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Any Cut In Space Budgets Could Put A Lot Companies Out Of Business

A substantial percentage of companies that specialize in the space industry are on the brink of extinction. According to the initial findings of an industry survey conducted by the federal government of 1,087 companies in the space supply chain, 38 percent said they would be insolvent if the government's space budget declines precipitously. Forty-six percent of the companies that are doing work for the space programs run by the National Reconnaissance Office said they would go out of business if there was a deep cut in that agency's budget.

Federal agencies that have space programs are vulnerable to the loss of important technologies and services. Those who responded to the survey identified 2,667 unique critical suppliers that supported key manufactured goods and services for the U.S. space industry. Of these, 37 percent were either from sole source suppliers (14 percent) or single-source suppliers (23 percent).

The detailed survey conducted by the Commerce Department's Bureau of Industry and Security in collaboration with the U.S. Air Force, NASA and the National Reconnaissance Office will provide agencies with pinpoint accuracy of what is happening down at least five tiers in the space supply chain. "We can see what is currently going on with these companies with their financial health and expenditures and potential impacts if there are programmatic or budget cuts," says a Commerce Department official involved in the analysis. "What we are trying to say to our partner agencies is you have 203 respondents that might lose their solvency or viability. You need to start looking at who they are and what they make, what suppliers support them and who they support in the industrial base to find these critical nodes, these potential weak points in the industrial base, not just for particular programs but the agency interdependency."

Already, 19 percent of the companies responding to the Commerce Department survey (206 out of 1,087) said they have already been somewhat or significantly impacted by declining demand from the U.S. government for space-related products and services. One small company said cuts to government space programs have "fundamentally changed the outlook for several of our clients and just as important it has significantly impacted several potential clients resulting in a drastically reduced demand for services

(Continued on page nine)

Many Newly Minted Ph.D. Scientists And Engineers Can't Find A Job

Executives at America's industrial companies constantly complain about there being a shortage of engineers, but the data indicate otherwise, according to the latest figures from the National Science Foundation. Only 64 percent of students who received a doctorate degree in engineering in 2011 were offered a "definite commitment for employment or postdoctoral study," according to NSF's "Doctorate Recipients From U.S. Universities" annual report. That is down from 72.5 percent receiving a job offer in 2001. "In every broad S&E field, the proportion of 2011 doctorate recipients who reported definite commitments for employment or postdoc study was at or near its lowest level of the past 10 years, 3 to 10 percentage points lower than the proportion of 2001 doctorate recipients reporting such commitments," says NSF.

(Continued on page four)

Electric Vehicle Owners Are Satisfied

The market penetration of electric vehicles will remain minuscule until automakers can convince consumers that by buying one they will considerably lower their fuel costs, according to J.D. Power and Associates. Currently, 44 percent of those who have purchased an electric vehicle did so because they believed it would lower emissions. These buyers place value on the "emotional benefits" of owning an electric vehicle.

But only 11 percent of potential consumers of electric vehicles would buy them for that reason, with the majority — 45 percent — saying they prefer to save money on fuel.

"Current EV owners report an average monthly increase in their utility bill of just $18 to recharge their vehicle's battery — which is significantly less than the $147 that they would typically pay for gasoline during the same period of time," according to J.D. Powers.

The cost of an electric vehicle is $10,000 more than a comparable regular gasoline vehicle. "Based on annual fuel savings, it would take an average of 6.5 years for all-electric vehicle owners to recoup the $10,000 premium they paid at the point of purchase," says J.D. Powers. For those who buy plug-in electric vehicle, which costs $16,000 more than a regular gasoline model, the payoff takes 11 years.

"The payback period is longer than most consumers keep their vehicle," says Neal Oddes, senior director of green practice at J.D. Power & Associates. "The bottom line is the price has to come down, which requires a technological quantum leap to reduce the battery prices."

There also needs to be a lot more charging stations outside of the home, since one-third of current EV owners use a standard 120-volt outlet to charge their vehicles, rather than installing a special home charging station, which reduces the charging time by half and enables owners to take advantage of off-peak electrical rates. The average cost of a 240-volt home charging station is $1,500.

