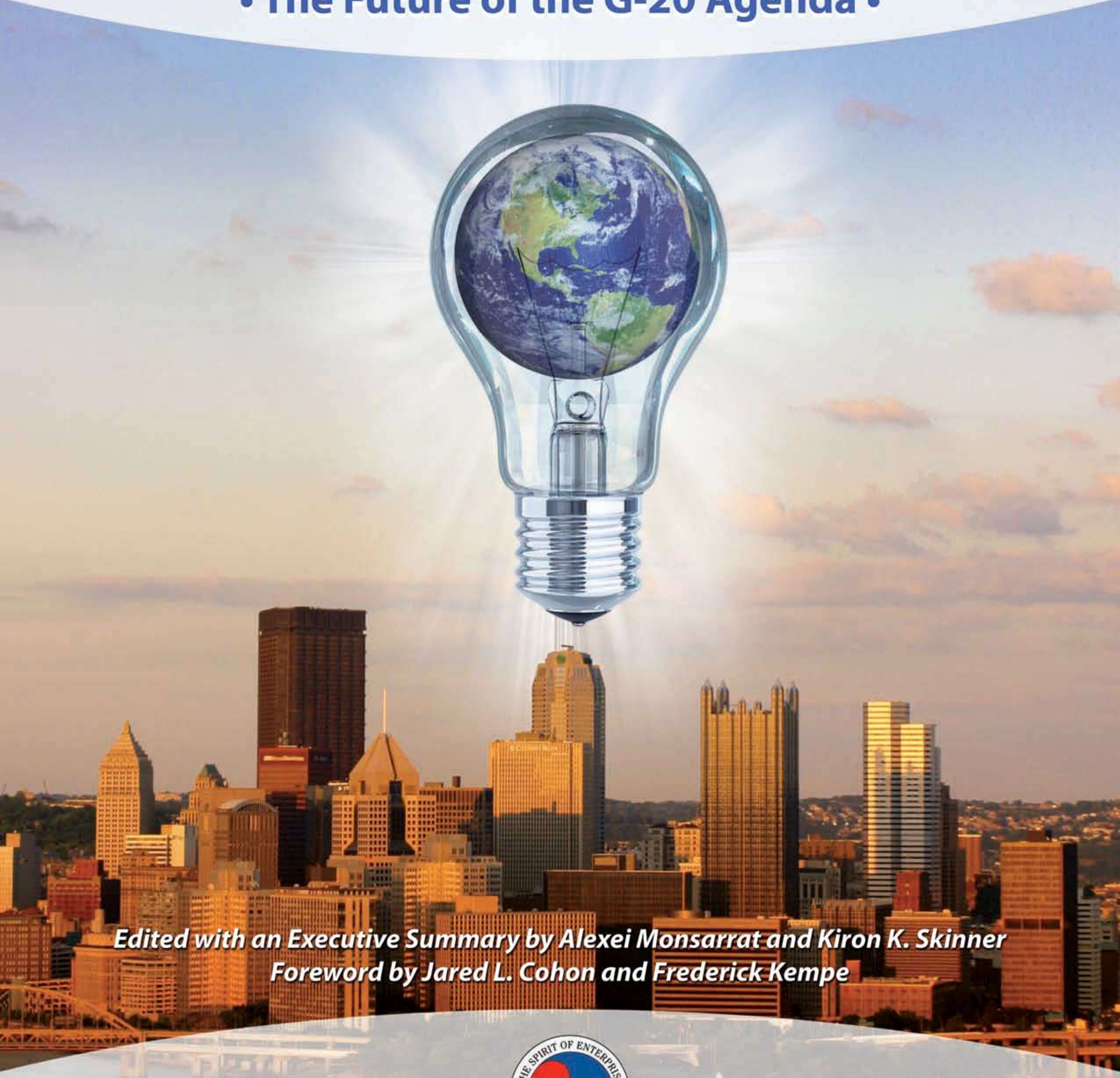
Renewing Globalization and Economic Growth in a Post-Crisis World

• The Future of the G-20 Agenda •



Edited with an Executive Summary by Alexei Monsarrat and Kiron K. Skinner
Foreword by Jared L. Cohon and Frederick Kempe

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September 2009

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Foreword

Leaders of the world's twenty most important economies are meeting in Pittsburgh on September 24-25 for the third time in less than a year to evaluate their collective efforts to combat the worst economic crisis since the Great Depression. Despite their best-laid plans, what we have already learned is that economic and political realities shift so quickly that government leaders, more often than not, find themselves playing a game of catch-up. For the moment, having averted the worst, they are breathing a sigh of relief and now can talk about recovery and beyond. Yet before growing too optimistic, they should not forget the famous answer of British Prime Minister Harold Macmillan, when asked by a reporter what was most likely to blow governments off course: "Events, dear boy, events."

The initial purpose of the G-20 was to save a storm-struck vessel called the Global Economy from shipwreck and sinking. As water poured over the sides of the ship, governments rapidly improvised to make repairs and to reassure passengers. Thus the G-20 meeting on November 15, 2008, in Washington, D.C., had to focus on attending to the emergency and its immediate causes. As a result of the meeting, working groups were formed to investigate new mechanisms to enhance regulation and strengthen transparency, bolster economic cooperation and financial integrity among states, reform the International Monetary Fund, and provide better guidelines for the full range of policy instruments steering the World Bank and other multilateral development banks. The G-20 agreed to meet again to review the findings of the working groups, to measure the success of government actions, and to assess any new damage.

By the time of the second G-20 meeting on April 2 in London, it was clear that the ship would go under if it were not quite literally bailed out. So the G-20 leaders turned their attention to priming the pumps by demanding fiscal stimulus packages and financial measures to save the banks and restore confidence in the Global Economy. While celebration of the ship's rescue may be premature, it seems clear that early damage assessment and rapid repairs have kept it afloat, even if it is not yet steady.

At the risk of straining this metaphor, it seems that now the G-20's purpose must be to help create a new, more reliable engine. What will be the drivers of the good ship Global Economy, where will they originate, what incentives can sustain them, and what rules should govern them? G-20 leaders in Pittsburgh will likely have no more important task than taking on these questions even as they nervously remain on the watch for unexpected storms and leaks in the ship's hull.

To present a vision for a new global economy that will determine the future G-20 agenda, the Atlantic Council, Carnegie Mellon University, and the U.S. Chamber of Commerce have gathered top minds from academia, business, and the policy community for a one-day conference in Pittsburgh. A number of these individuals were commissioned to write brief policy papers to identify the central goals and challenges in designing a new global economy, and the measures needed to meet them. Their essays address the topics covered by the G-20 working groups but also identify social, cultural, economic, political, and technological components of globalization that the G-20 must consider in the years ahead. These recommendations are presented in the Executive Summary to this report.

The task ahead is complex, constituting nothing less than charting the future of globalization. We have therefore brought together authors who write authoritatively on a range of issues, including the role of technological and managerial innovation in sparking new growth, how the financial regulations being designed by the G-20 will affect financing for innovation, the challenges in educating the workforce of the twenty-first century, and how political forces are likely to shape globalization. These illuminating and thought-provoking essays—and the debate and discussion they will surely engender—contribute to this vital task.

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Renewing Globalization in a Post-Crisis World: A New Agenda for the G-20

Alexei Monsarrat and Kiron K. Skinner

"One very clear lesson of the past year . . . is that a full-blown financial crisis can exact an enormous toll in both human and economic terms."

~ U.S. Federal Reserve Chairman Ben Bernanke, Jackson Hole, Wyoming, August 21, 2009

This statement, delivered by Federal Reserve Chairman Bernanke in the understated manner of a central banker, was made nearly a year after the collapse of Lehman Brothers—the event that tipped the global financial system into full crisis. Bernanke's message starkly reveals the scope of the challenge facing the stewards of the global economy.

We believe that the toll the crisis has exacted in human and economic terms constitutes a serious challenge to globalization itself.

The actions taken by financial authorities and governments around the world have been instrumental in preventing a full-scale global depression, but the crisis has exposed deep inequalities and structural problems in the international economic system. The G-20 summit to be held on September 24-25, 2009, marks the third time in less than a year that the leaders of the member states have assembled to redress weaknesses in the global economic system, rebuild confidence, and ensure that the recent economic crisis will not be repeated—at least not in the same way. This is an immensely challenging task; in addition to the issue of financial regulatory reform, consideration must be given to regenerating economic growth and renewing globalization so that the benefits of the global economy may be broadly shared.

This report seeks to provide ideas, analyses, and arguments for the various aspects of the expanded G-20 agenda. It does so by bringing together experts who, through scholarly research, business activity, or policy engagement, have developed valuable perspectives on international politics, culture, markets, technology, or some combination of these issues. The viewpoints they express in their respective essays provide guidance for confronting the ongoing challenges posed by globalization.

A New Agenda for the G-20

One definition of crisis is "turning point," and that is where we find the global economy in September 2009 as G-20 leaders assemble in Pittsburgh.

The question now is whether the G-20 will expand its agenda to fully embrace the gravity of the global turning point we face.

We have defined a four-part agenda to confront this turning point, keeping in mind that an agenda that seeks to address such a sweeping mandate must be focused in order to be implemented, yet broad enough to engage the root causes of the challenge. The assembled authors—distinguished voices from business, academia, and the policy community—offer their visions of how the G-20 nations can work together to renew globalization and economic growth in the post-crisis world by addressing:

1. Sources of growth and the role of innovation;
2. The role of financial regulation and trade in restoring growth;
3. Educating a workforce for the twenty-first-century economy; and
4. Social and political challenges of renewing globalization.

The relationships among these weighty issues are complex. In this report, we seek to present a comprehensive, holistic approach that the G-20 may use to confront these issues and progress from managing the crisis to restoring the global economy.

The bullet points in the four sections below include recommendations from a number of essays found in this report. In most instances, we have directly quoted the authors so as to capture their precise viewpoints. The positions presented below are not consensus based; rather, they reflect the opinions of the individual authors. What seems to bind the essays together, however, is an overarching commitment to make international forums such as the G-20, as well as national governments, more effective tools of economic growth and political liberalization.

1. Sources of Growth and the Role of Innovation

The pre-crisis global economy, driven by U.S. consumers and businesses financing expenditure and investment through foreign borrowing, is finished. While the G-20, collectively and as separate national governments, ultimately will find solutions to restore global financial markets, the forces that have driven growth in the real economy have been fundamentally altered. Most critically, the idea that financial markets alone can drive endless waves of economic growth that will benefit all economic participants—at home and abroad—has proven to be a fallacy. The G-20 is now faced with the task of finding ways to foster new sources of growth that will flourish in the twenty-first-century economy.

A. Match post-crisis growth models with economic realities

As the economy begins to recover from the crisis, countries and firms should innovatively adapt their economic growth promotion and firm-level growth policies to counter the weaknesses exposed by the crisis. Although no single approach will work for all countries, some broadly applicable efforts can be undertaken to counteract weaknesses such as low savings, overreliance on export-led growth, overemphasis on the preeminence of a globally distributed supply chain, and scant attention to how technology affects sustainable development.

- We must take serious steps now to create a new kind of globalization that shifts the core economic policies of nations from mercantilist, export-led strategies to innovation-based, domestic-growth strategies. The central task of global economic policy should be to encourage all nations to make raising domestic productivity a key priority. In particular, policies should seek to spur competition and the use of the best production tools—often by increasing the use of information technology—to raise the productivity of all sectors. ~ *Robert Atkinson*

- The New European growth model will now need to change because in the post-crisis world inflows of foreign financing are likely to diminish substantially. The new growth model should combine the best characteristics of the New European model—openness to trade, high quality of human capital, and advanced institutional framework—with those of the East Asian model, particularly higher savings rates, controlled exchange rate appreciation, and diversified exports. ~ *Marcin Piatkowski*

- To increase savings, New Europe should tighten fiscal policy, remove tax incentives for investment in nonproductive assets such as real estate, and increase private long-term savings through pension reforms. ~ *Marcin Piatkowski*

- New Europe should also diversify exports away from European Union markets toward fast-growing markets in Asia, Latin America, and Africa. This could be achieved through an expanded use of export-credit guarantees and partnership agreements with other emerging markets promoting market access and foreign direct investment. ~ *Marcin Piatkowski*

- Future productivity and growth in the United States will depend on upgrading the physical infrastructure of U.S. commerce and investing in human capital infrastructure by reforming education, health-care delivery, and finance. ~ *Myron Brilliant*

- The United States continues to embrace the legal and policy infrastructure that encourages people and companies to think globally, take risks to innovate, explore opportunities, and embrace responsibilities without being hobbled by the threat of harassment through abusive litigation. ~ *Myron Brilliant*

- Transporting technology to poor communities is a significant obstacle to sustainable development. Yet the fast-growing field of information and communication technology for development addresses this challenge by focusing efforts on technology innovation that specifically targets the needs of the poor. ~ *M. Bernardine Dias*

- It is impossible to separate technology development and manufacturing from the nation in which they take place. The most economically viable technologies produced in one country are not necessarily the most economically viable technologies when produced in another. Further, while some technologies will be most economically produced in one location for the global market, others will be most economically produced in multiple locations and customized to regional markets. A one-size-fits-all approach to technology cannot be adopted. ~ *Erica R.H. Fuchs*

B. Facilitate free movement of highly skilled workers and innovative ideas

In a global economy, companies should be able to harness the best workers and the best ideas, wherever they may be located. Changing visa restrictions and intellectual property regimes to maximize the free flow of skills and ideas will be even more essential in a post-crisis world. Using higher education to encourage innovation and promote economic growth is as important in the post-crisis world as it was in the early decades of the postwar era.

- Innovation typically comes from entrepreneurship, which is encouraged by worker mobility. Many of the best firms are founded based on ideas that were rejected by the founder's prior employer. ~ *Serguey Braguinsky and Steven Klepper*

- Caps on visas for highly skilled workers and various frustrating barriers to their legal immigration erected especially in recent years are, plain and simple, bad policy. For example, non-U.S.-born scientists and engineers make a disproportionately large contribution to technological innovations in the United States, and are responsible for many of the pioneering businesses that drive the international competitiveness of the U.S. economy. ~ *Serguey Braguinsky and Steven Klepper*

- In the years following World War II, the United States government supported higher education through significant investments in research and development at universities and through many federal programs that encouraged citizens to pursue higher education. At the same time, Washington invested in R&D at large, medium, and small companies, and those companies, in turn, invested in research. A complex ecosystem emerged that led to the creation of even more companies, many of which grew out of activity at research universities. This hub of activity created jobs and fueled economic growth and wealth in ways that the world had not experienced before. It is this type of ecosystem that needs to be recreated throughout the world. ~ *Pradeep Khosla*

2. The Role of Financial Regulation and Trade in Restoring Growth

Deliberations on financial regulation by the G-20, its various working groups and associated bodies, and national legislatures will lead to a change in the way global financial markets function. Recognizing that no regulatory system is foolproof, our report recommends that the G-20 foster the creation of a flexible system that will provide incentives to finance innovation and new economic growth while ensuring that no new barriers are raised.

A. Promote risk management, not risk elimination

Risk is the linchpin between the financial markets and the real economy. While regulatory debate and the work of the G-20 have so far centered on preventing the spread of contagion within and across financial markets, a comprehensive approach to risk should be developed that factors in the key role of risk in supporting innovative new ideas and entrepreneurial ventures.

- Business has a lot to say about where G-20 leaders take the global economy since it will be business that will have to implement all the key decisions. Companies dread that the group dynamics of high-level political meetings such as the G-20 summits will produce mutually reinforcing attempts to drive risk out of enterprise through stifling regulation and policies that have little to do with modern wealth creation by private enterprise. The G-20 summiteers should open the G-20 process more consistently to representative business input because American companies and our counterparts in the G-20 markets have the global experience, scope, and drive to work with leaders on identifying risks and developing smart ways to manage them. ~ *Myron Brilliant*

- Risk information and data gathering must be better aligned with end-users' needs. Not only must information be accurate, but governments must ensure that it is understood and that the data are useful. For example gaps in investors' knowledge of financial systems should be studied, identified, and used to inform new requirements for financial disclosure to make financial reporting more useful for investors. ~ *Baruch Fischhoff*

- There are several additional disciplines that can improve the usefulness of models: (1) behavioral finance, (2) detailed institutional economics analyzing the changing structure of the linkages between financial participants, and (3) financial history. ~ *Richard B. Hoey*

- It is not accurate to say that a financial crisis as severe as the current one has never happened before. Financial history provides good historical precedents for 100-year floods, and model makers should study them before they attempt to apply their models to real-world decision making. Regulators must have adequate information and skill sets to understand how the financial system changes over time. Confidence in the results of financial models might improve if all finance and MBA students were required to pass a course in financial history. ~ *Richard B. Hoey*

- The crisis has also revealed the need to develop more effective economic and market intelligence to identify economic "hot spots," both domestic and foreign, and deal with them more effectively and earlier. ~ *David McCormick*

B. Drive out all forms of protectionism

G-20 leaders have condemned protectionism at each of their summits, and World Trade Organization commitments have helped stem some of the most egregious protectionist measures. Yet leaders continue to put in place or countenance domestic policies that include discriminatory protectionist elements. Deft diplomacy combined with close cooperation and coordination among financial regulators throughout the world will be central to resisting the pull of protectionism.

- As it did with the World Trade Organization and trade protectionism, the G-20 should charge an international organization with responsibility for "naming and shaming." In this case, the Financial Stability Board (FSB) should be mandated to monitor and report publicly on financial reform measures that are protectionist or that disrupt the beneficial operation of global financial markets. In preparing its report, the FSB should consult with market participants as well as other international organizations. ~ *Daniel M. Price*

- The FSB should be further empowered and directed to ensure coordination of regulatory reform efforts and to encourage the development of best practices, including regulatory convergence and mutual recognition, that reduce the risk of fragmented or contradictory approaches and preempt disintegration of global markets. ~ *Daniel M. Price*

- There are growing risks of a jobs trade war given the high level of unemployment in many parts of the world. The best defenses against protectionism are cyclically appropriate macroeconomic stimulation to limit the amount of excess labor and excess productive capacity worldwide, and a rebalancing up rather than down of the global economy, with the current account-surplus countries adopting policies to raise their own domestic demand. ~ *Richard B. Hoey*

C. Focus and revitalize trade negotiations

Free trade and open markets buttressed by effective enforcement mechanisms are largely responsible for the benefits accrued from globalization. And despite the mire of the Doha Round, free trade will continue to play a crucial role in the twenty-first-century global economy. We thus suggest that the Doha Round be unencumbered by measures that will complicate or impede its resolution.

- The short-term priority is to defend the degree of existing free trade. Climate-change negotiations will shift the debate about trade. It is possible to have a well-functioning global free trade system as well as an effective climate-change program, but multilateral cooperation will be required. ~ *Richard B. Hoey*

- It would be premature at this time

for the United States and Western countries to incorporate "carbon tariffs" and other restrictions on imports of carbon-intensive goods from developing countries into their domestic policies to fight global warming. Taking such a stand now could significantly slow progress on global trade negotiations. ~ *Lee G. Branstetter*

- To ensure that the Doha Round trade negotiations are successfully concluded soon, the United States may have to reduce and restructure its agricultural subsidies without getting in return either major cuts in developing country agricultural tariffs or any significant weakening of the special safeguard mechanisms nations like India are keen to maintain. ~ *Lee G. Branstetter*

- The United States and the EU should cooperate to resolve the Doha Round, entailing substantial new U.S. and European concessions on agriculture in return for commensurate commitments by India, Brazil, and China to liberalize trade in agriculture and services. ~ *Robert Hutchings*

- U.S. policy makers must unflinchingly support open markets by implementing existing free trade agreements with countries such as Panama, Colombia, and South Korea and by taking steps to conclude the Doha multilateral trade round while also introducing more effective approaches to help individuals adapt to the rapid pace of global economic change. ~ *David McCormick*

3. Educating a Workforce for the Twenty-First-Century Economy

Globalization is perceived as the deepening of economic and political integration as well as the intersection of international politics, culture, markets, and technology. Both perspectives require an international workforce with core competencies in some combination of world languages, diverse cultures, the humanities, the social sciences, science, technology, and mathematics. Fostering knowledge and training in these disciplines will require that national governments focus intensively on improving the full range of education, from primary through post-graduate levels, by employing more innovative and creative educational methods.

A. Ensure a diverse curriculum to forge an adaptable workforce and an informed citizenry

Widespread acceptance of globalization is not a foregone conclusion; indeed, the economic crisis has further activated anti-globalization sentiment from the political left and right around the world. In order to address the often legitimate concerns of globalization's skeptics in an intelligent and persuasive manner, people the world over must be able to speak a common language, literally and figuratively, and they must be equipped to understand the latest technological and scientific advances.

- While restarting the motor of globalization requires careful consideration of economic policies, much more is at stake than technical economic adjustments. Implementing any distinctive economic policy, after all, depends on political will and credibility, which point in turn to questions of culture. Unless there is a cultural buy-in by the broad public, policies will not succeed. Therefore, attention to the cultural character of globalization—especially to the cultural bases for the resistance to globalization—is indispensable. ~ R*ussell A. Berman*

- The tendency to cut funding for humanities curricula and language training at universities during economic downturns must be resisted because the global corporate world, as well as fields such as technology, law, health care, education, and the arts, are highly dependent upon individuals with cultural and linguistic proficiency. ~ *Susan G. Polansky*

- On May 13, 2009, the U.S. Department of Labor issued an outlook on the jobs of tomorrow that reflects some startling realities. The report anticipates that employment in scientific and technical services, as well as computer-systems design and management, scientific, and technical consulting services will grow by large percentages. While this enormous growth is occurring for science, technology, engineering, and mathematics (STEM) occupations, the National Science Foundation reports that the proportion of STEM-related degrees conferred by U.S. institutions has shrunk since 1966. Simply put, we are failing to prepare our students for life in a twenty-first-century society where their ticket to prosperity can be acquired only through quality education. These challenges must be answered if the United States is to continue to compete in the global economy.
~ *Arthur Rothkopf*

B. Encourage the evolution of views on education delivery

In the United States and Europe (as well as other countries and regions), many outmoded educational systems remain in place. Changing these systems will require a new vision for education in the twenty-first century, including where it can take place and who can deliver it.

- The current economic crisis must be seen as an opportunity by policy makers, in coordination with the business community and academia, to make education and training widely available anytime and anywhere (on-site, online, and just-in-time).
~ *Thomas Spiller*

- We need to take a step back and focus on policies and practices that will build a lifelong learning system for the twenty-first century. Our policies must be focused on the goals of student access and success, workforce readiness, research and development infrastructure, global literacy, and essential disciplines. ~ *Thomas Spiller*

- We must help in creating innovative educational institutions of the twenty-first century where technology is infused into every part of the curriculum, where creativity and innovation are fostered in every discipline, and where students and educators are constantly striving to solve problems and think outside the box. It is the creation of new ideas and solutions that will ultimately lead to new industries and jobs. ~ *Thomas Spiller*

C. Increase support for primary and pre-primary education

In addition to changing and diversifying educational delivery systems, a sharper focus on education at the entry level, and across the socioeconomic spectrum, will increase students' ability to compete in the post-crisis economy. Investment in early childhood education, which is far less expensive than remedial training at later stages of a child's development, should be encouraged.

- Investment in early-childhood development ensures that all children start life healthy, well-nourished, and equipped by the time they reach kindergarten with the emotional and cognitive skills required to perform well and attain expected levels of achievement. ~ *Robert H. Dugger*

- Research shows that that disadvantaged children with high-quality early-learning opportunities have fewer special-education needs in later years and are more likely to graduate from high school, earn more money, and contribute more tax dollars than disadvantaged children without such opportunities. Every dollar spent on high-quality early-childhood programs for disadvantaged children creates $7 to $9 in future savings to the communities and states that do the investing. ~ *Robert H. Dugger*

4. Social and Political Challenges of Renewing Globalization

The future of globalization, and efforts to renew its promise, will be swayed as much by social and political forces as by economic change. Issues that will factor into the management of these forces include reforming national and international institutions and governance structures, gaining a better understanding of how investors and consumers make decisions that affect the economy, building stronger international partnerships, and understanding the variables that motivate leaders and constituents to promote policies of economic growth and political liberalization.

A. Strengthen institutions and governance

At the heart of the protectionist push by labor in developed and developing countries is a well-justified fear that changing production patterns will result in lost jobs, and that the few who move financial markets will inflict losses on workers around the globe. While advanced democracies struggle to manage these tensions, it is even more difficult for developing countries with comparatively weak institutions to manage the fallout from global crises and build support for open markets.

As states grapple with energy, security, and the proliferation of nuclear weapons, the problematic nature of stove-piping these issues in separate international arrangements becomes ever more apparent.

The interconnected nature of politics, economics, security, and energy is reflected in the fact that the G-20 agenda now reaches far beyond economic policy. Authors of essays in this report suggest combining new and existing institutional mechanisms to address this convergence.

- The fundamental problem inhibiting growth in developing countries lies in institutional structures of government and the incentives leaders have to attain and retain positions of power. The G-20 can help influence economic growth in developing economies by fashioning assistance programs that channel financial support and expertise to governments that are likely to convert the G-20's help into effective policies rather than into opportunities for kleptocracy or leader-controlled experiments in policy selection. ~ *Bruce Bueno de Mesquita*

- Governments and independent organizations seeking to promote better governance must focus on altering incentives, and not simply providing money or building state capacity. One way to alter incentives is through foreign assistance with ex-post conditionality; political leaders must implement reforms before they receive foreign aid. Donors may also be able to change the incentives facing leaders in poorly governed states by providing assistance to public and private organizations that might be able to check and balance centralized state power. ~ S*tephen D. Krasner*

- At the international level, the International Monetary Fund (IMF) members should rethink the tripling of resources pledged at the April 2, 2009, G-20 summit and instead ensure that IMF resources are large enough to deal with severe crises, but not too large to waste resources, lead to poor decisions, and even cause crises. At present, there does not seem to be sufficient evidence that the IMF requires more resources. ~ *John B. Taylor*

- Already the G-20 has moved beyond economic issues to touch on energy security and climate change; it could continue to evolve into a kind of informal global steering group, brokering deals at the political level and then referring the actual negotiations to established forums. It is not a perfect grouping because it leaves many countries unrepresented, but it could play a useful role in conjunction with the UN, IFIs, and other existing institutions in fashioning a 'global grand bargain' among the major powers, representing collectively some 85 percent of global economic activity, energy consumption, and greenhouse-gas emissions. ~ *Robert Hutchings*

- Restoring confidence is a crucial step in repairing financial markets and setting the global economy on a sustained growth path. The willingness of governments to coordinate their policies can help reestablish confidence by ruling out beggar-thy-neighbor responses to the crisis. A joint international commitment to maintain open markets for goods and services must be a central feature of governments' policy actions. Pooling of resources is an important way of ensuring the effectiveness of multilateral official responses that were articulated at the London Meeting of G-20 Leaders. ~ *Mansoor Dailami and Paul Masson*

B. Incorporate a systems approach to investor and consumer thinking

The crisis has been attended by individuals throughout the spectrum of the economic system—mortgage lenders, consumers of financial products, hedge fund and insurance companies, and rating agencies, among others—who were acting rationally. But rationality combined with a partial understanding of the economic system can have dire consequences. Scientific research of complex systems suggests ways to mitigate the economic effects of this sometimes hazardous combination.

