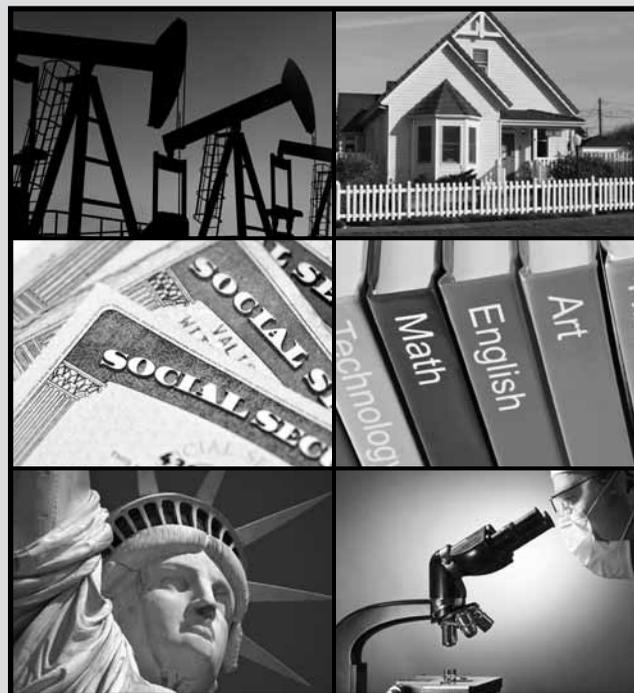


THE MILKEN ● INSTITUTE
Review
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Where's Sputnik?

Summoning the Will to Create the Next
American Century

By Michael Milken



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Not long after the terrorist attacks of September 11, 2001, a new book described how the United States had suffered a great shock. “No event since Pearl Harbor set off such repercussions in public life. There was a sudden crisis of confidence” that “created a perception of American weakness.” Many people “were scared half to death and had panic reactions.”

WHERE'S SPUTNIK?

The event that provoked that response was not 9/11. It was the 1957 launch of Sputnik – the world's first artificial satellite – by the Soviet Union.

Before Sputnik, few doubted America's global leadership. Our factories were humming; the military was powerful; and our technology, consumer goods and standard of living were the envy of every other nation. Americans had already won 64 Nobel Prizes – far more than any other country. With less

Soviet R-7 intercontinental missile that blasted it up there only two months after the first successful test firing. Within days of Sputnik, Soviet leader Nikita Khrushchev boasted that his nation would begin turning out nuclear-tipped missiles “like sausages.” The United States suddenly realized that our most-powerful enemy now had the capacity to hurl lethal weapons across the oceans.

That was our wake-up call. And wake up we did – so much so that Moscow's moment of apparent triumph turned out to be the be-

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than 6 percent of the world's population, the United States produced 36 percent of global economic output, up from less than 2 percent early in the 19th century. We had more telephones, television sets, cars, bathtubs and refrigerators than any place on Earth. Students flocked to America's great universities. As a net exporter, we sent three dollars of goods abroad for every two we imported. The U.S. dollar was so strong that it bought 360 Japanese yen and more than four German marks. Not since ancient Rome had any one nation dominated so many aspects of life on the planet.

All that changed on the morning of Friday, October 4, 1957. From 560 miles above Earth, Sputnik's constant beeping told the world the Soviets had beaten America into space.

The scary thing about Sputnik wasn't the 184-pound aluminum sphere that did little more than beep at us. The real threat was the

ginning of the end for the Soviet Communist system. As President Kennedy famously declared in his 1961 inauguration speech, “We shall pay any price, bear any burden, meet any hardship ... to assure the survival and the success of liberty.”

Faced with different global challenges today, are we prepared to “pay any price” and “bear any burden”? Recent history doesn't provide much encouragement. In 2005, a distinguished committee of leaders from industry, government and higher education produced a disturbing report, *Rising Above the Gathering Storm*, that spelled out ways to restore America's competitiveness. Revisiting their report in 2010, the committee concluded that “the outlook for America to compete for quality jobs has further deteriorated over the past five years. The gathering storm increasingly appears to be a Category 5.”

Despite that depressing conclusion, I believe the “American Century” does not have to end. We can extend it long into the future if the public and private sectors, and all of us

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as individuals, assume greater responsibility for our common destiny by summoning the will to face hard facts and make difficult choices – and by electing leaders who will do the same.

Six areas in particular provide opportunities for positive change: energy, housing, entitlements, education, health and immigration (the last of which I prefer to call “investing in America”). These are not new issues – panelists at my early investor conferences and later at Milken Institute Global Conferences have debated them since the mid-1970s. Nor do they represent insurmountable challenges – in many cases, there’s enough liquidity in private savings to develop solutions without more taxes and government spending. But they will require hard choices that demand stronger leadership and greater candor than we’ve seen from both parties in Washington and the statehouses. Our leaders have begun to realize that we can’t have it all; now they must better allocate the resources we have available.

So what *do* we have? Plenty. The world’s largest economy; a solid rule of law under a written constitution that has prevailed longer than any on Earth; established property rights; freedom of speech, press and religion; the most productive workers; free markets; unrivalled technology; medical centers that attract patients from around the world; the best institutions of higher education; the most innovative culture; and a richly diverse population. No wonder people everywhere want to come to America. We just need to deploy these assets more effectively.

Over the years, I’ve addressed the issues of America’s strengths and challenges before audiences in more than 35 countries. A central theme of these presentations is the importance of human capital. It doesn’t matter whether the challenge is market volatility, cli-

mate change, chronic disease or educational standards. In each case, the solution is the same: unleash the energies of entrepreneurial people and they will change the world.

What we face today is not a space race but a race toward what can be a new American Century. That race should begin by taking much more seriously the six issues below, which are far more consequential than a Soviet satellite flying overhead. We’re not getting anywhere near adequate returns on our investments in these areas. And worse, we’re complacent about it.

Previous generations stepped up to the challenges of their day. The problems faced by the Americans who brought us out of the Great Depression and led us through World War II to prosperity and peace were daunting. But our leaders never hesitated to ask for sacrifice – and Americans responded, pulling together for the common good. More than half a century later, the world still needs a strong America. Even if we’re no longer the sun – the center, the gravitational pull – of humanity’s “solar system,” we can be Jupiter, its largest planet.

China, Singapore and other command economies are directing increasing resources to human-capital development. We have the capacity to match them. But do we have the will? Where is the shock to our system that will light our fire? Where is the Sputnik for our new century? The answer lies in our response to the six challenges.

ENERGY

Do Americans realize what we’re *really* paying for gas at the pump? The true cost is a lot more than a few dollars a gallon. It’s actually well above \$10 a gallon. That includes the expense of keeping aircraft carriers in the Persian Gulf and defense of sea lanes, pipelines, storage depots and ports, which represent

WHERE'S SPUTNIK?

hidden components of federal taxes and borrowing. There's also the cost of mitigating environmental damage plus the burden of homeland security related to protection from energy-state terrorism. And none of this includes the tragic cost of American lives lost protecting our energy interests overseas. We'd all be more focused on these costs if a \$200 charge for filling up the gas tank were shown on the pump.

