period game that involves similar situations.

Relative economic power (resource endowment): Simply stated, the greater the economic resources of a player, the greater the bargaining power that player garners. In the context of bargaining over the US debt ceiling, economic power includes political capital, public support (poll approval ratings are an indication), degree of majority in each house, etc. A key aspect of economic power is the continual need to signal abundance.

Relative threat power: The greater each party's ability to threaten the viability of all parties, the greater its bargaining power. This depends on the ability of one party to inflict damage on other parties AND the willingness of that party to inflict damage on itself. Drawing from the US political scene to demonstrate self-inflicted threat power, former House Speaker Nancy Pelosi's willingness in the 2009-2010 session to sacrifice Democratic representatives who would be running for office improved her and the Democratic Party's bargaining position. Aggressive behaviors and a willingness to sacrifice are common manifestations of threat power expressions. Miscalculations in this dimension can be catastrophic.

Relative risk tolerance power: This source of power is based on how far each party is willing to risk a "no agreement" outcome. During the European liquidity crisis, it was difficult for Italy and quite easy for Luxembourg to demonstrate significant risk tolerance toward a disorderly Greek default. For Italy, "no agreement" likely would have meant liquidity contagion as investors shied away from the third largest sovereign borrower. Economic and political activity in Luxembourg would have been disrupted, but not ruinously so. Relative risk tolerance power-driven behaviors clarify why parties walk away from the bargaining table and why last-minute deals are the norm. Sometimes, when risk tolerance power is combined with self-inflicted

Game Theory Powers and Behaviors

Relative Powers[26]	Examples	Demonstrated Behaviors
Economic	Political capital, nuclear power, etc	Abundance
Threat	Lob some bombs, sacrifice collateral	Bluff, aggressive, sacrifice
Risk tolerance	Willing to accept "no agreement"	Bluff, disinterest, 11th hour
Coalition	"Merkozy" (Merkel & Sarkozy), media	Solidarity, adaptability

[25] John Nash is the Nobel Laureate mathematician who devised powerful generalizations of game theory.

[26] Woody Brock of Strategic Economic Decisions has discussed recent global developments on a game-theoretical basis, drawing upon these powers.

threat power, associated behaviors can seem suicidal. As with relative threat power, miscalculations in the risk tolerance dimension can be catastrophic.

Relative coalition power: Negotiating agents augment power through coalitions with other parties. In Europe, currently, the Merkel/Sarkozy coalition is a powerful bargaining platform. The difficulty of exercising this power is that factions come and go as the evolving game changes perceptions about economic, threat, and risk tolerance powers.

Macroeconomic Theory

Microeconomics is the study of small economic units such as individuals, individual firms, households, or industries. Macroeconomics focuses on economic aggregates such as production or income and attends to understanding an economy's growth, trade between economies, the implications of government policies, etc. Whereas microeconomics affords insight into the employment situation of an individual, macroeconomics elucidates the employment situation of the US. Microeconomics informs the failure of a corporation to hire and macroeconomics the success of government policy initiatives to foster employment.

The typical financial analyst is well versed in microeconomic concepts as a qualification for corporate financial statements and competitive analysis. Most people would not tell an engineer how to design a structure or tell Jean-Pierre Rampal how to play *The Magic Flute*, but there does not appear to be a single individual incapable of possessing strong macroeconomic convictions, regardless of training, that they are willing to impose upon others.

Dr. Greg Mankiw has stated that "there is more agreement among microeconomists as to how they approach things [than among macroeconomists]. . . . Macroeconomics is in some ways harder since you are dealing with the whole economy; the field therefore requires more simplifying assumptions to make anything manageable, to make the problem simpler than it really is in the real world. . . . [T] here is disagreement as to which simplifying assumptions are the most natural or the most useful."[27]

As national policies have grown increasingly influential and sovereign resources reach limits, the macroeconomics discipline grows in importance. The issues of illiquidity and insolvency bring to light the importance of a solid grounding in macroeconomic theory.