- Greater understanding of the interactions among the various parts of the entire economic system is needed to prevent collapse, including:
  - Networks of interaction, including interbank connections, the linkages between credit default swaps and counterparties, and so on; and
  - Monitoring of positive feedback mechanisms, such as those present in the housing and mortgage markets, to avoid unintended, destabilizing dynamics.

~ *John H. Miller*

C. Build networks of international cooperation

Today, international cooperation is more dependent on the participation of the developing world than it was in the early years after World War II. Recent evidence of the emerging equality between the developed and fast-growing developing economies suggests that many existing international agreements, understandings, and relationships are no longer suited to the current evolving environment. Thus, while recognizing that the United States remains a powerful economic, military, and political force in the world, one of the crucial components of globalization must be the restructuring of international politics and the international economy to more closely reflect the dynamics of the twenty-first century.

- The Federal Republic of Germany has emerged from the horrors of wars in the twentieth century as a nation that is committed to democracy and human rights, and that has managed well the inherent tension between nationalism and internationalism. The policies that flow from the German attitude have garnered much goodwill throughout the world and have allowed the country to be a powerful but unobtrusive power in the European Union. Germany can thus be a key facilitator when the United States and the European Union seek to cooperate. ~ *Stephen Brockmann*

- Despite the United States' longstanding trade embargo and travel restrictions against Cuba, the United States is one of the largest exporters to Cuba and illegal travel continues. Also, the European Union and many G-20 partners have trade and development ties to the island nation.

In light of these realities, the United States should develop new strategies for engagement with Cuba. ~ *Kenya C. Dworkin y Méndez*

- The United States' allies have enjoyed more than a half century of extended deterrence, and the United States and its allies have worked together and continue to cooperate on many of the most urgent economic and security matters despite having strongly differing views on the Iraq war and other issues. These engagements serve as a solid foundation for the emerging multilateral decision-making structures that include the United States, a country that predominates in economic and military power. ~ *Kiron K. Skinner, Inyoung Song, and Emily Clise*

Conclusion

The issues that affect people's lives are not solely economic, political, or social, but are rather some combination of all of them. These combinations vary across time, polity, and region of the world, so the G-20 leaders must be armed with multidisciplinary and novel approaches to enhancing financial stability, economic growth, political liberalization, and political transparency. This report contributes to the investigation of such policies by bringing together thinkers from a broad range of professions and academic disciplines. Their essays present multidisciplinary analyses or novel analytic thinking not always found in the halls of government or at hurried international meetings. Thus, this report merits the close attention of G-20 leaders—and leaders of other states—well after the Pittsburgh summit.

1. Sources of Growth and the Role of Innovation

The economic crisis has intensified the need to identify new sources of growth. This section examines: (1) how to match post-crisis growth models with economic realities; and (2) how to facilitate free movement of highly skilled workers and ideas.

Sustainable Globalization Means Limiting Export-Led Growth Strategies

Robert Atkinson

The global economic downturn has sharpened the debate over whether the current structure of globalization is sustainable. But this debate existed long before the crisis, and it will continue unless we take serious steps now to create a new kind of globalization that shifts the core economic policies of nations from mercantilist, export-led strategies to innovation-based, domestic-growth strategies.

Today, the global economy is increasingly characterized by nations desperately seeking to grow their economies by increasing their exports and reducing their imports, particularly in the limited number of globally-mobile export industries, and especially in technology sectors such as transportation, biotechnology, IT, and materials. These nations put this export-led strategy into effect by a wide array of means, many of which have negative-sum, beggar-thy-neighbor effects. These tactics include tariff and non-tariff barriers to imports, subsidies to attract investment and promote exports, forced technology transfer and production offsets, theft of intellectual property, aggressive use of anti-trust policies, and tax policies that subsidize exports. And many nations, especially China, turbo-charge these tactics by rampant and widespread currency manipulation designed to give their nation's products and services a subsidy in the global marketplace.

At the heart of these negative-sum policies is a misguided economic philosophy that many nations have adopted: a mercantilism that considers exports in general, and high-value added exports in particular, as the Holy Grail. Just a generation ago, many nations thought the answer was import substitution, but as that was shown to be a failure, most switched to export-led growth strategies. Yet these are just two sides of the same mercantilist coin; both believe that growth comes from importing less or exporting more.

There are two major problems with this "mercantilism as strategy" approach. First, even if the strategy might have worked in the past for some smaller nations like Taiwan and South Korea, it cannot work today. Markets in the United States or Europe—or even both combined—are simply not large enough if nations like Brazil, China, India, Russia, and Japan continue to promote exports while limiting imports as their primary path to prosperity. Moreover, such a strategy erodes support for globalization as an economic system to raise everyone's standard of living. With the downturn, export-based nations like Japan have experienced very deep drops in output, while the United States and many European nations with trade deficits have seen continued declines in manufacturing jobs.

But there is a more fundamental problem with this pervasive mercantilism: it is just bad economic policy for most of the nations pursuing it. While it might lead to greater wealth in a few relatively small export-based industries, it does nothing to raise productivity in the rest of the economy. While the Indian IT sector has created new opportunities for India, it accounts for only around 3 percent of national value added. Productivity in India is just 8 percent of U.S. rates, while Chinese productivity is but 14 percent. The productivity gap is better but still problematic in more developed nations. Despite some extremely productive and innovative multinational export-based firms, overall Japanese productivity is just 70 percent of U.S. rates, and South Korea is just 50 percent. Even if they attract all the multinational chip factories or software support centers they want, without higher productivity levels across the board in all sectors it will be extremely difficult for these nations to significantly raise their standards of living.

These anemic levels of productivity in non-traded sectors do not occur by happenstance. They are a result, in part, of these nations focusing on mercantilist practices for their traded sectors. These policies win the favor of powerful constituents: domestic producers seeking protection from competition, including foreign competitors (as small retailers have done in India to limit Wal-Mart from selling to consumers); businesses and consumers who do not want to pay for products with high levels of intellectual content (e.g., software, music, movies, and other content, and pharmaceutical products); workers and their unions seeking policies to protect their jobs from competition and automation; and government bureaucrats whose top-down control is challenged. In contrast, mercantilism only risks alienating some WTO officials, who normally do little to stop such practices.

As a result, over the last several decades the global economic system has become systematically distorted, with an increasing number of nations favoring beggar-thy-neighbor policies to attract and grow high-wage industries. Yet it is worse than this. It would be one thing if nations were focused on boosting and growing these technology-based industries through supportive policies such as expanding funding for research, government adoption of IT and e-government, educating highly skilled workers, and developing broadband infrastructure. These policies are not only fair but they grow the global pie by increasing productivity and innovation. To be sure, they could erode U.S. and European competitive advantage, but in our hyper-competitive global economy, firms as well as nations routinely and legitimately compete to gain competitive advantage.

The real problem arises when countries resort to heavy-handed mercantilist, negative-sum policies that end up lowering global economic productivity. When a nation engages in mercantilist policies, it is by definition distorting the location of economic activities. For example, if China forces Boeing to produce aviation parts in China as a requirement for letting Boeing sell jets in China, the odds are that this lowers global innovation and productivity because, absent this threat, Boeing would produce parts in other factories with higher productivity. Likewise, when nations turn a blind eye to theft of intellectual property, they reduce revenues (and jobs) for the producers of that IP, in turn reducing their ability to invest in innovation or higher productivity. And when nations keep their currency artificially low they contribute to production shifting from more productive plants to less productive ones.

If export-led mercantilism is not the answer, what is? The answer is an economic policy grounded in what is increasingly known as "innovation economics." Innovation economics is based on the view that the path to higher incomes is by raising domestic productivity by all firms in all sectors. It is also based on the view that it is not the amount of capital (financial or human) that nations have that is most important, but how that capital is used. And it is based on the view that microeconomic factors, such as product and labor-market competition, technology policies, and so on, are more important to growth than macroeconomic ones.

Under an innovation-economics doctrine, the central task of global economic policy should be to encourage all nations to make raising domestic productivity a key priority. In particular, policies should seek to spur competition and the use of the best production tools–often by increasing the use of information technology–to raise the productivity of all sectors. For example, Indian retail banking is just 9 percent as productive as U.S. levels and its retail goods sector productivity is just 6 percent. If India could raise productivity in these two sectors to just 30 percent of U.S. levels, it would raise its standard of living by over 10 percent.

Doing this, however, means working to develop a global consensus that domestic productivity growth should be the key focus of economic policy in every nation. Global bodies like the WTO, WIPO, the International Organization for Standardization, and the ITU need to fight more aggressively the beggar-thy-neighbor mercantilist strategies. International development organizations like the World Bank and the IMF, and national or regional development organizations like the Agency for International Development, the Overseas Private Investment Corporation, and the European Bank for Reconstruction and Development will have to do more than stop promoting export-led growth as a key solution to development. They will have to tie their assistance to steps taken by developing nations to move away from negative-sum mercantilist policies, especially currency manipulation, thereby rewarding countries whose policies are focused on spurring domestic productivity, not on protecting the status quo.

Globalization is a wonderful vision. It can be an even more wonderful reality, but only if nations abandon negative-sum mercantilist policies and embrace innovation-economics policies focused on raising productivity for all sectors and making sure that all individuals can benefit from this growth. If that happens, developed and developing nations alike will benefit greatly.

Worker Mobility and Growth: The Goose that Laid the Golden Eggs

Serguey Braguinsky and Steven Klepper

As numerous historical examples from ancient Greece, medieval China, and the former Soviet Union demonstrate, having advanced science and technology is not a sufficient condition for national economic growth and prosperity. Almost a hundred years ago Joseph Schumpeter identified the entrepreneur as a key agent who translates scientific and technological breakthroughs into economic innovations that give rise to higher productivity and generate economic growth.

But where do these entrepreneurs learn their craft? Recent research suggests that the best educational institutions for would-be entrepreneurs are not schools, but firms. Studies of the U.S. semiconductor, disk drive, laser, biotech, and medical device industries all point to the role established firms, particularly the leading ones, played in involuntarily training the next round of entrepreneurs that propelled their industries forward. Silicon Valley, perhaps the most extraordinary regional engine of progress in modern history, is a case in point. So many of its leading firms can be traced back one way or another to employees that worked for Fairchild Semiconductor, including Intel, National, and AMD, that these firms have been dubbed the Fairchildren.

This phenomenon is hardly new. Recent studies of the U.S. automobile and tire industries in their formative eras reveal that employees leaving incumbent producers to set up their own firms was key to the great auto and tire clusters that emerged in Detroit and Akron. Moreover, the phenomenon is not unique to the U.S. The astonishing growth of the Japanese cotton spinning industry in the late 19th century, which stands out as the first completely successful instance of Asian assimilation of modern Western manufacturing techniques, was driven by similar forces. We are beginning to accumulate studies of similar instances of spectacular industry growth around the world led by employees leaving initial successful firms to found their own firms or jump start others, including the Bangladesh cotton garment industry, the Israeli ICT sector, and the Australian and New Zealand wine industry. Indeed, entrepreneurial spawning knows no national boundaries. The growth of the Taiwanese semiconductor industry, for example, has been fueled by top level employees that learned their trade at Silicon Valley semiconductor firms, just as so many Silicon Valley semiconductor founders learned their trade at Fairchild Semiconductor. Today no one questions the role that Silicon Valley firms have (unintentionally) played in the growth of not only Taiwan but also South Korea, India, and China, to name just a few of the fastest growing countries in modern times.

What are we learning from this? The biggest lesson seems to be that we need to reassess the trade-off between vested interests of incumbent firms and the broad social need for sustained economic growth. Incumbent firms have long argued that when their employees leave to start their own firms they inevitably exploit their hard-earned intellectual property, which in the long run will stifle their incentives to innovate. Detailed examination of employee startups in a diverse set of industries and regions, however, reveals a very different picture. The most successful employee startups in the automobile industry in Detroit, the semiconductor industry in Silicon Valley, the U.S. laser industry, and the Japanese cotton spinning industry were motivated mainly by the unwillingness of their employers to aggressively pursue promising new ideas. We seem to be witnessing a limit on what existing organizations can do and the spectacular growth that can be unleashed when employees pick up the mantle and run with it.

Yet this growth can be stifled in so many ways. For example, in the United States it is hindered by non-compete covenants that nearly all employees sign when they go to work for a firm. It is significant that Silicon Valley emerged in California, which is one of the few states in the U.S. that does not enforce such covenants. Contrast this to Michigan, which in 1987 passed a law that strengthened the enforcement of such non-competes. A recent study attests to how this has hindered the mobility of Michigan inventors, which certainly seems ill advised given Michigan's recent travails. In other countries worker mobility can be hindered by the stigma surrounding failure, responsibility to employees by failed companies, and so on. Japan of the last 20 years may be a case in point – in the past, life-time employment was hailed as an important achievement, but as Japan has moved toward the world technological frontier it may be stifling the entrepreneurial creativity Japan needs to advance further.

Restrictions on international mobility of workers and ideas are equally, if not more, detrimental. Numerous studies have shown that non-U.S. born scientists and engineers make a disproportionately large contribution to technological innovations and are responsible for many of the pioneering businesses that drive the international competitiveness of the U.S. economy. Caps on visas for high-skill workers and various frustrating barriers to their legal immigration erected especially in recent years are, plain and simple, bad policy. And when foreign workers go back to their home countries and use the knowledge they acquired while in the U.S. to establish new businesses, this can be beneficial not only to those countries but to the U.S. as well. For example, the development of the Taiwanese semiconductor industry not only helped Taiwan become one of the more advanced economies in Asia but allowed the U.S. to specialize in the design of semiconductor devices where its comparative advantage is strongest, helping the U.S. industry to prosper.

To conclude, judging from a large bulk of accumulated evidence, both historical and contemporaneous, it appears to us that anything that can enhance the mobility of workers and the transfer of knowledge, regionally, nationally, and internationally, is socially desirable. It will, however, always be opposed by incumbent firms and other well-organized vested interests, so it is up to governments (regional and national) to promote this sort of mobility through determined policy action.

Data-Intensive Scalable Computing: A Transformative Information

Randal E. Bryant

Our world is awash in data. Millions of devices generate digital data, an estimated 1 *zettabyte* (that's 10^{21} bytes) per year. Much of this data gets transmitted over networks and stored on disk drives. With the dramatic cost reductions in magnetic storage technology, we can readily collect and store massive amounts of data. Data-intensive scalable computing (the ability to collect and process information sources on a massive scale) fundamentally opens up new capabilities that have important benefits for society. It also presents new challenges for both technology and public policy.

Some Possibilities

What is all this data good for? Consider the following examples:

The 6,000 Wal-Mart stores worldwide record every purchase by every shopper, totaling around 267 million transactions per day. They collect all this information in a 4-petabyte (that's 4 X 10^{15} bytes) data warehouse set up for them by Hewlett-Packard. These transactions are a treasure trove of information about the shopping habits of their customers. How much did that $200 discount on large-screen TVs increase sales, and how much did the shoppers who bought them spend on other things? Based on long-term weather forecasts, how many snow shovels should we order for our stores in Iowa? Sophisticated machine-learning algorithms can find answers to this question, given the right data and the right computing power.

The proposed Large Synoptic Survey Telescope (LSST) will scan the sky from a mountaintop in Chile with what can be considered the world's largest digital camera, generating a 3,200 megapixel image every 15 seconds and covering the total visible sky every three days. That will yield 30 terabytes (10^{12} bytes) of image data every day. Astronomers anticipate being able to learn much about the origins of the universe and the nature of dark matter by analyzing this data.

Every time a CAT scan or an MRI is taken, millions of bytes are recorded, but currently they are simply turned into a series of cross-sectional images. Imagine a future capability in which the different components of a patient's knee joint could be identified, compared with the data from previous images of this patient and others, and a plan generated automatically for knee surgery and rehabilitation.

These are just three of dozens of examples where an ability to collect, organize, and analyze massive amounts of data could lead to breakthroughs in business, science, and medicine, among other fields. Of course, search engine companies have already demonstrated the transformative value of information. Google and its competitors make good money by gleaning information from Web pages, maps, and images, and making this information available to the public. But the Web is just one of the many possible data sources in our world, and search engines are just one form of data aggregation.

Technology Opportunities and Challenges

Data storage technology has made dramatic improvements in the cost of storing data. Modern disk drives have capacities measured in terabytes, and a 1-terabyte disk drive costs less than $100. Consider that a digitized version of all the text in all the books in the Library of Congress—essentially the totality of all of humankind's knowledge—would only constitute around 20 terabytes. We can think of storage as being an almost-free resource. The challenge is in how to manage and make the most use of all this data.

The possibilities and technological challenges of collecting and processing massive amounts of data are giving rise to a new subfield of computer science that we term Data Intensive Scalable Computing (DISC). This discipline draws from existing areas such as database technology, large-scale computing, machine learning, and information retrieval, but it also has aspects not found in any other existing discipline. Many challenging and exciting research problems arise when trying to scale-up systems and computations to handle terabyte-scale datasets, so we need to educate students in the technologies that will help them cope with the data-intensive world in which they will live.

Although data storage is inexpensive, the computing power to analyze such vast amounts of information requires large-scale resources. A typical system to process terabyte-scale data consists of one hundred or more "nodes" each comprising processors, disk drives, and network connections. These machines must all be programmed to coordinate their activities, and provisions must be made for how to continue operating even when different parts of the system break down. Both proprietary and open-source software systems have been developed that make it possible to set up, program, and operate large-scale DISC systems.

The Dark Side of Data Collection and Analysis

Any new technology, whether it be fire, steel, or computers, has the potential to help people but also to inflict great harm. Data-intensive computing raises whole new possibilities for invading the private lives of individuals and for abridging their fundamental rights. We have already seen some controversies arise regarding the potential for companies and governments to collect and exploit large amounts of information about people. In 2002, DARPA initiated the Total Information Awareness

(TIA) project to demonstrate the potential of countering terrorist threats by collecting and analyzing information from many sources. Public criticism arose, predicting that this project would be a realization of George Orwell's vision of Big Brother, and so the program was largely shut down in 2003.

In 2006, *USA Today* published an article about the National Security Agency's call database, in which they had collected massive numbers of records (estimated in the trillions) of phone calls made within the United States. The U.S. government claimed that these records did not constitute wiretaps because they included only such information as the identity of the callers and the times of the calls, but nothing about the contents of the calls. This program remains controversial. It provides the NSA with the opportunity to perform social network analysis, extracting patterns of interactions that can potentially identify terrorist networks. This example also demonstrates an area where our nation's thinking and policies regarding the privacy of information have not adjusted to modern technologies. Any single call record is of no real significance. Does it really matter that Joe Smith talked to Jane Adams on September 22 of last year for 15 minutes? But the insights that can be gained about people by analyzing trillions of such records can be both insightful and invasive.

In August 2006, America Online made public a query-log dataset consisting of 20 million search terms that had been received by their search engine over a three-month period. They had attempted to make this dataset anonymous by using numeric codes rather than names for the individuals making these queries. They provided this information to foster research in the area of Web search and social-network analysis. Unfortunately, this log contained much more information than AOL realized. Researchers were able to re-identify many of the individuals (for example, people often search for themselves), and it provided many opportunities for identity theft and for revealing private information about these individuals to the world. This incident demonstrated how much information about people is being held in the databases of search engine companies, online retailers, and credit card companies. For the most part, these companies have become very vigilant and have devised strong safeguards to keep their information private. However, the potential for abuse by, for example, a cybercriminal who gains unauthorized access to this information, is very high.

Looking to the Future

Data-intensive scalable computing has already had a significant impact on our society. Our ability to search the Worldwide Web has fundamentally changed our access to information. Web search is just the first of many new capabilities that will be enabled by applying massive computing power to very large datasets. Both industry and academia are making rapid strides in developing, deploying, and applying this new technology. Unfortunately, our societal policies have not progressed as quickly. Controversies remain about who may collect what information about individuals and how this information may be used. As more corporate and individual data, including financial and medical records, are moved into "The Cloud," the potential for abuse by either malicious entities or overzealous government agencies becomes even higher. Both technologists and policy makers must work together to see how the technology can be steered in ways that are most beneficial to individuals and society.

Technology Innovation, Emerging Economies, and the G-20

M. Bernardine Dias

The G-20 promotes stable economic growth in emerging economies by investing in critical areas such as good governance and sound macroeconomic policies. However, technology innovation is an equally important component of economic growth and sustainable development that is often overlooked. When dealing with poorer communities, few people immediately see the relationship between technology innovation and sustainable development. In fact, the impact of technology on these communities is often viewed negatively because of new "digital divides" that are introduced as a result of skewed access to innovations. For positive impact in a community, technology innovations must address the specific needs, challenges, and constraints of that community and must ensure accessibility to all members of each community. However, due largely to a lack of investment in technology research and development to benefit poorer communities, work in this area has primarily included efforts to transplant technology from other communities or exclude poorer members of these communities from accessing the innovations. The fast-growing field of information and communication technology for development (ICTD) addresses these challenges by focusing efforts on technology innovation that specifically targets the needs of the poor.

The goal of ICTD can be summarized as utilizing the power of information communication technologies (ICTs) to address the challenges in developing regions. ICTs include a wide array of technologies ranging from robotic tools and state-of-the-art computers designed especially to cater to needs and conditions in the developing world, to desktop and laptop computers, mobile phones, PDAs, and wireless networks, as well as more traditional technologies such as television and radio.[1] These hardware platforms are complimented by software components that range from artificial intelligence to new algorithms to new interfaces and applications that are accessible in communities where literacy rates, individual purchasing power, and access to resources and infrastructure are low.

ICTD presents a variety of challenges to its researchers, who are often from more industrialized regions. These challenges include adapting to unfamiliar cultural nuances and traditions, ensuring accessibility to low-density languages and multiple levels of literacy, overcoming the barriers of misinformation and mistrust of technology, and creating sustainable solutions within the local infrastructures, among others. From an operational view, computers must work reliably in environments with dust, heat, humidity, and inexperienced users. Additionally, interfaces for this technology must accommodate semi-literate and illiterate users with traditional perceptions and fears of technology. Software applications also must be sufficiently sophisticated so that they may reliably provide useful, accessible, and relevant services to people who might be interacting with a computer for the first time. Finally, iterative development and field testing are essential elements of good practice in ICTD that require added ingenuity for accessing target communities, setting up long-term studies, transporting equipment, dealing with the logistics and legalities of export control laws, addressing safety concerns, and establishing partnerships and trust with the relevant indigenous organizations.

The potential of ICTs stems from their information processing and knowledge-sharing features that can affect all economic and development sectors. For this impact to reach the majority of the poor, a variety of factors must be addressed, including affordable access, sufficient human resources with adequate technical capacity (users, maintainers, and creators), relevant content, and an enabling policy environment to foster entrepreneurship.[2] Therefore, sound financing of ICTD efforts must primarily target innovation research that focuses on the needs, aspirations, capacities, and perspectives of the end users. Moreover, ICTD projects must be self-sustaining after the research and pilot-testing phases, and must be scalable to other contexts and communities if they are to have long-term impact. Unfortunately, many ICTD endeavors today end after the pilot stage because of a lack of funding for scaling these projects. Furthermore, successful ICTD endeavors must rely not only on technology innovation but also on complimentary and innovative business models to sustain them. Business models for ICTD work utilize a variety of methods such as designing appropriate cross-subsidies, harnessing the collective purchasing power of the user community, allowing purchases in smaller units or quantities, and creating markets for ICTD innovations in wealthier regions. Therefore, investment in ICTD efforts must consider both financial and operational sustainability of the projects and enable the entire lifecycle of the projects from needs assessment through research and iterative field testing to deploying and scaling to new contexts. Sound policies for investing in ICTD work must encourage innovation in both technology and business models while ensuring that these innovations serve the needs of the end users.

The powerful impact of appropriate technology innovation coupled with complimentary business and operational models for sustainability warrants greater investment in the field of ICTD. Proactive research and development of technology appropriate for developing regions can address many of the Millennium Development Goals more effectively and lead to growth and prosperity in emerging economies. Ripple effects of successful ICTD work will include a larger number of creative innovators and therefore innovations that not only benefit developing regions but also lead to enhanced technology solutions for the entire global population. Thus, sound investment in ICTD work can make technology accessible and relevant to emerging economies and support future innovators in these regions contributing to the G-20's goal of promoting economic growth.

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Remembering Comparative Advantage: Leveraging National Differences in Technology Competitiveness

Erica R.H. Fuchs

Walter Isard's criticism of economics in 1956 was echoed in 1995 by Paul Krugman, who described economics as occurring in a "wonderland of no spatial dimensions."[1] Today, a similar criticism could be made of engineering design and technology management. Current schools of thought on design, product development, paths of innovation, and the management of these processes see geographic location as secondary to other considerations or as having impact on only a singular aspect of the process, such as cost of labor or knowledge transfer. However, location—in the form of institutions, resources, and regulations—has a system-wide impact on the development, manufacturing, and market environment facing technology. Further, the geographic properties of a location cannot be isolated from one another; it is not feasible to choose one nation's institutions and another's resources, at least not without incurring additional transaction costs [2-4] and costs of knowledge transfer.[5-9] Thus, in the same way that it is impossible to design a part without taking into consideration the properties of the part's materials, it is impossible to separate technology development and manufacturing from the nation in which they take place.