Breaking free of dependence on foreign energy, and the expense of securing it, has long produced stirring rhetoric, but few effective policies. The chart on page 5 shows percentages of oil the U.S. sourced from overseas on the precise days that each of our past eight presidents made a major public pledge to seek energy independence. These were impressive declarations. For example, on July 15, 1979, President Jimmy Carter sternly told the American people, "Beginning this moment, this nation will never use more foreign oil than we did in 1977 – never!"

Will we ever do what we say about energy? If so, we must address several tough issues:

Uncertainty faced by investors and producers because of price volatility. The price of oil was about \$15 a barrel in 1977. It rose to \$40 over the next several years, giving oil and gas companies an incentive to spend heavily on domestic exploration. I financed some of those companies and recall how optimistic they were about energy's future. But then the price of oil sank to \$10, devastating real estate and financial institutions in oil-producing states and creating turmoil in markets worldwide. By 1999, the price hovered around \$17. It rose to a peak above \$147 in 2008; and again, within months, it dropped to less than \$34 before shooting back up to \$100. Who can invest successfully while riding a roller coaster of price volatility like that? Not major

petroleum companies. Not would-be investors in unproven alternative-energy ventures. They'd ask – reasonably so – why should we put capital at risk when it costs Saudi Arabia only a few dollars to lift a barrel of crude from the ground?

The rise in atmospheric greenhouse gases. These gases have increased about 50 percent since the Carter administration. Because the U.S. produces roughly a quarter of the world's greenhouse-gas emissions – gasoline is responsible for more than half of that – we should take the lead.

Loss of energy technology leadership. China, Japan and South Korea have all passed the U.S. in producing clean-energy technologies. Most important, their public investment will attract private investment, generating trillions of dollars of economic activity over the next decade. Unless we move fast, we'll become customers of their innovations, not suppliers and exporters of our own.

The potential for political instability in oil-exporting nations. A significant amount of energy comes from countries with volatile regimes like Libya, Venezuela, Nigeria, Iran and Iraq. Since these countries supply oil to the world market, the mere threat that their exports might be disrupted adds to global price uncertainty; and, when the local foreign economy is too small to absorb and recycle oil revenues effectively, the money often goes to unproductive uses, including corruption and support of terrorism.

These are difficult problems whose solutions will take many years to implement. But markets are based on projections of the future. So if the United States were to announce that it's actually going to *do something* to solve the energy problem, it would change expectations and the impact on global markets would be immediate and dramatic.

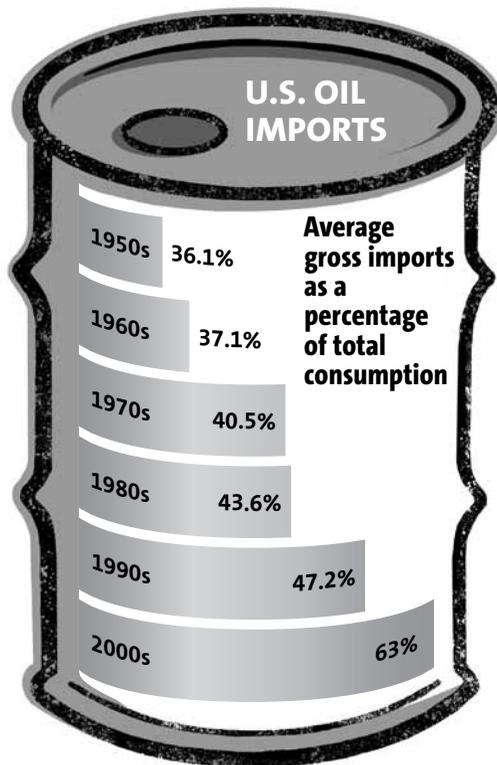
The Milken Institute's Center for a Sustain-

able Energy Future recommends several specific actions:

1. Upgrade the energy infrastructure. Too much energy is lost between production and consumption. “Smart grids” that reduce power losses in long-distance electricity transmission are technologically feasible and could save as much as \$1.8 trillion a year through greater efficiency and reliability by the year 2020. Although these grids are expensive and face local resistance, a nation that built cross-country railroad and highway systems should be able to do the same for electricity.

2. Scale up research and development of alternatives. The advantages and disadvantages of solar, nuclear, wind, hydro, geothermal and biofuels alternatives have been debated endlessly. No alternative is perfect, but by moving forward on all of them, we can incrementally displace – and eventually eliminate – most of the high-carbon coal that supplies the majority of nontransportation energy. The good news is that the lion’s share of the work – the physics and the chemistry – is done. Now we need big-scale commercialization.

3. Convert fleet vehicles to natural gas. In January 2011, the Abu Dhabi government announced it will convert thousands of government vehicles and taxis to natural gas, citing lower pollution and a 50 percent fuel-cost saving. This decision will add to the 12 million natural-gas vehicles already in use around the world. Guess how many of those 12 million are in the U.S. – which has the sixth-largest reserves in the world and is the largest producer of natural gas? One hundred and thirty thousand. That’s a mere 1.1 percent of the world’s fleet. Why wait? Natural gas is abundant and cheap, is cleaner than gasoline and diesel, and can be burned in today’s internal combustion engines with only minor modifications. As an interim measure until other cleaner alternatives become com-

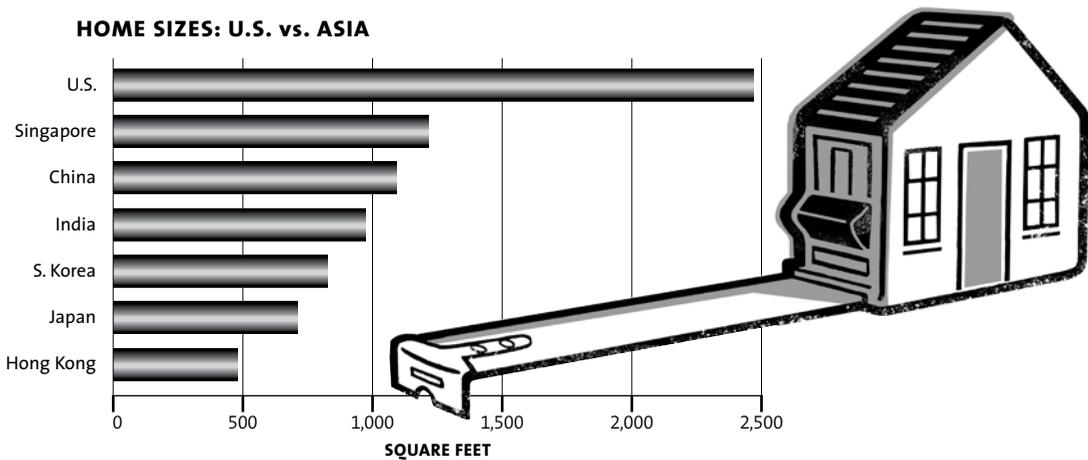


SOURCE: U.S. Energy Information Administration

petitive, we can switch our fleet of large trucks to natural gas. At the 2010 Milken Institute Global Conference, T. Boone Pickens, who joined Ted Turner and me on an energy panel, asserted that this would reduce oil imports by 2.5 million barrels a day and cut our dependence on Middle East oil by half in only seven years. That’s just with big trucks. Other fleets – buses, taxis, express delivery vehicles, and municipal and utility vehicles – could also switch.