Thirty-one percent of electric vehicle owners "are either on a time-of-day plan through their utility company that offers lower-priced charging during off-peak hours (entire household on same meter); have a special EV plan with a separate meter; or pay a flat fee per month to charge their EV (no separate meter required)," says J.D. Power.

Manufacturers of electric vehicles have a number of obstacles they must overcome before EV sales amount to more than 1 percent of the market. Customers still have anxiety about the lifespan of electric batteries. They worry about the vehicles' driving range, the lack of an infrastructure of charging stations needed for long trips, and the small size of most EVs.

"The payoff for automakers is that once they get consumers to buy an EV, they tend to retain them as customers," says J.D. Power. "Overall, 82.5 percent of owners indicate they 'definitely will' or 'probably will' buy another EV from the same brand. The average retention among owners of all vehicle types is 49.8 percent."

China Commission: Same Story Again

Not much has changed in the U.S.-China relationship over the past decade, according to the latest annual report from the congressionally chartered U.S.-China Economic and Security Review Commission (USCC). Back in 2004, the commission stated that the record trade deficit with China in 2003, at $124 billion — or 23 percent of the total U.S. goods trade deficit — had serious "negative implications" for the U.S. economy and national security. At the time, the China Commission said the surging trade deficit was driven by China's policy of undervaluing its currency and its many "mercantilist industrial and foreign direct investment policies that gave Chinese manufacturers a competitive advantage over U.S. manufacturers." Chinese policies, it added in 2004, were leading to a loss of U.S. manufacturing jobs and "contributed to the jobless recovery in the United States."

Forward to the China Commission's latest annual report, released November 14, and nothing has changed. It describes a U.S. trade deficit in goods with China that has "surged, reaching a record high of $295.4 billion in 2011, up from $273.1 billion in 2010." The U.S. trade deficit with China now accounts for 40.6 percent of the U.S. total trade deficit in goods. "Currency appreciation leveled out in 2012," notes the latest report. "The renminbi did not appreciate as much as in 2011 and there are even signs that the Chinese government may devalue the RMB to boost exports."

Back in 2004, the China Commission implored Congress to "pursue legislative measures that will direct the administration to take action to combat China's exchange rate practices." Such legislation is still lost in Congress and the Obama administration, which has done nothing to address China's currency policies, likely wouldn't sign it if it passed, anyway.

In its latest analysis, the China Commission found that China is not progressing toward being an open market-based economy. In fact, "in recent years, China has been backsliding from market reforms in favor of an increased role of the state in the economy," says the USCC. "To date, China has failed to make significant moves to rebalance its economy, reduce export dependence and increase domestic consumption. . . The United States should demand reciprocity and seek mutual benefit in its relationship with China, and both nations should remain mindful of our interdependence."

Problems in the U.S.-China relationship run deep, according to the commission. "China continues to develop its capabilities in the cyber arena," it notes. "U.S. industry and a range of government and military targets face repeated exploitation and nongovernmental groups including Chinese dissident groups, activists, religious organizations, rights groups and media institutions." Here is how the commission described one of many Chinese cyber attacks: "From a government standpoint, perhaps the most significant example of malicious Chinese cyber activity exposed in 2012 was when the National Aeronautics and Space Administration reported it was the victim of 47 'advanced persistent threat' attacks, 13 of which successfully compromised agency computers. Intruders stole user credentials for more than 150 NASA employees and gained full functional control over networks at the Jet Propulsion Laboratory."

While the attacks continue, "many U.S. entities do not have the capability to sufficiently manage the threat of Chinese cyber espionage," notes the China Commission. The annual report continues in such a manner for 497 pages. It is located at www.uscc.gov.

Chinese Government Companies Are Busy Buying Energy & Mining In Latin America

The Chinese government is setting up shop in America's back yard. Chinese state-owned enterprises are pumping billions of dollars of direct investment into energy and mining projects in Latin America in "an attempt to strengthen aspects of its economy considered to be strategic in the long run," according to Enrique Dussel Peters, a researcher at the Global Development and Environmental Institute at Tufts University.

Chinese foreign direct investment (FDI) "is qualitatively different" from other countries' FDI, says Peters. Not only does the majority of Chinese investment (87 percent) in Latin America come from Chinese government-owned enterprises, but it has been pursued with a "great level of coherence [and] a national strategy for the short, medium and long term."