The significance of national diversity for technology competitiveness has dramatic implications for the technology strategies of firms and entire nations. To understand these implications, I have studied two industries with emerging technologies developed in the United States, but whose production was later shifted to developing East Asia. Both technologies, described below, are key players in social welfare and national competitiveness. In both cases, when firms shift production from a developed nation (here, the United States) to a developing country (here, developing East Asia), the most advanced technologies that were developed in the United States are no longer the most profitable. Production characteristics abroad differ, and earlier technologies can be more cost-effective than new technologies in the production environments of developing countries. This leaves the most advanced technologies abandoned, and, in one case, creates a barrier to pursuing these technologies in the developed world.

The first of these technologies is carbon fiber or fiberglass for lighter-weight, more efficient automobile bodies. Composite bodies hold the potential to reduce automobile fuel consumption by more than 10 percent, with an equivalent reduction in per-vehicle carbon emissions and dependency on oil. Our results show that composite automobile bodies, if produced in the United States, would be significantly more competitive with today's steel alternatives than previously believed.[10] However, contrary to the conventional belief that composites should be even more competitive in China, composite-bodied vehicles produced in China for the Chinese market were less competitive.[11] These results are particularly significant in an era when the energy-efficiency of transportation is under increased scrutiny and the rising demand for automobiles in developing countries may significantly change the global viability of emerging energy-saving technologies.

The second technology, integrated photonics, today increases bandwidth and reduces power consumption in tele- and data-communications. It may be essential to future advances in sensor, medical, and solar applications, and to meeting the performance targets associated with Moore's Law. Advances in information technology (IT) associated with Moore's Law were a major contributor to total factor productivity growth in the U.S. in the 1990s and to growth in per-capita output worldwide.[12,13] Industry experts predicted that the high capital costs and low production yields of these new integrated designs would render them uncompetitive. Our results find that these expectations were incorrect; the new, integrated designs cost less than the prevailing technology at all production volumes when manufactured in the United States.[14] Even more surprising to industry representatives, who thought manufacturing location was irrelevant to their technical decisions, the opposite was true if firms produced in developing East Asia instead. Most important, the cheapest option globally was to produce the old, discrete technology in developing East Asia and to locate no production in the United States.[15]

Should all high-tech manufacturing take place in the developing world to ensure that economic incentives continue to exist for new technologies? Not at all. The problem is not that new, advanced technologies could not be more competitive in a developing country environment; it is that they are not. The source of the problem is that the existing advanced technologies have been developed by U.S. engineers with a U.S. manufacturing environment in mind. The reductions in labor, materials, packaging, and assembly achieved by these new technologies no longer have economic advantage once produced in a developing country environment.

How, then, do we think about linking production location and global technology decision making? Two variables are key: the minimum efficient plant size and the size of the global market. The ratio of these variables suggests how many manufacturing facilities can operate globally. For example, for automobile bodies, the minimum efficient plant size is approximately equal to the size of regional markets. Thus, a body manufacturer can afford to own multiple facilities, each producing a different technology suited for a regional market. In the case of automobile power trains, the minimum efficient plant size is approximately equal to the global market. Thus, a power train manufacturer must choose to produce in one location for the global market, and must choose a technology suited to that location's production environment.

What, then, do these results suggest for nations? First, we cannot adopt a one-size-fits-all approach to technology. The most economically viable technologies produced in one country are not necessarily the most economically viable technologies when produced in another. Further, while some technologies will be most economically produced in one location for the global market, others will be most economically produced in multiple locations and customized to regional markets. For nations to achieve an advantage in particular technologies, they must follow their own path. Take, for example, Taichi Ohno's Toyota Production System. The Japanese government had originally planned to force the small, fractured Japanese automotive manufacturers to consolidate into a "Big Three," so as to help them achieve the economies of scale that Japan was lacking. Just in time, so to speak, Taichi Ohno showed that Japan could implement a totally different manufacturing environment—one that excelled at low-volume, flexible manufacturing.[16] Similarly, nations should leverage their national differences in production environments and consumer preferences to create new product and process advances uniquely cost-effective in their national production environments and tailored to their national needs. Here, I do not mean to imply that engineers in one nation should not work on innovations for production or sale in another. Simply, when they do, they must take local differences into account. It is by leveraging these differences that we will not only achieve greater gains from trade, but also achieve greater diversity in innovation and greater advance as a society.

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Globalization 2: Growth in the Post-Crisis World

Klaus Kleinfeld

Globalization has been blamed for the rapid worldwide spread of the current economic crisis. While I do not believe that globalization was a principal cause of the crisis, I am convinced that it *can* be the solution—the engine of growth that serves as a catalyst for a sustainable recovery. Globalization has changed its face in recent years and will continue to evolve going forward. It will be driven by several megatrends and a greater balance within the global economic system. Those countries that fail to adapt to these changes or that ignore the inevitable forces of globalization by retreating into protectionism or isolationism will enjoy neither a swift economic recovery nor future growth.

The three megatrends affecting globalization are demographics, urbanization, and climate change, and demographic change is the driving force among them. By 2050, three billion more people will live on our planet, up 50 percent from today, and the demand for goods and services will increase substantially. Since most of the population growth will occur in less-developed countries, those demands and expectations will need to be fulfilled by an integrated worldwide industrial base, financed by a robust and regulated international financial system, and delivered by a global supply chain.

Cities will be a focal point of this growth. The desire for more opportunities and a better life will continue to drive urbanization. In 2006, for the first time more than half the world's people lived in cities; by 2030, cities will be home to 60 percent of the population. If we want to provide acceptable living conditions and a foundation for commerce and jobs to that burgeoning population, there must be a rapid and dramatic mobilization of the entire world's resources to build urban infrastructures.

The environmental pressures created by the population explosion and urbanization are already having a major global impact. The effects of climate change are felt by rich and poor nations alike, and the solutions will need to be implemented on a global basis.

If populism and short-termism tempt us to ignore the forces of globalization and favor protectionism and isolation, there is a fair risk of a disastrous scenario. The population explosion will dramatically drive down labor costs in the developing world and create protectionist sentiments in the developed world. The ensuing breakdown in trade will be replaced by the export of terrorism from poorer countries that are coping with social unrest and conflict caused by unemployment and unmet expectations. That unrest will be further exacerbated if crowded urban centers do not have the infrastructure to meet basic living, working, and health needs. As we have already seen, pandemics and terrorism know no borders; security, stability, and economic development are interconnected. And we will see political conflict over climate control as developing nations resist applying environmental measures that will restrain their growth, arguing that developed nations never had to abide by such restrictions during their own growth periods.

Fortunately, such negative scenarios should be less likely in a Globalization 2 world. The economic system is becoming more balanced and widely distributed among multiple global markets. As we see in the current crisis, China is playing a very constructive role and pursuing an enlightened stimulus program that has a positive internal and global impact. The Chinese government's spending is estimated to generate more than 80 percent of China's economic growth in 2009, with a strong focus on building an infrastructure that addresses China's economic and social needs, both long- and short-term. As it affects other markets, China will account for about three-quarters of the world's economic growth between 2008 and 2010, according to IMF forecasts.

What then are the implications of these changes for the United States? Certainly the United States, Japan, and Europe will share their important globalization roles with new countries, particularly China. But the United States has some enduring strengths to draw upon in a Globalization 2 world. As the leader of one of America's great icons and as a former CEO of a foreign competitor, I know well the competitive advantages of U.S. companies in the global marketplace. For the past century, American companies have benefited from being based in a country with a huge home market, a well-respected rule of law, a strong work ethic, outstanding universities that attract the best students from around the world, a venture capital base that encourages prudent risk-taking and innovation, and solid banking institutions that provide the financing for growth.

Unfortunately, there has been an erosion of some of these advantages that must be addressed in order to maintain the global competitiveness of American companies. De-leveraging in the wake of banking failures has frozen U.S. credit markets and dried up sources of venture capital. That overcorrection must be restored to a better balance of investment and risk. The Obama administration should re-evaluate plans to tax un-repatriated corporate profits on foreign revenues, which will further disadvantage U.S. companies whose competitors pay no tax on any foreign revenues. Current limitations on U.S. visas discourage the best and brightest foreign students from remaining in the United States to work. The resulting brain drain helps foreign competitors and denies the United States the energies and fresh thinking that America's immigrants have contributed for the past two centuries. One needs only to look to Thomas Mellon, an Irish immigrant who financed the industrialization that made Pittsburgh into the great city it is today. His son Richard was the first president of Alcoa, and our company's innovation and growth for the past 120 years have benefited greatly from the contributions of the immigrants who built Pittsburgh.

While there appear to be significant challenges in connection with responding to the current economic crisis and post-crisis globalization, Pittsburgh's story indicates that there is great promise for U.S. success in a Globalization 2 world. When steel production shifted to lower-cost Asian competitors, this former steel capital of the world turned to globalization as a solution. It diversified into other clusters—health care, information technology, and energy-efficiency technologies—and the city attracted foreign investment. When I was CEO of a German company, we purchased three Pittsburgh companies that had formerly served only the U.S. market. Two of these companies engineer and manufacture machinery that improves the efficiency of utilities, and the other treats industrial and municipal water supplies. Today, from their Pittsburgh base, all three of these businesses export to a growing international market. The key to their success has been matching Pittsburgh's skilled and productive workers with the presence of an international corporation. In the face of all the challenges of the current economic crisis, this commitment to globalization presents a great opportunity for the United States and for the world.

The Post-Crisis World and the New Growth Agenda for New Europe

Marcin Piatkowski

The global economy has avoided a deep depression and a recovery in economic growth has started, especially in large emerging markets. Prospects for growth in New Europe, comprising ten new European Union member states from Central and Eastern Europe, have also improved. Poland, the largest economy in the region, is projected to avoid the recession altogether. With the help of the IMF and the EU, the situation in Hungary and Romania also seems to have stabilized. Glimmers of hope have even appeared for the Baltic States, the hardest hit during this crisis. If all goes well, most countries in the region will soon grow again, although the next wave of a regional crisis, spawned by a return of global risk aversion, deterioration in economic conditions in the weakest economies in the region, or political turbulence, cannot yet be excluded.

Despite improved growth prospects, the crisis has shown that the New European growth model, particularly that embodied by the Baltic States, has been largely undermined. The growth model was based on rising domestic consumption fueled by imported savings, large foreign direct investment (FDI) inflows, especially into nonexport-oriented markets such as financial services or real estate, and high imports supported by appreciating real exchange rates. The New European growth model will now need to change because in the post-crisis world inflows of foreign financing are likely to diminish substantially. The new growth model should combine the best characteristics of the New European model—openness to trade, high quality of human capital, and advanced institutional framework—with those of the East Asian model, particularly higher savings rates, controlled exchange rate appreciation, and diversified exports.

What specifically should New Europe do to change its growth model to mitigate risks of future crises and rejuvenate growth to ensure continued convergence? And what role could the Group of 20 play to make this happen?

As regards the new growth model for New Europe, countries in the region should increase domestic savings, accelerate productivity growth, and strengthen financial market supervision. They should also diversify exports, enhance labor participation, and adopt the euro as quickly as possible. To increase savings, New Europe should tighten fiscal policy, remove tax incentives for investment in nonproductive assets such as real estate, and increase private long-term savings through pension reforms. Fiscal policy could be tightened through a mixture of expenditure cuts and coordinated tax changes. New fiscal rules and institutions such as independent fiscal councils would be useful to ensure that fiscal policies become more countercyclical.

Labor productivity growth should be re-emphasized. Spending on human capital, infrastructure, and innovation should increase so that New Europe can increasingly rely not only on absorption of imported technology but also on domestic innovation. The region should also strengthen financial sector supervision and lessen reliance on foreign banks. It is in New Europe's interest to support the creation of a single supervisory entity for the pan-European financial sector to equilibrate interests of the owners of capital from Western Europe with the recipients in New Europe and to help mitigate excesses in the financial markets.

New Europe should also diversify exports away from EU markets toward fast-growing markets in Asia, Latin America, and Africa. This could be achieved through an expanded use of export-credit guarantees and partnership agreements with other emerging markets promoting market access and FDI. New Europe should also increase labor participation, mainly through raising effective retirement age and opening borders to immigration. Lastly, all countries in the region should follow Slovenia and Slovakia and adopt the euro as quickly as possible at a competitive exchange rate to ensure that an overly strong rate does not undermine competitiveness, as seen in Portugal and Slovakia.

On the EU level, New Europe has much to gain from promoting ever-deeper integration with the rich part of the continent. Moreover, as it is composed of border countries, New Europe should be a natural champion of further EU enlargement to the Balkans, Ukraine, and Turkey, expanding the zone of economic prosperity and political stability.

New Europe would be well advised to support reforms needed in order for the euro to replace the U.S. dollar as the global-reserve currency. It would provide the needed vision for EU policy makers and the public to enhance EU-wide fiscal coordination, further integrate financial markets, and fully open sheltered product and services markets to more competition. New Europe should not want simply to enter the euro zone; it should want to become part of the most successful global currency area. To support expansion of the euro, entry criteria should be changed to ensure that more countries could also adopt the euro.

On a global level, to mitigate New Europe's still peripheral status in the global economy, highlighted by the crisis, it is in the region's interest to promote greater global policy coordination, enhanced multilateralism, and a better-supervised global financial system.

The crisis has shown that the World Bank and the IMF can play a positive role in cushioning the effects of external shocks on peripheral economies. Both institutions should be further strengthened. However, they should not be left to act alone, but rather should be complemented with regional self-insurance initiatives such as the Asian Chiang Mai Initiative or the EU's balance-of-payments assistance facility. As in the private insurance market, the more sources of anti-crisis insurance, the better for customers.

New Europe should also support multilateral forums such as G-20 summits where peripheral countries can finally have their say in global affairs. Given that its combined GDP rivals that of Russia or Brazil, the region should strive to have its own representative in the G-20. Poland, the star performer during the last 20 years of transition and the current crisis, with an economy substantially larger than that of Argentina, Saudi Arabia, or South Africa, would fit the bill well.

While the crisis seems to have abated, it has not yet ended. Global growth is likely to remain subdued for a long time to come, especially when the temporary effects of expansionary macroeconomic policies dissipate. More negative surprises may lie ahead. In the face of lower global financial flows, New Europe will have to change its growth model. It can achieve much on its own, but help from the global community will still be needed.

Software: The Endless Value Spiral

William L. Scherlis

Software plays a critical role in modern global enterprises, both in manifesting new kinds of value and in increasing productivity. This is true not just in the so-called software sector—the familiar software-intensive firms such as Oracle, IBM, Microsoft, Google, Amazon, Yahoo!, and eBay—but also in many other economic sectors including national security, health care, utilities, financial services, communication, and transportation. It is fair to say that software has become the building material of choice for nearly all kinds of complex systems.

Yet despite this pervasiveness of adoption, the engineering of software has not matured into a rigorous discipline. The risks and difficulties of software are growing in severity and diversity, and we continue to experience failures of all kinds—related to reliability, security, flexibility, and other attributes.[1] Software-related problems are responsible for life-threatening failures in health devices, failures of space missions, failures in military systems, cascading failures in infrastructure for telecommunications and power utilities, and so on. Additionally, there are numerous failures in the process of developing and operating innovative software.

The pace of innovation shows no signs of slowing, and the extraordinary economic contribution of software continues to increase. An analysis of European economic data, for example, suggests that while the information and communications technology (ICT) sector represents just over 5 percent of the European GDP, ICT drives 25 percent of overall growth and about 40 percent of the increase in productivity.[2] Software is also fundamental to national security; for example, an analysis by the U.S. Defense Science Board states that in modern fighter aircraft, the percentage of total systems functions that is enabled by software has risen to 80 percent.[3]

Immature Discipline

It may be perplexing that software-related risks seem to be increasing dramatically just when software technologies and practices are undergoing rapid improvement. This is unlike many traditional and established engineering disciplines. Indeed, we suggest that we are unlikely any time soon to arrive at what is generally accepted as repeatable engineering practice for innovative projects. We attribute this to the boundlessness of software—software is a uniquely abstract and purely synthetic medium that, for the most part, lacks fundamental physical limits.

This does not mean we should somehow avoid or limit the use of innovative software. Indeed, it is foolish not to continue advancing our use of software and improving our practices. But we must learn to engage with a more strategic attitude, focused both on the microcosm of how we manage software projects and also on the macrocosm of why and how we undertake software innovation. In the microcosm of software projects, we see that each new technical advance both creates opportunities but also presents new difficulties of measurement and risk assessment. With respect to software innovation, we see that leadership in software capability and innovation has a leveraged impact, conferring advantage across multiple sectors. This is why software innovation must receive constant priority in industry and government.

Software in Organizations

Let us consider the changing role of software in organizations in the past decade or so. There are three principal elements of this shift. First, most organizations have moved quite aggressively from managing portfolios of functionally focused systems to interconnecting systems within and across enterprises. This enables more agile and informed business models, including well established capabilities in ERP, CRM, SCM, and the like. In military systems, we see an analogous set of ideas such as net-centric warfare. This interconnection has associated risks, primarily related to the magnitude of failures, most vividly evident in the cascading failures of interconnected systems as experienced, for example, in telecommunications, utilities, and in supply chain systems.

Second, largely as a consequence, IT staffs are generally less involved in mediating between a system and its users—both those within an organization and those outside, including individuals. This is more efficient because it better couples decisions with actions. But it also means that many more individuals—usually inadvertently, but not always—can take actions with wide-reaching consequences, both positive and negative. Third, the systems support immediate electronic enactment of decisions. This enables agility and fast response in decisions and actions (consider the current discussion over the duration in milliseconds of the stock trading look-ahead window), but it also means that failures and compromises can happen very quickly, inside a human decision loop.

Software Supply Chains

These are profound shifts, and they are enabled in part by a surprisingly recent phenomenon in IT, which is the enrichment of the component structure and, consequently, the supply-chain structure for IT systems. This enrichment is more than just outsourcing as experienced in the past half century. Supply chains now include many more players, and involve technically rich and complex architectures, with frameworks, libraries, services, and other roles. The value of outsourcing, which was initially primarily cost reduction and access to expertise, now includes greater agility and ability to respond to changes in the operating environment. This richness in the supply chain is enabled by technical advances in areas ranging from the design of software architectures and components to the technical properties of modern programming languages and the design of modern processor architectures.

These technical steps have permitted a better alignment of business structures and IT structures in organizations, in addition to allowing greater flexibility in buy-versus-build decisions. For example, a goal of many organizations is to outsource common infrastructure such as databases, application servers, and software frameworks, and to in-source only those critical elements that provide unique capabilities and advantage over competitors. As technologies evolve and "commoditize," it may be perceived that the trend is to shift function from in-source to outsource. But this is not always the case, as new dimensions of capability and differentiation emerge for formerly commoditized infrastructural elements, as is happening now for data centers and their architectures.

Immature Discipline, Revisited

The changes sketched above may seem to contribute to the maturing of software as an engineering discipline, and in one sense this is very much the case. But there are also key characteristics of software that cause measurable and predictable outcomes—a hallmark of maturity—to remain disappointingly elusive. The principal characteristic is that advances in the underlying technology and practice of software are continuing at a rate that has been unabated for decades, in a manner roughly analogous to Moore's Law.

In other words, software is not at a plateau, despite apparent declarations of victory made on a regular basis. One of the first examples was the publication more than fifty years ago of the 1958 landmark paper by John Backus describing the first Fortran compiler. The title referenced "automatic programming."[4] The point of this phrase is that there was a much more direct correspondence between the programming notation—the earliest Fortran code—and pure mathematical thinking, than had been the case with the early machine-level code. With Fortran, mathematicians could express their thoughts directly to computers seemingly without the intervention of programmers. This was an extraordinary and historical breakthrough. But we know that, in the end, those mathematicians soon evolved into programmers as their ambitions for computing applications increased to the next level. The same story can be told about claims sometimes associated with the 4GL database languages a few decades later and, more recently, with languages for business rules. These are all major innovations, but it is fair to say that the specialness of software is that these developments move us forward but do not actually get us closer to "being there" with a fully established mature discipline. The profound fact is that software seems to be limitless.

Consider, for example, the traditional "stacks" of infrastructure and capability on which systems are built—technical progress has enabled us to advance our infrastructure capability, commoditizing and increasingly automating greater levels of capability in operating systems, databases, application servers, frameworks of various kinds, data centers, and so on. But, at the same time, we continue to innovate above and around the infrastructure, creating new kinds of capability and differentiation. Additionally, we continue to innovate within the infrastructure to add capability or make other enhancements. In other words, while there is a seemingly inevitable commoditization of software component capabilities, there is also a seemingly indefinite deferment of reaching the goal of safe decision making regarding innovative software-manifest capabilities in systems. This is a key point about the intrinsic lack of limits of software, and indeed this is a principal characterizing feature of software as an engineering building material.

Conclusions

We draw several conclusions from these observations. First, mere *presence* in the market—just being a software user—requires keeping pace with ongoing software innovation and improvements to practices. This is true even for individual software components—software starts to die the moment it stops evolving. It is also true for practices—continuous improvement in practices and processes is essential for survival. Second, *leadership* in the market requires, additionally, an active organizational role in defining the architecture of systems, and doing so as a first mover. This requires sustained technological leadership and clear thinking about the significance of architectural control. Third, software *technical challenges* are broadening. These include, for example, software assurance, ultra-scale architecture, concurrency (multi-core and distributed), framework design, programming language improvements for assurance and scale, concepts for "big data" systems, and so on. Fourth, *risk management* models need to be continually adjusted to accommodate the new realities of software and of IT-enabled business practices, as noted above.[5] Finally, the role of *software leadership* in the global economy is growing, and competition is becoming more intense at every level of capability. Such leadership must be maintained through constant investment in innovation and in people, both. While costly physical facilities are not needed in the software economy, education is a fundamental and ongoing challenge.

Software has diverse and critical roles, and a disproportionate influence on value creation. Technical progress is rapid, and there seems no real limit in sight. The software ecosystem is constantly evolving as architectures shift and commoditization comes (and goes). But the risks are significant. Software users must keep pace with the technology, and they must constantly rethink how to balance risks and benefits. Software leaders must do all of this, and, in addition, continuously invest in sustaining software capability at a level where they can maintain architectural and technological leadership.

1. The Risks Digest has provided an account of such failures for more than 20 years. Current and past issues of the Digest are at http://catless.ncl.ac.uk/Risks/
2. S. McGibbon, *Growth and Jobs from the European Software Industry,* European Review of Political

Technologies, December 2005.

3. *Report of the Defense Science Board Task Force on Defense Software*, Office of the Under Secretary of Defense for Acquisition and Technology, Washington DC, November 2000.
4. J.W. Backus, *Automatic programming: properties and performance of FORTRAN systems I and II.* In Proc. Symp. on the Mechanisation of Thought Processes. Teddington, Middlesex, England: The National Physical Laboratory, 1958.
5. See J. Rosenoer and W. Scherlis, *Risks Gone Wild,* Harvard Business Review, May 2009

2. The Role of Financial Regulation and Trade in Restoring Growth

The implementation of new financial regulations will change the way global markets work. The G-20 should support financial regulations that will: (1) promote risk management, not risk elimination; (2) remove all forms of protectionism; and (3) and continue to push for free and open trade regimes that are accompanied by verifiable enforcement mechanisms.

Getting Trade Talks Going Again: A Tall Order

Lee G. Branstetter

As the G-20 delegates prepare to meet in Pittsburgh, the world economy is coping with its sharpest downturn since the Great Depression. Many of the leading economies of that era, including the United States, abandoned commitments to open trade, making the Great Depression even worse. No one wants that to happen again. To prevent a relapse into protectionism, policy makers want to get the so-called Doha Round moving again. At the recent G-8 summit in Italy, President Obama expressed his intention to push for a resumption of these talks. He seemed to signal hope that the G-20 meetings could help work out the broad outlines of a compromise that would enable the resumption of serious global trade talks. I hope the president succeeds, but the going is likely to be tough.

The Doha Round is the latest in a long series of multilateral trade negotiations designed to reduce barriers to global trade and investment. The first round began in the late 1940s and several other rounds followed, culminating in the so-called Uruguay Round that established the World Trade Organization (WTO). Though it took decades, these negotiations eventually succeeded in rebuilding the global trading system that had been shattered by world war and global depression.

The Doha Round negotiations were begun in Doha, Qatar, in 2001, just months after terrorist attacks in New York helped push the major economies into recession. Then, as now, a push for further trade liberalization was viewed as a useful antidote to a major negative economic shock. Unfortunately, negotiations ran into almost immediate disagreement among the major trading nations. There have been several stops and starts since then resulting in eight years of discussion without a final agreement. Current efforts to complete the negotiations will have to deal with two areas of deep disagreement—one old and one new—between developed and developing countries.

The old sticking point is agricultural trade. Many developing countries resent the exposure of their poor farmers to competition from the highly subsidized farms of the industrial West. In 2007, India and Brazil led the developing countries in demanding a significant reduction in U.S. and European Union agricultural subsidies. The EU was willing to restructure these subsidies and some progress has been made on this front. Instead of paying farmers generous sums of money to produce and export commodities that push down world prices, the EU has moved toward paying farmers without requiring production, thus limiting the exposure of Brazilian and Indian farmers to competition with subsidized goods. In return, the EU asked Brazil and India to reduce their tariffs on manufactured goods, but not by much.

The United States tried to drive a harder bargain. In 2007, it demanded deeper cuts in the trade barriers erected by developing countries against foreign agricultural and industrial goods before it would consider significant reductions in its agricultural subsidies. India and Brazil refused and talks ground to a halt for a year. In 2008, the United States offered to reduce its agricultural subsidies if India and other developing countries would give up their current legal right to raise import tariffs on foreign agricultural goods when imports surge or prices decline, an arrangement known as the Special Safeguard Mechanism, or SSM. India refused and talks collapsed once again.

