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## U.S. Military Enters A New Phase Of Development Defined By Globalization Of Its Technology Suppliers

**The U.S. defense industrial complex has entered a new phase of its centuries-long development, the latest characterized by globalization of supply chains and the inability of U.S. defense contractors and laboratories to drive technological change. Gone are the days when the Department of Defense could depend on American industry to provide it with high-tech components used in advanced weapons systems. Gone too are the well-funded defense R&D enterprises responsible for the creation of entire industries such as the Internet, high-performance computing and the global position system.**

The Department of Defense and its major contractors are now dependent on foreign manufacturers for many of the military's most advanced weapons systems.

DOD is slowly catching up to the structural change caused by globalization of technology and supply chains. It is wrestling with the regulatory and procurement systems it has in place to monitor and conduct business with foreign suppliers, but it has little time to waste, says Bill Lynn, CEO of Finmeccanica North America and former Deputy Secretary of Defense from 2009 until 2011.

The defense industry is a shadow of its former self, representing less than 3.5 percent of the U.S. economy, a position that continues to decline as defense budgets reach new lows with no chance of them growing faster than the economy.

"Facebook is worth more than Lockheed Martin, Raytheon, Northrop Grumman and General Dynamics, combined," notes Lynn. Apple "could buy half the industry with the cash it has on hand."

When their R&D budgets are combined to total a scant $3 billion (or only 1.6 percent of revenue), the five biggest defense contractors — Boeing, Lockheed, Raytheon, L3 and Northrop — would not even make the list of

(Continued on page six)

## *China Has A Long Way To Catch Up To American Mfg. Wages*

There has been a wave of pronouncements from economists and consulting firms that China's labor costs are catching up to those in the United States — and by others that U.S. workers have priced themselves out of the global competitive labor market. But they have not looked at The Conference Board's annual survey of global compensations costs for manufacturing workers.

Total compensation cost for a manufacturing worker in the United States was $36.34 an hour in 2013, up from $34.75 in 2010 (an increase of $1.59 an hour).

In China, the total compensation cost for a manufacturing worker in U.S. dollars was $3.07 per hour in 2012, or 8.6 percent of an average U.S. manufacturing worker. That is up from $1.89 per hour in 2010. In the three years between 2010 and 2012, Chinese wages and benefits increased by $1.09 per hour, compared to the $1.59 per hour increase in the United States for the four years from 2010 to 2013.

Chinese workers in 2012 were making less than 10 percent of the average

(Continued on page 10)

# The Service Economy Is A 'Seductive Illusion'

The United States has been seduced into thinking that service sector jobs and Silicon Valley darlings like Facebook are the foundations for an advanced economy. But that is not the case, says William Lovejoy, professor of technology and operations at the Ross School of Business at the University of Michigan.

"Service-based and information-based economies are seductive but dangerous illusions that appeal to the natural human gravitation toward ease and comfort," said Lovejoy before the Society of American Business Editors and Writers annual conference in Chicago. "The pristine ideal of generating wealth from pure thought or energy, without the bothersome grit of making anything, is undeniably attractive. We are aided in this illusion by the sheer complexity of modern macroeconomic phenomena, making just about any theory seem plausible, even one that conjures up images of wealth without physics."

But the service economy is not working for most Americans. "It should be obvious that we cannot run an economy by giving each other haircuts or exchanging chats and photos," said Lovejoy. "Information has no value in isolation. Uber is worthless without cars, Airbnb is worthless without housing.

"Technological miracles like a modern automobile or a Boeing 747 are phenomenal confluences of human understanding and technology. Don't confuse that with Facebook and Snapchat, which are trivial. Almost by definition, if an 18-year-old can do it in a dorm room, it's not difficult and it's certainly not the basis for an economy.

"There is a reason why manufacturing is only 12 percent of the U.S. economy but accounts for 60 percent of our exports. If we cease making things, we give up a foundational source of national wealth."

The industrial heartland of the country should give up on trying to emulate Silicon Valley and focus instead on its traditional strengths of building physical products, Lovejoy told the business journalists. "Today's Silicon Valley does not revolve around great hardware, but software. What we do in manufacturing is infinitely more difficult and complex than writing software. Recognize and value that difference. If the Rust Belt has no future, America has no future. Capture people's imaginations. Why is the cool electric vehicle (Tesla) being made in California and not Detroit? If we're not making cool stuff the world wants, America is going to lose out, not just the Rust Belt.

The manufacturing sector needs to "embrace social trends instead of fighting them," he continued. "At least from a public perception, the auto industry opposed mileage standards for years. Now, the perceived leaders in hybrid efficiency are Japanese, not American. Why should that be? The need to use less fossil fuel was apparent then, is apparent now and is not going away.

"What other social trends are worthy of recognizing, and perhaps designing for? An aging population? The accelerating rich/poor divide (the latter still need cars)?"

"Look for a mixed big company/small company economy. Nurture a startup environment in physical products. Lots of small innovators will create more cool things than a few big ones. Urban bicycles, urban farming, etc., all invite new product design that may be well-suited for smaller design companies. But, we still need large companies for complex, capital intensive products and mass employment."

# *Baldrige Award Falls Out Of Favor*

For decades, the annual award ceremony for the winners of the Baldrige National Quality Award was a grand event, involving the President of the United States and the"President's Own" United States Marine Band. The ceremony was scheduled to fit with the availability of the President. His motorcade would transport him one block from the White House to the Commerce Department or to one of the big Washington hotels hosting the event. If the President had a change in schedule, then the Vice President stepped in.

Now, the Baldrige Award has lost political value. This year's ceremony held in April was presided over by Deputy Secretary of Commerce Bruce Andrews.

Perhaps the reason for the political snub is the fact that the biggest and most important American industrial companies are no longer interested in the Baldrige Award. There were no manufacturing firms — large or small — among the 2014 winners. Of the four organizations winning the award, none make a physical product: two are involved in health care; one is a credit union; and another is a Beltway bandit.

Secretary of Commerce Penny Pritzker said she wanted to be at the award ceremony, but was on a trade mission in China. From a televideo, she told attendees that the Obama administration was proud to honor the four recipients as being "the innovators and job creators who power our economy and keep America open for business."

Hill Country Memorial Hospital in Fredericksburg, Texas, was honored for a "culture shift that lowered employee turnover," said Pritzker. St. David's HealthCare based in Austin, Texas, contributed more grants to its local community, resulting in one of the top patient loyalty scores in the country. PriceWaterhouseCoopers' federal government consulting practice in McLean, Va., "is one of the fastest growing consulting firms serving the federal government," said Pritzker. Its success is due to a "renewed focus" on its federal customers. Elevations Credit Union based in Boulder, Colo., was honored because it set goals that allowed it to "survive the financial crisis of 2008," said Pritzker. "This year's awardees are the leaders in the truest sense of the word."

The Baldrige Award is no longer funded by the federal government. It is run out of the National Institute of Standards and Technology and is underwritten by an independent trust.

# Walmart Prepares For Round Three Of Buy American

WalMart is preparing for its third "U.S. Manufacturing Summit" to be held July 7 - 8 at corporate headquarters in Bentonville, Ark. The company is issuing an open call for all manufacturers interested in selling American-made products through Walmart.