Geopolitical Science

The idea that a nation's wealth could be measured by the size of its treasury was not refuted until Adam Smith published *The Wealth of Nations* in 1776. The phrase "mercantile system," or economic nationalism for building a wealthy, secure, and powerful state, was coined by Smith to describe geoeconomic structures of prior centuries. Dialogue and reason prior to Smith did not contemplate geopolitics because politics were local and only expanded to the national level at its greatest reach. Geopolitics did not become an important craft until the nineteenth century and was not defined as a term until coined in the early part of the twentieth century by Dr. Rudolf Kjellen (Swedish) based on the concept of anthrogeography developed by Dr. Friedrich Ratzel (German). [28]

Geopolitics remained an important and intensively used expertise through both the first and second world wars, but its relevance for investors diminished during the bipolar Cold War world. The Cold War resulted in a stable (if suboptimal from the perspective of wealth maximization) geopolitical environment. Capital and financial market activities focused on capitalistic markets and there was little need for investors to involve themselves with the day-to-day intrigue of the two big players. The world of investors was a staid set of developed economies around the world; geopolitical science was of secondary concern.

For much of the last couple of decades, it was vogue and correct to argue that sector and industry influences trumped national influences. It may now be vogue, but it is no longer correct. Today, times are more complicated and global connections and interactions encompass geographically segregated economic, religious, and political ideologies. The globalization of economies and the availability, or unconstrainability, of information has rendered the discipline of geopolitics indispensible. Increased global integration and connectedness demonstrate the importance of geopolitical science into the pricing of assets and resources, even when the focus is within a single country.

[27] Interview with Professor Mankiw in his office at Harvard University on 18 February 1993 and subsequently corresponded in February/March 1998.
[28] The Swedish word for geopolitics is "geopolitik," which has continued use in the English language.

Conclusion

The first figure of this white paper demonstrates the resilience of asset returns, and economies for that matter, to all but the most complex and incompetent bureaucracies. Despite the destabilizing nature of multiple wars and bouts of high inflation, countries and capital markets only marginally blemished by "normally stupid" policy interventions can remain surprisingly robust. On the other hand, intervention in Germany after World War I suggests the astronomical damage that can be wrought by ham-handed policies. We believe that the opportunities for inept decisions and actions by powerful people are likely to pock mark the future landscape.

Consequently, *we strongly believe that broad macro themes increasingly will dominate portfolio performance.* Robust investment processes will need to include a greater focus on integrating the disciplines of game theory, macroeconomic theory, and geopolitical science – the tools required to fathom the behaviors of these players and understand the ramifications of their decisions.

Like the slow rise and fall of the tide, macro themes move slowly and lift all boats. Waves of short-term periods of panic and euphoria, more than has been experienced by today's investment professionals, toss each boat wildly, capturing attention and distracting from the inevitable ascendance of the tide. Investors should embrace the tidal influence of systemic, macro factors, harnessing their potential for wealth creation. ■

About the Author

Brian Singer, CFA, is the Head of the Dynamic Allocation Strategies Team. Prior to joining William Blair and Company in 2011, he was the Head of Investment Strategies of Singer Partners, LLC. Mr. Singer was the former head of Global Investment Solutions and Americas Chief Investment Officer for UBS Global Asset Management. He was a member of the UBS Group Managing Board and Global Asset Management Executive Committee. Brian was a board member and former chair of the CFA Institute Board of Governors and is also a former member of the Research Foundation of CFA Institute Board of Trustees. He was elected to the Board in 2004 and previously served as chair of the Candidate Curriculum Committee. Brian serves on the Exeter College at Oxford University Endowment Investment Committee and is the chairman of the Milton Friedman inspired organization 'Free To Choose Network.' In 1991, Brian co-wrote a landmark update to one of the pioneering studies on asset allocation, '*Determinants of Portfolio Performance II: An Update,*' with Gary Brinson and Gilbert Beebower. In 2009, Brian was the lead author of '*Investment Leadership and Portfolio Management*', Wiley Publishing.

Reading List for the Macro Investor

Axelrod, Robert, The Evolution of Cooperation, Penguin Political Science, 1984.

Buchanan, Mark, Ubiquity: Why Catastrophes Happen, Three Rivers Press, 2001.

De Soto, Hernando, The Mystery of Capital Why Capitalism Triumphs in the West and Fails Everywhere Else, Basic Books, 2000.

Gibbons, Robbin, Game Theory for Applied Economists, Princeton University Press, 1992.

Heuer, Richard, Jr., Psychology of Intelligence Analysis, Novinka Books, 2006.

Olson, Mancur, The Rise and Decline of Nations: Economic Growth, Stagflation, and Social Regidities, Yale University Press, 1982.

Seabright, Paul, The Company of Strangers, Princeton University Press, 2004.

Surowiecki, James, The Wisdom of Crowds, Anchor Books, 2005.

Tainter, Joseph, The Collapse of Complex Societies, Cambridge University Press, 2007.

Tuchman, Barbara, The March of Folly: From Troy to Vietnam, Ballantine Books, 1985.

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