While China has a strategy for its investment, that is in contrast to Latin American countries which are recipients of the investment. None of them have coherent economic strategies for the short, medium and long term, "much less one that is specifically geared toward the attraction of FDI," Peters notes.

Overall, 50 percent of China's global FDI has been going into mining and oil. But in Latin and Central America, 99.6 percent of Chinese FDI in 2010 and 2011 was in energy and mining.

Latin America was the second largest recipient of Chinese overseas FDI between 2000 and 2011, with only Hong Kong receiving more.

"Massive public overseas foreign direct investment generates important challenges from an economic perspective," says Peters. While China places numerous restrictions on FDI headed into its own country (by not allowing investments in strategic industrial sectors and requiring mandatory technology transfer), no such requirements are being made by Latin American governments.

"In the case of public overseas foreign direct investment [from China], strategic, long-term criteria involving politics [and] national security may prevail, therefore moving beyond a strictly microeconomic approach," says Peters. "Public FDI can generate misunderstandings, suspicions and political responses within the receiving countries, and particularly among 'sensitive' sectors for reasons of employment, technology, national security, cultural preservation, etc. The fact that public Chinese companies are starting to own mines as well as manufacturing and service companies means that conflicts within labor, environmental and commercial spheres must be considered, given that Chinese involvement in these areas has never been experienced to such an extent internationally or in Latin and Central American countries."

At home, Chinese companies are being pressured to make direct foreign investments, Peters notes. The Chinese government's "Going Global Strategy" remains in full force, since the country must do something with its $3 trillion in reserves. Investments that boost Chinese competitiveness are viewed as "valid strategy for fulfilling macroeconomic as well as microeconomic objectives, such as reducing international reserves and obtaining new technologies, raw materials and energy sources," says Peters.

Chinese companies making direct overseas investments can be exempt from paying value-added taxes for five years. They receive funding from the Export-Import Bank of China as well as the National Development and Reform Commission (NDRC).

Every foreign direct investment made by a Chinese company as well as any subsidiary is approved by the NDRC and must further be approved by the Chinese State Council.

"It is clear that the function of the NDRC is to coordinate and encourage FDI through specific processes, which is why the NDRC demands to be informed of all negotiations with overseas counterparts and — contrary to a merely informative process — have the final say regarding overseas foreign direct investment approval."

All of these government processes were affirmed in China's Twelfth Five-Year Plan, which encourages the growth of new industries — such as environmental protection, advanced machinery, state-of-the-art information technology, renewable energy, new materials and alternative energy for automobiles. China wants these industries to grow from their current 5 percent of GDP to 8 percent in 2015 and 15 percent in 2020. Chinese FDI encourages the development of these domestic industries.

Chinese overseas foreign direct investment has been growing substantially, from $916 million in 2000 to $22.5 billion in 2007, to $56 billion in 2009 and to $68 billion in 2010.

Specifically, Peters found that there were 95 Chinese investments in Latin America between 2000 and 2011, averaging $464 million each. Only eight of the investments were carried out by private Chinese companies. Moreover, 88 percent of all the major investments made by China were in Latin American companies owned by governments, again, mostly in oil, natural gas and natural resources. Almost 90 percent of the total Chinese investment in Latin America occurred in 2010 and 2011, and investment in raw materials "has increased to more than 80 percent since 2007, while involvement in other areas has drastically diminished," says Peters.

The study, "Chinese FDI in Latin America: Does Ownership Matter," is located at http://ase.tufts.edu/gdae/Pubs/rp/DP33DusselNov12.pdf.

