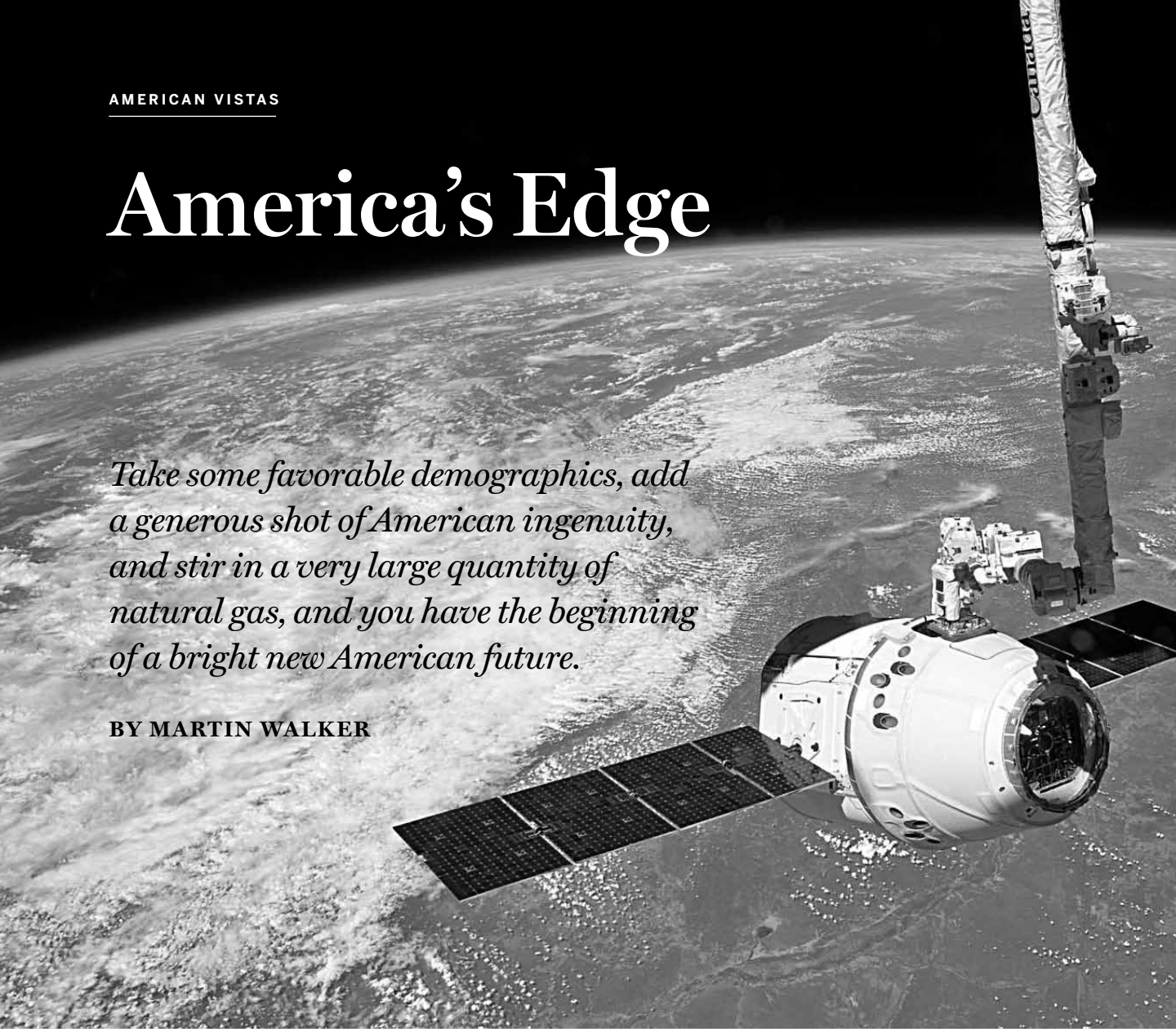
America's Edge



Take some favorable demographics, add a generous shot of American ingenuity, and stir in a very large quantity of natural gas, and you have the beginning of a bright new American future.