4. Promote conservation. If we really got serious about encouraging American families and businesses to be efficient with energy, it would have a major impact. We could save \$1.2 trillion through 2020 just with improvements like sealing leaky buildings and replacing inefficient household appliances, according to a 2009 McKinsey report. That would cut our nontransportation energy use

HOME SIZES: U.S. vs. ASIA



SOURCE: CLSA Asia-Pacific Markets, *Mr & Mrs Asia*

by 23 percent – more than the total energy consumption of Canada – and cut greenhouse gases by 1.1 billion tons a year.

5. Implement market-based financing solutions. During the 1970s and 1980s, I saw firsthand how expanding access to capital for growing, innovative companies could accelerate technology development and drive down costs. So I firmly believe that financing is a key issue for energy independence. For example, according to a Milken Institute report, widespread clean-coal development could cost up to \$1 trillion. But with standardized financial instruments to attract private capital, and long-term forward markets to improve production planning, costs could be reduced. Investors will respond to rational regulation, reasonable incentives and policies that don't change with every election.

6. Minimize volatility to encourage investment. Those who remember how investors in alternative energy sources suffered after oil prices fell in the 1980s understand how exceedingly difficult it is for other fuels to compete with oil. The memory of \$10-a-barrel oil casts a pall over all forms of alternative-energy investment. We should consider establishing a floor under the price of oil – perhaps in the range of

\$40-50 a barrel – that would encourage technology innovation aimed at less-expensive energy sources. If oil's price fell below that floor, a temporary fee would kick in to maintain the minimum price. The revenue would support further research into alternatives.

7. Use consistent regulatory and fiscal policy. Hundreds of regulators oversee the national grid, making it hard to conduct energy business across state lines. The same holds true for gasoline – different states allow different formulations, which is hard on producers and distributors. And taxes and subsidies on bio-fuels like ethanol are confusing and contradictory. The government, at various levels, taxes these fuels when they're sold to consumers as gasoline substitutes – but at the same time subsidizes their production. A modification in tax policy that does away with such conflicts would help development of alternative fuels.

These initiatives would greatly reduce investment risk. Regrettably, with development timescales that can stretch into decades, it's hard to get the attention of politicians standing for re-election. Yet as citizens and voters, we can demand that our representatives get priorities straight. We need an even-handed



Levittown, NJ, 1950s (stock photo)

energy policy that makes the market more competitive and protects the environment.

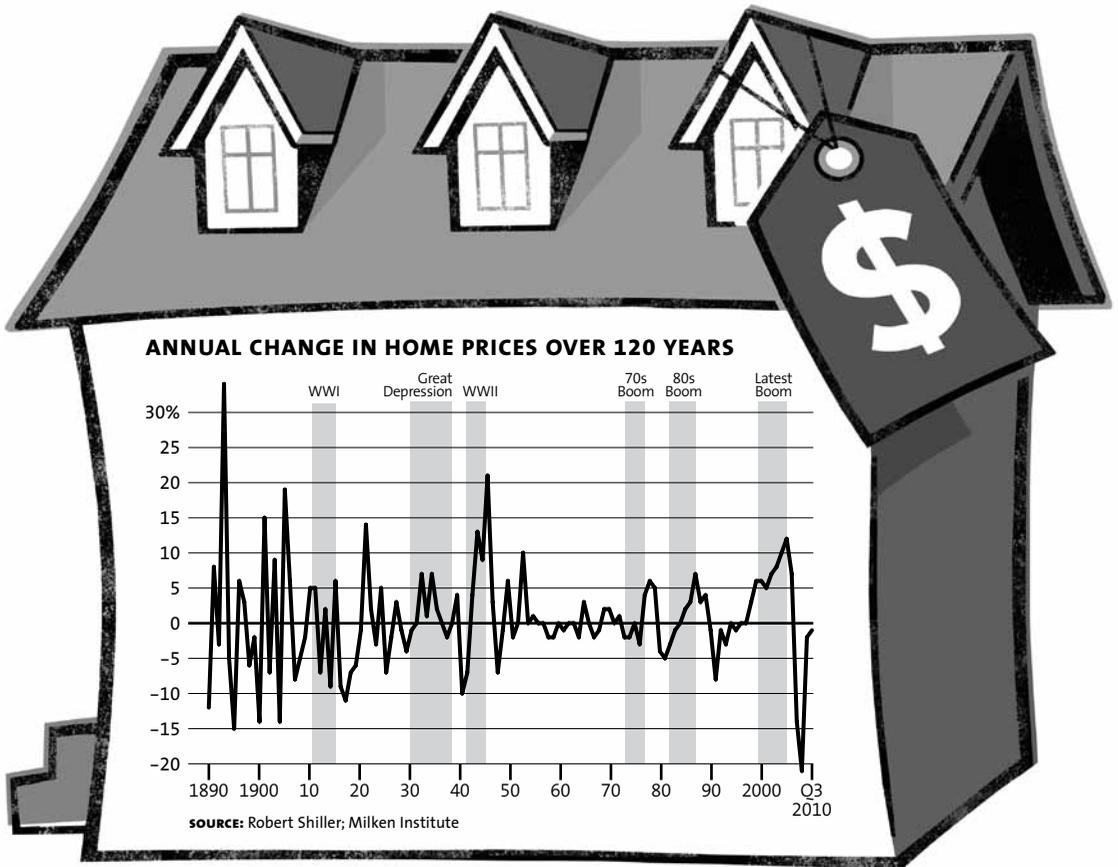
HOUSING

I grew up in a 1,300-square-foot house with my brother, my sister and our parents. It never occurred to the five of us that our California house was too small. It seemed just right to me. Few of the neighbors in our middle-class neighborhood talked about moving to bigger houses. But in recent decades, many Americans have felt compelled to “move up.” The change was driven by perverse incentives built into our housing, mortgage and tax systems that have created minimal social good and great financial harm. They’ve resulted in a gross misallocation of resources toward larger houses, more-powerful cars and longer commutes – at the expense of higher social priorities, most notably, investment in education and medical research.

The combination of incentives to buy a

house on credit created the illusion that it was a smart financial move. But for many, the “American Dream” of home ownership turned into a nightmare. Many factors pushed Americans to take on too much mortgage debt, including low down payments, tax preferences, extended payback terms, a lack of prepayment penalties, nonrecourse terms that shield non-housing assets, government guarantees and the myth that housing prices always rise. In effect, the government had turned middle-class homeowners into reckless speculators.

A range of players share part of the blame for the collapse of the mortgage and credit markets in recent years. Regulators failed to set adequate standards for borrower qualification. Mortgage brokers, knowing they could quickly sell the mortgages they originated, pushed loans they knew might not be repaid. Non-resident speculators hoping to “flip” houses to other buyers drove up prices, helping create an asset bubble. Rating agencies



were unable or unwilling to use the correct analytical tools in assessing the quality of securities backed by mortgage loans. And institutional buyers failed to perform adequate due diligence on the mortgage-backed securities they purchased.