On the first day of the event, the company will "facilitate meetings for current and potential suppliers with key state economic development officials with knowledge of available U.S. manufacturing locations," says the company. "Walmart will offer the unique opportunity to meet with buyers across our formats and will offer a wide variety of workshops on doing business with Walmart."

On the second day of the conference, Walmart executives, government leaders and industry executives "will share insights into the Walmart customer, the U.S. supply chain and America's manufacturing competitiveness," says Walmart.

The company is inviting current Walmart suppliers interested in setting up U.S. manufacturing facilities; current suppliers with new U.S.-made products; potential suppliers with U.S. manufactured products; and state economic development representatives. "Space is limited!" Walmart notes.

The company says its effort to buy an additional $250 billion worth of American products over a decade ending in 2023 is beginning to bear fruit. Here are some of the companies that are providing Walmart with American-made goods under its manufacturing initiative:

• Implus Footwear moved production of gel insoles from China to Waldsworth, Ohio, where it has added 40 new jobs.

• Bell Sports is re-shoring production of bicycle helmets for sale at Walmart stores.

• Andover Healthcare is adding 52,000 square feet of manufacturing space at its plant in Portsmouth, N.H., to produce cohesive bandages.

• Dalen Products has created a new line at its factory in Knoxville, Tenn., to produce lawn and garden plastic owls.

• NUK USA is now making the majority of its pacifiers and baby products at its Reedsburg, Wisc., factory.

• True Science, a producer of pet products and treats, was selling to 75 Walmart stores in 2012. They are now in 800 stores. The company has grown from 20 employees in 2010 to 300 today.

• General Electric is creating 150 jobs to produce energy-efficient soft white bulbs that will be sold exclusively at U.S.-based Walmart stores. GE opened factories in Mattoon, Ill., Circleville, Ohio, and Bucyrus, Ohio.

• Renfro, a North Carolina-based legwear company specializing in design, manufacture and sale of all kinds of socks, is expanding its capacity over the next two years in Cleveland, Tenn., and Fort Payne, Ala. The company will add 195 manufacturing jobs.

• No nonsense, a legwear brand made by Kayser-Roth Corp., announced a sock initiative with Walmart that will add more than 100 jobs at its plants in North Carolina.

• Element Electronics Corp. has opened a flat-screen TV assembly facility in Winnsboro, S.C.

• Hampton Products Intl. recently invested in a new Shell Lake, Wisc., facility to begin production of screen and storm door hardware.

• Elan-Polo, a global footwear supplier, has started production of injection-molded footwear at a factory in Hazelhurst, Ga., as part of a joint venture with McPherson Manufacturing. When at full capacity, the facility will create 250 jobs and produce 20,000 pairs of shoes per day.

• Louis Hornick & Co., a manufacturer and importer of window coverings and home textiles, will establish a new manufacturing facility in Allendale County, S.C. The investment is expected to create 125 new jobs over the next three years.

• Tailor Made Products, a kitchen utensil manufacturer, is expanding existing production and adding 12 new manufacturing jobs in Wisconsin.

• Korona Candles will create 170 jobs in Virginia to produce more candles.

• Hanna's Candles is expected to increase sales to Walmart from $4 million in 2012, to $30 million in 2013 and to $45 million by 2017, making its candles in Arkansas.

• Kent Bicycles moved production from overseas to Manning, S.C. When at full capacity in 2016, the company expects to add at least 175 jobs and will be assembling one million bikes annually.

• Richelieu Legwear International of Canada is expected to create 200 jobs by the end of 2018 at a new manufacturing facility in Hildebran, N.C.

• Giti Tires will establish a facility in Chester County, S.C., that will create 1,700 jobs over the next decade producing "price-point" tires for Walmart.

## *NIST Gets Head Start On Recompeting MEP Centers*

The Manufacturing Extension Partnership program is gearing up to re-compete manufacturing centers in 21 states in 2016. "We're announcing next year's competitions now in order to reach as many potential applicants as possible and to give them ample time to prepare," said Carroll Thomas, MEP's new director.

In January 2016, the National Institute for Standards and Technology expects to announce competitions for centers in Alabama, Arkansas, California, Georgia, Louisiana, Massachusetts, Missouri, Montana, Pennsylvania, Puerto Rico and Vermont.

In July 2016, NIST expects to announce competitions for Delaware, Hawaii, Iowa, Kansas, Maine, Mississippi, New Mexico, Nevada, North Dakota, South Carolina and Wyoming.

NIST currently has an open solicitation to re-compete 10 centers, the deadline for which proposals are required is June 1.

# *Huge Demand For Manufacturing R&D Consortia*

After issuing a call for proposals last summer for new manufacturing R&D consortia, the National Institute of Standards and Technology was flooded with interest. The agency received 118 applications seeking a total of $56.6 million under its Advanced Manufacturing Technology Consortia (AMTech) program. With $7.8 million in funding available for this year, NIST selected 16 of those proposals, providing them with up to $500,000 over a period of one to two years to develop ideas on how to pursue large-scale collaborative programs aimed at re-energizing and re-inventing major American industries.

Forty organizations are involved in the 16 projects selected by NIST. Most are headed by universities and non-profit trade and research groups. "Thirteen of the projects will launch new consortia," says NIST. "All will initiate technology roadmapping activities or similar efforts intended to identify, prioritize and align research and development in targeted industry sectors."

The industrial sectors tend to be those that are "mundane," yet ubiquitous and important to the entire industrial enterprise. Without them — and without them embracing a new era of innovation and growth— the United States will be hard pressed to maintain its standard of living, much less a tax base upon which governments depend.

Despite the pent-up demand for the program, in a recent budget markup, the House of Representatives eliminated funding for the program for next year.

Here are the projects along with an explanation of what they hope to accomplish, their participants and a contact person to answer your questions.

**Fluid Power Advanced Manufacturing Consortium**
University of Minnesota, $413,269

The National Fluid Power Association, the Association for Manufacturing Technology, the Center for Compact and Efficient Fluid Power and the Oak Ridge National Lab will launch the Fluid Power Advanced Manufacturing Consortium (FPAMC) to address manufacturing challenges in this technology. Fifty-two companies and organizations have committed to participating in the consortium to create a technology roadmap, improve efficiency of factories, develop lightweight and more energy efficient components, promote wider adoption of fluid power in new applications, launch new start-up companies, improve international competitiveness and increase global market share and job growth.

Fluid power is the use of fluids under pressure to generate, control and transmit power. It is a foundational, cross-cutting technology used in a wide range of industries including manufacturing, transportation, aerospace, agriculture, construction, mining, forestry and renewable energy. Nearly all U.S. manufacturing plants rely on fluid power to produce goods; more than half of all U.S. industrial machines have fluid-power components. Its advance is a vital interest to the United States.

In 2008, shipments of fluid-power components exceeded $17.7 billion and employed 68,000 Americans. Sales of systems using fluid power exceeded $226 billion and employed 683,000 Americans. However, U.S. and global shares are declining, and R&D programs in Europe and Asia threaten U.S. competitiveness.

For project information, contact Amy Rollinger at 612-624-5599, amyg@umn.edu.

Funded participants include Albright Strategy Group; KoMotion Technologies; and Tom Kurfess of Georgia Institute of Technology.