Domestic politics in the United States and India contributed to this collapse and are likely to complicate further negotiations. Major elections that were pending in both countries made governments reluctant to take on the farm lobbies in their respective nations. Those elections are now over, but the path to a compromise will probably require the United States to reduce and restructure its agricultural polices without getting in return either major cuts in developing country agricultural tariffs or any significant weakening of the Special Safeguard Mechanism India is keen to retain. That will not be a popular position with U.S. agricultural exporters. Most economic analyses of current U.S. agricultural subsidies conclude that reducing them would enhance economic efficiency and overall welfare, even if America receives little in the way of reciprocal concessions from its trading partners. Other economic studies suggest that a successful conclusion to the Doha Round could provide at least a modest boost to the global economy. But pure economic logic does not always carry the day, and the politics of keeping farm-state senators on board for the president's other legislative priorities may work against the kind of compromise that could seal a global trade deal.

Even if old disagreements over agricultural trade can be laid to rest, a new area of disagreement has arisen over policies to combat global warming. Congress has insisted that if U.S. firms are going to be penalized for their greenhouse gas (GHG) emissions, then manufacturers in developing countries should face the same penalties; otherwise, U.S. firms would be disadvantaged in global markets. Over the objections of the president, the House of Representatives inserted into the climate change bill a provision that would impose carbon tariffs on imports into the United States of goods produced by GHG-emitting industries in countries that do not have GHG-restricting policies at least as tight as those of the United States.

China and India have declared illegal under WTO rules any attempt to levy a carbon tariff on their exports to the United States. Whether they are right in their legal interpretation is uncertain, but no one doubts the strength of their convictions. China has threatened the United States with a trade war if it levies such tariffs. If Western countries actually pass climate change bills that contain this carbon tariff provision—which will happen if the Waxman-Markey bill passed by the House also passes the Senate—then global trade negotiations could break down completely.

In the long run, of course, India and China are such large economies that they must participate in attempts to control global warming if such efforts are to have any chance of success. In the short run, efforts to force their participation through carbon tariffs are likely to undermine the trade negotiations the president wants to support. By offering to take carbon tariffs off the table for now, the Obama administration could pave the way for meaningful progress on both global trade and climate change. Industries worried about competition from countries without carbon controls could be compensated through other means, including free handouts of carbon permits under the proposed cap-and-trade system. But a U.S. carbon-control policy without carbon tariffs might not pass Congress. Once again, domestic politics gets in the way of economic logic.

I think we are in for a long, hard slog.

The G-20 and the U.S. Business Path to Global Economic Recovery: Gaining Productivity and Expanding Trade

Myron Brilliant

At the end of the dot-com bubble, no one called on the G-20, the club of economies formed in the wake of the Asian financial crisis. In fact, no one bothered about much of the global financial architecture. Not every recession triggers a resurgence of interest in global institutions, but the current economic crisis is different, and institutions do matter. The crisis first struck the financial services and capital markets that are based primarily on gathering, processing, and distributing information; as such, they respond instantly to new data points and mood swings—and respond to them globally. Confidence in tangible products takes much longer to erode than confidence in numbers; just ask some of the companies that have taken decades to begin the turnaround of their industrial production. The swiftness of the current crisis and the fact that it threatened to paralyze the nerve system of the markets—financial intermediaries—called for a coordinated political response that the G-20 began to provide late in 2008.

The April 2009 G-20 summit produced a firm statement on expanded and strengthened regulation in the financial sector, a boost to the IMF resources, and a consensus that global growth should be supported through national efforts within an international gentlemen's agreement not to engage in beggar-thy-neighbor economic policies. Most importantly, there emerged a consensus to deploy public means to encourage growth in the private sector as the only way out of the immediate crisis. Each country has since undertaken its own program to obtain growth within the instruments available and get political consensus, if possible.

Companies worldwide are expecting the G-20 leaders to give signals of (1) cohesive policy directions to restore confidence in growth, (2) efforts to avoid global fragmentation of markets, and (3) joint commitment to spot and mitigate very real systemic risks. What companies dread is that the group dynamics of high-level political meetings such as the G-20 summits will produce mutually reinforcing attempts to drive risk out of enterprise through stifling regulation and policies that have little to do with modern wealth creation by private enterprise.

The main issue that should dominate public policy debates is how to incentivize increased productivity, entrepreneurship, and competitiveness. Without these attributes, economic growth will be plagued by credit and asset bubbles. What is necessary is not simply a spending-led recovery, but rather a productivity-led recovery.

For the United States, productivity will depend on the infrastructure, understood broadly to include physical infrastructure, human capital, and legal environment. For decades we have been advising developing countries to think this way about *their* competitiveness. We no longer have an excuse to ignore our own advice for restoring economic growth.

First, the physical infrastructure of our commerce needs drastic modernization that should keep us open to world markets, not sheltered from them by bureaucracy, inefficient security, or other policies that deter enterprise. Since the United States has not undertaken major infrastructure modernization in decades, we need to embrace the best from global experience. Second, we must invest in our human capital infrastructure, including reform of education, health-care delivery, and finance. Finally, the United States cannot walk away from the legal and policy infrastructure that encourages people and companies to think globally, take risks to innovate, explore opportunities, and embrace responsibilities without being hobbled by the threat of harassment through abusive litigation. Every effort should be expended to ensure that we do not regulate or litigate business out of job creation.

While the U.S. economy may already be showing green shoots in a few sectors, the global recession continues to present the business community with serious challenges. One of them is the need to remain globally competitive in times of reduced U.S. consumer spending and tighter access to capital. Just as it is difficult to imagine worldwide recovery without the U.S. economy nurturing these green shoots and returning to growth, so it is unrealistic to expect robust U.S. economic growth if the other major markets keep shrinking or become more difficult to access due to protectionist measures. We are unlikely to see a steady growth in business confidence if U.S. consumers remain skittish about the economy and foreign consumers find U.S. goods shut out of their markets.[1] This is why the business community is increasingly concerned about the threat of creeping protectionism both in the United States and abroad.

So far, the leaders of the G-20 nations have helped avoid a descent into a maelstrom of protectionism. In April 2009 in London, President Obama joined with other G-20 leaders in a pledge to "refrain from raising new barriers to investment or to trade in goods and services" and to "minimize any negative impact on trade and investment of our domestic policy actions, including fiscal policy." He also spoke out against "Buy American" mandates and against tariffs in a climate-change bill that would violate U.S. commitments under the World Trade Organization (WTO). WTO rules and other trade agreements still serve as an effective brake on economic isolationism. These rules are largely being respected—with almost every G-20 member guilty of dangerous exceptions and policy miscues. For example, the Chinese government recently released a circular that includes a "Buy Chinese" directive for all projects under the country's very sizeable stimulus package. National treatment is becoming uncertain even for goods and services produced by U.S. companies in China. Unfortunately, high on this list of blatantly protectionist measures are the "Buy American" mandates included in the U.S. economic stimulus package, known as the Recovery Act. It's worth taking a closer look at this controversy because it shows the dangers awaiting those who heed the siren song of protectionism.

Due in part to objections from business and major trading partners, the Recovery Act was amended to require that "Buy American" rules "be applied in a manner consistent with" the WTO Government Procurement Agreement and other international agreements. This amendment resolved many difficulties at the federal level. However, tens of billions of dollars in Recovery Act spending are being channeled to states and municipalities, many of which are not constrained by those international agreements. Outside of transportation infrastructure governed by the so-called Buy America Act,[2] states and municipalities have never been forced to comply with "Buy American" rules in the past. Now even U.S.-based companies are often barred from bidding on projects simply because they rely on global production chains that integrate components from U.S. and foreign sources. The stimulus funds aimed to jump-start job creation are now tied up in "Buy American" red tape.[3]

This is but one egregious example of government policies that deny the realities of global production. American ingenuity and capital go into manufacturing goods around the world; the benefits flow back with jobs, dividends, and taxes. To generate sustainable economic growth, we ought to shift from promoting "made in America" to policies that promote goods and services "made *possible* in America."

If, together with the G-20 and other partners, we succeed in suppressing protectionist reflexes, then smart investments in all aspects of infrastructure have a much better chance to drive healthy economic growth through productivity gains and innovation.

In addition to building anti-protectionist resolve of the leading nations, the G-20 should continue to provide political momentum to the coordinated recovery of the financial services sector. While the regulatory weaknesses exposed by the current crisis must be addressed, it would be wrongheaded to assume that any regulatory system can prevent every market loss or economic downturn. This should not even be our goal. Free enterprise thrives on taking risks. It is built on the potential for reward and the possibility of failure. The real question is how to make sure that this particular Schumpeterian destruction can still be a creative one.

Another important task for the G-20 is to look at the experience of having missed the systemic risk in the most information-intense part of the economy—financial services and capital markets—for clues about risks lurking in other corners of the global markets. Getting together to opine about, and regulate for, the crisis that we are leaving behind is a low-reward occupation for political leaders. Developing shared frameworks for forecasting and managing risks promises much better returns. American companies and our counterparts in the G-20 markets have the global experience, scope, and drive to work with leaders on identifying those risks to us all and developing smart ways to manage them. The G-20 summiteers should open the G-20 process more consistently to representative business input.

Our overriding goal must be to create nimble regulatory systems—from the "real" economy to financial services to e-commerce—that leave businesses and investors with flexibility to innovate and compete in a global economy. If we lose that flexibility, we will lose years of growth and leave an impoverished world to the next generation.

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1 The chief economist of the International Monetary Fund, Olivier Blanchard, estimates that as the American consumer continues to save at an historically high rate, return to growth in the U.S. will require another 3 percent of global demand for U.S. output to come from sources other than the U.S. consumer, which implies a capacity to boost American exports. Considering the difficulties of achieving this goal, he is skeptical that we will be able to return to the growth path of the last decade and therefore may see a long-term deterioration of the growth potential. *Finance and Development*, to be published in September 2009.

2 Section 5323(j) of Title 49 of the United States Code is known as the Buy America Act. Buy America provisions are applied to transit-related procurements valued over US$100,000, for which funding includes grants administered by the Federal Transit Authority or Federal Highway Administration. The Buy American Act, Sections 10 (a-d) of Title 41 of the United States Code applies to all U.S. federal government agency purchases of goods valued over the certain *de minimis* threshold, but does not apply to services.

3 Back in 1961, George Meany, president of the AFL-CIO, explained the labor federation's opposition to "Buy American" in a letter to an Iowa shop steward of the United Rubber Workers' union: "Millions of American workers are dependent for their livelihood on the sale overseas of the goods they produce. . . . We must keep in our minds the necessity to find even more markets for American-made goods overseas. . . . A 'Buy American' campaign . . . would be to run contrary, not only to the policy of the AFL-CIO, but also against the best interests of American workers."

Better Decisions, Better Lives

Baruch Fischhoff

Societies depend on the effective functioning of their constituent institutions: financial and commercial markets, electoral and regulatory political processes, courts, businesses, farms, health care, fraternal and religious organizations, schools, and families, among others. Each institution depends, in turn, on the quality of the decisions made by the individuals participating in it. Markets require informed consumers, electoral politics require informed voters, health care requires informed patients, and families require informed parents.

Recognizing the importance of these choices, governments invest heavily in aiding the people who make them. Governments require the disclosure of some information about medical treatments, financial offerings, consumer products, campaign contributions, and more. They support formal and informal education. They create advice bureaus and issue advisories. They sponsor the medical, economic, safety, social, and other research needed to provide the facts that decision makers need.

However, that information has little value unless people can use it. A half-century of research has delineated the strengths and weaknesses of individual decision making. Combining the analytic and empirical approaches of psychology and economics, decision scientists have produced the basic research fields of behavioral decision research and behavioral economics, along with applications in finance, accounting, medical decision making, energy, environment, safety, politics, and more.[1]

Yet government communications typically ignore that science. Governments that work hard to ensure that financial information is accurate do little to ensure that it is understood. Governments that would not approve a drug without rigorous evaluation require little from the communications that patients need in order to select and use drugs wisely. Governments that strive to protect diverse populations in emergencies often rely on intuition when telling people how to prepare.

Governments have a unique ability and responsibility to create and provide authoritative information. When they fail to do so, governments undermine the mutual respect needed between officials and the public. On the one hand, the public feels that it has been denied access to vital information. On the other hand, officials feel that the public has failed to act responsibly—not realizing that it lacked that information.

Opponents of transparency sometimes cite decision-making research in their cause, claiming that the public is too irrational to be trusted. These critics accuse the public of being prone to panic, hysteria, and phobias—behaviors that are more common in films than in reality. If sufficient care is taken, the essential facts of many decisions can be made comprehensible to most people.

Fulfilling this obligation requires leadership, organization, and a small investment. Leadership is needed to insist that vital communications pass performance standards, showing that they meet the public's decision-making needs. Organization is needed to assemble and manage the expertise required to achieve that goal. Investment is essential to secure missing expertise and to collect the evidence needed to see how well the public has been served.[2]

Leadership entails recognizing the vulnerabilities that poor communications create for both governments and citizens. It means putting public health purposes—addressing citizens' decision-making needs—over public relations purposes of advertising the virtues of the communicators.

Organization entails assembling teams with (a) subject matter experts who can ensure information accuracy, (b) decision analysts who can ensure information relevance, (c) social scientists who can ensure information comprehensibility, and (d) communication specialists who can make the system work.

Investment entails covering the costs of designing and evaluating communications. These costs are negligible relative to the stakes riding on effective communication: political credibility, market efficiency, and public welfare. Nonetheless, they require viewing communication as more than just an afterthought.

Three current opportunities for demonstrating such a commitment are:

Financial disclosure. The meltdown in capital markets has prompted concern for better consumer protection. Research by the U.S. Federal Reserve, among other organizations, has characterized the limits to investors' financial literacy. Combined with basic decision-making research, these studies will allow the creation of disclosures that will take advantage of this historic opportunity to help investors protect themselves.

Consumer medical information. Pressure to reduce health-care costs has prompted comparative-effectiveness research, designed to identify relatively worthwhile medical procedures. However, unless the public receives the results of this research, it will suspect that health care is being rationed. Fortunately, most people should be able to understand the critical facts, if such facts are properly presented.[3]

Pandemic preparedness. The impending H1N1 pandemic has prompted concern for whether the public will accept interventions, like vaccinations and quarantines, and perform measures such as hand-washing, self-diagnosis, and home care. Good decision-making science can make communications about these topics more effective, while providing officials with estimates of how well they will work (e.g., Can people wash their hands effectively? Will they trust official assurances of vaccine safety?).

If these communications are done poorly, they will foster public distrust of governments that seem neither to understand nor care for their citizens. If they are done well, they will demonstrate that governments are committed to treating their citizens as partners in decision making.[4]

1. T. Gilovich, D. Griffin, and D. Kahneman, eds., *The Psychology of Judgment: Heuristics and Biases* (New York: Cambridge University Press, 2002); P. Slovic, ed., *Perception of Risk* (London: Earthscan, 2002); R.H. Thaler and C.R. Sunstein, *Nudge: Improving Decisions about Health, Wealth, and Happiness* (New Haven: Yale University Press, 2008).
2. B. Fischhoff, "Risk Perception and Communication," in *Oxford Textbook of Public Health,* 5th edition, eds. R. Detels, R. Beaglehole, M.A. Lansang, and M. Gulliford (Oxford: Oxford University Press, 2009), 940-952; M. G. Morgan, B. Fischhoff, A. Bostrom, and C. Atman, *Risk Communication: The Mental Models Approach* (New York: Cambridge University Press, 2001).
3. S. Woloshin, L.M. Schwartz, and H.G. Welch, *Know Your Chances:Understanding Health Statistics* (Berkeley: University of California Press, 2008).
4. HM Treasury, *Managing Risks to the Public* (London: HM Treasury, 2005); U.S. Food and Drug Administration, *Strategic Plan for Risk Communication* (draft)(Washington: FDA, 2009).

Political and Social Dynamics of Economic Growth

Richard B. Hoey

Sources of Economic Growth

There should be a period of substantially higher growth as we recover from the recession, but there is a general consensus that the long-term trend growth rate in the United States should decelerate to a new slower normal rate of about 2 to 2.5 percent. From the demand side, gradual consumer de-leveraging should restrain the growth rate of consumption. From the supply side, the aging demographic in the United States should slow the growth rate in the labor supply, except to the degree that it could be partially offset by new patterns of later retirement or increased immigration. From a long-term perspective, the United States has the flexibility to improve the skill set of its workforce and adapt its tax and immigration policies in ways that would promote economic growth.

We believe that the quality of U.S. economic policy is likely to prove a key determinant of U.S. economic growth. There are three critical aspects of economic policy. First, the Federal Reserve must anchor long-term inflation and inflation expectations. Second, the structural budget deficit must be tamed. Third, government policies need to be highly sensitive to the competitive challenges that American producers face in a world of intense global competition.

We expect a significant increase in the number of green jobs. However, the net contribution to job creation should prove to be less than the total increase in green jobs because other jobs are likely to be eliminated as the shift to green occurs. U.S. government policy will propel the green shift, in part, by raising energy prices, quite possibly at a faster rate than they will rise in a number of other countries that are major exporters. Net job creation will be higher to the degree that the United States can mobilize its competitive advantages of great universities and well-developed sources of risk capital.

Innovation

The United States has the building blocks for continued innovation: first-rate universities, government support for basic research, and healthy sources of risk capital. However, several shifts could create challenges. Defense-related innovation funded by the government is narrowing now that priorities have shifted away from potential superpower conflicts. Private sector incentives for major medical advances may come under pressure. As government policies support the shift to green technology, it is critical that this support be designed to advance productive green innovation rather than to lock in obsolete technologies. Finally, cyclical economic weakness can affect innovation, as outlined in the OECD report "Investing in Innovation for Long-Term Growth."

Financial Regulation

Unintended consequences can result from both deregulation and regulation. The rule-making perspective has a difficult time keeping up with dynamic innovation, which inevitably occurs either within or outside of the regulatory purview. It is important that there be transparency of information and clarity in regulatory assignment. Regulators must have adequate information and skill sets to understand how the financial system changes over time.

Trade

The short-term priority is to defend the degree of existing free trade. Climate-change negotiations will shift the debate about trade. With countries likely to adopt carbon-reduction policies at different speeds, talk about carbon tariffs is likely to increase. It is possible to have a well-functioning global free-trade system as well as an effective climate-change program, but multilateral cooperation will be required.

Education

According to a number of studies, including those of the Programme for International Student Assessment, the United States is hardly near the top of educational achievement relative to other advanced countries. According to Professor Karl Alexander of Johns Hopkins University, "Two-thirds of the academic achievement gap between disadvantaged youngsters and their more advantaged peers can be explained by what happens over the summer. During the school year, lower-income children's skills improve at close to the same rate as their more advantaged peers. Over the summer, middle- and upper-income children's skills continue to improve, while lower-income children's skills do not." The educational shortfall of disadvantaged students is a major problem that needs to be solved in the United States even if it will require additional funding and changing patterns in education.

Market Forces

There never was much justification for assuming that markets and consumers would always behave rationally except as a convenient simplification to permit the use of mathematical tools to provide a partial understanding of reality. The failure to accept the incomplete nature of these insights contributed to the recent financial crisis, as did the oversimplifications embedded in narrowly defined estimates of risk.

There are several additional disciplines that can improve the usefulness of models: (1) behavioral finance, (2) detailed institutional economics analyzing the changing structure of the linkages between financial participants, and (3) financial history. It is not accurate to say that a financial crisis as severe as the current one has never happened before. Financial history provides good historical precedents for 100-year floods, and model makers should study them before they attempt to apply their models to real-world decision making. Confidence in the results of financial models might improve if all finance and MBA students were required to pass a course in financial history.

Civil Society

The United States faces a crucially important set of decisions that will determine its future. Partisans on all sides have a tendency to promote maximalist analyses and maximalist policies. Civil society has an important role in providing pragmatic balance to these debates, increasing the odds that realistic and effective policies can eventually be adopted.

Economic Nationalism

There are growing risks of a jobs trade war given the high level of unemployment in many parts of the world. The best defenses against protectionism are cyclically appropriate macroeconomic stimulation to limit the amount of excess labor and excess productive capacity worldwide, and a rebalancing up rather than down of the global economy, with the current account-surplus countries adopting policies to raise their own domestic demand.

The New Multilateralism: International Economic Policy in the Aftermath of the Crisis

David McCormick

The current financial crisis, in addition to all its other costly consequences, has created new uncertainties, constraints, and challenges for U.S. economic policy makers in influencing international economic policy. To maximize the effectiveness of their efforts, they must focus on critical longer-term priorities and retool the policy process to accommodate a rapidly changing world.

While the need for U.S. leadership is more pressing than ever, the capacity of that leadership is diminished. Recent economic challenges and an indeterminate outlook undermine America's authority, feed growing skepticism over the wisdom of the U.S. capitalist model, and test U.S. credibility at a time when budgetary constraints make support for foreign assistance and diplomacy more difficult.

In addition, key emerging markets such as those of China, India, and Brazil have rapidly gained relative influence as drivers of the global economy because they largely sidestepped the recent financial problems suffered in the West.

Finally, the crisis has altered domestic politics and perceptions within countries as many developing countries have suffered, exacerbating poverty and destabilizing internal political conditions, and as growing economic pressures feed rising protectionism around the world, including in the United States.

In recent months, the Group of 20 (G-20) has come to serve as the coordinating body for the global response to the crisis. To the surprise of many, it has orchestrated a common response: the commitment of additional resources for international financial institutions (IFIs) such as the International Monetary Fund and the World Bank, and an agreement on detailed reforms to strengthen transparency and accountability and promote financial market integrity.

Yet the G-20's future credibility will depend on its ability to transition from encouraging words to effective coordinated action. Subtly influencing this effort will be a challenge and an opportunity for U.S. policy makers. While there is a growing consensus that the G-8 is not the appropriate entity for tackling many global challenges, opinions are divided on whether the G-20 should lead or be replaced by some smaller group. This question is best left unanswered for now as it is politically sensitive, distracting, and may well answer itself over time. Moreover, G-20 leaders must ensure that their efforts to address the crisis are successful.

An important question for U.S. policy makers, therefore, is how best to advance their agenda within these respective dialogues. For example, should climate change be pursued through the G-20, the G-8, the Major Economies Process launched by the Bush administration, or all three? How can disparate regulators in the United States such as the Federal Reserve and the FDIC best coordinate unified positions on critical regulatory issues being considered internationally? And given the expanding role of the IFIs, what steps should the administration take to guide these institutions and ensure continued support for them on Capitol Hill?

Success in addressing these questions will require a focused agenda and more effective U.S. multilateral engagement. The crisis has revealed the need for the United States, in collaboration with global allies, to transform its economy into one that is less dependent on consumption, less susceptible to bubbles, and built on diverse, dynamic sources of growth. Similarly, U.S. policy makers must unflinchingly support open markets by implementing existing free-trade agreements with countries such as Panama, Colombia, and South Korea and by taking steps to conclude the Doha multilateral trade round while also introducing more effective approaches to help individuals adapt to the rapid pace of global economic change. Finally, the financial crisis has also complicated important action on global issues like climate change, HIV/AIDS, and poverty, all of which pose risks to U.S. economic growth and threats to national security. In all these areas, policy makers face the dual tasks of coordinating the United States' international efforts while crafting policy responses reflecting domestic political and budgetary constraints.

Achieving these objectives requires a retooling of the international economic policy apparatus to accommodate a rapidly changing and increasingly complicated world. Given today's complexities, existing economic institutions may no longer be adequate. For example, in designing policies to combat climate change, a plethora of agencies including the Departments of State, Energy, Commerce, and Treasury, not to mention the Council on Environmental Quality, the United States Trade Representative, and the Securities and Exchange Commission, all have significant responsibilities in this area. Yet is this array of institutions, even when ably coordinated, adequate for developing and executing needed policy changes? The same might be asked in the area of foreign assistance.

Similarly, in recent months the crisis has created growing demands for supporting international "summitry" in the G-8 and the G-20, among others, and has revealed that the relatively small staffs in the White House and the international division at the Treasury are understaffed and lack the hands-on familiarity with the financial markets required to manage the complex issues facing the United States.

Thus, in pursuing its reform agenda, the administration should undertake a strategic review of the mandates and responsibilities of its economic institutions and determine whether new capabilities and more consolidated accountability is needed. It should provide additional resources for the international economic function shared by the National Security Council and National Economic Council to support the expanding multilateral economic agenda. Finally, it should conduct an economic "talent review" to identify needed resources, improve recruiting and incentives to attract private sector expertise, and provide better training to the outstanding civil servants already in place

The crisis has also revealed the need to develop more effective economic and market intelligence. Both the Treasury and the intelligence community have recently improved economic information gathering, but questions remain over how to improve collection, ensure timely and appropriate distribution, and identify and evaluate potential economic hot spots posing the greatest risks. The administration should review and reform, as appropriate, the collection and distribution of economic information and intelligence.

The United States presently confronts economic challenges unprecedented in their breadth and complexity. The path ahead is challenging and U.S. leadership on international economic policy is more crucial than ever. Economic policy makers must transform existing institutions and processes to maximize the efficacy of their efforts.

The New Face of Anti-Globalization: Economic Recovery and Reform Efforts[1]

Daniel M. Price

At their summits in Washington and London, the G-20 leaders highlighted two threats to economic recovery: trade-contracting protectionist measures and unwise, uncoordinated financial regulatory reforms that could impede global flows of investment.

In Washington, the G-20 recognized "the critical importance of rejecting protectionism" and agreed to "refrain from raising new barriers to investment or to trade in goods and services" for twelve months. At the same time, they committed to "avoid over-regulation that would hamper economic growth and exacerbate the contraction of capital flows, including to developing countries." Similarly, at the London summit, the G-20 leaders renewed and expanded their anti-protectionism pledge, declaring that "[w]e will not retreat into financial protectionism, particularly measures that constrain worldwide capital flows, especially to developing countries."

At both summits, the leaders also committed themselves to an unprecedented degree of global cooperation on financial regulatory reform, and in London they agreed "to establish the much greater consistency and systematic cooperation between countries, and the framework of internationally agreed high standards, that a global financial system requires."

Unfortunately, these aspirations have foundered on a new political reality: the developed world, formerly the champion of global economic integration, has become its principal skeptic. The result is economic recovery and regulatory reform measures that, if unchecked, will foster a disintegration of the global economy and once again raise the very barriers to cross-border trade and capital flows that the world has spent the past sixty years dismantling.