But the biggest factor in creating the housing crisis, which became a global financial crisis, was the structure of government-guaranteed mortgage loans, which simply were never worth what people assumed they were worth. In most cases, because of a lack of call protection and high transaction costs, these loans were worth less than their nominal price on the very day the government bought or guaranteed them. For these and other reasons, the investment quality of real-estate loans has continually been exaggerated.

In the end, lenders faced a “heads-you-win, tails-I-lose” situation. If property prices rose, the borrower kept the gain; if prices fell, the borrower could walk away, leaving the lender with a long-term depreciating asset. If interest rates rose, the value of the loan declined; and if interest rates fell, the borrower could prepay.

Residential mortgages not only lack the call protection of most bonds and other debt instruments backed by business assets, but also lack the liquidity of securities. Thus, an investor can sell 1,000 shares of IBM stock – worth about \$180,000 as this is written – in less than a second with a transaction cost under \$10; but a \$180,000 house in foreclosure takes months to sell with fix-up costs, commissions and legal fees that can exceed \$20,000.

Ever since the stock market crash of 1929,

securities regulators have understood (at least in theory) the need to raise margin requirements for stock purchases when excessive speculation drives up prices too quickly. The margin on a housing purchase is the buyer's down payment. Decades ago, it was rare for a buyer to secure a mortgage loan with less than 20 percent down. But average down payments fell in recent years, in some cases reaching zero – with government blessing. Looking back, it's now obvious that when housing prices were rapidly doubling or even tripling in some markets, regulators should have raised the margin requirements by requiring larger down payments.

Why is this obvious? Because over long periods of time, housing prices have not moved much in real terms. Calculations by the Milken Institute based on data from Yale economist Robert Shiller show that over the past 120 years, U.S. housing prices actually fell in more years (63) than they rose (57). Research by professors Carmen Reinhart and Kenneth Rogoff indicates that inflation-adjusted average American housing prices rose a total of only 27 percent in 106 years beginning in 1890. But starting in 1996, spurred on by government policies, the cumulative real price increase was about 92 percent in just 10 years. On any reasonable historical basis, that was unsustainable.

America's real-estate market is unique. Nowhere else are nonrecourse, no-prepayment-penalty loans guaranteed by the government and made available at better terms than are available to established companies. To borrow for 30 years, a triple-A-rated company would usually have to accept an interest rate that's higher than the home-mortgage rate. And it would often be required to put up the entire collateral of the company to guarantee the debt with full faith and credit – plus provide call protection. Consider how many more jobs

small businesses could create if they enjoyed the same terms we give residential real estate.

In many U.S. states, if a mortgage borrower stops paying on the loan, the lender's only recourse is to pursue an expensive and time-consuming foreclosure on the mortgaged property. The borrower's other assets and income can't be used to satisfy the debt. So if the borrower walks away from the contractual obligation, the lender is stuck. Even in states where lenders can go after nonresidential assets, they rarely do because the costs are so high.

CONSUMER SPENDING % OF HOUSEHOLD BUDGET

UNITED STATES		ASIA	
Housing	33%	Food	23%
Transportation	18	Supplemental education	15
Food	13	Housing	10
Insurance/pensions	11	Clothing	8
Health care	6	Other	8
Entertainment	5	Transportation	6
Apparel and services	4	Health care	5
Supplemental education	2	Communication	5

SOURCE: U.S. Bureau of Labor Statistics; CLSA Asia-Pacific markets, *Mr & Mrs Asia*

The public and its policy leaders need a better understanding of how markets work if we're to stop making the same mistakes. That's part of the motivation for the establishment of the Milken Institute Center for Financial Markets Understanding. This new center, based in Washington, seeks to confront the ways in which markets are often misperceived by participants, regulators and academics. For example, most people thought that generous housing incentives would produce more homeownership, which would be good for the country. Instead, we ended up with excessive consumer debt, irresponsible lending, mortgage defaults, unemployment and declining neighborhoods.

WHERE'S SPUTNIK?

For middle-class Americans who stood at an economic precipice a few years ago, the message was clear: your priorities should be a big house and big car. And as a result, half of the typical American family's disposable income went to housing and transportation. That impairs our national competitiveness because we're allocating limited means to nonproductive ends. Middle-class Asians typically spend only 16 percent on housing and

great physicist reportedly answered, "Compound interest!" That insight has eluded the administrators of pension funds on which millions of Americans are relying. These funds often assume long-term rates of return of as much as 8 percent per year, compounded. Yet anyone who has purchased an annuity recently knows the market is assuming a return closer to 4 percent. That difference, when compounded over a typical working life, is likely to leave a pension fund about 75 percent short

We have to stop thinking of the aging population as a burden and look at it as a resource.

transportation combined. They spend almost as much – 15 percent – privately tutoring their children, often a single child. In effect, these Asians regard education as a consumer product while most of their American counterparts view it as a government product.

If we think we can compete globally by spending half our disposable income on horsepower and square footage, we're at best naïve. And the tragedy is that our children and their children will pay the price.

ENTITLEMENTS

It's time for our leaders to admit that expectations for Social Security, Medicare and public pensions are no longer realistic.

This isn't a partisan issue. It's math. The problem is rooted in (a) unrealistic assumptions about rates of return on assets, (b) falling ratios of current workers to retirees, (c) workers who pay in to the system for too few years, and (d) pensioners who live longer than the original system planners assumed.

The story is probably apocryphal, but when Albert Einstein was once asked to name the most powerful force in the universe, the

of its assumed value. For example, \$1 billion growing at 8 percent compounded will be worth \$16 billion in 36 years; at 4 percent, it will grow to only \$4 billion.

The good news is that we're living longer. Americans born in 2010 have life expectancies of 76 years for men and 81 for women. Those spans are about three decades longer than they were for Americans born in 1900. In terms of vigor, today's 80-year-old American man is similar to a 60-year-old as recently as 1975. A 60-year-old woman is equivalent to a 40-year-old in 1960. No wonder that around the globe, for the first time in human history, people age 65 and over are about to outnumber children under five.

Now the bad news. Although we live much longer, we're retiring earlier. So the number of older people entitled to government-funded pensions and health services is growing rapidly while the number of tax-paying younger workers is shrinking.

Something must be done, and it will take political courage. Consider the piling-on of critics last year when a deficit-reduction commission made some very straightforward

and reasonable recommendations. They were treated as social radicals when actually they were too timid, especially about taking more than half a century to implement a small extension of the retirement age. It would be more effective to adjust it every few years to 85 percent of current average life expectancy.

When Social Security was introduced in 1935, life expectancy was 61.7 years. Back then, it made sense for people to start collecting pension checks as early as age 62. After all, they weren't expected to live long. A system designed for a labor force that worked more than 40 years and lived for only a couple of years after retirement cannot now pay workers for almost as many years as they were paying into the system.

What can be done? On paper, the answer is simple. But it's tougher in the real world. Can any candidate be elected to public office by attempting to tackle this issue? Democrats don't want to cut benefits. Republicans don't want to raise taxes. These entrenched positions are endangering our economy and society. Do we, the people, have the will to vote for candidates who acknowledge that unrealistic promises are being made?

One way to maintain economic growth in the face of demographic facts is to rethink current approaches to work and retirement, pension and health care policies, and government budget discipline. We need ideas, big and small.