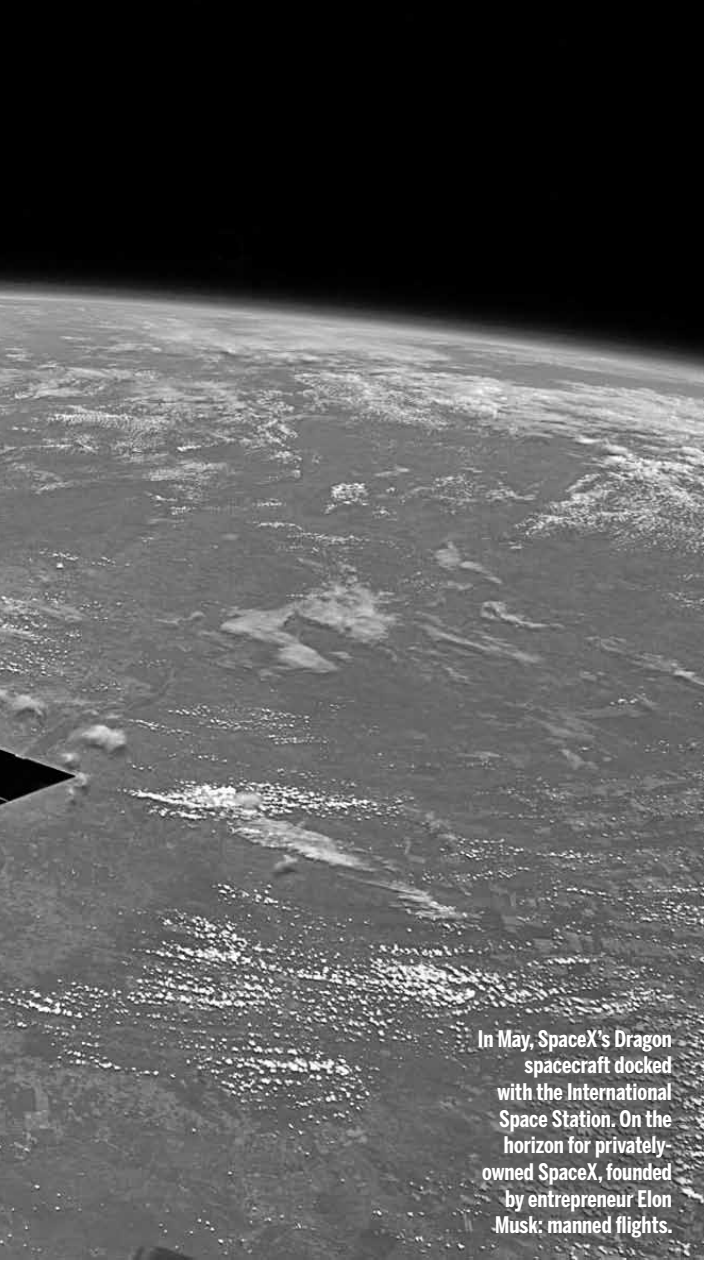
BY MARTIN WALKER

If the United States were a person, a plausible diagnosis could be made that it suffers from manic depression. The country's self-perception is highly volatile, its mood swinging repeatedly from euphoria to near despair and back again. Less than a decade ago, in the wake of the deceptively easy triumph over the wretched legions of Saddam Hussein, the United States was the lonely superpower, the essential nation. Its free markets and free thinking and democratic values had demonstrated their superiority over all other forms of human organization. Today the conventional wisdom speaks of inevitable decline and of equally inevitable Chinese triumph; of an American financial system flawed by greed and debt; of a political system deadlocked and corrupted by campaign contributions, negative ads, and lobbyists; of a social system riven by disparities of income, education, and opportunity.