The Trade World

While this paper focuses on financial regulatory reform measures, a brief review of the trade horizon is instructive. At the risk of oversimplification, today's global supply chains and the benefits they bring are possible only because successive rounds of international trade negotiations have (1) progressively lowered tariffs and other import restrictions such as quotas, and (2) ensured that, once imported goods enter a market, they will not be discriminated against by internal taxes, distribution restrictions, or subsidies that favor the purchase of locally produced goods. Both the lowering of border barriers and the principle of nondiscrimination are under increasing pressure.

The World Bank reported that between the G-20 summit in Washington in November of 2008 and the London summit in April of 2009, seventeen of the G-20 countries had adopted measures that either limited imports or favored local products over imports. "Buy American" or "Buy Chinese" provisions in stimulus programs, or other measures that link public funds to local purchases, are politically attractive because they seem to correspond to the commonsense proposition that taxpayer funds should redound to the taxpayers' benefit. Of course, if that approach were adopted by all countries, manufacturing and trade would turn on which country has the biggest budget for subsidies rather than which country has the comparative advantage in producing a given product for the rest of the world.

Thus in the trade realm we already see the risk that economic recovery measures will disrupt global supply chains and retreat from the very principles that have made them possible.

A New Financial "Protectionism"

Something similar is under way in financial regulation, where reform efforts are increasingly premised on the rollback of principles that led to the globalization of financial markets and access to capital at lower costs. These benefits were made possible by (1) rules that allow financial institutions to operate across borders without having to establish a physical presence or replicate their information technology or capital infrastructure in each and every country where they have customers, and (2) international cooperation to reduce regulatory conflicts and discrimination.

More stringent rules to reduce systemic risk can be achieved without sacrificing the benefits of coordinated, consistent regulation and globalized financial markets. Deleveraging need not mean de-globalizing, but that is the apparent direction of efforts to date.

Since the G-20 Washington summit, in spite of pledges to work collaboratively and cooperatively on reform issues, several countries have adopted measures that run counter to these efforts. These measures threaten to materially disrupt global financial markets just as trade measures disrupt global supply chains. For example:

1. The European Union recently proposed regulations that require all investment fund managers, regardless of where they are located, to register in the EU. That imposes new barriers to global markets by forcing all such companies doing business in the EU to establish a physical presence there, regardless of whether business needs warrant it. Similarly, various countries are moving ahead with proposals relating to executive compensation that are at odds with the principles adopted by the Financial Stability Board (FSB) and endorsed by the G-20 leaders in London.

2. Several countries have implemented rules designed to increase domestic lending. While arguably neutral on their face and perhaps considered necessary from a political perspective, these provisions encourage domestic lending at the expense of cross-border lending. This is the "lend local" analogue to "buy local." In the G-20, this can be seen in the United Kingdom and French requirements that banks receiving public assistance achieve certain domestic lending targets, and in the U.S. rules requiring regular reporting on increases in domestic lending from banks receiving TARP funds.

   Switzerland has taken a different approach and has used regulatory incentives to achieve the same result. Under these rules, Swiss banks cannot exceed a specified leverage ratio based on a calculation that requires a number of adjustments to the bank's balance sheet. One such adjustment allows a Swiss bank to exclude amounts attributable to its entire domestic loan book, but not its foreign lending. As a practical matter, this results in a limit on international lending.

3. The United Kingdom has proposed rules that would limit the ability of international banks to include capital held by their parent or group in calculating their liquidity requirements. While styled as necessary in order to protect domestic consumers, this proposal would force multinational banks to fully capitalize their UK branches, which would reduce the efficiency of operations and interfere with the banks' ability to effectively manage their capital.

4. The European Commission has enacted regulations that in effect limit or prohibit foreign participation in certain financial activities. For example, the Commission's new rules on credit-default swaps (CDS) prohibit non-EU-domiciled companies from acting as a central clearing party. Rather, all CDS transactions must be cleared through EU-domiciled entities. Similarly, credit ratings issued by non-EU-domiciled credit rating agencies cannot be used in the European Union unless those ratings are endorsed by an EU-registered and domiciled credit rating agency.

Three Action Items for the G-20 in Pittsburgh

Developing countries' concerns—reflected in both G-20 summit declarations—about the impact of economic recovery and reform measures on capital flows have proven well-founded. Global investment flows have fallen precipitously. The World Bank recently reported that private investment flows to developing countries decreased by more than 40 percent in 2008 and will continue to fall in 2009. It estimates that private capital flows to developing countries will fall by almost three-quarters this year to $363 billion from a peak of $1.2 trillion in 2007. The continued drop-off in private capital flows threatens to undermine investment in emerging and developing economies and to slow global recovery efforts worldwide.

While we would expect global capital flows to decline as the world de-leverages, regulations that discourage cross-border lending and investment and impede the functioning of the global capital markets surely contribute to the decline. A time of such contraction is precisely when we most need to avoid measures that impede international capital flows.

The remedies are relatively simple to identify but may prove hard to implement.

First, the G-20 should explicitly and emphatically renew its commitment to open markets and to avoiding the type of financial protectionism identified here and should commit to phase out protectionist measures that have been adopted.

Second, as it did with the World Trade Organization (WTO) and trade protectionism, the G-20 should charge an international organization with responsibility for "naming and shaming." In this case, the FSB should be mandated to monitor and report publicly on financial reform measures that are protectionist or that disrupt the beneficial operation of global financial markets. In preparing its report, the FSB should consult with market participants as well as other international organizations, including the International Organization of Securities Commissions (IOSCO), the WTO, the International Monetary Fund (IMF), and the Basel Committee.

Third, beyond reporting, the FSB should be further empowered and directed to ensure coordination of regulatory reform efforts and to encourage the development of best practices including regulatory convergence and mutual recognition that reduce the risk of fragmented or contradictory approaches and preempt disintegration of global markets.

Efforts to address the global financial crisis and prevent its recurrence demand a high degree of cooperation and coordination among regulators. Measures that close markets and shun or discourage cross-border investment will only impede recovery efforts. And beggar-thy-neighbor policies are no less a risk in financial regulatory reform than in stimulus programs. If every country goes it alone and regulates financial institutions or products without regard to impacts on global financial markets, a downward spiral is sure to result.

The G-20 leaders have an opportunity in Pittsburgh to alter this course and return to the mandate they have twice adopted. They need to seize that opportunity.

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1. A version of this essay originally appeared in the *International Herald Tribune*.

Should the G-20 Reconsider the Decision to Treble IMF Resources?

John B. Taylor

At their last meeting on April 2, 2009, in London, the leaders of the G-20 nations agreed "to treble the resources available to the International Monetary Fund (IMF) to $750 billion." Their purpose was to enable the IMF to make loans to many more countries and by much larger amounts than in the past in order to combat the global financial crisis. The previous IMF resource limit of $250 billion was apparently viewed as inadequate. My purpose in this short essay is not to question that decision, but rather to suggest, in light of events since April, that it be reviewed in time for the next G-20 meeting on September 24, 2009, in Pittsburgh.

Why a Review Is In Order

First, the IMF has actually loaned far less than the $750 billion in resources agreed to in April. For the first half of 2009 (the latest data available), the IMF lent 11.9 billion Special Drawing Rights (SDRs), which, at $1.56 per SDR, is only $18.6 billion. As shown in Figure 1, total IMF loans outstanding as of June were 33.4 billion SDRs ($52.1 billion)—only 7 percent of the $750 billion the G-20 requested.

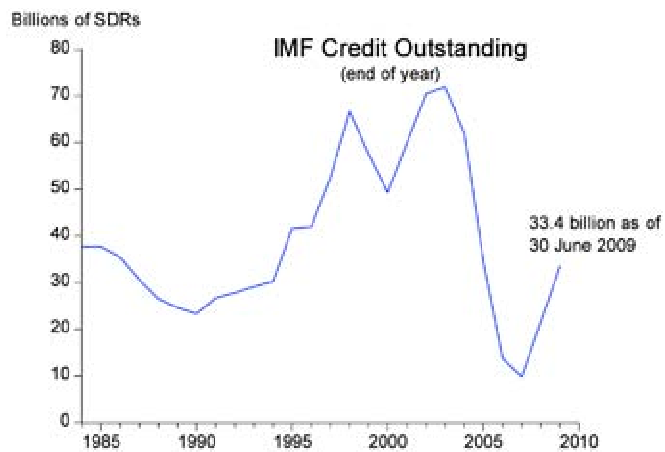

Figure 1. IMF Credit Outstanding.

Resource use is below the peak of the 1995-2003 emerging-market crisis period and far below the $750 billion called for by the G-20 on April 2, 2009. (Source: International Monetary Fund)

Moreover, as shown in Figure 1, the amount lent in this global financial crisis is even less than the peak loan amount (72 billion SDRs) in the severe emerging-market crisis of the 1995-2003 period. It is also less than the average amount loaned each year during that crisis period.

A second reason to reconsider the tripling of resources to $750 billion is that since April it has become clear that most economies are recovering from the worst of the financial crisis—especially from the panic of the fall of 2008. Figure 2 illustrates this dramatic change. The world's economies as a whole reached bottom in December of 2008, well before the April G-20 meeting. Indeed, the data now show that most economies were well beyond their low points at the time of the meeting.

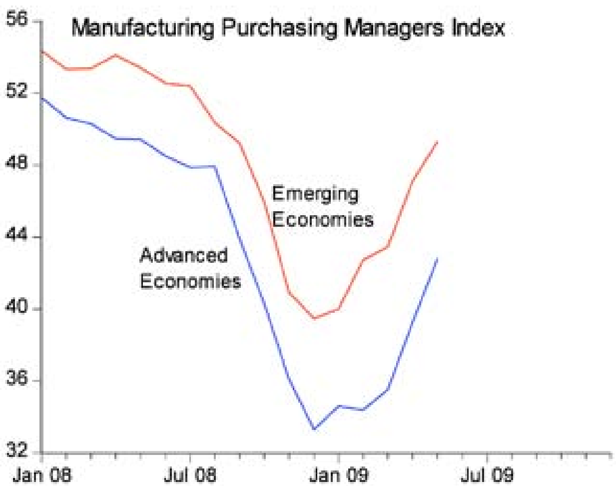

Figure 2. Manufacturing Purchasing Managers Index.

The index reached bottom in December for emerging economies and for advanced economies. (Source: *World Economic Outlook Update*, International Monetary Fund, July 2009, Figure 2)

In sum, with loans far below the requested amount of resources and with the estimated need for loans greatly diminished going forward, one has to question whether the IMF still needs to triple its resources. Indeed, it now appears that the request was disproportionate to the task at hand. Certainly doubling its resources would have been sufficient. Even leaving them unchanged would have been enough. At the least, a new estimate of required resources is needed.

Other Factors Should Also Be Considered

To be sure, there are other factors to review. First, the IMF created a new instrument called the Flexible Credit Line (FCL), which a country can open and then draw on if needed. Since the FCL was created in April, Mexico has agreed to a credit line for $47 billion, Poland for $21 billion, and Colombia for $10 billion. However, none of these countries actually took out a loan, so IMF credit outstanding did not increase. Even if all these countries had drawn on the total amount of the credit line and IMF credit had risen on this account, existing IMF resources would have been sufficient, as Figure 1 makes clear.

A second factor to consider is that a number of countries with existing IMF programs (stand-bys) have yet to draw fully on the multiyear contingent commitments. The key countries are Hungary with a $15.7 billion loan, Ukraine with $16.4 billion, Romania with $16.0 billion, and Iceland with $2.1 billion. But even when undrawn balances on existing loans are taken into account, the existing resources would be enough.

A third issue is that not all IMF resources are readily available, according to IMF staff technical calculations. For example, undrawn balances are subtracted out, although I considered those in the previous paragraph. Even after making these other adjustments, I find that existing resources or a modest increase are sufficient; nothing close to a tripling seems appropriate.

The Importance of an Overall Budget Constraint

Why should we care if the IMF has excess resources? Providing too many resources to any government institution can be harmful. Without any effective budget constraint, discipline is lost. Even with the best intentions of the management and shareholders of an international institution, resources tend to be wasted or misused without such constraints. The worst situation is where excess resources become a slush fund leading to mission creep into new areas. Policy can become unpredictable and even be a source of crises.

In 2001, the United States, the United Kingdom, and Canada undertook a special effort to keep IMF resources in check in order to provide such a budget constraint. As explained in my book *Global Financial Warriors*, focusing on an overall budget constraint was the initial stage of an IMF reform effort that eventually led to the Exceptional Access Framework providing guidelines to IMF interventions. The budget constraint was also useful for the creation of the new Policy Support Instrument, which can be used to advise and help developing countries stay on track without making loans.

Ideally, the amount of IMF resources should be based on a cost-benefit analysis. Resources should be large enough to deal with severe crises, but not too large to waste resources, lead to poor decisions, or even cause crises. The time is ripe for such an analysis.

3. The Education of a Workforce for the Twenty-First-Century Economy

Globalization requires a highly skilled and well-educated workforce. National governments can assist in meeting this need by: (1) supporting educational initiatives in science, technology, engineering, mathematics, second-language acquisition, and the humanities; (2) encouraging the acceptance of improved methods of delivering education; and (3) increasing support for primary and pre-primary education.

Rebuilding a Culture of Globalization

Russell A. Berman

The worldwide economic downturn has taken the wind out of the sails of globalization. The first years of this century witnessed expanding global trade, highly visible immigration, and expanding transnational networks of capital, communication, and governance. That wave of deep transformation has come to an abrupt halt. International trade is contracting, unemployment is leading labor migrants to return to their countries of origin, and, on the level of international relations, realistic paradigms of national interest are eclipsing the erstwhile utopian discourses of universalism. Bold and optimistic aspirations of the recent past for the spread of democracy and human rights have dwindled into a timorous respect for the diversity of existing political forms.

While restarting the motor of globalization requires careful consideration of economic policies, much more is at stake than technical economic adjustments. Implementing any distinctive economic policy, after all, depends on political will and credibility, which point in turn to questions of culture. Unless there is a cultural buy-in by the broad public, policies will not succeed. Therefore, attention to the cultural character of globalization—especially to the cultural bases for the resistance to globalization—is indispensable.

Globalization has always had salient cultural dimensions because it involves the international mobility of labor. Labor migration—whether of unskilled, skilled, or elite professional workers—has brought previously dispersed populations into intimate contact with one another. Most immediately, these encounters have posed challenges of language ability while highlighting deficiencies in second-language acquisition resources. Long before the economic crisis, globalization faced the impediment of language barriers that rarely received programmatic attention, let alone sufficient resources.

More broadly, heterogeneous cultural norms and values have sometimes coexisted in parallel but separate worlds, due in part to patterns of residential segregation, and sometimes they have clashed. Efforts to resolve these differences have ranged from policies of relativist multiculturalism to calls for homogenizing integration into a normative Western liberalism or even specific *Leitkultur* (national tradition). Far from facilitating reciprocal understanding, however, pertinent discussions have tended to turn into flashpoints of cultural conflict, generating diffuse concerns about threatened national identity, such as bilingualism in the United States, perceived as a threat to national cohesion, or the headscarves debate in France as a challenge to the republican legacy. A successful resolution to the values problem in globalization remains elusive.

A further piece of globalization pertains to educational mobility, in and of itself desirable because it provides students with wider experiential perspectives. However, the current system of international education remains counterproductively asymmetric; students from the developing world study science, technology, and economics at the universities of the developed world with little attention to the cultures of Western democracies, while students from the developed world (in much smaller numbers) study abroad to learn about culture refracted through paradigms of cultural relativism. Educational globalization therefore currently provides for little systematic transfer of liberal democratic values to the developing world; this piece of international higher education has been technocratically foreshortened. This inadequacy applies especially to the satellite programs of Western universities located in the developing world, which typically lack any humanities or liberal arts components. Meanwhile, for Western students the lesson of study abroad is often skeptical disillusionment with their own liberal democratic traditions and institutions.

The economic crisis has exacerbated pre-existing cultural anxieties concerning globalization. Reviving globalization therefore requires facing those anxieties and developing appropriate strategies to address them. Discourses of anti-globalization have been metastasizing on the left and the right, sometimes as protectionism, sometimes as populism. Indeed, at times the alternative ends of the political spectrum grow nearly indistinguishable when leftist anti-elitism and right-wing nationalism or xenophobia overlap in a hostility to globalization. It would be a grave mistake to underestimate this political resistance to globalization. It is insufficient, however, simply to utter ideological condemnations. Instead, the underlying angst concerning a perceived threat to traditional ways of life has to be recognized and seriously addressed.

Modernization has always entailed points of values conflict between traditionalist and modernized frameworks and between different degrees of relative modernization. Moreover, modernity itself has generated internal, nontraditional conflicts between competing value spheres, contributing to experiences of alienation or anomie, often compounded by the consequences of migration (loss of homeland) and urbanization (anonymity). As a late phase of modernization, globalization magnifies these structural problems by superimposing onto them population cohorts from starkly different linguistic and cultural backgrounds. The resulting experience of cultural disorientation and alienation can take various forms, including:

1. Fear (and xenophobia) on the part of the indigenous population of a host country facing a nonintegrated immigrant population with alien cultural references, especially during periods of high unemployment;

2. Anxiety on the part of elements of immigrant populations moving from conservative and conventional cultures into modern (or postmodern) secular contexts, with attendant lifestyle conflicts between the immigrant generation and their children born in the host country; and

3. A generalized disaffection of non-elite population strata from state structures and political leadership deemed increasingly distant, especially in the context of regional or international bureaucracies. This structural distance can be amplified when political elites fail to live up to proclaimed universalist values (Srebrnica, Abu Ghraib, Darfur), which further undermines the credibility of the internationalist agenda on which globalization depends.

Specific Recommendations to Rebuild a Culture of Globalization

1. Investment in state-of-the-art second-language acquisition programs encompassing serious study of other cultures;

2 Redesign of international higher education to assure an integration of humanistic and liberal arts components rather than solely technocratic training;

3. As globalization is not credible without internationalism, promotion in higher education and elsewhere of universalist and liberal democratic principles;

4. Insistence on the normative importance of human rights, as cynicism about human rights only generates hostility to globalization, and a betrayal of human rights, despite short-term advantages, will render globalization unbelievable; and

5. Support for a values discussion within the cultural complexity of modernity, between traditionalism and universalism in order to maintain a productive conversation and generate pragmatic accommodations compatible with normative expectations for human rights and dignity.

Investing in Early-Childhood Programs Builds Human Capital and a Solid Foundation for Economic Recovery and Growth

Robert H. Dugger

If you owned a business and had the opportunity to invest in a product with a proven ability to increase your sales immediately, establish a foundation for future growth, and bear dividends for decades, would you take it? When I pose that question, most people answer yes without hesitation. Yet most don't realize that we have such an opportunity right now in the United States and Europe.

The investment is in early-childhood development: ensuring that all children start life healthy, well-nourished, and equipped by the time they reach kindergarten with the emotional and cognitive skills required to perform well and attain expected levels of achievement.

A growing body of evidence clearly demonstrates that our society can make few investments that provide the same high returns, both in the short term and over the long run, as an investment in our children. For example, families participating in a voluntary mentoring program for expectant mothers and fathers saw a 56 percent reduction in babies' hospital visits. And every dollar spent on high-quality early-childhood programs for disadvantaged children creates \$7 to \$9 in future savings to the communities and states that do the investing. Research shows that disadvantaged children with high-quality early-learning opportunities have fewer special-education needs in later years and are more likely to graduate from high school, earn more money, and contribute more tax dollars than disadvantaged children without such opportunities.

These simple realities have helped place early-childhood investment front and center as an economic development priority among a growing number of business people in the United States, in Europe, and around the world. More private-sector leaders, economists, and policy makers are now recognizing that our long-term prosperity will suffer if we do not get child development and education right.

That is because the strength of our labor force is a key to economic growth and fiscal sustainability. Through new economic analysis and scientific evidence, we are beginning to appreciate fully that experiences from the prenatal period to age five are profoundly influential in determining an individual's workplace effectiveness as an adult. During these early years, neural connections form at a rate of 700 per second, shaping the foundation of a child's mental, physical, emotional, and social development. In fact, in the time it took you to read the last sentence, 3,500 connections were formed in a child's brain.

During this early window of opportunity, a child's experiences—both positive and negative—have a real and lasting impact. Some disadvantages can be addressed down the road through remedial education and other intensive programs. However, the cost to taxpayers is far less and the chances of success are significantly higher if evidence-based early-childhood development programs are made widely available.

On a societal level, research spanning decades shows conclusively that investing early in children's lives yields significant gains in the form of increased labor productivity, competitiveness, economic growth, and job creation. Research from the Minneapolis Federal Reserve Bank, for instance, demonstrates that early-childhood programs should be viewed not just as expenses, but rather as highly effective economic-development initiatives generating high public, as well as private, returns. This perspective is now shared by the chief executive officer of the Cleveland Federal Reserve Bank as well as the chairman of the Federal Reserve.

Investing in early-childhood development is not often seen intuitively as a strategy to restore lost economic growth and jobs. Raising children, however, is highly labor-intensive, and expanding early childhood opportunities creates stable, local jobs—an invaluable commodity in our sputtering economy—for pre-kindergarten teachers and others trained in the area of childhood development.

To be sure, decision makers in the United States and Europe face tough budget choices, and there will be crushing pressure to scale back or delay investments in early-childhood programs. Across the United States and Europe, government leaders are proposing funding reductions for preschool, child care, early-childhood health, and home-visitation programs. Such cuts would ultimately do far more harm than good, both now and far into the future.

The quality of a country's early-childhood development and education system will help determine the quality of that nation's workforce and its ability to attract the best and the brightest people and businesses. So as budget pencils are sharpened in capitals around the world, government officials must remember this: The more we invest in high-quality early-childhood programs today, the stronger the economic recovery and growth will be in the United States, Europe, and the world.

See the World Through the Eyes of an Engineer

Pradeep K. Khosla

The main role of universities has been to educate and to create knowledge. However, this role has been redefined, at least in the United States, because of the creation of the American research university. The research university was created mainly as a consequence of an influential report titled "Science, the Endless Frontier" written by Dr. Vannevar Bush in response to a request from President Roosevelt.[1] In his letter of request, dated November 1944, President Roosevelt wrote:

> *DEAR DR. BUSH: The Office of Scientific Research and Development, of which you are the Director, represents a unique experiment of team-work and cooperation in coordinating scientific research and in applying existing scientific knowledge to the solution of the technical problems paramount in war. Its work has been conducted in the utmost secrecy and carried on without public recognition of any kind; but its tangible results can be found in the communiqués coming in from the battlefronts all over the world. Some day the full story of its achievements can be told.*
>
> *There is, however, no reason why the lessons to be found in this experiment cannot be profitably employed in times of peace. The information, the techniques, and the research experience developed by the Office of Scientific Research and Development and by the thousands of scientists in the universities and in private industry, should be used in the days of peace ahead for the improvement of the national health, the creation of new enterprises bringing new jobs, and the betterment of the national standard of living.*

While it is not possible to describe here all the findings contained in Dr. Bush's report, the essence of those findings is captured in the following paragraphs from the report.

> *Progress in the war against disease depends upon a flow of new scientific knowledge. New products, new industries, and more jobs require continuous additions to knowledge of the laws of nature, and the application of that knowledge to practical purposes. Similarly, our defense against aggression demands new knowledge so that we can develop new and improved weapons. This essential, new knowledge can be obtained only through basic scientific research.*
>
> *Science can be effective in the national welfare only as a member of a team, whether the conditions be peace or war. But without scientific progress no amount of achievement in other directions can insure our health, prosperity, and security as a nation in the modern world.*

The words in President Roosevelt's letter and in Dr. Bush's report still ring true today. If anything, the problems are bigger and more complex today than they were sixty-five years ago. The mass burning of fossil fuels is disrupting the earth's climate. Many people throughout the world do not have access to clean water or safe infrastructure. Despite significant advances in improving health care and life expectancy, millions of people do not have access to basic health services. Computer networks and computing systems that were a source of economic expansion during the past two decades, and on which the economic well-being and security of all the countries in the world depend, are under constant attack. Solving these and many other problems will require that the best minds in the world work on them. Solving these problems will require that an adequate number of scientists and engineers are trained and educated not only in the United States but also in other countries. It will take innovation to solve these and other pervasive problems, and much of this innovation will take root in U.S. and foreign universities. While there was a great need for scientists and engineers in the 1940s, it is clear that the need is more pressing and greater today. Unlike the past, today no single country can create the number of engineers and scientists required to meet that need.

Since 1945, the United States government has built a unique enterprise called the American research university, which has had a tremendous impact on the U.S. standard of living. It created this entity through significant investments in research and development at universities, through investments in infrastructure, and through many federal programs that supported citizens in their pursuit of higher education. In parallel, Washington invested in research and development at large, medium, and small companies; it created incentives that induced companies to invest in research; it created programs that allowed entrepreneurs to start and build businesses; and it created legislation to support and enable technology transfer. The research university enterprise created an environment that allowed faculty members to pursue research and teaching simultaneously. This environment created an entrepreneurial culture for faculty, students, and staff, and created incentives for faculty to transfer technology and to commercialize their research. The result of this complex ecosystem is that one can point to many companies and even industries that have come out of the American research university enterprise. These companies create jobs and fuel economic growth and wealth generation in ways that the world has never before experienced. In short, the creation of the American research university led to economic growth (although the research university was not the sole reason for the growth) because the United States found a way to integrate investment in research and development with economic development.

This wave of economic growth and wealth generation that started in the United States has, in the past ten to fifteen years, travelled to many other countries that have been the beneficiaries of the U.S. strategy. During the last decade, the successful model of the American research university has been, and continues to be, studied by many developing and developed countries that want to advance technology, secure a stronger position for themselves in global markets, and better the standard of living for their citizens. It is clear that the U.S. model (or its variant adapted to different cultures and countries) must be replicated in many countries in order for the world to be a better place. An important component of this will be the replication of the American research university enterprise, in addition to the creation of programs that result in a complete ecosystem that will foster and support significant economic development.