We have to stop thinking of the aging population as a burden and look at it as a resource. We need incentives such as bonuses for people who work past age 70, reduction of employer Social Security taxes for employees over retirement age, more flexible work schedules, telecommuting options and late-career sabbaticals for education and training.

Governments with national health programs must start curbing growth in medical

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spending now, not later. At the same time, private citizens need to get comfortable with the idea that living longer comes hand-in-glove with prudent money management, like saving more from their paychecks and paying more of their medical and long-term-care costs.

Finally, in most discussions about the shortfall in funding entitlements, disturbingly little talk has been about the real key – restoring economic growth. In country after country, the trend has been clear: The bigger the bite the government takes out of the economy, the slower the average growth rate. In countries like Greece, people came to believe that they could – were *entitled* to – retire in their 50s. We've seen what happened in

WHERE'S SPUTNIK?

Greece and other countries where entitlements were too expensive to afford – but also so big and entrenched that reform seemed politically impossible. With a relatively young population, the United States has an opportunity to fix its entitlements dilemma before it reaches an economic tipping point. But we'd better act soon.

EDUCATION

Once upon a time, U.S. college graduates near the top of their classes routinely entered the teaching profession. In fact, 90 percent of new American teachers in the early to mid-20th century came from the upper third of their classes. Today, it's just 23 percent. Meanwhile, virtually 100 percent of teachers in Singapore, South Korea and Finland come from the top third of their graduating classes.

In 1960, America was an education powerhouse. Each decade from 1880 to 1960, on average we added one year of school to our children's learning. By the time I was in elementary school, we led most of the world by at least two years of formal schooling. But since then, we've stalled while other nations have moved ahead and in some cases surpassed us. In fact, U.S. high school graduation rates have actually declined since 1960. It's not that we're not spending enough money – the U.S. spends far more on education than other countries. The problem is that we're getting far too small a return on our investment.

How do American students stack up to international competition? Not well. The United States ranks 30th – just behind Hungary – among nations on Programme for International Student Assessment (PISA) math tests. PISA is a widely recognized standard assessment of performance by 15-year-old high-school students in science, reading and math.

The PISA tests benchmark educational

quality by ranking the ability of students to perform complex mathematical tasks on a scale of one to six. Recent top performers were China, Korea, Japan and Belgium, with about one in ten students reaching level six. More than a quarter of U.S. students couldn't even go beyond level one.

The results of PISA tests released in late 2010 caught much of the world's educators by surprise when they placed China at the top in every category. Indeed, Chinese students scored a perfect 600 in math. (Singapore, 562; Germany, 513; United States ... 487.) In reading, China scored 556; in science, 575. (The U.S. came in 17th in reading and 23rd in science.) Critics say these Chinese students were hand-picked and that the U.S. population includes disadvantaged minorities and unskilled immigrants. That may be true, but it still looks like we're being out-educated. China and India, along with a host of other nations that have been doing it for a while now, are placing education at the top of the national agendas.

Meanwhile, in a United Nations study, the United States ranked 49th among nations in adult literacy. According to the U.S. Department of Education, 20 percent of American workers read at no better than a fifth-grade level, which for employment purposes makes them functionally illiterate. Practically the only category American kids rank No. 1 in is *thinking* they're No. 1. Apparently we're tops when it comes to student "self-esteem." These U.S. students are like the British athlete Michael Edwards, "Eddie" to his friends, who set his sights on competing as a ski jumper in the 1988 Calgary Olympics. All he had to do was beat other applicants *from England*. That wasn't hard in a country with no tradition of ski jumping and minimal interest in the event, and he made it to the Olympics, calling himself "Eddie the Eagle." How good was Eddie?

The laws of physics suggest that if you strap a 180-pound mannequin to a pair of skis and slide it down the ramp, it will fly about 230 feet. Eddie's best jump was 253 feet. No other jumpers did worse than 360 feet.

The International Olympic Committee wasn't amused and created the "Eddie-the-Eagle rule," requiring qualifiers to finish in the top half of an *international* competition or among the top-50 competitors worldwide. In other words, being the best at home didn't count – you had to show you could meet global competition. Unfortunately, we look at America's educational system the way Britons saw Michael Edwards – the best within national borders. But American students no longer compete just within U.S. borders when they join the workforce.

It's unfair to America's children not to provide them with an understanding of world standards in education. Many U.S. students who would score below the 50th percentile on international tests are being placed in "gifted" programs because they beat their local peers. These kids don't realize they're like Eddie the Eagle.

Ironically, we do the opposite with our teachers. We pay truly gifted educators the same salaries as their less-competent colleagues. Instead of rewarding teachers for results, we base their pay on how long they've held a position and the number of graduate courses they've passed. By paying new teachers low wages, but promising relatively high retirement income and lifetime benefits, we discourage the high achievers who know they can earn more in other professions and are confident they can manage their own retirement planning. This skews the utility curve so that many promising teachers leave the profession within five years of starting their careers, while those who score lower on pedagogy exams hang on. We've set up a system

where teachers are shielded from global competition, but the students they teach will be fully exposed to that competition.

Our short-sighted compensation policies haven't changed much in half a century. What *have* changed are the skills required to live a middle-class life in America. Following World War II, three of every five jobs were "unskilled," according to the government's classification. But in postwar America, an unskilled worker's wages were sufficient to support a family, buy a house in the suburbs and drive a decent car. Today, almost seven in ten jobs require a specific skill. And our schools are increasingly failing to produce the workforce employers need. We're limping by with remedial courses, vocational programs and on-the-job training.

It's not as if America hasn't known this was happening. Starting with the 1947 Truman Report, a long line of studies analyzed American education. Every new White House resident claims to be "the education President" and appoints a blue-ribbon commission. One of the most influential was the National Commission on Excellence in Education, which produced the 1983 report, *A Nation at Risk*. It decried the "rising tide of mediocrity" that was "eroding the nation's educational foundation." Among its 38 specific recommendations was a plea for teacher salaries that are "professionally competitive, market-sensitive, and performance-based." It also gave this warning: "If an unfriendly foreign power had attempted to impose on America the mediocre educational performance that exists today, we might have viewed it as an act of war."

In 1982, the Milken Family Foundation began to study which factors had the greatest impact on student achievement. We found that teacher quality is far and away the most important school-related factor. In response,

WHERE'S SPUTNIK?

we launched an educator awards program to seek out, recognize and reward exceptional teachers. We've recognized more than 2,500 of these outstanding educators across America. Each has received a \$25,000 award and an opportunity to participate in annual professional development forums.

Over the past 30 years, I've visited schools in dozens of countries and always been impressed by the difference a single great teacher can make. Even in the most economically depressed areas of America's central cities and rural areas, inspiring teachers do excite the desire to learn – a desire that produces dramatic changes in student performance. I've seen this repeatedly in public elementary schools where I've helped teach classes using the techniques of Mike's Math Club, a Milken Family Foundation program that gets kids excited about arithmetic and algebra by turning math problems into games.

Although the cultures are different, quality teachers have the same impact in places like China, South Korea and India. I'm an investor in a company that operates thousands of early childhood education centers. Some of these centers operate as Pat's Schoolhouse in

Singapore, where the students easily become bilingual by age six. Each classroom has one English-speaking teacher and one Mandarin speaker. It shouldn't be a surprise that these kids do well.