**Remanufacturing in the Circular Economy**
Rochester Institute of Technology, $495,608

The Golisano Institute for Sustainability at the Rochester Institute of Technology, in collaboration with Energetics, Inc., will assemble a consortium consisting of groups such as the Remanufacturing Industries Council, the Automotive Parts Remanufacturing Association, the Professional Electrical Apparatus Recyclers League, Caterpillar, GE Healthcare and Davies Office, as well as researchers from Argonne and Idaho National Labs.

The remanufacturing industry must move into a new phase of environmental and economic restructuring to compete with the most serious challenge in the future of manufacturing: material availability. Without stakeholder input, development of a technology roadmap to address the technology challenges of the $43-billion remanufacturing industry would be unlikely. Meeting these challenges will contribute to the retention of 180,000 current jobs and the creation of new jobs. For project information, contact Nabil Nasr at 585-475-5106, nzneie@rit.edu.

Funded participant: Energetics Inc.

**Functional Glass Manufacturing Innovation**
The American Ceramic Society, $480,000

The American Ceramic Society in collaboration with the American Precision Optics Manufacturing Association, SAE International, Corning Inc., the Center for Optical Materials Science and Engineering Technologies, Oak Ridge National Laboratory, the International Materials Institute for New Functionality in Glass and Pennsylvania State University will coordinate the development of an advanced technological manufacturing roadmap.

Thirty organizations representing the functional glass industry have committed to participating in the consortium.

Functional glass represents a significant growing market for the United States, impacting about 1.8 million employees and 55,000 companies with $830 billion in annual revenue. Manufacture and deployment of new functional glass products for solar panels, fiberoptic networks and integration of touchscreen electronics into information systems require critical breakthroughs that push glass processing and performance to their limits by strategically developing and implementing advanced manufacturing technologies.

For project information, contact Eileen De Guire at 614-794-5828, edeguire@ceramics.org.

Funded participant: Nexight Group.

**Atomization Technology Innovation Consortium (ATIC)**
ASM International, $485,000

ASM International, in collaboration with the Thermal Spray Society, America Makes, the AMES Laboratory, the Institute for Liquid Atomization and Spray Systems, the University of California-Irvine Combustion Laboratory and the Metal Powder Industries Federation will develop a technology roadmap for the atomization industry. Sixteen organizations from research institutions to manufacturers to end users have committed to ATIC.

Atomization, or the controlled fragmentation of a liquid stream into particles, is a technology widely used in a range of cross-industry applications. Approximately 19,500 U.S. companies manufacture or use atomized products resulting in $1.46 trillion in goods and the employment of more than 2.2 million people. Atomization is a key technology employed in fuel injection for motorized vehicles, 3-D printing, electric power generation and thermal spray technologies.

For project information, contact Stanley Theobald at 440-338-5410, stan.theobald@asminternational.org.

Funded participant: Nexight Group.

**Consortium for Large-Scale Precision Mfg. Innovation**
University of North Carolina at Charlotte, $486,300

UNC Charlotte, in collaboration with the Coordinate Metrology Society, will develop a roadmap for large-scale product precision manufacturing. At the consortium's core are large manufacturers in the defense, aerospace, shipbuilding and transportation sectors,

*(Continued on next page)*

# Manufacturing Consortia...(From page four)

along with supply-network representatives. These large-scale precision manufacturing sectors are critical to the U.S. economy and defense security. The competitiveness of the industry in the global market depends on understanding which technological innovations can lower production costs, increase productivity, improve product quality and reduce dependence on costly, less-efficient large-scale machinery.

CLPMI will become a permanent part of the Coordinate Metrology Society two years after the consortium's launch.

For project information, contact Erika Cottingham at 704-687-1882, erika.cottingham@uncc.edu.

Funded participant: Coordinate Metrology Society.

**Consortium for Advanced Hybrid Manufacturing Integrating Technologies (CAM-IT)**

Youngstown State University, $495,910

Youngstown State University and North Carolina State University, in collaboration with manufacturing companies, academic partners, professional societies and research entities, will create the nation's first consortium to develop a comprehensive roadmap for integrating additive and subtractive metal manufacturing technologies.

Metal additive manufacturing (AM) processes currently produce parts that lack the tolerances, surface finish and properties achievable with traditional manufacturing and thus require post-processing before they can be used within assemblies. There is no widely used system for integrating AM and secondary processing methods. This presents an excellent opportunity to define a roadmap to guide such integration. Doing so will provide U.S. manufacturing industries the opportunity to become global leaders in the successful integration of the advanced manufacturing technology of AM with conventional value chains.

For project information, contact Edward Orona at 330-941-2377, eorona@ysu.edu.

Funded Participants: North Carolina State University, College of Engineering; Pennsylvania State University, Dept. of Industrial and Systems Engineering; Iowa State University, Dept. of Industrial and Manufacturing Systems Engineering; Texas A&M University, Dept. of Industrial and Systems Engineering; Cornell University; Rochester Institute of Technology, College of Engineering; RP+M LLC (Rapid Prototyping + Manufacturing); and Incodema3D.

**Consortium for Manufacturing Innovation in Structural Thermoplastics (CMIST)**

University of Maine, $497,965

The University of Maine's Advanced Structures and Composites Center, in collaboration with Celanese Corporation, Eastman Chemical Company, Polystrand and Royal TenCate, will launch CMIST to address the most significant manufacturing challenges associated with the use of thermoplastic composite materials for structural applications. The consortium will recruit members from across the United States to road map potential solutions to manufacturing of structural thermoplastic composites. Structural composite materials are strong enough to be used as a substitute in many primary structural applications, including ones in which aluminum once replaced steel in aircraft and automobiles. Such substitution has the potential to transform manufacturing. U.S. manufacturers intending to benefit from such a transformation face two challenges: technical issues and competitive market threats. Technical issues include: realizing faster manufacturing cycle times; developing fast and reliable thermoplastic joining methods; and characterizing thermoplastic composites for desired performance and economical manufacturing. The vision and applied research that results from this planning mission will help U.S. manufacturers bring their products to market faster and in advance of global competition.

For project information, contact Davis Erb at 207-581-2308, david.erb@maine.edu.

**Biomanufacturing Science and Technology Consortium to Advance U.S. Manufacturing of Biopharmaceuticals**

University of Massachusetts Lowell, $499,928

The University of Massachusetts, Lowell, in collaboration with a broad swath of academic and industry partners, will create a Biomanufacturing Science and Technology Consortium of industry and academic leaders; conduct workshops on national and regional levels to compile; identify and prioritize technology challenges; attempt to leverage crowdsourcing; provide innovative ideas for solutions to important questions; and identify research projects. The group will develop a technology roadmap for the biomanufacturing industry's next generation.

Approximately one in every four drugs introduced to the market are biopharmaceuticals. The industry is booming. There are tremendous technology challenges that affect production and purification of this highly specialized and complex process. The specialized nature of these pharmaceuticals and complexities involved in producing them are major drivers of increasing healthcare costs. Without a roadmap, the industry's current challenges cannot be transformed, innovative biomanufacturing systems cannot be pioneered, new technological standards cannot be set and sustained global leadership of the U.S. biomanufacturing industry cannot be guaranteed.

For project information, contact Lucille Dailey at 978-934-4704, Lucille_Dailey@uml.edu

Funded participants: University of Washington, University of Delaware, University of Maryland, University of Minnesota, Tufts University and Texas A&M University.