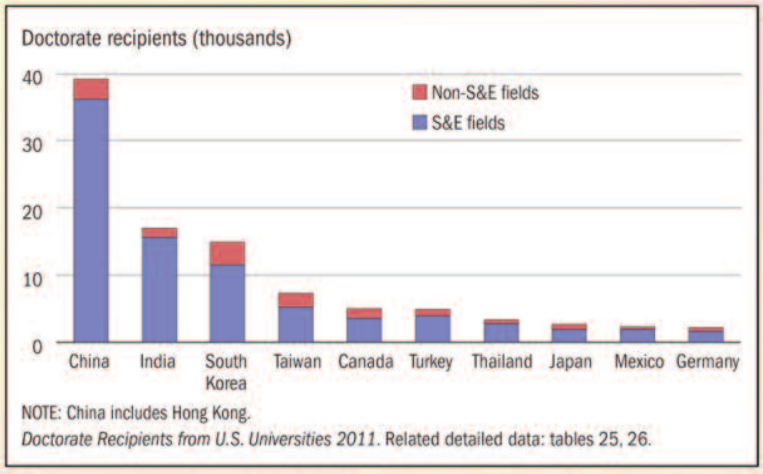
Plenty Of Trained Engineers... *(From page one)*

The number of doctorates awarded in the fields of science and engineering has almost doubled since the 1970s "whereas the number of doctorates in non-science and engineering fields has not grown over that period," according to NSF. "In 2011, almost three-quarters of all research doctorates were awarded in S&E fields," with the amount increasing by 4 percent from 2010. There were 36,269 doctoral degrees awarded in S&T fields in 2011, up from 34,887 in 2010. In non-S&T fields of study, there were 12,741 doctorate degrees awarded, down from 13,147 in 2010.

Of the total S&E doctorates, 21,891 were awarded to American citizens, while 12,184 (36 percent) were awarded to foreigners or "temporary visa holders," down from a peak in 2007 of 41 percent. Of all the doctorates awarded in S&E fields in 2011, 16.3 percent were in engineering; 16.6 percent were in the social sciences; 17.7 percent were in the physical sciences; and 23.4 percent were in the life sciences.

Engineering also had the lowest percentage of Americans receiving doctorates: In 2011, only 44.4 percent of those receiving an engineering doctorate were American citizens, down from 48.3 percent in 2010. The study is located at http://www.nsf.gov/statistics/sed/digest/2011 /index.cfm.

Top 10 countries/economies of foreign citizenship for U.S. doctorate recipients: Total, 2001–11



NOTE: China includes Hong Kong.

Doctorate Recipients from U.S. Universities 2011. Related detailed data: tables 25, 26.

NSF *Doctorate Recipients from U.S. Universities 2011*; www.nsf.gov/statistics/sed/

Feds Take Next Step To Create NNMI

The federal government is getting ready to unveil the structure of its proposed $1-billion National Network for Manufacturing Innovation (NNMI). The Department of Defense will host a public meeting in Huntsville, Ala., on Jan. 16, 2013, devoted to "reviewing and refining the suggested design" for the proposed network of regional Institutes for Manufacturing Innovation.

The workshop, organized by the federal interagency Advanced Manufacturing National Program Office (AMNPO) at the National Institute of Standards and Technology and supported also by NASA, will seek public input on how to operate the nationwide system.

"In early January, the AMNPO intends to publish a draft NNMI 'concept paper' that presents the office's preliminary design proposals on the objectives, organization, governance, operations and activities of the network and its institutes," says NIST. "The proposed design draws on input from more than 800 people and organizations" that participated in nationwide meetings and a request for information issued by the government last May.

NIST says that each of the regional hubs — anchored by an IMI — "will connect technologically promising research discoveries and ideas for advanced, high-value-added products with existing U.S. manufacturers and aspiring start-up firms. Regional collaborations will bring together industry, universities and community colleges, federal agencies and states to accelerate innovation by investing in industrially relevant manufacturing technologies with broad applications and to support education and training of an advanced manufacturing workforce. While each of the competitively selected IMIs will have its own technical focus, all will integrate capabilities and facilities required to reduce the cost and risk of commercializing new technologies and to address relevant manufacturing challenges on a production-level scale." To register for the event ($50 to cover materials and food), go to http://manufacturing.gov/event_011613.html.

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Portrait Of An Ancient Industry In The United States

The United States is not much of a player in the global ceramic tile industry. As a producer, the United States ranked a distant 18th in the world behind countries that have only a fraction of the U.S. GDP, like the United Arab Emirates, Indonesia, Poland, Portugal, Thailand, Vietnam, Iran, Egypt and Turkey.