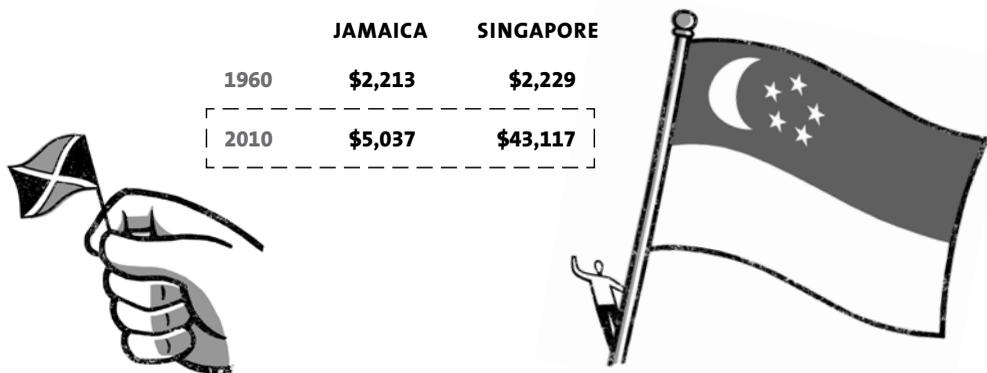
Singapore wasn't always so advanced. In the early 1960s, it was much like another former British colony – Jamaica. These two subtropical islands were virtually identical with the same size populations and gross domestic product of about \$2,200 per capita in today's dollars. But Singapore had Lee Kuan Yew, who had recently become its first prime minister and who led his nation with a keen focus on human-capital development, particularly through education. Meanwhile, Jamaica continued to base its economy on low-skills industries like agriculture, mining and tourism.

Today, Singapore is an economic powerhouse – a fully industrialized country and a global leader in computers and electronics, investing its substantial surplus wealth throughout the world. Its people enjoy high-quality schools, health care and public services. And GDP per capita exceeds \$43,000. Jamaica? It still has an underdeveloped economy with a GDP of about \$5,000 per person.

The lesson is clear: Nations that increase

DO HUMAN CAPITAL STRATEGIES WORK?

(PER CAPITA GDP IN CURRENT U.S. DOLLARS)



the overall level of education in their populations are most likely to prosper.

HEALTH

Of all the great achievements of our civilization, perhaps the greatest has been the doubling of human life spans during the 20th century. We did it by curing and preventing age-old diseases. Lost amid the debates about the 2010 health care bill was the fact that preventing and curing diseases are at least as important as fixing a flawed system of insurance payments and coverage. In fact, the term “health care” has multiple components, including medical insurance, treatment protocols, prevention and laboratory research aimed at cures. My mantra for decades has been, “Not just care – cures.” It recognizes that the best way to reduce health care costs is to reduce or eliminate the burden of illness at all stages of life.

One way to do that is to attract the best and brightest students to careers in medical research. When we established what is now the Prostate Cancer Foundation two decades ago, we made recruitment of outstanding talent one of the highest priorities. And to retain that talent, we removed as many bureaucratic barriers to research as possible while funding deserving work without delay. Today, death rates from prostate cancer are less than half of what was once predicted.

But researchers alone can't reduce the cost of disease when 70 percent of health care spending is related to lifestyle. More of our citizens must take *personal responsibility* for their health and get over the idea that it's someone else's job. While genes cause or contribute to some disease, our excess weight, tobacco use and poor exercise habits are far more damaging. After millions of years of evolution, the body shape of Americans changed dramatically in just the past two de-

cadecades. In 1991, only four U.S. states reported obesity rates exceeding 15 percent. Today, in 49 states – Colorado excepted – obesity rates exceed 20 percent. Nationally, nearly two of five Americans are obese, compared to two of 28 French citizens and fewer than two of 100 Japanese. This is a national emergency.

Even as we address the obesity epidemic, we would be wise to increase resources devoted to medical research. We can accelerate cures if we eliminate these barriers:

Unnecessarily complex and inefficient processes. Researchers, clinicians and patients are constantly filling out paper forms. Grant applicants submit hundreds of pages of documentation to the U.S. National Institutes of Health (NIH). And what patient hasn't been handed a clipboard to fill in the same medical history given to another doctor a few days earlier? Only four in ten U.S. doctors use electronic records. We need to accelerate efforts – from the federal government and from insurance companies – for practicing physicians to go fully electronic. That will save lives.

Bureaucracy. The NIH is a unique resource that has helped drive many of the great medical achievements of the past half century. But with 27 distinct institutes and centers operating in parallel, effective and efficient collaboration across disciplines is not easy. Establishing a framework that allows for greater collaboration and seamless coordination will pave the way for a more outcomes-oriented and accountable NIH. And creating a new entity – the proposed National Center on Advancing Translational Sciences focused on accelerating therapeutic development – is an important first step. This center would improve the ability of each institute to translate its vast scientific knowledge into better diagnoses, treatments and prevention.

Too much “safe” research. If regulatory and funding structures could evolve at the same

WHERE'S SPUTNIK?

pace as science, cures would come faster. Unfortunately, we have a system that creates incentives for low-risk research aimed at small improvements, not breakthroughs. Rather than cooperate on big problems, scientists too often dwell on individual projects whose success can be predicted even if they don't lead to useful therapies. There is insufficient federal funding of new high-risk research.

Underuse of technology and lack of standardized information. In 1995, I delivered a speech at the National Cancer Summit in Washington and outlined a 10-point "plan of attack" on cancer. One recommendation was to create a world library of organic chemicals and test every known chemical compound against every known cell line for specific diseases. Since 1995, the cost of crunching data has plummeted. The issue now isn't cost; it's coordination. The NIH has taken some welcome steps in this area. But diseases don't limit themselves to national borders and neither should we limit ourselves in coordinating global responses.

Today, you can withdraw cash from an ATM anywhere in the world and your bank records the transaction instantaneously. Yet medical researchers at institutions around the world have trouble exchanging information about something as basic as your blood pressure. If banks in 200 countries – each with its own financial regulatory structure – can agree on a common communications protocol, surely laboratories can do it.

Excessive privacy/security concerns. The public is rightly concerned about invasions of privacy and compromises of sensitive medical information. But the same technology that makes data vulnerable can also make it secure. Congress should amend the Health Insurance Portability and Accountability Act of 1996 (HIPAA) to allow patients more control

over how accessible they want to make their own data. I'm happy to make my medical records public, and I'm sure millions of others would volunteer to do so. That could save time in the search for cures.

Low participation in clinical trials. Clinical trials drive nearly all medical progress, yet only one of ten patients asked to participate in clinical trials agrees, and many others aren't even asked. As a result, less than 5 percent of patients with serious diseases are enrolled in a trial. One way to correct this is to build patients' confidence that a trial is the norm, not a desperation measure, and that doctors conducting trials are acting in good faith with patients' interests in mind.