It was ever thus. The mood of justified triumph and national solidarity after global victory in 1945 gave way swiftly to an era of loyalty oaths, political witch-hunts, and Senator Joseph McCarthy's obsession with communist moles. The Soviet acquisition of the atom bomb, along with the victory of Mao Zedong's communist armies in China, had by the end of the 1940s

Martin Walker, a senior scholar at the Wilson Center, is senior director of the Global Business Policy Council. His latest novel, *The Crowded Grave*, will be published by Knopf this summer.

REX FEATURES VIA AP IMAGES



In May, SpaceX's Dragon spacecraft docked with the International Space Station. On the horizon for privately-owned SpaceX, founded by entrepreneur Elon Musk: manned flights.

infected America with the fear of existential defeat. That was to become a pattern; at the conclusion of each decade of the Cold War, the United States felt that it was falling behind. The successful launch of the Sputnik satellite in 1957 triggered fears that the Soviet Union was winning the technological race, and the 1960 presidential election was won at least in part by John F. Kennedy's astute if disingenuous claim that the nation was threatened by a widening "missile gap."

At the end of the 1960s, with cities burning in race riots, campuses in an uproar, and a miserably unwinnable war grinding through the poisoned jungles of Indochina, an American fear of losing the titanic struggle with communism was perhaps understandable. Only the farsighted saw the importance of the contrast between American elections and the ruthless swagger of the Red Army's tanks crushing the Prague Spring of 1968. At the end of the 1970s, with American diplomats held hostage in Tehran, a Soviet puppet ruling Afghanistan, and glib talk of Soviet troops soon washing their feet in the Indian Ocean, Americans waiting in line for gasoline hardly felt like winners. Yet at the end of the 1980s, what a surprise! The Cold War was over and the good guys had won.

Naturally, there were many explanations for this, from President Ronald Reagan's resolve to Mikhail Gorbachev's decency; from American industrial prowess to Soviet inefficiency. The most cogent reason was that the United States back in the late 1940s had crafted a bipartisan grand strategy for the Cold War that proved to be both durable and successful. It forged a tripartite economic alliance of Europe, North America, and Japan, backed up by various regional treaty organizations such as NATO, and counted on scientists, inventors, business leaders, and a prosperous and educated work force to deliver both guns and butter for itself and its allies. State spending on defense and science would keep unemployment at bay while Social Security would ensure that the siren songs of communism had little to offer the increasingly comfortable workers of the West. And while the West waited for its wealth and technologies to attain overwhelming superiority, its troops, missiles, and nuclear deterrent would contain Soviet and Chinese hopes of expansion.

It worked. The Soviet Union collapsed, and the Chinese leadership drew the appropriate lessons. (The Chinese view was that by starting with glasnost and political reform, and ducking the challenge of economic reform, Gorbachev had gotten the dynamics of change the wrong way round.) But by the end of 1991, the Democrat who would win the next year's New Hampshire primary (Senator Paul Tsongas of Massachusetts) had a catchy new campaign slogan: "The Cold War is over—and Japan won." With the country in a mild recession and mega-rich Japanese investors buying up landmarks such as Manhattan's Rockefeller Center and California's Pebble Beach golf course, Tsongas's theme touched a national chord. But the Japanese economy has barely grown since, while America's gross domestic product has almost doubled.

There are, of course, serious reasons for concern about the state of the American economy, society, and body politic today. But remember, the United States is like the weather in Ireland; if you don't like it, just wait a few minutes and it's sure to shift. This is a country that has been defined by its openness to change and innovation, and the search for the latest and the new has transformed the country's productivity and potential. This openness, in effect, was America's secret weapon that won both World War II and the Cold War. We tend to forget that the Soviet Union fulfilled Nikita Khrushchev's pledge in 1961 to outproduce the United States in steel, coal, cement, and fertilizer within 20 years. But by 1981 the United States was pioneering a new kind of economy, based on plastics, silicon, and transistors, while the Soviet Union lumbered on building its mighty edifice of obsolescence.