**The Consortium for Advanced Production & Engineering of Gas Turbines (CAPE)**

Energy Florida, Inc., $499,956

CAPE is managed by Energy Florida, in partnership with the Gas Turbine Association and with Florida Turbine Technologies. The Consortium's research and development efforts will engage the gas turbine industry through the Turbine Manufacturing Leadership Council.

Technical advances for gas turbines over the next decade require the development and production of a new set of materials that will allow for higher temperatures and greater loads on the core components. Adoption and acceptance of new materials within the gas turbine manufacturing sector require development of a methodology for standardizing the characterization of materials and standard certification processes. These steps must be taken if the U.S. turbine industry is to remain globally competitive.

For project information, contact Michael Aller at 321-205-4533, michael.aller@energyflorida.org.

Funded participants: Florida Turbine Technologies, Inc. and the Gas Turbine Association.

**SemiSynBio Consortium**

Semiconductor Research Corporation, $500,000

SRC, along with 11 companies, experts from top universities and the Office of Naval Research, will broaden the consortium they are establishing to advance U.S. SemiSynBio capabilities, and develop a roadmap to take the technology from basic research to commercial production. SemiSynBio combines synthetic biology and traditional semiconductor technology to build a new type of semiconductor technology with significant advantages of energy efficiency and processing power. The objectives of the project are to identify and assess transformative SemiSynBio platform technologies and the development of new manufacturing processes.

The semiconductor industry is crucial to U.S. economic and national security. But the domestic industry faces two major challenges. One is the ever-increasing technical difficulty and cost of continuing to develop and manufacture conventional silicon semiconductors. The technology is approaching fundamental physical limits, and the cost of both R&D and equipment production is rising sharply. The other is the development of state-of-the-art manufacturing capabilities overseas, particularly in Asia, much of which is driven by government policies and funding aimed at promoting their industries. This makes it critical that the United States lead in developing transformative, leap-frog alternatives such as SemiSynBio. Because such development will likely require a research horizon beyond the 10-year time frame traditional in the semiconductor industry, the roadmap is expected to look out up to 15 years. The project has the potential to fundamentally redefine semiconductor design, manufacturing, and the supply chain.

For project information, contact Victor Zhirnov at 919-941-9454, zhirnov@src.org.

(Continued on page eight)

# New Defense Era..(Continued from page one)

the top 20 global companies that invest in R&D, notes Lynn.

The defense sector and the U.S. military have "moved from being a net exporter of technology to a net importer," he notes. The defense industry has had little impact on the latest technology developments such as 3D printing, autonomous vehicles and information technology in general.

"Those are things where the commercial industrial base is stronger than the defense industrial base and in many ways the key to maintaining our future [defense] technology edge is to be able to import those technologies into our defense industrial base," Lynn told a recent meeting of the Center for Strategic and International Studies in Washington, D.C. Since many of the underlying technologies now reside outside of the United States, DOD has to figure out how to deal with foreign corporations and state-owned enterprises that hold the keys to its success.

The defense industry has almost stopped investing in research and development and capital equipment, which does not bode well for its future health, says Lynn. Most of the cash the industry is generating is going to stock buybacks and dividends. In 2013, 80 percent of cash generated was going to dividends and buy-backs. By 2014, that number surged to 102 percent, which means the big defense contractors were taking cash off the balance sheet in order to give it back to shareholders.

The desire of executives in the defense industry to drive stock prices to record highs has worked, "but over the long run, you have to wonder how this strategy is going to play out over a half a decade and a decade in terms of [whether there will be] the technology to keep refreshing the military," says Lynn.

The changes described by Lynn are well understood by Stan Sims, Director of the Pentagon's Defense Security Service, which approves foreign company involvement in U.S. military programs. "We have been seeing foreign investment for a while," says Sims. "We have been dealing with this for quite some time. So welcome to the discussion."

The process by which foreign companies are approved as contractors, or are allowed to purchase U.S. companies, has been changing, says Sims. "We are not adapting as fast as most of us would like, but we are adapting. The bureaucracy is slow, but we have to be patient with it because we see ourselves as a risk management organization."

Sims' office has hired lawyers from the private sector, bankers, business school graduates and accountants to help assess foreign takeovers, foreign investment and the contractual means by which U.S. contractors purchase goods from overseas suppliers. Managing the global industrial base for security purposes goes beyond just the challenge of compliance and oversight by the office that approves mergers and investment, says Sims. The bias in favor of "Buy American" and against foreign companies runs deep within the military's procurement community. "It's a mindset and culture," says Sims. "We have to change the culture and mindset of the people dealing with this. We have to change our acquisition professionals."

But there is only so much the DOD can do. "We took a look at the supply chain. We have done studies at DSS — looked at the acquisition managers and looked at how much they knew about their own supply chain, and it was ugly. It was not pretty. We can give you examples and examples about how our industrial base is not managing the supply chain in a risk-managed approach."

So if the private sector wants to criticize the Pentagon for not being responsive to the business changes caused by globalization, it has only itself to blame. "The government does not own the industry supply chain," says Sims. "You do. You own it. You hire it. You pay for it. You own it. The government doesn't own it. You have to take responsibility. Soon will be gone those days where we have the big integrators and primes who get the govern-

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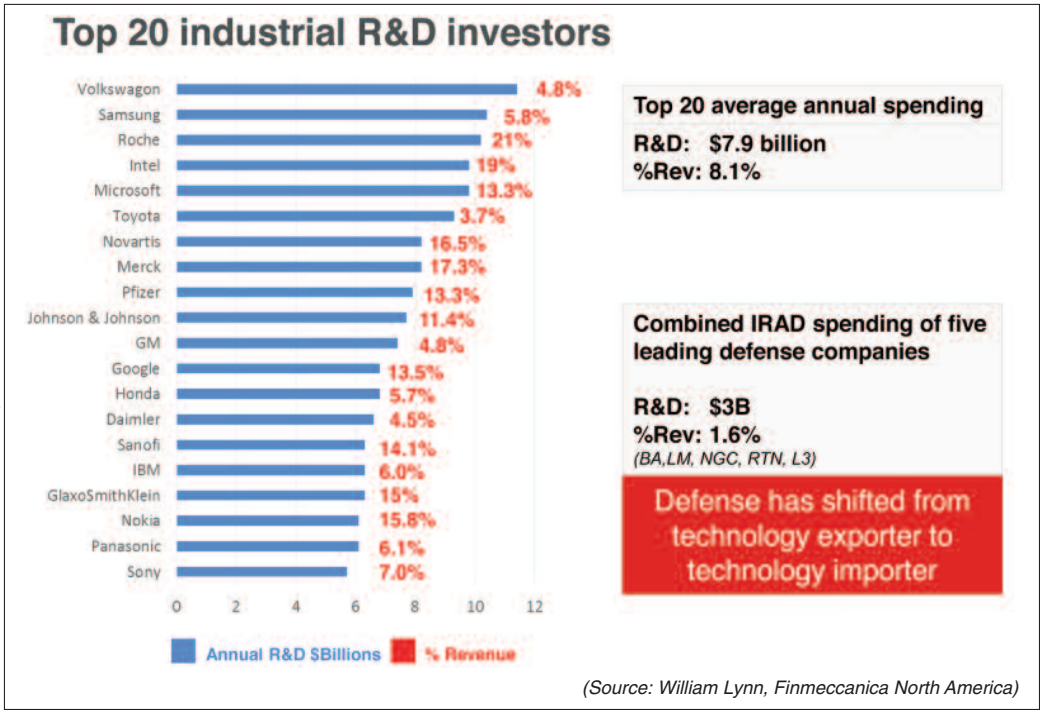



(Source: William Lynn, Finmeccanica North America)

# New Era..(Continued from previous page)

ment contract and then they immediately farm out — sub out. They may have some visibility at the first or second layers [of the supply chain] and beyond that no visibility at all. But if you own the supply chain, you pay it, then you manage it, you control it. The government cannot do it. The companies that are going to get the business are going to be the ones that are aggressive in knowing what their supply chain is and they will be able to deliver products that are uncompromised. They are going to know who is doing the work — not every widget, but someone has to take a look at what are the important widgets — the critical aspects of the supply chain — and you have to take an interest in that. It means you have to have a more aggressive risk-management approach. If you are looking for the U.S. government to do that, you are looking in the wrong place. Industry owns the supply chain."