The creation of the American research enterprise using the existing university infrastructure in other countries will be extremely difficult, if not impossible. The United States has been successful in building good programs and universities for its own citizens, but it is still far from proficient in duplicating the American research university in other parts of the world. In many cases, because of existing cultures at foreign universities, replication of the U.S. system will be impossible. I say this based on my experience during the last decade of interacting with many countries and establishing several international programs. What is needed, therefore, is a careful examination to determine which existing universities can step up to the challenge. This activity can then be complemented with the construction of new research universities built from scratch. What is also required is a thorough examination of existing regulations to make sure that entrepreneurial activity in curriculum development and in research is both permitted and encouraged.

During the last decade, Carnegie Mellon has partnered with several countries, including Portugal, Greece, Taiwan, Australia, and Japan, among others, to establish high-caliber education and research programs. While the programs are uniquely tailored to meet the needs of individual partners, a consistent thread runs through them: participants are committed to the partnerships they have formed because of the great value these ventures bring to their countries and their schools. Countries that can successfully replicate the U.S. research university enterprise will secure for themselves a strong position for the future, for they will be the source of the next wave of economic expansion in the world.

1. http://www.nsf.gov/od/lpa/nsf50/vbush1945.htm#letter

Are We Educating the Next Generation for the Twenty-First Century? The Promising Pursuit of World Languages and Cultures

Susan G. Polansky

Advocates for education in the humanities or liberal arts maintain that these disciplines are prerequisites for personal growth and participation in a pluralistic democracy, regardless of a student's career choice. Yet many share the perspective expressed in a *New York Times* article of February 24, 2009, that carried the banner "In Tough Times, the Humanities Must Justify Their Worth." Author Patricia Cohen wrote, "In this new era of lengthening unemployment lines and shrinking university endowments, questions about the importance of the humanities in a complex and technologically demanding world have taken on new urgency." In this same vein, Cohen quoted Richard Freeland, the Massachusetts commissioner of higher education, who asserted that study of the humanities evolved during the twentieth century "to focus almost entirely on personal intellectual development and that much attention has not been paid to how students can put those abilities effectively to use in the world, [and] that we have created a disjunction between the liberal arts and sciences and our role as citizens and professionals."

When I addressed our Modern Languages graduates at Carnegie Mellon University this past May, my message was that they present a promising response to those who voice concerns about the value of the humanities. Having acquired vital training for global citizenship in the twenty-first century, these graduates are especially well prepared to communicate, work, and network in our increasingly interconnected world. How so? Here are five significant and promising indicators.

First, these students have gained strong linguistic and analytic skills. Systematically and incrementally, they have built impressive multilingual-communication and critical-thinking skills enabling them to read, write, listen, speak, and explore in languages in addition to English. English may be considered the lingua franca in much of the working world. Yet current research, published in 2009 by the International Research Foundation for English Language Education and aimed at capturing the role of English and plurilingualism in hiring, training, job advancement, and other human resource and talent development practices of global corporations, has shown that corporations are engaged in efforts to define and assess their language needs. Global corporations prefer to set high language-proficiency thresholds but find that the supply of qualified candidates is limited. The global corporate world is recognizing the importance of language proficiency and its economic returns, and these returns are identifiable beyond the corporate world in multilingual and multicultural contexts in the fields of technology, law, health care, education, the arts, and more.

A second indicator is the perseverance of these students. They have developed their linguistic and cultural proficiency through hard work, much practice, and persistence. They have also learned by way of some healthy and constructive embarrassment from their mistakes, some of which are fairly humorous. We all have stories about language blunders. Among my favorites is the Spanish student who described the North Pole, the home of Santa Claus, as the *norte polaco* (the north Polish person). Another student, while ordering dinner, mixed up *pecho* (human breast) and *pechuga* (chicken breast). Strong determination seasoned with a healthy sense of humor in the face of challenges makes for a beneficial balance of confidence and humility.

A third signal is the spirit of cooperation and community that these students possess. They have engaged in collaborative learning through projects and presentations in diversely populated modern-language classes and groups with students from across the colleges of the university and from all over the world. An example is the student majoring in Japanese who completed her senior thesis entitled "Enhancing Japanese Kangi Acquisition in Non-Native Readers." Taking inspiration from her own experience, she collaborated with other undergraduates and graduate students to develop a computerized program to help students learn Japanese characters through strategies of association rather than straight memorization. Another example is the Hispanic Studies student who, for her senior thesis project, told the story of Pittsburgh's growing number of Spanish-speaking immigrants who remain largely unseen by the city's traditionally non-Hispanic population. In a service-learning course, this student and her classmates connected with Spanish-speaking members of the local area to uncover their history, issues, and perspectives.

A fourth sign of the advantageous position of these students as global citizens is their appreciation of self and others. They have gained important cross-cultural awareness, learning much about themselves in the process of learning about the practices and perspectives of others. Many of them, through study abroad and immersion in other cultures, have gained critical insights into the strengths and limitations of their own cultures and values as they have experienced life in new contexts. Many have also developed a heightened appreciation for the unity and diversity of the cultures and peoples of our interconnected world. They have embraced the important lesson in Dr. Kwame Anthony Appiah's essay "The Case for Contamination" that "we should learn about people in other places, take an interest in other civilizations, their arguments, their errors, and their achievements, not because that will bring us to agreement but because it will help us get used to one another—something we have a powerful need to do in this globalized era."

A fifth indicator is the great creative and interdisciplinary strength exhibited by these students. Creatively combining their study of languages and cultures with many other fields, these students appreciate the added value of their language study to their next step, be it graduate school or work in business, technology, the social sciences, international relations, the health and service professions, or other areas. These students have integrated their study of world languages and cultures with additional disciplines, such as Chinese with architecture, biological sciences, biomedical engineering, economics, information systems, or international relations; French with art, biological sciences, mechanical engineering, or psychology; German with chemistry, computer science, material science, or music; Hispanic Studies with electrical and computer engineering, history, math, professional writing, Social and Decision Sciences, or urban design; Japanese with information systems, architecture, or electrical and computer engineering; and Russian with linguistics or psychology. These undergraduates provide strong counterevidence to the concern that there is a disjunction between study of the humanities and our role as citizens and professionals.

Unfortunately, the fact that these students have achieved a high level of proficiency in an additional language or languages, or, for that matter, have studied an additional language at all, sets them apart from the vast majority of university students in the United States. According to an enrollment survey published by the Modern Language Association in 2007, only 8.6 percent of college students had studied an additional language during their undergraduate years. We must appeal to students who have attained advanced-level skills in additional languages to hold themselves up as role models. Whatever professional paths or personal journeys they take, we look to them to be active multilingual messengers, future leaders, and inspirations to others. They are well poised to build bridges of comprehension, tolerance, and appreciation of our similarities and differences in this twenty-first-century world. There should be no doubt that their humanities training and the fruits of their dedicated study of world languages and cultures contribute to enhanced prospects for themselves and enriched fields of exchange and knowledge transfer for those with whom they interact.

The Challenge of STEM Education

Arthur Rothkopf

This May, many college graduates faced some difficult decisions. Given an economy with unemployment inching close to 10 percent, many wondered where they might find work. They had to consider moving back home with their parents, as even part-time jobs that might pay the rent were difficult to obtain. Some decided to go on to graduate school in hopes that the economic storm would pass before they received an advanced degree.

For others like Brian Krausz of Carnegie Mellon University, the questions were quite different. Instead of thinking about moving back in with Mom and Dad, Brian considered the cities in which he might want to live. Instead of staring through classifieds looking for jobs that weren't there, Brian had the choice of four job offers he received in February—in the middle of one of the worst economic downturns our nation has seen since the Great Depression.[1]

Some might say that Brian is fortunate to be in such a good position, and to some extent, he is. However, let's look at the situation a little more closely. What is the difference between Brian and the tens of thousands of other recent college grads struggling to find a place in the workforce? It's simple; Brian earned a degree in computer science with a minor in software engineering.

On May 13, the U.S. Department of Labor issued an outlook on the jobs of tomorrow that reflects some startling realities. The report anticipates that employment in professional, scientific, and technical services will grow by 28.8 percent and add 2.1 million new jobs by 2016. Computer-systems design and related services will grow by 38.3 percent, and management, scientific, and technical consulting services will grow at an astounding 78 percent.[2]

While this enormous growth is occurring for science, technology, engineering, and mathematics (STEM) occupations, the National Science Foundation reports that the proportion of STEM-related degrees conferred by U.S. institutions has shrunk by 3.1 percent for bachelor's degrees and by 8.7 percent for master's degrees since 1966.[3] Making matters worse, just more than half of the STEM-related bachelor's and advanced degrees conferred by U.S. schools in 2006 were to U.S. citizens.

The innovations that this rapidly shrinking group of scientists and engineers might produce will ultimately be maintained and implemented by many thousands of technicians across the country. Increasingly, these technicians must have a significant level of proficiency in math and science in order to do their jobs effectively, while a decreasing number of Americans can claim such proficiency. At a time when more than half the population does not even know what an electron is,[4] it should not come as a surprise that our students are continually lagging behind on international benchmarks. Only about half of high school graduates who took the math section of the 2008 ACT met the testing organization's college-readiness standards.[5] Though there is considerable excitement over the prospects for an economic boost from the creation of new green jobs, these jobs will provide little relief to our economy until we have American workers proficient enough to perform them.

Simply put, we are failing to prepare our students for life in a twenty-first-century society where their ticket to prosperity can be acquired only through quality education. That we continue to produce high-school dropouts at an alarming rate at a time when twelve of the twenty fastest-growing occupations require some kind of postsecondary education is a tragedy. These challenges must be answered if the United States is to continue to compete in the global economy.

There are, however, some signs that we are moving toward improvement. Earlier this year, Secretary of Education Arne Duncan announced that the government would seek assurances from states participating in the $48-billion State Fiscal Stabilization Fund that they would take specific steps toward reforming their education systems. Those steps include implementing college- and career-ready standards and high-quality, valid, and reliable assessments for all students; developing and using pre-kindergarten through postsecondary and career data systems; increasing teacher effectiveness and ensuring an equitable distribution of qualified teachers; and turning around the lowest-performing schools.

The Council of Chief State School Officers and the National Governors Association have answered Secretary Duncan's call to action in announcing their own initiative to develop common, high-quality standards across the nation. This Common Core State Standards Initiative, which was agreed upon by forty-six states, will develop research-based standards that are aligned to both college and career readiness. This initiative is also being supported separately by the Department of Education, which announced that $350 million has been set aside to help fund common assessments for states that adopt international standards.

No Child Left Behind was a necessary first step toward improvement. Without it, we would not have been able to assess the problems within our education system or recognize how badly we are failing low-income and minority students on an institutional level. Congress should follow the lead of the Obama administration and the education-reform community and take their initiatives to the next level by further reinforcing high-quality standards and expanding accountability to science education.

Reversing the damage caused by decades of sedentary attitudes toward education will take more than just these opening salvos. We must ensure that these reform efforts will not be abandoned or forgotten after a few years like the many programs that have come and gone before them. Further, these promising practices cannot be conducted in isolation of the other, deeper problems with the education system and with society. We still have too many children entering school unprepared to learn and too many children leaving school too early.

We have an education establishment that seems to be more concerned about the adults who run the system than the children who are being inadequately served by it. We must aggressively challenge the status quo for the benefit of our young people and the continued competitiveness of the United States in the world economy.

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5. Jay P. Greene, Manhattan Institute for Policy Research, 2009.

Educating for Global Competitiveness

Thomas Spiller

From Boston to Bangalore to Beijing, education is the engine of economic growth. Whether we are talking about poverty alleviation, global security, or innovation, the discussion must begin with education. If communities and countries hope to prosper on the road ahead, we must support bold, innovative, and transformative education policies and practices.

New Models for the Information Age

In the political debate over education policy, "bold" is often translated as expensive. Certainly, governments must increase their investment in education at all levels, from primary school through lifelong learning.

But the size of the educational budget is only one variable in the equation that translates knowledge into economic growth. More important is how that money gets spent. Most schools in Europe and the United States are trying to meet the needs of this information age using an industrial factory model on an agrarian calendar. We are trapped in old models designed for a very different time. Our arguments are too often about finding funding rather than fundamentally redesigning the educational system. We expend too much energy testing outcomes or outdated models and too little energy trying new technologies.

Governments, industry, and educators on both sides of the Atlantic have raised alarms about the inadequacies of educational institutions in addressing the needs of the twenty-first century workforce. In the United States, many are concerned about the deficiencies in science, technology, math, and engineering education and they are calling for expansive legislation to address education reform, research, and immigration issues. Similar concerns exist in most European Union countries; many are struggling to devise and gain the acceptance of reform programs by their educational establishments.

Governments and stakeholders must examine the policies, programs, and practices of education systems and ask hard questions about how successful they are in improving and expanding learning and, more important, how their performance can be assessed.

Policies for Meeting the Challenge

We need to take a step back and focus on policies and practices that will build a lifelong learning system for the twenty-first century. Our policies must be focused on the goals of student access and success, workforce readiness, research and development infrastructure, global literacy, and essential disciplines. Moreover, we should throw out our attachments to the way we have always done things in education. Technology can be one of the main enablers of this new approach. Our focus on practice needs to be driven by the tough-minded questions: (1) Does this practice improve or advance learning? and (2) How do we know? We believe that information and communication technologies (ICT) have demonstrated their potential to help answer these questions.

- ***Technology for education, training, entrepreneurship, and economic growth.*** In developed and emerging markets, sustained economic growth requires ensuring that future generations will receive strong educations that can be turned into entrepreneurial skills. The current economic crisis must be seen as an opportunity by policy makers, in coordination with the business community and academia, to make education and training widely available anytime and anywhere (on-site, online, and just-in-time). Information technology that allows access to necessary knowledge and skills at any point in an individual's lifetime already exists. Its deployment is eased by the fact that technology—cell phones, PDAs, and game consoles—has always been part of the environment of the current generation of youth. Their educational experience, however, often lags behind this personalized, on-time, interactive experience. Future technology developments, such as personalized educational content or multilingual online content, will allow for an even more positive outcome. In particular, the focus should be put on pre-primary education programs, which have historically provided the best return on investment. Content is just one piece of the solution; schools also need hardware, connectivity, technical training, and support. These are areas where government agencies and the private sector can help.

- ***Technology for education performance.*** In a world shaped by information and data, it is imperative that education and training processes receive the same attention as the content itself. Technology can serve as both facilitator and teaching assistant. The goal is to give teachers back the portion of their workday that has been lost over the years so that they can do what is most important: teach. Technology can also help create strong accountability and transparency in our education systems. For instance, technology helps put accountability systems in place that provide educators with insights on what happens to students after they complete school, transfer, or enter the job market. Such an approach helps discern whether these students have the necessary skills to gain and maintain employment and provides important information for adapting the curriculum to fit students' needs.

We must help in creating innovative educational institutions of the twenty-first century where technology is infused into every part of the curriculum, where creativity and innovation are fostered in every discipline, and where students and educators are constantly striving to solve problems and think outside the box. It is the creation of new ideas and solutions that will ultimately lead to new industries and jobs. With the support of existing and nascent technologies, we can develop a curriculum that reinforces essential disciplines such as mathematics, science, and engineering while it addresses the emerging need for global literacy. The productivity and competitiveness of every nation depends on it.

4. Social and Political Challenges of Renewing Globalization

Aims to move globalization forward are being influenced by social and political forces. To rekindle confidence in the potential of globalization, the G-20 should seek to: (1) strengthen institutions and governance; (2) incorporate a systems approach to investor and consumer thinking; and (3) build networks of international cooperation.

Germany as a Global Player

Stephen Brockmann

The current global economic crisis has shown that no single country, even one as powerful as the United States, can solve major international problems on its own. Key economic, political, and ecological issues can only be solved by groups of nations working together. One of the major mistakes of American foreign policy in the period from 2000 to 2008 was the failure to recognize this fact.

In looking for partners to cooperate with on solving global problems, the United States would be well advised to look to the European Union, and, in particular, to Germany. The European Union is a complex economic and political structure that has expanded remarkably over the two decades since the fall of the Berlin Wall. Economically, it is the most powerful trading bloc in the world, with a combined GDP that rivals that of the United States. Politically, the EU has absorbed many of the states of the former Eastern Bloc, and in the future it might even expand to include Turkey. This expansion is based partly on the economic power of Europe and partly on the attractiveness of such European ideals as democracy and human rights. The importance of these ideals should not be overlooked.

In terms of both population and economy, Germany is the most important country in the European Union. It has the fourth largest economy in the world after the United States, Japan, and China; the latter surpassed Germany only in the past year. The Germans, however, are far richer than the Chinese, dividing a similar-sized economy among only eighty million people as opposed to well over a billion in China. When the German economy grows by only 1 percent, German per capita income goes up by 300 euros; when the Chinese economy grows by 10 percent, Chinese per capita income goes up by only 190 euros. It will therefore take many decades of steady, extraordinary growth for Chinese per capita income to rival that of Germany.

In addition to its obvious economic power, Germany has a number of other assets that make it an attractive partner for the United States in addressing global issues. The first is the Federal Republic of Germany's close historical ties with the United States. The Federal Republic, which is celebrating the sixtieth anniversary of its founding this year, emerged from the devastation of Nazi Germany in 1949 and has been a resounding political and economic success story, thanks in part to active American economic, political, and military assistance. The United States helped create the Federal Republic, and during the years of the cold war it sent hundreds of thousands of American military personnel to Germany to guard against a possible invasion. It would not be far-fetched to argue that the growth and success of the Federal Republic of Germany—and the transformation of a former enemy into a current friend—is one of the major successes of post-World War II American foreign policy. Germans have not forgotten this, and Americans should not forget it, either.

The second factor recommending Germany as a partner for the United States is its similar value system. Like the United States, the Federal Republic upholds the values of democracy and human rights, but it is much less likely than the United States to act unilaterally, partly because it does not have the same degree of military power, but, more important, because Germany's own problematic twentieth-century history has taught Germans to avoid unilateralism and aggressiveness.

A third key factor recommending Germany to the United States is that there is probably no major player on the world stage today that is as careful as the Federal Republic of Germany to avoid traditional nationalism and to promote internationalism. This tendency contributes to Germany's importance in international forums such as the European Union and the United Nations, among other groups. The Federal Republic of Germany, far from trying to avoid acknowledgment of the horrible crimes committed by Germany during the twentieth century, actively and publicly addresses them. This model is remarkably helpful in a world still characterized by excessive nationalism and violence.

Germany's influence in the European Union is powerful but relatively unobtrusive for historical reasons. It is obvious, however, that wherever the United States needs the cooperation of the European Union—and there are many such areas, given the EU's tremendous economic power—it would be well advised to turn to Germany for help. Other areas of potential German influence are less obvious but nonetheless important. For instance, Germany and Russia enjoy a good relationship, a relationship based on mutual respect and facing up to a difficult twentieth-century history. When Russia invaded Georgia in the summer of 2008, German chancellor Angela Merkel was able to negotiate a successful cease-fire among the warring parties. Her quiet, unobtrusive negotiations were more effective than any amount of bluster would have been. Germany is therefore of potentially great value in U.S. negotiations with a proud and powerful Russia.

Because of its strong emphasis on internationalism, Germany also has cordial relationships with most of the other countries of the world. It is a strong supporter of the state of Israel but it also enjoys credibility as an honest broker in the Arab world. Germany's historic relationship with Turkey is strong; today millions of Turks call Germany their home. Because of its pro-Western and secular policies, Turkey is of great importance to the United States in dealing with the Islamic world, so the United States would be well advised to work with Germany in this area.

Germans invented the concept of *realpolitik*—political pragmatism and realism—in the nineteenth century, and German foreign policy tends to be pragmatic and realistic, without the great flights of rhetoric that one sometimes hears from the United

States. Nevertheless, German foreign policy is based not only on pragmatism—the desire to preserve and enhance German influence—but also on a certain idealism—the desire to avoid war and work with other nations to help solve the world's ecological and political problems. And Germany is fundamentally committed to basic human rights, as the German government recently made clear in its statements on both China and Iran. It is typical of contemporary German policy that pragmatism and idealism go hand in hand. Of course, U.S. and German interests will not always coincide, but in a great many cases, particularly on some of the key issues facing the world today, they do, and will, overlap. And whereas the United States has earned a considerable amount of ill will over the last decade, Germany has primarily earned goodwill. That goodwill can be helpful to the United States as well. Germany is and remains a key U.S. ally, and the United States should encourage and enhance that relationship. It can be sure that Germany is willing to cooperate.

Governance, Growth, and the G-20

Bruce Bueno de Mesquita

Promoting stable economic growth in emerging economies is one of the G-20's significant goals. As the G-20 recognizes, an open environment for trade and investment is fundamental to the promotion of sustained and predictable growth. The economics to advance these objectives are well understood, but the impediments created by perverse political incentives are not. Too often, it is assumed that leaders in emerging economies do not understand the economics of growth or else that they face social or cultural impediments that make growth difficult. Whatever the truth may be of these concerns, the fundamental problem inhibiting growth lies in institutional structures of government and the incentives leaders have to attain and retain positions of power.[1]

Regimes that depend on a small coalition of senior civil servants, generals, and family members to keep the incumbent in power are most efficiently governed—from the perspective of survival-oriented leaders—through cronyism and rent-seeking that benefit the few, distorting the economy and retarding growth. As the size of a leader's coalition increases, private-goods-oriented policies become too costly, so incumbents switch to more public-goods-oriented, growth-promoting public policies.

This is not to say that growth inherently harms a leader's longevity in office, for it surely does not. It is just that leaders in small coalition, generally illiberal, settings cannot risk depriving their backers of ample private gains lest the backers find someone who will do better by them and so depose the incumbent. But, at the same time, small coalition environments mean that only a small proportion of the government's revenue is needed to sustain coalition loyalty, giving the incumbent greater discretion over a larger portion of the government's revenue. This is probably why we observe much higher variance in growth rates among nondemocratic regimes than democratic ones. A leader who spends substantial sums at his or her discretion may choose to be a kleptocrat and steal discretionary money to provide a rainy-day fund in case of a coup or other threat to the incumbent's political survival. But the leader may be genuinely civic-minded and so spend the discretionary funds on policy undertakings that he or she believes will benefit society. Sometimes, as with Lee Kuan Yew in Singapore and Deng Xiaoping in China, the leader's ideas about how to benefit society are good ones and substantial economic growth results. Other times, as with Kwame Nkrumah in Ghana or Mao Zedong in China, the ideas may be utterly misguided, producing economic contraction rather than growth.

The G-20 can help influence economic growth in developing economies by attending to the way in which political institutions create perverse or growth-oriented incentives. Simply looking at whether a country has free, multiparty elections, for instance, is insufficient. As the case of Tanzania highlights, a free, competitive electoral system can still operate within a small coalition environment that produces considerable corruption and misallocation of funds. Thus, the G-20 should pay close attention to the details of campaign financing (whether elections involve single-member districts, run-offs, proportional representation, or other mechanisms for aggregating votes), and other features of electoral competition (access to the media, freedom of assembly, and so on). By doing so, the G-20 can fashion programs that channel economic assistance and expertise to governments that are likely to convert that help into effective policies rather than into opportunities for kleptocracy or leader-controlled experiments in policy selection. Failing to attend to these governance details—the size of the required winning coalition and the size of the pool from which the coalition is drawn—results in well-intentioned policies that fail to produce beneficial consequences.

1 Bruce Bueno de Mesquita, Alastair Smith, Randolph M. Siverson, and James D. Morrow, *The Logic of Political Survival* (Cambridge: MIT Press, 2003); Bruce Bueno de Mesquita and Alastair Smith, "Political Survival and Endogenous Institution Change," *Comparative Political Studies* 42, no. 2 (2009): 167-197.

Gauging Investor Confidence: Policy Actions in the Current Crisis

Mansoor Dailami and Paul Masson

The current financial crisis has highlighted the fact that declines in confidence can have a self-fulfilling effect on economic activity. Among government officials, policy makers, and key market observers, therefore, calls to restore confidence in the global financial system have become the international mantra. Financial and political leaders from across the globe—including U.S. Federal Reserve Chairman Ben Bernanke, People's Bank of China Governor Zhou Xiaochuan, U.K. Prime Minister Gordon Brown, Italian Prime Minister Silvio Berlusconi, and leaders of the G-8 and G-20—have spoken out over the course of the year about the crucial role that confidence has played in the crisis. These statements have been matched with action in many areas, but we see clear need for continued effort.

Restoring confidence is a crucial step in repairing financial markets and lifting the global economy out of recession. Initial policy responses by central banks addressed the lack of liquidity in financial markets but were unable to stem the loss of confidence. Thus, broader measures were put in place to recapitalize banks, provide fiscal stimulus, and reform financial regulation. The indicators of confidence we have examined show the dramatic deterioration that occurred as the crisis unfolded and the inadequacy of policy measures taken so far to reverse fully the deterioration of confidence.

Confidence has been shaken by the severity of the crisis and by its unique features, including heightened volatility in all financial markets, plunging equity prices that have erased trillions of dollars of households' wealth, and deteriorating macroeconomic conditions that have led to successive announcements of bleaker forecasts and desperate policy measures. These and other factors have inflated the public's foreboding about the economic future, a feeling reinforced by major securities scandals and the failure of prestigious global financial firms. Drawing parallels with the Great Depression, reputable commentators have sharpened the public's consciousness of the severity of the crisis, as memories of that era conjure up images of serious economic hardship, political instability, and self-defeating protectionism. Confidence has been especially shaken by the fact that the crisis originated in the United States—the heart of the global financial system and the country reputed to have the most advanced financial system and effective financial regulation and supervision.

Measuring changes in investor confidence is not an easy task because it must be grounded in the psychology of investor behavior and attitudes. We find that investor confidence is guided and influenced by four principal factors. This framework enables us to gauge the extent to which confidence has deteriorated and to link changes in confidence to various economic events.

Market volatility: Measures of market volatility and investor anxiety show a sharp deterioration in credit markets in August/September 2007[1] followed by movements in a fairly narrow range until September/October 2008, when confidence suffered a massive deterioration following the failure of Lehman Brothers. Since that time, there has been a substantial narrowing of the TED spread as liquidity in credit markets has improved. Other indicators of market volatility[2] were slower to increase but have since risen to high levels and have not seen much improvement as the crisis has spread and become more severe. Thus, the measure of overall market volatility has remained at an elevated level, though somewhat below its peak in October 2008.