U.S. production of 60 million square meters of ceramic tile in 2010 accounted for only 0.6 percent of global production of 9.515 billion square meters, according to the "World Production and Consumption of Ceramic Tiles," an analysis conducted by *Ceramic World Review* based in Italy. U.S. production has stayed steady since 2006, when the country produced 58 million square meters.

U.S. production did increase between 2009 and 2010, but almost all of the growth was "controlled by Italian groups" that have established manufacturing in the United States over the past 10 years, according to *Ceramic World Review*.

It's a whole different story with China.

Chinese ceramic tile production surged from 3 billion square meters in 2006 to 4.2 billion square meters in 2010. Between 2009 and 2010, China's ceramic tile production increased by 17 percent and accounted for 44 percent of total global production. U.S. production is 1.5 percent of China's.

Every other area of the world save for Africa produces more ceramic tile than does North America. Asia's production of 6.37 billion square meters, an increase of 828 million square meters in one year, accounted for 67 percent of global production in 2010. Europe accounted for 17 percent of total world output, rising from 1.471 billion square meters of output in 2009 to 1.571 billion square meters in 2010, an increase of 6.8 percent. Central and South America's production increased by 5 percent between 2009 and 2010 to 940 million square meters. The United States and Mexico experienced a production increase of 8 percent between 2009 and 2010, to 257 million square meters.

It is tough for the U.S. to compete in the global ceramic tile industry. The average price for U.S.-made tiles is $1.40 per square foot. Mexico can make a similar tile for $0.60 per square foot. The average price of an imported square foot of ceramic tile in 2011 was $0.94 up from $0.91 in 2010, according to Andrew Whitmire, trade data analyst at Tile Council of North America based in Anderson, S.C.

China is also the largest consumer of ceramic tile at 3.5 billion square meters in 2010. In total consumption, the United States ranked in eighth place in 2010, at 186 million square meters, or 2 percent of global consumption.

Imports accounted for 130 million square meters (out of 186 million square meters) of U.S. consumption, and domestic production accounted for 56 million square meters. Imports as a percentage of U.S. consumption have fallen from 82 percent in 2007 to 69 percent in 2011, according to the Tile Council of North America's "2011 Ceramic Tile Industry Update."

Brazil, India, Iran, Vietnam, Indonesia and Egypt all consumed more ceramic tile in 2010 than did the United States.

The United States did not make the list of top 15 tile exporting countries. China boosted its exports from 450 million square meters in 2006 to 705 million square meters in 2010. China's exports are more than 10 times larger than total U.S. production.

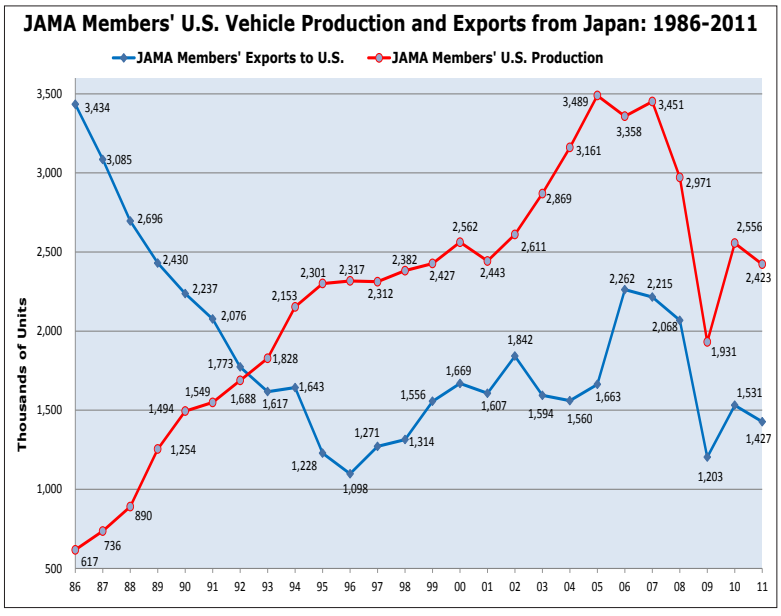
The United States did rank first globally in one ceramic tile category in 2010: It is the world's largest importer, at 130 million square meters.

Japanese Auto Sales Slide In U.S.