Lynn says that changing perceptions about foreign involvement in the defense industry are similar to what happened in the U.S. auto sector. Thirty years ago, the American automobile industry was dominated by the Big Three and it was considered unpatriotic to drive a German or Japanese automobile. Americans and their representatives in Congress were skeptical about foreign nameplates.

But as foreign auto companies started building factories in the United States and hiring American workers, the tide turned. Companies like BMW, Toyota, Subaru and Honda built solid political support in the United States because they built their cars state-side and hired American workers.

"The politicians care about the jobs; they care less about the nameplate," says Lynn. "BMW will get political support if they build their cars here."

The defense industry "is a couple of decades behind, but the [foreign] nameplate will become less important if defense firms build their products in the United States," says Lynn. "Every country does this. [Congress] will look for the jobs and will care less about who owns it."

The Pentagon cannot get stuck in a protectionist view of technology, says Lynn. It cannot restrict access to commercial technology since so much of it originates from foreign suppliers. "The key point is we need to manage the transition to this [new] industrial base era," says Lynn. "We need to have pretty strong attention and active management of this transition."

## *U.S. Defense Sector Is Entering Its Fourth Stage Of Development*

The U.S. defense industry is entering its fourth phase of development, according to William Lynn, CEO of Fenmeccanica North America and former senior Pentagon official.

The first phase lasted 150 years until World War II, with the industry controlled by the federal government, which owned the means of production through its arsenals and shipyards.

After the war, the big defense contractors became a permanent fixture of the industry, dominated by conglomerates including IBM, General Motors, Ford, AT&T and General Electric.

After 50 years, that phase ended in the 1990s after the Cold War, when Defense Secretary William Perry told the industry that it was time to consolidate. Lockheed Martin, Boeing, Raytheon, Northrop Grumman General Dynamics and L3 became the dominant defense specialists, an era that lasted just over 20 years.

The new era is one defined by defense spending in decline, with fewer new platforms, the rise of foreign technology companies, the globalization of supply chains and the outsourcing of production. The fourth era is defined by a decline in the economic influence of the U.S. defense industry, falling from 12 percent of GDP in the 1950s and 1960s, to 6 percent in the 1990s, to 3.5 percent currently and soon to be under 3 percent. There is now less competition, with only 4 percent of the tonnage for new Navy ships being competed. The same is happening in the manned aircraft sector with the phase out of the F-18 leaving only the F-35.

DOD is also buying far less from the legacy defense contractors, with their share of spending falling from 73 percent in 2002 to 57 percent in 2011. The share of spending being won by commercial and global companies continues to rise as they control the technologies that the Pentagon demands, including cyber, advanced manufacturing, aircraft, computer networks, robotics and synthetic biology.

## *Semiconductor Industry Reaches New Market High*

Global sales of semiconductors reached an all-time high of $83.1 billion during the first quarter of 2015, an increase of 6 percent over the same period in 2014, according to the Semiconductor Industry Association (SIA). Global sales for the month of March were $27.7 billon, also up 6 percent from the same month in 2014.

North America was the fastest growing market for semiconductors during the first three months of 2015. Sales were up by 14.2 percent in the Americas compared to the same period in 2014. Sales in China for the first three months of 2015 were up by 13.3 percent. In Europe, sales of semiconductors fell 4 percent during the first three months of 2015, compared to the same period of 2014. In Japan, sales were off by 9.6 percent.

In 2014, U.S. semiconductor sales were $173 billion, representing over half of the global market, with 82 percent of those sales exported to customers outside of the United States, according to SIA.

# Mfg. Consortia..(From page five)

**Advanced Manufacturing Technology Consortium for Aerospace (AMTCA)**

Ohio Aerospace Institute, $499,994

The Ohio Aerospace Institute, in collaboration with SAE International, Alcoa, Lockheed Martin, United Technologies-Aerospace Systems, RP+M, Lorain County Community College, the NASA Glenn Research Center, MAGNET and the Federal Aviation Administration will focus on roadmapping the most critical needs concerning aerospace manufacturing. The effort will focus on much-needed manufacturing standards, materials databases and certification processes. The consortium will establish the required standards, procedures and certification processes that will accelerate the flight worthiness of aerospace parts and components that are designed, developed and fabricated via advanced manufacturing technologies and methods.

The sector employs 500,000 workers in scientific and technical jobs, and supports another 700,000 plus jobs in related fields. In 2012, the U.S. aerospace industry contributed $118.5 billion in export sales to the U.S. economy. Unlike many other manufacturing sectors, much of the aerospace work is retained within the United States. To continue a strong U.S. presence in aerospace manufacturing, it is imperative that investments be made regarding new advanced manufacturing approaches.

For project information, contact Andrew Gyekenyesi at 216-433-8155, Andrew.L.Gyekenyesi@nasa.gov.

Funded participants include Rapid Prototype + Machining and the Lorain County Community College.

**Center for Accelerated Development of Large-Scale Structures (CADLSS)**

Louisiana Center for Manufacturing Sciences (LCMS), $500,000

LCMS, in collaboration with the National Center for Advanced Manufacturing, will create the CADLSS consortium of stakeholders from aerospace, shipbuilding and ground transportation sectors, who will oversee development of technology roadmaps and building NCAM, which is a partnership of NASA members and the Louisiana State University. Both large and small corporations, academic institutions, and government agencies in public and private entities will be involved in development of these processes. CADLSS will focus on tools to support an end-to-end, integrated, product realization environment, with emphasis on virtual product development and modeling and simulation.

The objectives of the project are to form a large-scale structures consortium through the assembly of aerospace, shipbuilding and ground transportation technical and academic leaders in the design and manufacturing industry. It will define technology opportunities in large structures.

Production can be a significant challenge for U.S. manufacturers. By developing and advancing technologies that make production flow more smoothly, U.S. manufacturers of large structures can improve market share among global competition. CADLSS aims to develop and deliver transformational advances in technologies that will extend the U.S. market positions in commercial aircraft, automotive and shipbuilding.

Funded participants include Integrated Manufacturing Technology Initiative, David Williams, LLC, Louisiana State University and Keystone Synergistic Enterprises.

**Sustainable Separation Processes: Creating a Roadmap to Accelerate Industrial Application of Less Energy Intensive Alternative Separations**

The American Chemical Society, $500,000

This proposal was developed in response to the escalating energy costs of the chemical process for separation by distillation. Equipment costs for separations are estimated at 50 percent to 90 percent of the capital investment for large-scale chemical plants. The costs for researching and developing an alternate separation process are far beyond the resources of one or even a small group of chemical companies.