Investment performance: Dramatic declines in wealth have occurred in all of the world's equity markets—the United States, other industrial countries, and emerging markets. In February 2009, equity markets stood at their lowest point in more than a decade, a fact that has exerted a continuing depressive effect on consumer confidence, though a sharp rebound in stock markets beginning in March 2009 suggests that a durable improvement may be under way.

Macroeconomic data: The overall performance of the economy is an important factor in investor confidence because it affects prospects for employment income as well as the values of financial and nonfinancial assets. Until the end of 2007, macroeconomic indicators in major industrial countries had not shown much deterioration. By the end of 2008, however, these series had declined to levels signaling that the current global recession was the most severe in the postwar period.

Government policy: The credibility of their responses has a strong impact on traders and the public. Governments can influence investors' confidence in many ways: through macroeconomic policy, through regulatory policy, and through other legislative actions that can strengthen transparency and enhance corporate financial disclosure and integrity. While the measures announced or taken to date have no doubt helped somewhat to stem the deterioration in confidence, they have not been able to offset the negative effects of grim financial and macroeconomic developments in the fourth quarter 2008 and first quarter 2009.

Policy Actions

Liquidity expansion and easing interest rates

Initial policy responses to the unfolding crisis centered on the provision of liquidity, since the initial symptoms involved the effective shutdown of interbank markets and markets for securitizations. The term "liquidity," however, has two principal meanings, and the global liquidity measure captures just one of them, namely the volume of funds available for investment.

Another meaning, however, is the ease and quickness with which assets can be converted to cash, and this depends in turn on the volume of transactions for that particular asset and the spreads over comparable assets.

A striking feature of the crisis is the extent to which the quantity of official liquidity available has become disconnected from the ease of realizing assets issued by banks or backed by private securities. In contrast to the above measure, liquidity in this second sense has decreased dramatically for all except government securities.[3] Monetary authorities banked on their ability to resolve the problems in private credit markets by an expansion of official liquidity, but, at least initially, this did not prove successful.

State intervention in the banking sector

Policy measures in many advanced countries have also included substantial state intervention in virtually all aspects of the banking industry, including funding, loan portfolios, compensation, and dividend policies. Governments have moved beyond their traditional role of lender of last resort to a new status as guardian of last resort in extending sovereign guarantees to banks' new debt issuance and risky assets, as well as investing directly in banks' debt and equity instruments. As of early March 2009, the total amount of cash invested in the banking industry by governments in the United States and Europe had reached $538.6 billion, with the United States spending $250 billion under the TARP's Capital Purchase Program, and the UK spending $172.5 billion. Capital infusions had already led governments to acquire large stakes in banks in the United States, Britain, and continental Europe, but even more government financing seemed likely.

Fiscal Measures

In the last quarter of 2008, attention turned to broader policy measures to provide stimulus to the economy, in particular the use of fiscal policy.[4] Around the world, countries announced their plans. The fiscal stimulus measures will take time to be effective, especially infrastructure spending, which typically involves long lead times. It is too early to tell whether these measures will have a significant impact on confidence. It is also too early to predict whether they may have significant costs, both to the taxpayer and to private borrowers, if government borrowing crowds out other borrowers' access to capital markets.

Recommendations

At the global level, a two-pronged approach involving greater pooling of resources and addressing stronger cooperation across countries merits attention.

Pooling of resources is an important way to resist a downward spiral in economic activity and to prevent the world recession from having a catastrophic impact on developing countries, in particular. Experience from the Latin American and Asian crises of the 1990s shows that official financing must be substantial in order to be effective.

Governments' willingness to coordinate their policies can help reestablish confidence by ruling out beggar-thy-neighbor responses to the crisis. The danger of special interests using trade policy to protect particular industries is especially severe in a downturn. A joint international commitment to maintain open markets for goods and services must be a central feature of governments' policy responses. As for financial policies, there have been clear instances in which the absence of coordination has led to problems. For example, Ireland initially guaranteed the deposits of domestic banks only, leading to runs on branches of foreign banks operating in the country. Ireland later extended the guarantee to all banks operating in Ireland, and other European countries also widened the scope of their deposit insurance.

The case for *fiscal policy coordination* is weak in normal times because countries generally face very different challenges and priorities, but it is called for today, as all countries face the same prospect of inadequate global demand. Stimulating aggregate demand through fiscal expansion is in everyone's interest at the moment. Many countries will be reluctant to undertake it on the necessary scale, however, because some of the expansionary effects will spill over to other countries. Moreover, a country acting alone—even the United States—may reasonably fear that increases in government debt will cause investors to lose confidence in its fiscal sustainability and so withdraw financing. Both of these constraints will be lessened by a commitment to coordinate a global fiscal expansion.

1. The views, findings, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the view of the World Bank, its Executive Directors, or the countries they represent.

   As measured by the TED spread, the spread between interest rates paid by the U.S. Treasury and those prevailing in the interbank market.
2. The VIX and measured volatility in commodity and foreign exchange markets.
3. A proxy for the deterioration of the liquidity in markets for claims on banks and for other non-government securities is the TED spread, which widened dramatically in September 2008 and has not yet narrowed back to pre-crisis levels.
4. The U.S. administration had already implemented fiscal stimulus in the second quarter of 2008 through tax rebates. While they temporarily boosted economic activity, they did not lead to a revival of confidence, and the United States experienced a sharp fall in GDP in the second half of the year.

The United States and Cuba: Time for a New Look at an Old Neighbor

Kenya C. Dworkin y Méndez

At this precise moment in the history of the 47-year-old U.S. embargo of Cuba and the 46-year-old restrictions on U.S. citizen and permanent-resident travel to Cuba, the G-20 countries and other countries in the European Union are in a position to assist President Obama and the United States in developing new strategies for engagement with one of its oldest and closest neighbors.

Nearly 50 years of misguided and ineffective policy toward the island's government has accomplished almost the exact opposite of its intended effect, managing to bolster the long-lived Castro regime by allowing it to focus the Cuban populace's attention on American bullying and away from its homegrown problems, and sullying the United States' reputation as a promoter of democracy around the world. Under President Obama's leadership, it is time for the United States to implement an approach to Cuba that is grounded in a "non-confrontational, measured, cooperative, and empowering" political philosophy.[1] Now more than ever, the countries of the world need each other, and the United States is no exception.

The United States can learn from its European Union and other G-20 partners, many of which have had long-standing trade and development relationships with Cuba, how to insert itself into the international arena with Cuba once the legal wall comes down—and down it must come. The European Commission alone, with its many programs and its emphasis on and support for creating networks of partners in Latin America (including Cuba) in fields such as trade promotion, education, information, civil society, and the environment, can serve as a model for the U.S. to explore. Since 1996, the European Union's Common Position on Cuba has meant an effective and meaningful policy toward the island, a policy that not only promotes legitimate economic interests and principles but also international human rights for the country's 11 million people.[2] There are clearly lessons to be learned from Europe's track record with Cuba over the past ten to fifteen years.

In 2009, even the so-called emerging economies show evidence of healthy trade relations with Cuba. India announced that its trade with Cuba will increase to $100 million in the next three years. Brazil is financing the rebuilding of Mariel, Cuba's shipping port, so that it can serve as a hub for an offshore oil concern, and it is partnering with Cuba to help market Cubanpatented anti-cancer medications. China is Cuba's second-largest trading partner and its top importer of nickel and sugar, and Russia is financing Cuba's purchase of agricultural and electricity-producing equipment. The fact that the United States fully pursues economic relationships not with Cuba itself but with many of Cuba's trading partners, particularly the above-mentioned emerging economies, reveals the absurdity of its policy towards Cuba. The still-enforced 1962 U.S. trade embargo and 1963 travel restrictions, with all their subsequent enhancements and modifications, such as the 1992 Torricelli Law and the 1996 Helms-Burton Act, continue to hurt Cuban and American citizens, their respective economies, and foreign companies in Europe and around the world that choose to do business with Cuba. The European Union and Canada have challenged these restrictions.

The continued existence of the nearly total embargo that the United States imposed on the island in 1962 is by now a contradictory anachronism, especially because the United States is currently the fifth-largest exporter to Cuba, mostly of agricultural, fish, and forestry commodities. Statistics from the U.S. Census Bureau's Foreign Trade Division show that, as of 2002, U.S. exports to Cuba began to increase dramatically from a value estimated in single-digit millions to over $368 million (and up to $711.5 million in 2008).[3] In addition, many do not realize the detrimental effects on the U.S. economy of the legal restrictions on travel to Cuba. It is estimated that unrestricted, legal travel to Cuba by Americans on U.S. carriers could generate up to $1.8 billion and nearly 12,000 jobs after only five years.[4]

Following the historic election of its first African-American president, in the throes of near economic collapse, and in the process of considering extraordinary reforms to its health care and financial systems, the United States is in a position to abandon its diplomatic isolation and economic embargo of Cuba. President Obama has already taken measured steps toward a positive change in relations with Cuba, having ordered the closing of the Guantanamo Bay Detention Camp and the removal of restrictions on Cuban-American travel and remittances to Cuba. Likewise, bilateral talks on issues such as immigration and counter-narcotics have resumed, and the president is allowing American telecommunications companies to purchase licensing agreements in Cuba.[5] Past U.S. administrations have contended that Cuba's human rights violations and its opposition to the United States' war on terror are obstacles to a normalization of relations, or détente, but these very same purported obstacles have not prevented the United States from developing relationships with former adversaries such as China.

While it is clear that Cuba, too, will need to take steps toward any normalization of relations with the United States, it is also true that the United States' long-term position on Cuba and the collapse of the Soviet Union caused the island government to seek out and nurture relationships with other regional partners, leaving the United States low on Cuba's list of burning priorities.[6] Thus, the United States should not expect an overly enthusiastic response from or rapid change in Cuba, but it should not be discouraged. Both Cuba and the United States will reap enormous human and economic benefits from a constructive U.S. policy toward Cuba that leads to slow but steady re-engagement with our island neighbor. Our two histories are intricately linked, and at this moment our destinies may very well be linked, too. The G-20 and other European countries could well play an essential role in expediting a long-overdue and constructive change in U.S.-Cuba relations.

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3 http://www.census.gov/foreign-trade/balance/c2390.html#2009.

4 For more information, visit the Web site of the Cuba Policy Foundation. For statistics on the economic effects of the embargo on Cuba and travel restrictions on American travelers and U.S. carriers, see http://www.cubafoundation.org/Releases/Study%20Shows%20Cuba%20Travel%20GOOD%20for%20U.S.%20Economy%20-%200206.25.htm.

5 http://www.nytimes.com/2009/04/15/world/americas/15cuba.html.

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The Golden Rule

Steve Forbes

If the G-20 countries are serious about preventing future financial disasters such as we have experienced since 2007, then they must consider a heretical idea: resurrect—in modern garb—the essence of the Bretton Woods monetary system, which was conceived by finance ministers and delegates from Allied nations at a meeting in Bretton Woods, New Hampshire, in 1944. Bretton Woods fixed the dollar to gold, and other currencies were fixed to the dollar. Devaluations and revaluations were resisted and thus were rare. There were no more floating currencies. No more beggar-thy-neighbor devaluations and rampant erecting of trade barriers that so hideously pockmarked the purgatory of the 1930s. If a country's money got in trouble, immediate measures were taken.

The system worked. By today's standards, currencies were indeed made remarkably stable. The occasional change in value was headline-worthy stuff. Trade blossomed. Europe and Japan made astonishingly swift recoveries from the rubble of World War II.

Unfortunately, the system was undermined in the late 1960s and destroyed altogether in the early 1970s. It has never been rebuilt.

The blunt truth is that the current crisis would never have happened under Bretton Woods. The Federal Reserve could not have printed too much money and kept interest rates at artificially low levels for so long. Without the excess liquidity created by the Fed and other central banks, the money to balloon the bubble simply would not have existed.

So why was Bretton Woods blown up and then buried? Because of a misbegotten theory that stable exchange rates hurt economic growth. When a country's currency got into trouble, the government would raise interest rates to attract foreign exchange, which would in turn prop up the value of the currency. Higher rates dampened economic growth; this would reduce imports and thus help improve a country's trade balance. Because of this, however, preserving currency stability came to be seen as something that curbed the economy.

Instead of fixing rates, revisionists asked, why not float them? A currency's value would change and the government wouldn't have to throttle economic growth. Floating money would automatically adjust those pesky trade and capital imbalances.

Beguiling thoughts, but the theory ignored why a currency got into trouble in the first place: its central bank was printing too much money. Austerity was not the cure for inflation. Less money-printing was—and is. A recession might result because of the investment and spending distortions inflation invariably introduces into an economy.

The U.S. dollar was prey to bouts of weakness under Bretton Woods because the Federal Reserve would periodically mistakenly create excess liquidity. Nonetheless, American politicians and even economists blamed this on all the money we spent on our overseas military, particularly the cost of stationing hundreds of thousands of our troops in Europe to deter the Soviet Union. In a foreshadowing of our recent hectoring of the Chinese, we badgered Germany and Japan about their deutsche mark and yen being "undervalued." Given such junk thinking, it's no surprise that in the early 1970s we severed the dollar's link to gold and churned out dollars as promiscuously as we would subprime mortgages decades later. Everyone else followed our bad example to varying degrees. A decade of ever wilder inflation and economic chaos resulted.

In the early 1980s the U.S. and other governments clamped down. Money became tight. Inflation was curbed. But the tie to gold was not reinstated. Thus we've had periodic outbreaks of monetary instability. One example was the Asian Contagion of 1997, which unnecessarily sent Pacific Rim countries into bone-crunching recession.

So here is what President Obama should—but won't—propose at the G-20: that the United States tie the dollar to gold. But unlike under Bretton Woods or the traditional gold standard, countries wouldn't promise to pay out gold from their vaults when people turned in dollars, euros, or other currencies. Instead, the Fed would conduct monetary operations to keep the dollar within a gold-price range of, say, $800 to $850. We would invite other countries to follow suit.

The resulting global monetary stability would do wonders for getting the world's financial markets working again, as well as for getting businesses to make capital expenditures and entrepreneurs to take risks in things other than commodities and currencies.

But this won't happen. In economists' and central bankers' minds, gold is a relic of a bygone era. Indeed, in their mistaken thinking, the yellow metal somehow caused—or at least prolonged—the Great Depression. If anything, gold was the victim of trade wars and onerous taxation, yet the myth persists.

This credit crisis will subside, but, like the bubonic plague before rudimentary sanitation reduced the breeding grounds of flea-hosting rats, it will eventually flare up again.

A Global Grand Bargain

Robert Hutchings

We are in the midst of the most profound flux in world affairs since the creation of the Western alliance system in the late 1940s. The collapse of the cold war order, the rise of China and India as new global powers, and the advent of new transnational challenges have all combined to introduce new uncertainties into the global system. Seemingly unconnected surprises, including the global financial crisis of 2008-09, the spread of swine flu, $140-per-barrel oil, the breakdown of transatlantic solidarity over Iraq, the effects of the Indian Ocean tsunami and Hurricane Katrina, and the terrorist attacks of 9/11 were not isolated events but rather interrelated consequences, direct or indirect, of the new era of globalization. Globalization was rendering obsolete the old dividing lines—East-West, North-South, developed-undeveloped, aligned-nonaligned—that had helped define the international order for a half century.[1] Managing this revolution in world affairs demands nothing less than a new international system.

The nature of these challenges calls for concerted international action because no country—not even the United States with its unrivaled power—can successfully address them alone. What is needed is a "global grand bargain"[2] that brings together the relevant global actors to address the overlapping challenges of reforming the global financial system, managing a growing anti-globalization backlash around the world, enhancing energy security, addressing the causes and consequences of climate change, countering the danger of nuclear proliferation, and reforming global institutions that are no longer up to these challenges.

This agenda was not pulled out of thin air, by the way. It springs from a series of structured strategic dialogues conducted under the auspices of the Atlantic Council of the United States in conferences with key leaders in China, Japan, Russia, India, Brazil, South Africa, Nigeria, Egypt, and a dozen other countries on five continents. From Paris to Tokyo, Beijing to Lagos, Cairo to São Paulo, and Delhi to Johannesburg, we encountered a common set of challenges. The problems have different accents in different places, and some are obviously more acute in one part of the world than in another, but the same basic issues concern people everywhere. And the policy responses that were proposed during these trips reflect a substantial degree of consensus on what needs to be done. They constitute the global strategic agenda.

It would be too much to say that we encountered a yearning for an American answer or a "made in USA" solution, but we did conclude from these trips that addressing the new challenges will require catalytic U.S. leadership in several linked areas:

- Reforming the IMF and constructing a "Bretton Woods II" architecture as the functional equivalent of a "World Financial Organization," but without the formal structure of a WTO-like body;

- Advancing a U.S.-EU Doha Round initiative entailing substantial new U.S. and European concessions on agriculture in return for commensurate commitments by India, Brazil, and China to liberalize trade in agriculture and services;

- Expanding International Energy Agency membership to include China, India, Russia, and other non-OECD countries and elevating the IEA, along with an expanded Energy Charter Treaty, as a forum for energy security through negotiation among suppliers, consumers, and transit countries;

- Creating a global clean energy fund (financed by the United States., the EU, Japan, and private-sector firms) by developing a more ambitious version of the International Partnership for Energy Efficiency Cooperation (IPEEC) established at the G-8 summit in L'Aquila in July;

- Pursuing a post-Kyoto environmental regime based on flexible national commitments extending to 2050, with the United States and other developed countries agreeing to binding targets and China, India, and other countries agreeing to emissions ceilings and, in the longer run, cuts—aiming toward a framework agreement at the Copenhagen review conference in December; and

- Reinvigorating the Nuclear Non-Proliferation Treaty through deep reductions in U.S. and Russian nuclear warheads, persuading non-NPT nuclear powers to accede to the treaty, creating an international nuclear fuel cycle bank, and negotiating a Fissile Material Cutoff Treaty.

The agenda is so large that it is hard to know where to begin and how to prioritize. Addressing these challenges separately carries the risk of leaving us in the same ruts that negotiators have been in for years. For example, successful conclusion of the Doha Round calls for asymmetric market opening; the most advanced countries must open their markets disproportionately to rising economies at the next level of development, while those countries must open theirs disproportionately to the poorest countries. The cost to the rich is small, the benefits to the poor are large, and the payoff to the stability of the global system is considerable. Yet countries will not agree to seemingly disadvantageous market-opening measures, no matter how small the cost, unless they are persuaded of tangible benefits in other areas. Large common goals fall victim to a series of small particular ones; this is the familiar "collective action" problem that is almost the definition of the global predicament.

One way around this dilemma is to follow the advice of former U.S. President Dwight Eisenhower: "If a problem cannot be solved, enlarge it." It is a way of bringing more politically relevant clout to bear and creating opportunities for constructive trade-offs. Most of the challenges are interconnected, and they have better chances of resolution if they are tackled as part of a coherent overall strategy—a "global grand bargain." This would not be a bargain in the sense of a single negotiated settlement, a single treaty, or a single institution, but rather a flexible set of reciprocal, step-by-step concessions among several dozen countries across these various domains.

A new bargain is needed for the additional reason that the existing Western-led international order is being challenged on several fronts by new global actors who do not fully share the same values and norms. The open question is whether the existing international institutions and patterns of interaction can be successfully adapted to accommodate and integrate the rising powers and address a new agenda of issues brought on by globalization. If so, on whose terms will this transformation occur? An Indian author recently wrote that "the West is within us." Will those liberal democratic values prevail, or will there be a clash with the competing values and perceived interests of other important global actors – "the West versus the rest," in other words?

In this regard, the evolving role of the G-20 is promising in that it brings China, India, and other rising powers into a common forum with the established powers, representing collectively some 85 percent of global economic activity, energy consumption, and greenhouse-gas emissions. Already the G-20 has moved beyond economic issues to touch on energy security and climate change; it could continue to evolve into a kind of informal global steering group, brokering deals at the political level and then referring the actual negotiations to established forums. It is not a perfect grouping because it leaves many countries unrepresented, but it could play a useful role in conjunction with the UN, IFIs, and other existing institutions in creating a new and flexible international system.

The task is analogous to the creation of the post-World War II system sixty years ago. The institutions created then—the United Nations, the Bretton Woods institutions, the Marshall Plan, the North Atlantic Alliance, the European Economic Community, and others—were not part of a single system, but they were linked conceptually. NATO would not have gotten off the ground without the success of the Marshall Plan, just as the early steps toward a European Community would not have been possible without the security assurance that NATO provided. But an attempt to deal with new problems within the framework of existing institutions cannot provide the solutions required. This is where the international community has been stuck for the nearly two decades since the end of the cold war: trying to adapt those institutions to new challenges and open them to new members while invoking a sense of common interests that were more relevant to the last half of the twentieth century than they are to the early twenty-first. That effort at incremental adaptation has nearly run its course. A new overarching concept, a global grand bargain, is needed—not to displace but to strengthen existing institutions by creating an essential forum for political hard bargaining.

U.S. leadership will be necessary but not sufficient. It is necessary because no other country or group of countries wields the essential power and influence in each of these areas—or as much capacity to block action by others—as does the United States. But the United States lacks the capacity to deliver progress all by itself in any of them. The illusion that the United States as the sole superpower could solve global problems on its own surely has been shattered by our experience in Iraq over the last few years. Nor will the emerging distribution of global power and influence, characterized by a dramatic shift of power and influence roughly from west to east, permit a new global order to be managed by a U.S.-European condominium. Yet, somewhat paradoxically, the United States and its allies have a crucial role to play in fashioning a new global bargain that integrates the rising powers and accommodates their interests, while at the same time preserving and extending the basic liberal values that have undergirded the Western-led international system. That is the historic task we face.

An expanded version of the author's "global grand bargain" proposal, with specific policy recommendations, will be forthcoming this fall as a policy paper of the Atlantic Council of the United States.

1 National Intelligence Council, "Mapping the Global Future: Global Trends 2020" (Washington, D.C.: Government Printing Office, 2004) and "Global Trends 2025: A Transformed World" (Washington, D.C.: Government Printing Office, 2008).

2 Robert Hutchings, "A Global Grand Bargain," *Washington Post*, November 17, 2008, A19; Robert Hutchings and Frederick Kempe, "The Global Grand Bargain," *Foreign Policy Online*, November 2008.

Failed and Badly Governed States

Stephen D. Krasner

Relations among great powers have never been more benign. The last war among major states ended sixty-four years ago. The states of western Europe are now part of a North Atlantic security community among whose members war is not only unlikely but unthinkable. The cold war ended not with a hot war but with the collapse of the Soviet Union. Relations between Russia and other major powers may not be completely cordial, but the threat or use of force involving other powerful states is not on the table. China's peaceful rise to power is embraced by other major powers, not just China. India and the United States have taken the lead in working around India's possession of nuclear weapons so that India can more fully participate in key global institutions.

Several explanations have been offered for this unprecedented period of peace among major powers. Second-strike nuclear weapons have eliminated any ambiguity about the cost of a nuclear war, which would be suicidal. Global integration has raised the economic cost of wars above the levels that Norman Angell famously predicted would make war unlikely before the conflagration of World War I. With the exception of China and Russia, all the major powers are democracies, and democracies—for reasons related to domestic constraints and attitudes, or the information that they provide—do not fight among themselves. Regardless of the explanation, the world is more secure from the threat of a great power war than it has ever been.

Beyond the major powers, much of the rest of the world has also enjoyed unprecedented peace, social progress, and economic growth. Hundreds of millions of people have escaped absolute poverty, and not just in China. The financial collapse of 2008 will not derail this process.

The major threats to peace, prosperity, and security come not from the powerful but from the weak—from what Paul Collier has termed the "bottom billion." In the countries of the bottom billion, governments have been repressive, economic growth has been anemic, civil wars have been frequent, and absolute poverty has been pervasive.

Moreover, the insecurity of the bottom billion is a threat to the security of even the world's most powerful states. Weapons of mass destruction, especially nuclear and biological weapons, have severed the relationship between a state's underlying resources and the destruction that it can bring on others. North Korea has nuclear weapons and missiles that can reach Japan, Russia, China, and South Korea. Although North Korea could kill millions, its GDP is less than 1 percent that of Japan and China and less than 2 percent that of Russia and

South Korea. Transnational terrorist and crime organizations can take refuge in ungoverned spaces not only in weakly governed states like Afghanistan but even in relatively well-governed ones with ungoverned territory like Colombia.

Improve governance in weak and badly governed states is a formidable challenge. The empirical record is not comforting. Forcible intervention has not been very successful in achieving long-term political and economic change. One study identified seventeen examples of forcible American intervention since 1900. Six had some degree of success in establishing more accountable democratic polities: Japan, Germany, Grenada, Panama, Bosnia, and Kosovo. The rest were failures. Forcible intervention aside, the record for foreign assistance of various kinds is mixed, at best. Statistical analyses of the relationship between economic growth and foreign assistance are inconclusive. Some studies have found a small positive relationship, some a negative relationship. Poor countries have received more than $2 trillion in foreign aid. There is not much to show for it.

There is no agreement about what kinds of approaches might be most productive in improving governance and economic growth in badly governed states in either academia or the policy world. The most prominent approach, routinely endorsed at international conclaves such as the Group of 20, is to give more money. The underlying theory supporting the call for more aid is that the countries of the bottom billion are suffering from a finance gap. If poor countries can secure enough capital to seize the first rung of the economic growth ladder, they will be able to escape the poverty trap. The endorsement of the Millennium Development Goals and especially the continually repeated mantra that developed countries should meet the 0.7 percent aid target reflect this perspective. (The 0.7 percent figure, put forth in the Pearson Report of 1969, was based on the Harrod-Domar growth model. If the calculation were re-done now, the figure would be not 0.7 but about 0.45 because of the more rapid relative growth of the industrialized countries since 1970.)

A second approach focuses on institutional capacity. Absent a capable government structure, development will be impossible. Foreign actors need to help build the capacity of the state. Training and technical assistance are crucial. This approach is particularly prominent in post-conflict situations because of the focus on creating a security force that will allow external actors to leave, whether that be the United States in Iraq, NATO in Afghanistan, RAMSI in the Solomon Islands, or MINUSTAH in Haiti.