This is the essence of America that the doom mongers tend to forget. Just as we did after Ezra Cornell built the nationwide telegraph system and after Henry Ford developed the assembly line, we are again all living in a future invented in America. No other country produced, or perhaps even could have produced, the transformative combination of Microsoft, Apple, Google, Amazon, and Facebook. The American combination of universities, research, venture capital, marketing, and avid consumers is easy to envy but tough to emulate. It's not just free enterprise. The Internet itself might never have been born but for the Pentagon's Defense Advanced Research Projects Agency, and much of tomorrow's future is being developed at the nanotechnology labs at the Argonne National Laboratory outside Chicago and through the seed money of Department of Energy research grants.

American research labs are humming with new game-changing technologies. One MIT-based team is using viruses to bind and create new materials to build better batteries, while another is using viruses to create catalysts that can turn natural gas into oil and plastics. A University of Florida team is pioneering a practical way of engineering solar cells from plastics rather than silicon. The Center for Bits and Atoms at MIT was at the forefront of the revolution in fabricators, assembling 3-D printers and laser milling and cutting machines into a factory-in-a-box that just needs data, raw materials, and a power source to turn out an array of products. Now that the latest F-18 fighters are flying with titanium parts that were made by a 3-D printer, you know the technology has taken off. Some 23,000 such printers were sold last year, most of them to the kind of garage tinkerers—many of them loosely grouped in the "maker movement" of freelance inventors—who more than 70 years ago created Hewlett-Packard and 35 years ago produced the first Apple personal computer.

Workers using new drilling technologies tap into the Marcellus Shale near Burlington, in northeastern Pennsylvania.

RALPH WILSON / AP IMAGES

The real game changer for America is the combination of two not-so-new technologies: hydraulic fracturing ("fracking") of underground rock formations and horizontal drilling, which allows one well to spin off many more deep underground. The result has been a "frack gas" revolution. As recently as 2005, the U.S. government assumed that the country had about a 10-year supply of natural gas remaining. Now it knows that there is enough for at least several decades. In 2009, the United States outpaced Russia to become the world's top natural gas producer. Just a few years ago, the United States had five terminals receiving imported liquefied natural gas (LNG), and permits had been issued to build 17 more. Today, one of the five plants is being converted to *export* U.S. gas, and the owners of three others have applied to do the same. (Two applications to build brand new export terminals are also pending.) The first export contract, worth $8 billion, was signed with Britain's BG Group, a multinational oil and gas company. Sometime between 2025 and 2030, America is likely to become self-sufficient

in energy again. And since imported energy accounts for about half of the U.S. trade deficit, fracking will be a game changer in more ways than one.

The supply of cheap and plentiful local gas is already transforming the U.S. chemical industry by making cheap feedstock available—ethylene, a key component of plastics, and other crucial chemicals are derived from natural gas in a process called ethane cracking. Many American companies have announced major projects that will significantly boost U.S. petrochemical capacity. In addition to expansions along the Gulf Coast, Shell Chemical plans to build a new ethane cracking plant in Pennsylvania, near the Appalachian Mountains' Marcellus Shale geologic formation. LyondellBasell Industries is seeking to increase ethylene output at its Texas plants, and Williams Companies is investing $3 billion in Gulf Coast development. In short, billions of dollars will pour into regions of the United States that desperately need investment. The American Chemistry Council projects that over several years the frack gas revolution will create 400,000 new jobs, adding $130 billion to the economy and more than $4 billion in annual tax revenues. The prospect of cheap power also promises to improve the balance sheets of the U.S. manufacturing industry.

Gas is not the only fuel unlocked by fracking. In 2003, the Bakken Shale formation in North Dakota was producing only 10,000 barrels of oil a day. Now, producers are extracting more than 500,000 barrels a day, making North Dakota the second-largest oil-producing state in the country and a boom region with unemployment at three percent. Similar supplies of "tight" oil elsewhere in the Great Plains states may deliver up to two million barrels a day in extra production by the end of the decade. U.S. oil production has increased 25 percent in the last four years, and after peaking at 60 percent of U.S. consumption in 2005, oil imports are down to 42 percent and are still dropping.