The American Chemical Society is initiating a collaborative effort with leaders in the chemical and pharmaceutical sector, universities and professional organizations such as the AICHE Separation Unit and the Industrial Fluid Separation Unit to ensure the research, development and demonstration of less energy-intensive separation technologies. Participation throughout the chemical and petrochemical industry will include most of the major players in the industrial sector as well as universities and research foundations.

For project information, contact David Constable at 202-872-4523, d_constable@acs.org.

Funded participant: the American Institute of Chemical Engineers.

**Advanced Superconductor Manufacturing Institute (ASMI)**

University of Houston, $499,895

The Advanced Superconductor Manufacturing Institute will assess the challenges, barriers, aspirations and risks of this technology in its many applications, which include power cables, rotating machinery, power grids and magnets.

The program seeks to expedite the transition of superconductor manufacturing to commercialization through cost reduction, high-volume production, reliability assurance and effective integration into the existing infrastructure.

For project information, contact Venkat Selvamanickam at 713-743-4044, selva@uh.edu.

Funded participant: Energetics.

**Biomedical Devices and Equipment Consortium Organization to Roadmap Industry (BIOCOR)**

University of Southern California, $500,000

BIOCOR will identify major technical and manufacturing challenges facing the industry from a national perspective. It will prioritize these challenges and develop a technology roadmap.

With a growth rate of more than 25 percent, BDE is a major contributor to the expansion of the bioscience industry. But future growth is not assured. The industry faces numerous challenges, in part because it includes a number of small and medium-size enterprises. Such companies have difficulties with the long lead times and the high cost of doing research and developing the manufacturing methods that the technology requires.

International competition is also increasing, not just from countries with established BDE industries, but also economies such as Brazil, Singapore and China that are laying the groundwork for them. Developing a plan that fosters collaboration among SMEs in the industry and helps accelerate the path from precompetitive research to product manufacturing will grow the U.S. BDE industry and increase its global competitiveness through technology superiority.

For project information, contact Brigidann Cooper at 310-448-9161, brigidannc@research.usc.edu.

Funded participants include Columbia University, University of Maryland, University of Minnesota, USC - Institute for Biomedical Therapeutics, and the USC - Center for Economic Development.

**Advanced Lyophilization Technology Consortium for Manufacturing of Food, Pharmaceuticals and Biotech Products (ALTC)**

Purdue University, $453,623

The Lyophilization Technology Consortium will conduct technology roadmapping in order to address the increasing threat of offshore activity and rising labor costs. If the U.S. food and pharmaceutical manufacturing industry does not address the international competitive challenge it risks losing more than $30 billion. Addressing manufacturing deficiencies is essential to the health and growth of this important U.S. industry. Every American household depends on food and pharmaceuticals. Fine-tuning the lyophilization manufacturing process to make it safer and more profitable.

Food and pharmaceutical products such as protein drugs, vaccines, fruits and probiotic cultures would not be commercially viable without lyophilization. However, lyophilization is a time-consuming and costly manufacturing process. The project is vital to advancing lyophilization, ensuring its proper and safe regulation and developing state-of-the-art equipment and best practices.

For project information, contact Elizabeth Topp at 765-494-1450, topp@purdue.edu.

# Supply Chain Software Market Continues To Grow

The market for supply chain management and procurement software surged by 11 percent in 2014, a faster growth rate than most software product categories, according to Gartner. Total global revenue for companies in the sector reached $9.9 billion, due to an increasing number of industrial companies that are modernizing their supply chains.

The biggest of all supply chain software providers in 2014 was SAP, which had revenue growth of 19.9 percent to $2.56 billion. SAP grew its market share to 26 percent in 2014 (up from 24 percent in 2013), while Oracle's market share declined for the year (from 16 percent in 2013 to 14.6 percent in 2014). Oracle's revenues increased marginally, from $1.43 billion in 2013 to $1.45 billion in 2014.

"In generating revenue of $438 million in 2014, JDA Software sustained its market share ranking of third globally, with 4.4 percent of the global market, and remains the largest pure-play, supply-chain focused vendor despite a decline of 1.7 percent [market share] since 2013," says Gartner.

The supply chain management market "is fragmented," adds Gartner in a market research report. The top 10 vendors control 55 percent of total market share. "Collectively, the remaining 57 vendors experienced annual revenue growth of 9.6 percent, indicating not only opportunity in the market created by acquisitions, but also strong demand for specialized offerings that are competitive and often complimentary to the larger-suite providers' offerings."

In 2015, Gartner expects a "new wave" of acquisitions in the supply chain software sector that will "continue to drive market disruption."

## New Innovation Caucus In Congress

Congress has a new caucus focused on inventors, inventions and the importance of creating innovative companies. The new "Inventions Caucus" will provide senators and representatives with "a forum on practical matters related to this important piece of the economy," says the new group. It will educate members about invention, inventors and issues they encounter — legal, financial, business and strategic — and what it takes to move "an idea from research and development to commercialization and market entry," says the Caucus. Adds Entrepreneurs for Growth, which helped organize the caucus: "High-growth small innovative companies are responsible for 65 to 100 percent of all new net job growth." The caucus is headed by Reps. Paul Gosar (R-Ariz.) and Bill Foster (D-Ill.).

## General Aviation Encounters Slowdown

The general aviation industry experienced a slowdown during the first quarter of this year. Total worldwide shipments were down 13 percent to 441 units (from 520 in 2014), and billings dropped to $4.5 billion (from $5.2 billion in 2014), according to the General Aviation Manufactures Association.

First quarter shipments of rotorcrafts (piston and turbine aircraft) dropped by 18 percent to 188 units, down from 230 in 2014, while billings were down by a similar percentage to $800 million, down from $1 billion in the first quarter of 2014.

"The first-quarter numbers show that, while our industry has been gaining traction over the past few years, we face some renewed headwinds in several regions of the world including Asia, parts of Europe and Latin America," said GAMA President Pete Bunce. "Our industry is focused on regaining momentum but we need the U.S. Congress to be a strong partner and reauthorize the Export-Import Bank before the June 30 deadline."

## Stanford Calculates Cost Of Carbon

The real economic damage caused to the environment from of a ton of carbon dioxide emissions in 2015 is $220, not the current estimate of $37 per ton, according to a study by Stanford University. Damages include decreased agricultural yields, reduced economic output, slower economic growth and harm to human health.

"For 20 years now, the models have assumed that climate change can't affect the basic growth rate of the economy," said Frances Moore of Stanford's School of Earth Sciences. "But a number of new studies suggest this might not be true. If climate change affects not only a country's economic output but also its growth, then that has a permanent effect that accumulates over time, leading to a much higher social cost of carbon."

The study, "Temperature Impacts on Economic Growth Warrant Stringent Mitigation Policy," was published in *Nature* magazine.

## China, Japan Target U.S. Stainless Market

The United States was inundated with seamless stainless steel imports last year. Imports from China and Japan surged by nearly 1,800 tons, "accounting for all of the growth in imports last year," says David Hartquist, counsel to the Stainless Steel Tube Trade Advancement Committee. The surge continues in 2015, and is "startling," he adds. Imports from Japan and China increased by 67 percent in February compared to the same month in 2014. "The two countries' share of total imports increased from 50 percent in February 2014 to 58 percent in February 2015," says Hartquist. "The Asian producers are edging out imports from other foreign producers and are entering the U.S. at prices well below those of U.S. producers."