A final perspective on state development emphasizes the self-interest and strategic calculations of political leaders. All leaders want to stay in power. Economic and political development will take place only if it is in the interest of leaders to adopt policies that improve, rather than undermine, growth and stability. In well-governed democracies, leaders have an incentive to provide goods to many people because they need many votes to stay in office. In poorly governed states, leaders provide goods only to a narrow base of supporters even if this means damaging the economy as a whole.

If political and economic development depend on the calculated self-interest of leaders, then external actors seeking to promote better governance must focus on altering incentives, not providing money or building state capacity. One way to alter incentives is through foreign assistance with ex-post conditionality; political leaders must implement reforms before they receive foreign aid. The United States Millennium Challenge Account is the only foreign aid program that is unambiguously committed to this approach. The funding request for this program, however, is only a modest $1.45 billion for FY 2010. Providing trade opportunities, either through preferential tariffs or by eliminating subsidies in OECD countries, would be another way to alter incentives.

Donors may also be able to change the incentives facing leaders in poorly governed states by providing assistance to public and private organizations that might be able to check and balance centralized state power. Such groups could include not only entities associated with politics such as parties, bar associations, human-rights organizations, the media, parliamentary staffs, and corruption commissions, but also more apolitical entities such as microfinance plans, women's education groups, and professional organizations.

Policies based on altering the incentives of leaders are difficult to implement. Conditions will vary from one country to another. Providing money for private or public organizations is more like investing venture capital than investing in the stock market, much less a savings account. If 10 percent of investments come to fruition, investors may be very rich, but informing the U.S. Congress or another legislature, as opposed to venture capitalists, that 90 percent of the money will be wasted is not politically attractive.

Focusing on the calculated choices of political leaders is the most compelling way to understand state development. But unlike providing capital or building state capacity, it does not translate easily into public policy. Until political leaders in the Group of 20 and beyond are willing to admit that conventional formulas for improving the conditions of the bottom billion have been unsuccessful, the threat that failed and weakly governed states pose to internal and external security will not abate.

Psychological Impediments to Taking Action on Global Warming (And Implications for What Must Happen in Order for Action to Occur)

George Loewenstein

There are compelling economic reasons why global climate change is difficult to manage. Most significantly, the benefits resulting from any costly action taken by an individual are dispersed around the world and over time, so it would never be worthwhile for an egoistic, rational individual to take unilateral action to reduce his or her impact. In fact, it very well might not be worthwhile for any nation to take costly unilateral action.

However, nations, religious groups and, in some cases, social classes have often managed to overcome this free-rider problem. During times of war, nations have persuaded throngs of young people to make the ultimate sacrifice by playing on their patriotism and, in some cases, fear and/or hatred of the enemy. Religious, and in some cases revolutionary, groups have similarly managed to motivate members to sacrifice themselves for a larger purpose. Clearly, under the right circumstances it is possible to surmount the free-rider problem.

Global climate change is probably not one of these circumstances. There are too many psychological factors weighing against coordinated action of the type that one sees in wars and in religious and revolutionary movements. In this essay, I detail several of these factors and argue that a consideration of them leads to the conclusion that there is only one possible solution to the problem: the creation of an international authority with "teeth" and a reputation for objectivity. I believe that widespread acceptance of such an authority is feasible.

An understanding of some simple properties of human psychology helps to explain why it is so difficult to motivate individuals to take action, to accept policies that entail immediate sacrifice, or to coordinate efforts between nations.

Adaptation and the Fear Deficit

When people are acutely fearful, they are often willing to take action to remedy a problem and make personal sacrifices toward that end. Like other animals, we have a fear system that is designed to mobilize us in response to threats. However, our fear system evolved at a time when most of the dangers we confronted were of an acute nature. Thus, it is well equipped to deal with immediate threats such as predators, natural disasters, or even road hazards, but it is poorly designed to deal with gradually worsening situations—most significantly global warming—that pose the greatest collective perils in modern times. Our fear system is adaptive; hold any threat constant, even at a high level, and fear subsides. Consequently, we cannot rely on fear to mobilize people in response to this impending calamity. Instead, we must rely on our analytic capabilities.

Time Discounting

One of the best-documented errors of human decision making is our tendency to discount excessively costs and benefits that are remote in time and to overvalue costs and benefits that are immediate. Most of the problems that cause difficulties for individuals, such as overspending, obesity, and practicing unsafe sex, involve immediate benefits and delayed costs. Mitigating these problems entails accepting immediate costs in exchange for delayed benefits. Again, this tendency to discount the future cuts against action to mitigate global warming because the consequences of global warming are delayed while the costs of effective action to remedy it would necessarily be immediate.

Though one might hope that our elected representatives would play the role of guardians of the future, they are in an even worse position to make reasonable long-term trade-offs than are private individuals. As individuals, we often take actions with long-delayed benefits, even extending beyond our own lives, such as sending our children to college or leaving them an inheritance. On the other hand, politicians who typically face periodic elections are unlikely to stay in office if they advocate measures that benefit future generations but impose severe costs on their immediate constituents.

Discounting for Uncertainty

The consequences of global warming are not only delayed but are also uncertain, as are the benefits of any actions that could be taken in the present to mitigate the problem. Indeed, there is—and inevitably there will continue to be—debate about whether global warming is real, whether it is caused by humans, and whether it can be remedied by human action. There is also some chance that, even if no action is taken, scientists will discover some kind of technological solution to the problem. It is, of course, perfectly rational to give less weight in decision making to outcomes that are uncertain relative to those that are assured. But the human reaction to uncertainty can go beyond such rational discounting. All of these varieties of uncertainty interact with time discounting—the natural human reluctance, discussed above, to avoid making immediate sacrifices for future benefits—in a pernicious fashion. People will be tempted to procrastinate in taking immediate, costly measures to mitigate global climate change if there is any chance that those sacrifices might later prove to have been unnecessary.

The Drop-in-the-Bucket Effect

The benefits of any personal sacrifice, or even any sacrifice made by one nation, are tiny—a proverbial drop-in-the-bucket. Once again, many of the most self-destructive patterns of human behavior are associated with this feature. We eat too much in part because the impact on our weight of a single bag of Doritos is tiny. We save too little because foregoing that latte is going to have a negligible impact on our savings or our credit-card debt. This is different from the standard economic point that people are unlikely to take costly actions when they cannot personally appropriate the benefits associated with the costs. The point here is that even if they could appropriate the benefits, people are unlikely to make a sacrifice if the resulting benefits are intangible.

Coordination by Multiple Nations: The Self-Serving Bias

Suppose there was general agreement that hydrocarbons had to be reduced worldwide by some specific amount to have a significant impact on global climate change. How should the burden be distributed between countries? Any attempt to reach a solution to this problem would encounter another, very robust psychological effect: the self-serving bias, which is the tendency to view as fair settlements that favor one's self.

There are various differences between countries that might enter into the determination of how burdens should be allocated. Countries differ in their (1) existing levels of wealth; (2) existing levels of emissions; (3) growth rates; (4) costs required to reduce emissions by a certain amount based on the composition of economic activity; and (5) likely vulnerability to the consequences of global warming. Unfortunately, different countries are likely to reach conflicting, and almost certainly self-serving, conclusions about how these different factors should normatively enter into the sacrifice required by an individual country. In addition, there is likely to be disagreement about how to quantify each of these ingredients. Thus, even if every country were on board to do its fair part to reduce emissions by the global target amount (a heroic assumption), it is unlikely that there would be much agreement about what constituted a fair share—that, is, how burdens should be distributed.

Implications of These Points

Clearly, many dimensions of human psychology weigh against the likelihood that there will be a public outcry, especially at a global level, for action on global climate change. Worse, any far-sighted, global-minded leader of a nation who attempted to implement policies that imposed immediate costs on citizens would likely be met with widespread public opposition. Yet the same people who might oppose such policies if enacted by their own leaders might be willing to accept a policy in which those same leaders ceded limited authority to some kind of global organization entrusted with the long-term well-being of the planet, if that entity were trusted and widely viewed as objective and impartial.

The history of such supranational entities is not very encouraging when it comes to matters of war and peace. Consider the League of Nations or the United Nations. But war and peace are exactly the types of emotional issues for which leaders can often mobilize the public to deal with acute problems. There is a much more encouraging history of nations ceding authority to organizations when it comes to less emotionally charged issues such as trade treaties, international development, and economic issues in general. The European Union is probably the best known of such supranational organizations with influence, but is certainly not the only one.

Parties, including countries, with competing interests often have a difficult time resolving thorny issues directly, particularly when there are sources of tension such as differences in power, religious beliefs, forms of government, historical animosities, and so on. However, the same parties that are unable to reach agreement on specific issues may be able to come to terms on a mechanism for reaching agreement. Thus, for example, businesses that cannot reach agreement on a point of contention are often not only able to agree on arbitrating the dispute, but may even reach agreement about who the arbitrator should be. By the same token, countries that are unable to reach agreement on how to apportion the sacrifices necessary to counteract global warming may be able to agree on the establishment of an authority in charge of determining such burdens.

In the same way that the World Bank sometimes helps leaders impose austerity measures that they recognize are necessary but do not feel capable of implementing, a higher authority could take pressure away from local politicians. Moreover, research on procedural justice finds that people are often content with the resolution of a dispute, even a resolution antithetical to their personal interests, if they perceive the procedure that led to the resolution as just.

Whether or not the solution to global warming—if, indeed, a solution exists—takes the form of a supranational organization, any attempt to deal with this problem must take into account the complex dimensions of human psychology.

Eight Deadly Sins

John H. Miller

The recent economic crisis fully embraced all of the seven deadly sins. Gluttonous fixed-income asset buyers wanted any asset with the promise of slightly higher returns. Extravagant home buyers opted for houses beyond their means, hoping that rising prices would allow refinancing. Greedy mortgage brokers were willing to go to any lengths to qualify buyers, knowing that they would be able to pass the newly issued mortgages on to others. Slothful rating agencies relied on poor statistical models and the word of the issuing banks to certify investments. Envious firms pursued high leverage and suspect derivatives to boost their returns. Prideful government agencies relished the increase in home ownership and the power of the unregulated market. As for wrath, hell hath no fury like an economic system scorned.

The point here is not to tell a modern morality tale but rather to emphasize how, at each level in our economic system, individuals were following perfectly understandable—though perhaps not virtuous—incentives. Thus, in a very real sense, economists and policy makers were well equipped to understand the *parts* of the above system. Unfortunately, thinking that understanding the parts of a system will lead to understanding the system as a whole is a sin that is committed all too often.

Over the last few decades, scientists from across various fields have begun to focus on how to understand, predict, and ultimately control the complex systems that often arise in our world. A primary tenet of this work is that understanding the individual parts of a system may not be sufficient for understanding how the *interactions* of these parts result in system-wide behavior. Thus our usual scientific reductionism is not enough. The idea that parts may aggregate in unexpected ways is not new. Indeed, over two centuries ago, Adam Smith's foundational insight about markets was formulated in exactly this way: "He intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention."

While the field of complex systems is in its infancy, it does offer a number of insights about our current economic crisis. Here we provide a few examples.

Complex systems are characterized by networks of interaction. Depending on the structure of these networks, the ties of agents in a system can result in surprising behavior. Consider a line of trees growing along a ridge. During lightning storms, individual trees may be ignited and may subsequently ignite neighboring trees. If one wants to maximize the timber harvest, there is a trade-off between planting more trees and the chance that a single spark will cause a raging conflagration in an area of densely packed trees. To improve this situation, one can incorporate firebreaks on the ridge, that is, connections can be intentionally destroyed by occasionally leaving bare land between trees so as to contain any potential fires. Such firebreaks may not arise in the natural course of things, especially if individual landowners follow their own incentives. Economic phenomena such as interbank loans or chains of credit default swap holdings may be subject to a forest-fire-like dynamic, suggesting that carefully designed "firebreaks" may be needed if we want to maximize the "harvest."

Complex systems are often subject to various feedback mechanisms that have a dramatic impact on the dynamics of the system. For example, the housing market is rife with positive feedbacks: increased access to mortgage money results in higher house prices, which increase the demand for houses and also make lenders more willing to lend. Alas, unlike negative feedback that tends to dampen and stabilize systems (think thermostats), positive feedback causes systems to run amok. Thus, when prices are rising, the system feeds upon itself and prices climb ever higher. Unfortunately, such feedback is a double-edged sword, for when prices begin to fall, the system races to the bottom. The lesson here is to think carefully about, and control, the types of feedback that are inherent in the system.

Complex systems may tend toward various attractors, that is, over time systems may favor relatively stable configurations. For example, consider the human body, which is composed of many trillions of interacting cells. One attractor for this system is a living, breathing human being, host to a universe of metabolic and electrical activity. However, disrupt the electrical flow to the heart for even a fraction of a second and the same, once vital body, may begin a cascade of activity that quickly results in death (another attractor). Attractors tend to have "basins of attraction" that, like watersheds, direct the flow of activity from specific areas of the landscape into the associated attractor. Markets, especially for goods with values tied to expectations such as commercial loans, are likely to have multiple attractors as well. Much like the human body, these markets may have a vital state where positive expectations are easily realized and commercial paper flows freely, and a quiescent state where unfavorable expectations become self-fulfilling prophecies and the market becomes moribund. At times when the system is on the edge of a basin of attraction, it may be possible for a slight effort to result in a radical realignment of the system, just as a raindrop falling next to the Continental Divide is within inches of going either to the Atlantic or the Pacific. At other times, especially when the system is trapped at an unfavorable attractor, moving to another attractor may require a much more extreme, and carefully executed, stimulus.

These are just a few of many areas of active research in the field of complex systems that might provide new insights into the behavior and control of modern economic systems. Alas, one final property of complex systems is that they often result in the emergence of wholly unexpected behaviors. At times, this is a good thing, as when the interactions of thousands of self-interested traders in a market result in a stable price that allows information and goods to flow freely to their best use. At other times, seemingly innocuous changes in the system can cause a cascade that ultimately leads to disaster. For want of a nail, the kingdom can be lost.

International Institutions and Sound Reasoning

Kiron K. Skinner, Inyoung Song, and Emily Clise

The Group of Eight (G-8) and the Group of Twenty (G-20) must increase their engagement with developing nations if they truly seek widespread support for (1) the G-8's proposal of a 50-percent cut in carbon emissions by 2050, (2) the conclusion of the Doha Round talks by next year, and (3) making fast-growing economies a central component in restoring global economic growth.[1] Developing nations have as much equity as developed nations in the most pressing issues facing the international system, and there is growing demand to expand membership in the groups-of-state entities. Nicolas Sarkozy, president of France, spoke for many throughout the world when he recently declared: "The G-8 isn't representative enough to face issues as important as the response to the economic crisis. It seems unreasonable to us that the most important international issues are dealt with without Africa, Latin America and China."[2]

Many of the arguments in favor of expansion are self-evident. Any greenhouse gas emissions proposal should have the approval of fast-growing energy consumers like China and India, yet they are not G-8 members.[3] The Doha Round may very well flounder if India's position on the Special Safeguard Mechanism is not addressed. In terms of GDP (purchasing power parity), China surpasses all G-8 members except the United States and the European Union; India surpasses G-8 members Germany, the UK, Russia, France, Italy, and Canada; Mexico and Spain surpass Canada; and South Korea falls just below Canada.[4]

Analytical mistakes are being made in the name of shared global governance, however. If these mistakes are ignored, they could contribute to the creation of a decision-making structure that is less effective and efficient than the existing structures currently being criticized.

Mission creep is one concern. The groups-of-state entities have historical roots in the informal-meeting structure that started in 1973. In the spring of that year, the finance ministers of the Federal Republic of Germany, France, the United Kingdom, and the United States agreed to hold an informal private discussion about the world economy and national economic policy coordination in the aftermath of the demise of the Bretton Woods system. That session, held in the basement library of the White House, was dubbed the Library Group by its participants, and news of the meeting soon became public. Japan's trade minister was invited to join the ongoing discussion, and by November 1975, when the first leaders' summit was held in

Rambouillet, France, Italy had also joined.[5] Among the issues discussed in France were high unemployment, persistent inflation, and energy crises. These issues again took center stage during the second summit held in San Juan, Puerto Rico, in June 1976. With Canada also on board, the Group of Seven (G-7) was born.

The G-7 was a club of leading industrialized nations which, despite some often serious disagreements, held a common view about how the international economic and political system should be ordered. All were on the same side in the cold war divide, and all were democracies. The group was intended to be a forum on international economic matters, but by the Bonn summit in 1978, political declarations that were separate from the official economic communiqués became commonplace. At the 1983 Williamsburg summit, issues of U.S.-Soviet military competition and other security aspects of the cold war dominated the meeting.

In 1991, the final year of the Soviet Union's existence, President Mikhail Gorbachev was invited to join some of the G-7 meetings. Before the end of the 1990s, President Boris Yeltsin was attending as a full member of the new G-8. Thus, the group system evolved from a club of countries largely committed to free market capitalism to a club that included an untested democracy on the march toward a freer economy. The group had responded to the changing dynamics of the international system.

An even larger international governance body was created in 1999. The Group of Twenty (G-20) Finance Ministers and Central Bank Governors had its inaugural meeting in Berlin in December 1999. With heads of government attending three meetings in less than a year—November 2008 in Washington, April 2009 in London, September 2009 in Pittsburgh—the G-20 is becoming another forum for leaders. As one writer has noted, "the decision to turn to the G-20 for . . . April's London summit was an acknowledgment that we inhabit a new geopolitical landscape. No solutions to the global economic crisis would be possible without involving countries such as China, India, Brazil and Saudi Arabia."[6] The scope of the G-20 is quickly going far beyond its original design as a forum for finance ministers. The economy, security, energy, and the ways these issues intersect are now part of the G-20 agenda. Just as the Library Group of over thirty years ago, the G-20 is evolving in response to changes in the world. Mission creep is not always negative, but it inevitably creates new aspects that must be managed.

The expansion of membership in these groups and the addition of issues to be addressed do not necessarily lead to better policy coordination or universally salubrious outcomes. The groups-of-state entities expanded to reflect the growing stature of certain countries; Russia's admission to the G-7 is an example. The G-20 was created to enhance dialogue between advanced industrialized nations like the United States and Germany and emerging economic powerhouses like China and Brazil. Along the way, these groups are facing expanded agendas that, in turn, produce more communiqués and working groups. Yet is it is not clear that there is greater consensus among countries. During the London G-20 summit, for example, appeals by the leaders of the United States and the United Kingdom for additional public spending to spur national economies were not the focus of the summit's communiqués. Summit documents did, however, include numerous references to international regulation of financial activity, which France and Germany heavily championed. The point is not that the UK and the United States should have their way, but rather that larger bodies have their own dynamic of dissension just as smaller groups do. In an international body of any size, there is a risk that while some important perspectives might be heard other valuable perspectives might be ignored.

If the goal is to create an entity in which the greater number of relevant perspectives are not only heard but acted upon, then the leaders of the group system should task their deputies to look seriously into the issue of institutional design. This will be especially important if calls continue to grow for transforming the G-20 into the G-192, an informal body including the full membership of the United Nations.[7]

One has to be concerned about consultative bodies that are decidedly large and informal but that also are capable of setting in motion a decision train that redounds to formal international financial institutions like the World Bank and the International Monetary Fund. The G-20 describes itself as "an informal forum that promotes open and constructive discussion between industrial and emerging-market countries on key issues related to global economic stability."[8] Yet at the April G-20 summit, $750 billion was committed to the International Monetary Fund. In his essay in this report, John Taylor questions whether states will tap into anything close to the full amount of IMF funds available.

The G-8 is also self-described as an informal body: "The G-8's membership comprises the main industrialised countries. It is not an international organisation, nor does it have an administrative staff with a permanent secretariat; it is rather a process that culminates in an annual Summit at which the Heads of State and Government of the member countries hold talks with a view to finding solutions to the main world issues."[9] Yet for most of its existence, the G-7/G-8 has been seen as a central body for establishing and coordinating international economic policy. Its pronouncements have influenced policy making at the International Monetary Fund, the United Nations Security Council, the World Bank, and other multilateral institutions. This is one of the main reasons that the Group of Five grew out of the Heiligendamm, Germany, G-8 summit in June 2007. Brazil, China, India, Mexico, and South Africa seek to be included in the G-8 discussions, and they attended the L'Aquila, Italy, summit in July. Sarkozy and Prime Minister Silvio Berlusconi of Italy, among others, have endorsed including the G-5 along with Egypt in a new G-14.[10]

Expanding the membership of the G-8 might be the equitable thing to do. However, enlarging an informal body whose pronouncements bear upon policy decisions among the international financial institutions (IFIs) is a formula for chaos unless institutional mechanisms are put in place to manage what takes place in the informal bodies and how those bodies interface with the IFIs.

The issue of overlapping membership in informal international regimes is another issue of concern. The prevailing view among leaders seems to be that membership in more informal international structures is useful for promoting states' interests. In addition to the G-5, the G-8, and the G-20, there are BRIC and SCO. A dialogue on economic reform among Brazil, Russia, India, and China (BRIC) has evolved during the past few years. The countries met in Yekaterinburg, Russia, in 2008, and held the first BRIC summit there in June 2009. Russia is also a member of the G-8 and the G-20. Brazil, China, and India are also members of the G-5 and the G-20. The Shanghai Five (China, Kazakhstan, Kyrgyzstan, Russia, and Tajikistan) was formed as a mutual security organization in 1996. In 2001, Uzbekistan was added to the group, which then took the name Shanghai Cooperation Organization (SCO). Russia and China are members of the G-20; Russia is a member of the G-8; and China is in the G-5. Although the G-5, G-8, and G-20 primarily address economic matters, as discussed earlier, security issues are often at the top of their agendas.

Where does a state place its primary allegiance at the international level when it has membership in multiple organizations and those organizations address essentially the same issues? What position does a state take when one of the international organizations to which it belongs takes a different stand from that of another international organization of which it is a member? In an effort to give all states, especially those with fast-growing economies, a place in the meeting halls of international regimes, informal entities are proliferating without a clear sense of how they will interact with each other, and whether more is actually less. Put differently, to what degree do these entities reduce rather than enhance global governance?

Conflating the terms "multilateral" and "multipolar" is also troubling. With respect to the United States' dominance in both formal and informal international institutions during the twentieth century, it has been declared many times over that "the American Century is behind us."[11] But declaring that the world is multipolar because international institutions are increasingly multilateral does not make the world truly multipolar.

In the first point of its communiqué at its June 15-16, 2009, summit in Yekaterinburg, the Shanghai Cooperation Organization declared that the world is on an unstoppable march toward multipolarity: "Serious changes are taking place in the contemporary international environment. Aspiration to peace and sustainable development, promotion of equal cooperation became the spirit of the times. The tendency towards true multipolarity is irreversible. There is a growing significance of the regional aspect in settling global problems." In its June 16, 2009, communiqué, BRIC endorsed having a multipolar world: "We underline our support for a more democratic and just mult-ipolar world order based on the rule of international law, equality, mutual respect, cooperation, coordinated action and collective decision-making of all states." On July 8, the G-5 declared: "The world needs new global governance, which must be established on the basis of inclusive multilateralism. In our changing multipolar world, the G-5, as a positive platform, contributes to the promotion of developing countries' interests and will continue actively coping with global challenges."[12]

Polarity at the international level is much more about the combined economic and military strength of states than a state's participation in an international organization that has numerous members. For all of its perceived and real faults, the United States remains a default power for the world.[13] No state currently has a stronger economy, and the United States has a strong military and fighting force. It is also the source of extended deterrence for many of its critics. Despite low ratings in many international public opinion polls during the Bush era, the United States remains a compelling source of culture, ideas, and technology for the rest of the world.

International institutions, formal and informal, have an important role to play. The significance of these organizations has been highlighted during the past year as the world found itself in the midst of greatest global economic recession in more than a half century. Considering the importance of these institutions, we must ensure that they are constructed carefully and always on the solid foundation of sound reasoning.

1. Stephen Kaufman, "G8 Nations Agree to Cut Carbon Emissions 80 Percent by 2050," America.gov. http://www.america.gov/st/peacesec-english/2009/July/20090709153615esnamfuak0.3577082.html, and Laurence Norman, "FOCUS: Developing Giants Make Weight Felt As G8 Mutates," *Wall Street Journal*, July 10, 2009.
2. Laurence Norman, "FOCUS: Developing Giants Make Weight Felt As G8 Mutates," *Wall Street Journal*, July 10, 2009.
3. Matt Spetalnick, "Obama Uses G8 Debut to Issue Warning to Iran," *Washington Post*, July 10, 2009.
4. See the CIA World Factbook: https://www.cia.gov/library/publications/the-world-factbook/rankorder/2001rank.html?countryName=United%20States&countryCode=us&regionCode=na&rank=2#us.
5. George P. Shultz, *Turmoil and Triumph: My Years as Secretary of State* (New York: Charles Scribner's Sons, 1993), 148.
6. John Hiliary, "End the G8 charade—we need a G192," *Guardian* (London), July 6, 2009.
7. Ibid.
8. http://www.g20.org/about_what_is_g20.aspx.
9. http://www.g8italia2009.it/G8/Home/G8-G8_Layout_locale-1199882116809_FAQ.htm.
10. Italian Prime Minister Silvio Berlusconi said, "As far as I am concerned the G14 is the format that in the future will have the best possibility to take the most important decisions on the world economy, and not just that." See http://www.reuters.com/article/gc07/idUSTRE5692JO20090710. "I note with pleasure that the transformation of the G8 into the G14 has taken a decisive step forward," Sarkozy told a meeting of French ambassadors in Paris. See http://www.hindustantimes.com/France-will-transform-G8-into-G14-Sarkozy/H1-Article1-447311.aspx.
11. John Hiliary, "End the G8 charade—we need a G192," *Guardian* (London), July 6, 2009.
12. http://www.fmcoprc.gov.hk/eng/zgwjsw/t569480.htm; http://www.groupoffive.org/; http://www.fmprc.gov.cn/eng/zxxx/t569701.htm; and http://www.g8italia2009.it/static/G8_Allegato/G8_G5_Joint_Declaration.pdf.
13. Josef Joffe, "The Default Power: The False Prophecy of America's Decline," *Foreign Affairs*, (September/October 2009): 21-35.