Failure to take reasonable risks. Every drug has risks. Even aspirin can kill people susceptible to gastric bleeding. But the pendulum sometimes swings so far toward caution that it inhibits progress on potentially life-saving therapies. The key is to understand the level of risk and convey it to patients, design trials carefully, review them objectively, get informed consent and charge ahead. As in any battle, limited casualties that save millions of lives are regrettable but must be expected.

Poor incentives for careers in science and medicine. Ever since Sputnik, politicians, editorial writers and blue-ribbon commissions have declared that America will lose its competitive edge if we don't train more scientists. Meanwhile, our society creates disincentives for students considering careers in science and medicine, including antiscience crusades based on religious or ideological views; erosion of the doctor-patient relationship; the cost of malpractice insurance; insufficient funding of the NIH and National Science Foundation; and the low status of postdoctoral fellows who are expected to work very long hours for years with low compensation. Unless we pay life-saving professionals what

they're worth, more of them will either change careers or take their work to places like Singapore that put out the welcome mat for promising researchers.

Failure to integrate technology. Cures don't always come from biology or chemistry. MRIs, CAT and PET scans, electron microscopes, ultrasound, DNA microarrays, genome sequencers and other medical tools were developed by physicists, engineers, mathematicians and computer scientists. Yet no U.S. federal agency works to integrate information technology with biotechnology. Meanwhile, we're teaching yesterday's biology with inadequate focus on computation and systems biology. Medical-school deans have told me that their students should be taking more engineering classes. Students need significant computational skills to pursue the interdependent disciplines of advanced cell physiology, neurobiology, genetics, genomics and molecular biology.

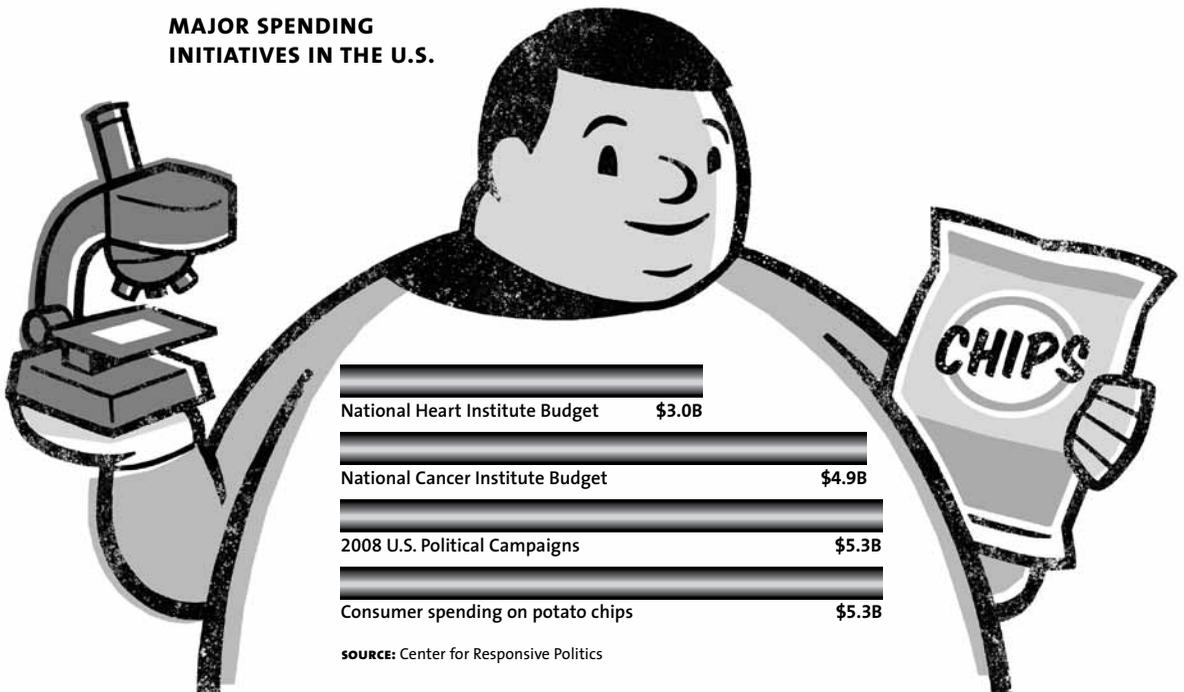
Lack of political will. In 1961, there were few coordinated movements to send astronauts to the moon, but President Kennedy

challenged the nation to think big, and in little more than eight years, we accomplished that "impossible" goal.

We need similar bold leadership to focus the public on the benefits of medical breakthroughs – which are immense. The National Cancer Institute (NCI) estimates that reducing the cancer death rate by 20 percent would add \$20 *trillion* to the U.S. economy. That's more than the national debt. This isn't a new insight – more than a decade ago, economists Kevin Murphy and Robert Topel at the University of Chicago reported that even a 1 percent reduction of cancer deaths would be worth at least \$500 billion. Yet the NCI budget is only \$5 billion a year. Does anyone doubt that a doubling of that budget to \$10 billion would reduce deaths by more than 1 percent? If that's the case, shouldn't we invest an additional \$5 billion a year for several years to reap a benefit of more than \$500 billion?

The argument in favor of research investment becomes stronger if we compare it to

MAJOR SPENDING INITIATIVES IN THE U.S.



SOURCE: Center for Responsive Politics

WHERE'S SPUTNIK?

other expenditures. National political campaigns in 2008 cost \$5.3 billion. Interestingly, Americans also spend \$5.3 billion a year on potato chips. Potato chips! Nearly double the federal budget for heart-disease research. More than the National Cancer Institute budget.

Finally, we must give the Food and Drug Administration adequate resources. An estimated 25 percent of the U.S. economy is affected by FDA oversight. And Congress keeps expanding the agency's responsibilities. Without a larger budget, the FDA won't be able to keep up with the pace of innovation in such areas as medical device development and regenerative medicine. That will further slow the movement of effective drugs and devices from laboratory bench to patient bedside.

There are many other barriers to medical progress, including nonstandard licensing, insufficient medical-outcomes data, obstacles to creating useful biobanks, immigration restrictions, institutional-review-board bottlenecks and inadequate disease models. We need to address all of these and that won't be easy. But the greatest long-term stimulus we can provide our economy will come from better prevention and from medical science. So let's set our priorities. For example, for just half the cost of an aircraft carrier, we can double scientific investigations into heart disease. Improved public health translates directly into greater national productivity, which underpins all economic growth.

IMMIGRATION

The power of immigration to invigorate society is so fundamentally American that we sometimes forget how much it enriches us. Given the current uproar over undocumented workers, it's time we remind ourselves that by welcoming talented *legal* immigrants, we're

really investing in America. Like other forms of capital, talent goes where it's wanted and stays where it's well-treated. And to America's great economic and social benefit, our nation has welcomed and rewarded the best and the brightest people on the planet to become part of our constantly evolving culture.

The face of science and engineering innovation in our nation's epicenter of technology entrepreneurship, Silicon Valley, is increasingly Indian and Chinese – the vast majority of whom are now American, or want to be. In 2000, 53 percent of the Valley's science and engineering workforce was foreign-born. From 1995 to 2005, Indians were the key founders of 15.5 percent of all Silicon Valley startups, and immigrants from China and Taiwan were key founders in 12.8 percent. In that same time period, 52 percent of Silicon Valley tech companies were founded by immigrants.