Hartquist notes that the European Union has issued an antidumping order against China with duties that are as high as 72 percent. "This causes Chinese producers to favor exporting to the U.S.," he says. The industry is considering whether to press its own trade case against the two countries.

# *Intl. Labor Rates...* *(From page one)*

American manufacturing workers' wages and benefits.

Compensation costs include direct hourly pay, benefits, bonuses, overtime pay, cost-of-living adjustments and all employer payments to governments for legally required social insurance.

Compensation costs for manufacturing workers were even less in India than in China. In 2011, total Indian hourly compensation costs were $1.59, or 4.5 percent of U.S. manufacturing labor compensation costs. And that number might be high, since the ILC program can only account for compensation costs for "formal" manufacturing in India. "Unorganized sector manufacturing workers account for approximately 80 percent of total manufacturing employment in India and earn substantially less than their formal sector counterparts," explains the ILC program. "For this reason, employer's average compensation costs in formal manufacturing overstate average compensation costs for Indian manufacturing as a whole."

In Mexico, hourly compensation costs were only 19 percent of what Americans manufacturing workers make — at $6.82 per hour in 2013 (up from $6.13 an hour in 2010). (The Conference Board's ILC program does not keep track of manufacturing labor costs in places like Vietnam, Laos, Cambodia and Myanmar, all of which are lower than in China and are attracting multinational investment.

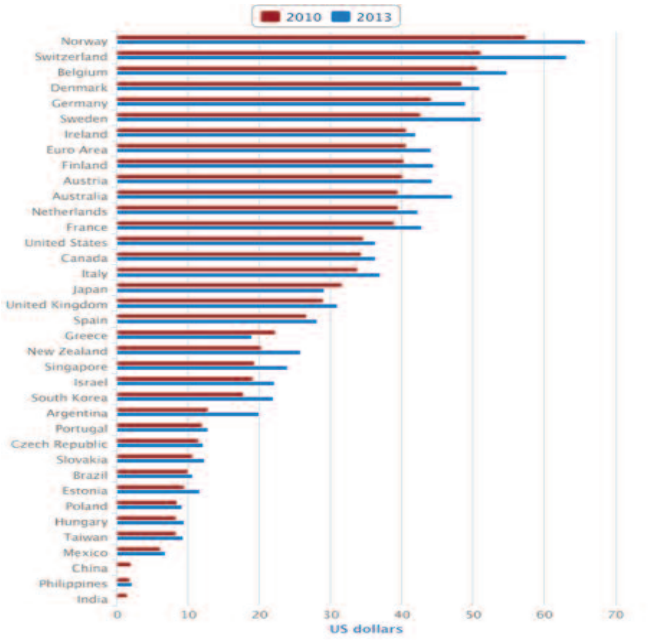
U.S. manufacturing workers make less than those in 13 other countries. In Norway, total compensation costs in 2013 (at $65.86 per hour) were almost double those in the United States. Since 2010, manufacturing workers in Norway saw their total compensation costs increase by $8.35 per hour, up from $57.51.(Norway is the only country in the world where hourly compensation costs were increasing at the same rate as productivity growth.)

Hourly compensation costs for manufacturing workers in Switzerland in 2013 were $63.23 (up from $51.12 in 2010), followed by Belgium at $54.88 (up from $50.66); Denmark at $51.07 (up from $48.50); Sweden at $51.10 (up from $42.69); and Germany at $48.98 per hour in 2013 (up from $44.25 in 2010).

Manufacturing compensation costs were higher than those in the United States for workers in Australia ($47.09), Finland ($44.57), Austria ($44.37), France ($42.85), Netherlands ($42.26) and Ireland ($41.98).

South Korean manufacturing workers made 40 percent less (at $21.96 per hour) than those in the United States. In Japan, hourly compensation costs were $29.13 in 2013, down from $31.75 in 2010, and 20 percent less than American compensation costs.

*Hourly Compensation Costs In Mfg. in U.S. Dollars, 2010 & 2013*




*(Source:The Conference Board's International Labor Comparisons Program)*

"Between 1997 and 2013, compensation costs in manufacturing as a percent of U.S. costs increased in all economies compared except Japan, Taiwan and Brazil, improving U.S. labor cost competitiveness," states The Conference Board.

The ILC program also keeps track of manufacturing productivity and has found a growing gap between productivity growth and compensation costs. The biggest increase in that gap worldwide has been in the United States.

Increases in productivity should "signal potential increases in labor income and, by extension, increases in the standard of living of workers," says The Conference Board. But this relationship has been broken, since compensation growth is no longer tracking productivity growth. The result is the "fruits of productivity gains are not equally distributed among the factors of production."

The U.S. federal government decided to drop the International Labor Comparisons data set three years ago, stating that keeping track of America's competitors' labor rates was a low priority. The Conference Board picked up the series, which can be viewed at https://www.conference-board.org/ilcprogram/.

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# Straight Talk On Currency Misalignment

BY CHARLES BLUM

**Americans spend most of their lives in a dollar-denominated world and don't have as much experience with foreign currencies as non-Americans have with dollars. As a result, much of our public discourse on currency issues over many years has been distorted and unproductive. This is an attempt to set forth a few basic truths about the problem and to identify first steps toward a solution.**

Currency misalignment is not a new problem. In the classical mercantilist world centuries ago, trade was a zero-sum game: one nation's loss was another's gain. The object was to stockpile financial assets — essentially gold and silver — based on persistent trade surpluses. In today's world, neomercantilists adopt a persistently undervalued currency to generate trade and current account surpluses and to amass a stock of convertible currencies. It's still a zero-sum game, and according to the Peterson Institute it distorts roughly 40 percent of the global economy. As such, persistent currency undervaluation is just another form of the mercantilist practices that prompted Adam Smith to write his masterpiece *The Wealth of Nations* in 1776. Smith argued that a free market would produce greater economic efficiency and shared benefits that mercantilism prevented. Thus, mercantilism in any form is the arch-enemy of free trade and free markets. Adam Smith recognized that; so should we.

Today, a persistently undervalued currency impacts the United States and other countries trading in dollars in a number of ways. This is a systemic, not a bilateral, issue. Since 85 percent of global trade is transacted in dollars, almost everyone is impacted by mercantilist practices. Here are some of the most significant adverse effects of currency misalignment:

• An undervalued currency constitutes price-fixing on a national scale. It subsidizes the mercantilist country's exports; its producers earn extra units of their currency only when they export. Exporters can use this subsidy to offer lower dollar prices and still make a profit. The cheaper their currency, the more they get in return for each dollar — provided they export the products.

• An undervalued currency forces importers in those countries to pay more for foreign goods; imports are artificially expensive in their currency. As a result, it depresses the purchasing power of consumers in those countries.

• An undervalued currency diverts investment dollars to those countries, providing a hidden subsidy paid for with the proceeds of trade transactions dollars rather than taxes on its citizens.

• An undervalued currency helps sustain otherwise unprofitable enterprises by shielding them from effective international competition. This enables them to maintain excess capacity and to shift the burden of adjustment to oversupply onto trading partners. That's what is happening once again in the steel sector.