Controversies around the fracking process mean that the rise of natural gas production will not be smooth; there are environmental and water safety issues, although probably fewer than with either coal or oil. Above all, the prospect of replacing America's old coal-fired power plants with natural gas, which emits half as much carbon dioxide as coal in combustion, means that the United States could even meet the emissions targets of the 1997 Kyoto Protocol, which the Senate declined to ratify. At the least, the frack gas revolution buys a lot of time in the longer-term effort to cut carbon emissions.

THANKS TO THE FRACK gas revolution, the United States is likely to become self-sufficient in energy between 2025 and 2030.

The geopolitical implications of the frack gas revolution are significant. Self-sufficiency in energy transforms America's relationship with the Middle East and Saudi Arabia, whose priority in U.S. foreign policy is likely to decline significantly. The United States will maintain an interest in supporting Israel and constraining Iran. It will still hope that Iraq can achieve stability and prosperity through responsible government. But given the advances in military and other technologies and the proximity of the U.S. base in Diego Garcia, none of these interests require a costly military presence. Indeed, since the future principal customers for Saudi and Iranian oil and gas are likely to be India and China, Beijing and New Delhi may soon inherit the diplomatic and geopolitical complications of the region.

The effects of the frack gas revolution in other countries that will be able to tap potentially plentiful supplies—Argentina, Australia, Indonesia, and several in Europe—are another bonus, reducing the future importance of Iran and Russia as major gas exporters and therefore their political influence. Already, Russia has delayed the development of the Shtokman gas field in the Arctic Ocean, whose gas was to have been brought ashore at Murmansk for processing and shipment to the United States. The greater availability of oil on the global market has forced Russia's giant energy company Gazprom to accept renegotiation of its longer-term contracts with European customers.

While Europe may be able to generate something like 50 years of its current gas consumption from its recoverable shale resources, it will have many other available suppliers, not only Persian Gulf states such as Qatar but also Australia, Argentina, and industry newcomers that will include Mozambique and other countries in East Africa, where massive offshore gas deposits have recently been discovered. A study by the Baker Institute at Rice University suggests that Russia's market share of Europe's energy supply will drop from 27 percent in 2009 to 13 percent by 2040. This would reduce Russia's ability to exploit its energy exports for political influence, and also seems likely to undermine Russian ambitions, intermittently voiced by Vladimir Putin, to establish a natural gas cartel along the lines of OPEC.

Russia's third hoped-for market has been China, but that country has its own large reserves of shale gas, estimated to be larger than those of the United States. A report prepared for the U.S. Energy Information Administration calculates that the United States possesses 482 trillion cubic feet (tcf) of recoverable shale gas reserves, while China has 1,275 tcf. But more than half of China's reserves are in regions of severe water stress. While the water demands of shale gas are not excessive (the average well uses as much water in its operational life as a Florida golf course uses in a few weeks), this will inhibit China's exploitation of its resource.

The Baker Institute reckons that China can still count on a minimum 230 tcf of recoverable reserves, roughly the same amount as Europe. Chinese companies have invested billions in U.S. and Canadian shale producers, not simply to secure energy supplies but to learn the complex technologies America has pioneered to exploit it.

For future White House national security advisers, what's not to like? Russia's hopes of using its energy reserves as a diplomatic and political weapon are frustrated. Europe's dependence on Russian oil and gas is markedly reduced. The United States dramatically curtails its balance-of-payments deficit and is no longer forced to see Saudi Arabia and the Persian Gulf states as vital national security concerns. As a bonus, China sharply reduces its dependence on imported energy, which could help moderate the zeal with which it pursues energy supplies beyond its shores and risks confrontation with its neighbors over the vast oil potential of the South China Sea.

The United States holds another trump card: its healthy demographics. With the highest birthrate among the group of industrialized countries that make up the G-7, it can count on a relatively young labor force well into the present century. While more than 30 percent of the populations of Germany and China will be over 60 in the 2030s, it is projected that only 25 percent of Americans will be 60 or older in 2032. At the least, that means that for all the difficulties the United States faces in financing the pensions and health care of its elderly citizens, these difficulties are much less daunting than those of its most prominent competitors. The Census Bureau projects that the U.S. work force will grow by more than 40 percent between 2000 and 2050, while that of China will shrink by 10 percent, the European Union's by 25 percent, and Japan's by more than 40 percent.