Startups are responsible for most net new jobs in the U.S., and immigrants are almost 30 percent more likely than nonimmigrants to start a business. About one in four U.S. engineering and technology companies have at least one immigrant founder – companies that have generated hundreds of thousands of jobs.

Obviously, high-skill immigration has been great for America, and people around the world still want to come here. But future generations of entrepreneurs are leaving the U.S. We need a comprehensive, innovative immigration policy that focuses on America's need for talent to compete globally without being paralyzed by security and other concerns. Here's how I would address what is essentially the first "reverse brain drain" in our history:

Accommodate skilled noncitizen workers and their families currently living legally in the U.S. These employees contribute dispropor-

tionately by filing more than a quarter of our global patents. Most want to stay but can't, either because they're scientists and engineers forced to wait 12 or more years for a green card, or international students who can't get H-1B visas (which allow U.S. employers to temporarily employ foreign workers in specialty occupations). They're leaving because we offer fewer than 10,000 visas per year per country. With more than 350,000 Indians and 250,000 Chinese stranded in immigration limbo while opportunities grow back home, talent that wants to remain in America is being lured elsewhere. We need to match other nations' pro-science policies. We also need to remove limits and restrictions on current visa holders so U.S. companies can once again shop the world for top talent. The benefits of lifting these restrictions go beyond the obvious. A recent study demonstrates that H-1B visa holders not only earn a large number of patents themselves, but also add substantially to U.S. innovation and cause increases in patent activity by *existing U.S. citizens*. When H-1B visa numbers go down, so do patent applications, and when visa numbers go up, so do new patents.

Retain the students we train. We still educate a fair share of the world's top students. But when these high performers graduate, they can't plan their future in the U.S. because of visa uncertainties. One-third of all doctoral students here are foreign, up from one-tenth 30 years ago – and 84 percent are studying engineering and the sciences. As soon as they earn advanced degrees in our top universities, we escort them to the border and say, "Goodbye." They go overseas to become our biggest competition. Why not automatic, permanent residence for foreign graduates from accredited STEM (science, technology, engineering and mathematics) master's and PhD programs? We should also

offer a clearer path to citizenship. If encouraged to stay, they'll pay Social Security and Medicare taxes for decades. Their savings – and immigrants save at a high rate – will strengthen our financial institutions. Many will become entrepreneurs who create good jobs in fast-growing fields. Their children, as is typical in immigrant families, will tend to be the most motivated students in our schools.

Induce entrepreneurs to invest in the American dream. Currently, 10,000 EB-5 U.S. visas – the "immigrant investor" visa – are available for foreigners who invest between \$500,000 and \$1 million in creating a new enterprise that produces at least ten full-time jobs. The program isn't working well. Unlike many other countries, we continue to tax the foreign income of noncitizen residents. To support this program, we should eliminate their offshore tax until they become citizens, advertise benefits of the program widely, simplify the application process and offer citizenship in less time.

It's time to level the playing field with other countries by matching the incentives they provide to high achievers from around the world. Canada, the United Kingdom and Australia encourage immigrant investors. Singapore entices leading researchers and technologists to its \$2 billion Biopolis biomedical center. As I wrote in an op-ed article last year, "The real immigration issue is not only huddled masses yearning to be free – it's smart entrepreneurs and scientists who can change the world. Any nation that fails to welcome them will fall behind."

* * *

These are six of the most important challenges America faces. In many ways, they suggest that we're moving in the wrong direction. It will take extraordinarily strong leadership to change that direction. Leadership from

WHERE'S SPUTNIK?

Washington, yes, but also leadership at the community level, in corporations, in volunteer organizations, in our schools and at home. It must become a widespread social movement.

Despite everything I've cited, I remain optimistic about the future because we Americans have a tradition of rising to a challenge. Whenever problems seemed insurmountable, bold individuals stepped forward and led us to the right solutions. In the 18th century, we fought for and won our independence. Later, when the Civil War tore the country apart, we bound up our wounds and created a stronger nation. And when the Soviet Union launched Sputnik, we responded by putting astronauts on the moon in little more than a decade.

Today, we have to stop tinkering at the margins of big problems and start attacking their cores with conviction. In politics, it means transcending excessive negativism and partisan one-upmanship for the sake of the broader social good. In education, it means putting the classroom teacher at the center of the process and expecting greater professional accountability. In business, it means unshackling small and medium-size enterprises so they grow and create jobs. In medical research, it means allocating more resources to young investigators most likely to develop scientific breakthroughs. It means living within our household, state and national budgets, and welcoming the best and brightest from the rest of the world.

There's no time to waste in shoring up the institutions that develop human capital. If we summon the political will, we can leave the world's children a lasting legacy of a clean environment, stable democracy, robust health and universal access to knowledge.

We know how to do this – we've done it before. Let's do it again. Now. 

NOTES

Page 1:

"No event since Pearl Harbor set off such repercussions ..." from Paul Dickson, *Sputnik: The Shock of the Century*, Walker and Company, New York, 2001.

Page 2:

"*Rising Above the Gathering Storm*," National Academy of Sciences, 2005 (Revised 2010).

Page 5:

"...through greater efficiency and reliability by 2020." *Electricity Sector Framework for the Future*, Electric Power Research Institute, 2009.

Page 6:

"...according to a Milken Institute report." *Energy's Next Generation*, 2009 Milken Institute Research Report, available at www.milkeninstitute.org.

Page 7:

"...home ownership turned into a nightmare." See *The Rise and Fall of the U.S. Mortgage and Credit Markets*, a 2009 Milken Institute report, available at www.milkeninstitute.org.

Page 9:

"Research by professors Carmen Reinhart and Kenneth Rogoff..." Carmen Reinhart and Kenneth Rogoff, *This Time Is Different: Eight Centuries of Financial Folly*, Princeton University Press, 2009, citing Robert Shiller, *Irrational Exuberance*, 2nd ed., Princeton University Press, 2005.

Page 10:

"A 60-year-old woman is equivalent to a 40-year-old in 1960." Robert N. Butler, M.D., President & CEO, Alliance for Health and the Future, International Longevity Center; panelist, *Longevity, Biological Age and an Aging Population*, 2006 Milken Institute Global Conference, Los Angeles.

Page 12:

"...added one year of schooling to our children's learning." Claudia Golden and Lawrence F. Katz, *The Race Between Education and Technology*, Harvard University Press, 2008.

Page 15:

"...reduce or eliminate the burden of illness at all stages of life." See *Health Reform: The Role of Medical Research and Prevention*, a 2010 Milken Institute publication, at www.milkeninstitute.org.

Page 18:

"...immigrants from China and Taiwan were key founders in 12.8 percent." AnnaLee Saxenian, *The New Argonauts: Regional Advantage in a Global Economy*, Harvard University Press, 2006.

Page 19:

"A recent study demonstrates that H-1B visa holders..." *How Much Does Immigration Boost Innovation?* Jennifer Hunt, McGill University; Marjolaine Gauthier-Loiselle, Princeton University, 2009.

"As I wrote in an op-ed article last year..." *Toward a New American Century*, Michael Milken, *The Wall Street Journal*, October 7, 2010, available at www.mikemilken.com.

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