• An undervalued currency enables foreign mercantilists to pick winners and losers in our country and elsewhere, punishing those who produce here and rewarding those who import from them.

• Finally, an undervalued currency provides the mercantilist country with an endless stream of free money — no tax revenues required — to be used in projecting its soft power through foreign aid, the creation of new multilateral financing institutions and so forth.

Well, you say, there ought to be a law. In fact there is. For almost 70 years, IMF Article 4 has obliged members not to manipulate their exchange rates to "gain a competitive advantage" or to prevent the "correction of imbalances in trade and payments flows." And under the GATT, export subsidies are the most pernicious form of subsidy and they are prohibited. In addition, GATT Article XV obliges members not to use exchange rates to frustrate the intended trade liberalization and elimination of trade distortions that the exchange of concessions is intended to produce.

So, a persistently undervalued currency is a violation of both IMF and GATT rules, in letter as well as in spirit. Unfortunately, the IMF has rules but no tools to enforce them. Moreover, it shows increasingly less willingness to use even moral suasion when large countries are the violators. In the GATT system, it is left to individual nations to resolve trade disputes by consultations and negotiations, through dispute settlement, or for some practices like subsidies through the application of national trade laws in conformance with certain agreed definitional and procedural norms.

The real currency issue is not whether an exchange rate is fixed or fluctuates. In fact, any type of exchange rate is supposed to vary depending on conditions. Persistently surplus countries are supposed to let their exchange rate rise so as to reduce any imbalances. It's not a matter of currency practices so much as the results of those practices. That's the common sense meaning of Article 4, but it is ignored in mercantilist practice.

Applying these concepts to trade negotiations aimed at reducing foreign barriers and eliminating distortions, an undervalued currency is a trump card. (Border adjustable taxes are another.) Such a trump card can more than make up for the trade concessions that American negotiators gain by making concessions of their own. Take the case of Japan. Prime Minister Abe was elected in large part on the basis of his pledge to reduce the value of the Japanese yen and expand Japan's exports. That's hardly a recipe for combating Japan's longstanding problem of deflation as imports are becoming more expensive and it's an implicit rejection of Japan's obligations under Article 4. Abe doesn't want to correct imbalances; he wants to perpetuate them. His approach — based on easing of money supply, higher taxes on consumption and a cheaper yen — has failed to reinvigorate the Japanese economy, but it has put money in the pockets of exporters such as car companies. The yen at the time of the election was trading freely at a rate of

(Continued on page 12)

# Currency...(Continued from page 11)

about 78 to the dollar; today it trades at about 119 to the dollar — a depreciation of almost 55 percent. What has the IMF done about that? Nothing. What has the Treasury done about that? Nothing.

That means that U.S. exporters can expect little or no benefit for U.S. exports by the elimination of Japan's tariffs. On a trade-weighted basis, Japan's import duties average about 2 percent; its hidden currency tariff on all imports has risen by 55 percent thus far. Why would we expect to sell more autos, rice or anything else when our prices in yen have risen so dramatically — and could rise even more without any response from the IMF, the U.S. Treasury or the USTR? Until the currency problem is effectively resolved, we are bargaining for theoretical market access. Without effective action on currency misalignment, we're left holding a paper agreement while mercantilist countries like Japan hold the trump cards.

Or take the case of Germany, number one in the world in terms of manufacturing exports and current account surplus. The Treasury mildly rebuked Germany in its April 2014 semiannual report on exchange rates. Chancellor Merkel sarcastically replied: "If you Americans had good policies, you'd have a surplus, too." In the wonderful world of Merkel Math, it seems that every country could have a surplus if only they would adopt the right policies like Germany. What nonsense!

That lays bare the basic premise for today's global economy: every country can run a surplus or at least minimize its deficit so long as the United States is willing and able to amass ever greater amounts of foreign debt, borrowing back money to finance sustained consumption that our incomes won't support. We're at $17 trillion in foreign debt now — the equivalent of one year's GDP — and the number rises every day. Those dollars are claims on our future production and the assets we own; they threaten our standard of living and our standing in the world. The longer we take to address and reverse this growing imbalance, the more painful the adjustment for Americans and indeed for the entire world.

What can we do? We need to devise and implement a coherent, comprehensive and multi-pronged strategy. The elements of such a strategy might include:

• Recognize the problem for what it is, and factor that understanding into all of our trade and economic policymaking.

• Learn the lessons of history. In the 1970s, President Nixon forced a realignment of currencies, and the Tokyo Round of trade negotiations was able to proceed to a conclusion in 1979. In the 1980s, President Reagan forced a realignment of currencies and the Uruguay Round was able to proceed to a conclusion in 1994. The clear lesson of history is that currency realignment and trade negotiations go hand-in-hand.

• Take action where we can. The obvious first step is HR-820, the bipartisan Currency Reform for Fair Trade Act. It's the same uncomplicated bill that passed the House in 2010 by a decisive 348-79 vote. All it does is to direct the Commerce Department to treat currency subsidies as it does every other subsidy, using the procedural standards of the WTO and the measurement techniques of the IMF. Similar provisions have passed the Senate in 2011 and were approved by the Senate Finance Committee as part of the customs enforcement bill that is being bundled with the new TPA bill. Enactment and implementation of currency countervail legislation would be a small first step. It would not be applied across the board but on a case-by-case basis and then only when the particular petitioning domestic industry persuaded the U.S. International Trade Commission that the subsidy had caused injury to it.

Nonetheless, implementation of a countervailing duty remedy law would send an across-the-board message that the United States is determined to correct the currency problem and will use legal means at its disposal to do so. Every House member who signs on as a cosponsor to HR-820 sends a helpful message to the mercantilist countries as well as to the many other countries that are waiting for effective American leadership in this area.

• Make existing obligations under the WTO and IMF enforceable — at least among members of free-trade clubs. We should see new and existing agreements as a vehicle for validating the objectives of existing rules on currency. For example, under each agreement countries could simply restate their IMF/WTO commitments and agree to resolve disputes about them through the same dispute settlement process used to enforce other rights and obligations.

• Perhaps there is another, better approach. But you cannot discover areas of potential agreement by refusing to consider proposals as this administration has done. To say in advance that something is a "deal-breaker" is capitulation, not negotiation. Let's at least try. Let's find out who our allies are. And let's remember that in every mercantilist country consumers are being punished by undervaluation; these are the people we are bargaining to gain improved access to. The more effective purchasing power they have, the better for them as well as for our exporters.

That's why it makes eminently good sense to include in the TPA bill the Portman-Stabenow amendment that is expected to be considered soon on the Senate floor. It would make negotiation of enforceable currency disciplines a Congressionally-mandated negotiating objective. An even stronger formulation — for example, making this a mandatory objective for access to fast-track procedures or an "instruction" in the language of the Levin substitute amendment — might be considered to provide even more of the leverage American negotiators seem to lack.

• Revamp the monetary system. In the long run, we need to plan to construct a monetary system better suited for the 21st Century than the creaky relic we have now. That will take time, vision and leadership. The first steps in that direction should be the judicious exercise of our legal rights, determined negotiations and an unshakable commitment to overcome mercantilism, not perpetuate it.

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*— Charles Blum is President of IAS Group and is Government Relations Director for the Coalition for a Prosperous America. He made this presentation at a staff briefing in the House of Representatives on May 8.*