AS CHINESE WAGES RISE, U.S. manufacturers are coming home—though they are unlikely to employ the masses they once did.

The problem, of course, will be generating jobs for America's workers. There are hopeful prospects. As Chinese wages rise, U.S. manufacturing is coming home again, back to where transport costs are lower, productivity rates are higher, and the legal system is more hostile to counterfeiters and technology theft. And while U.S. energy costs look likely to fall, electricity costs in China are up almost 20 percent over the last two years. In 2009, Peerless Industries, a maker of audiovisual mounting products, cited shorter lead times, cost efficiencies, and local control over the manufacturing process as reasons for bringing its work back from China to Illinois. General Electric is

LEE JIN-MAN / AP IMAGES

Made in the U.S.A.: American beef exports topped $5 billion last year, and total farm exports were a record-setting $136 billion.

investing $1 billion in American plants to build domestic appliances.

But onshoring, as this return of manufacturing is called, is only a partial answer to the jobs question. The reality is that manufacturing is unlikely ever again to provide the mass employment it did in the past. In the last 40 years, the value of U.S. manufacturing (in constant dollars) has increased by 240 percent, but the manufacturing work force has shrunk by a third. Blame automation, computers, and sharply improved productivity.

Beyond the obvious growth industries such as education and care for the elderly, the jobs of the future will probably come from industries and products that have yet to be invented. As they were in the past, many of those inventions are likely to be made in the United States, which will also be benefiting from its status as the world's top food exporter. Worldwide, there will be two billion extra people to feed by 2050, and many of them will be hoping to clamber up the protein chain from rice and gruel to eggs and hamburgers. The OPEC oil cartel's influence may be waning with the shift in energy markets, but in the future, a cartel of food-exporting countries (possibly destined to be known as OFEC) would be far more potent. Indeed, one of the most likely future trends is that the heartland between the Rockies and the Appalachians will gain special benefits from the energy revolution and the coming boom in food exports. This should help balance the disparity that emerged in recent decades when the East and West Coasts fared significantly better than the inland states.

In terms of energy, raw materials, demographics, and skills and education, there is no reason why the United States should not continue to flourish, with more and more of its people prospering over the coming century. Its difficulties are likely to come from a system of governance that is becoming dysfunctional and that shows few signs of being able to tackle the challenges of financing the pensions and health care of retiring baby boomers and repairing the roads, bridges, water and public transport networks, and other infrastructure whose disrepair is already a scandal. The country has a ramshackle mechanism of taxation, a battered and discredited financial structure, and an education system that does little to help a dismayingly large proportion of its young people. Failure to fix these problems would undermine all the advantages the United States can otherwise expect to enjoy in the future.

At the heart of these woes is politics, the arena in which a democratic society decides its goals and priorities. So remember how the country charted the course that carried it through the five-decade confrontation of the Cold War: A Democratic administration, with a Republican-controlled foreign relations committee in the Senate, crafted a bipartisan, long-term strategy that avoided panic, played to American strengths, and enlisted allies while trying to uphold traditional democratic values. It worked before. With cool heads, open minds, and goodwill, there is no reason why America cannot make it work again in meeting today's challenges. The 2010 Simpson-Bowles fiscal reform plan even offered a blueprint that many people across the political spectrum embraced as a foundation for a broad agreement.

If the capital's politicians cannot rise to the occasion, there are intriguing signs of a new fiscal politics emerging in the states. Washington may have ducked the issue so far; stuck with requirements to balance their budgets, the states cannot. This federal structure is itself one of the Republic's reserve strengths, allowing the states to pioneer and experiment with new policies. The states may teach Washington how to solve the fiscal problem. If that fails, there is one final recourse. In a nation built on "We, the people," the ultimate responsibility rests with Americans themselves. ■