Japanese auto companies are having a hard time topping their U.S. sales from a high reached in 2007. The Japanese OEM transplants in the United States are also still not close to buying the amount of parts they once did from U.S. suppliers.

In 2011, Japanese companies produced 3.025 million cars in the United States, down from 3.74 million in 2007. Japanese companies imported 1.434 million cars from Japan, down from 2.222 million in 2007. Total sales of Japanese cars in the United States in 2011: 4.459 million, down from 5.967 million in 2007. Imports accounted for 32 percent of Japanese automakers' sales in the United States in 2011. Japanese automakers purchased $43.24 billion worth of American parts in 2011, down from $50 billion in 2007.

Americans are buying far fewer hybrid vehicles. In 2011, 281,000 alternative-power vehicles were sold in the United States, down from 352,000 in 2007. Japanese brands still dominate the category. In 2011, Japanese brands accounted for 223,500 of the 281,000 alternative-power vehicles. GM, Ford and Chrysler combined sold only 40,000 alternative-power vehicles; Korean brands accounted for 15,000; and European brands accounted for 1,700.



Germany Takes 'Methodical' Approach To Industrial Policy

There has been talk recently about the need for a "Fraunhofer Institute" type of research network to be established in the United States. And for good reason. The Fraunhofer Institute plays an important role in the success of the German economy, and everybody there knows it.

The German Federal Ministry of Education and Research (BMBF), which funds the Fraunhofer system, helps to set the Fraunhofer's applied research agenda through a "Strategic Dialogue" program that provides government agencies with the justification to fund industrial applied research programs.

The Strategic Dialogue process presents "results of stakeholder involvement both during the process of creating consensus views of future developments and during their transition into research policy," says Frauke Lohr, of Grolman Result, a Frankfurt, Germany-based consultancy. The Strategic Dialogue groups make sure the people involved have a "commitment to future activities." They identify the scope of work that needs to be pursued, and create a joint understanding between government agencies that can provide funding.

"It is essential to reach a common understanding about current challenges, potential future paths and the necessary steps to move forward from an overall perspective integrating individual stakeholders' point of views," according to Lohr. "Given the crucial role of research output in the global competitiveness of countries, in securing employment and in reaching and setting benchmarks of innovation capability, effective alignment of stakeholders can be regarded as one of the prerequisites for national wealth and well-being."

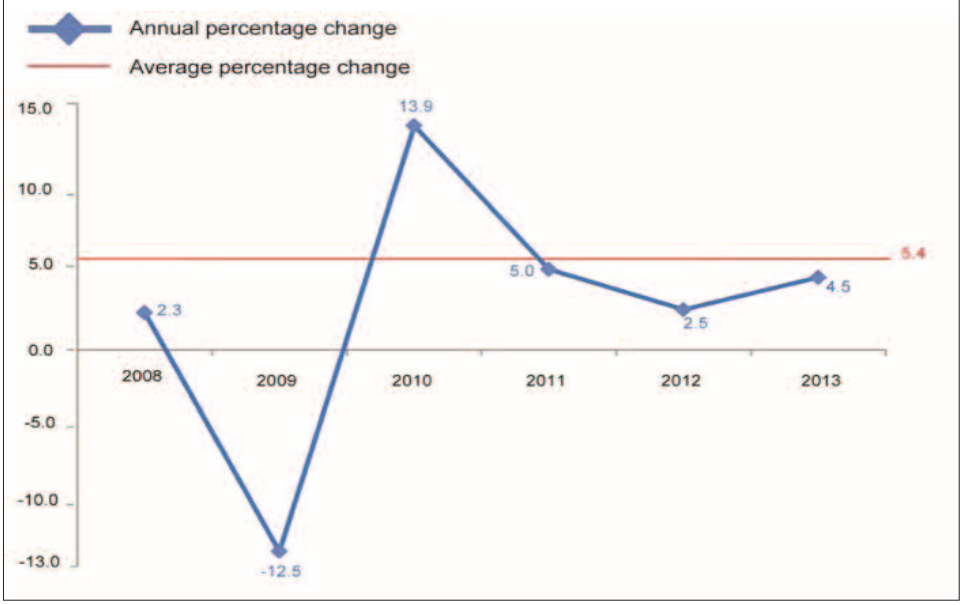
The Strategic Dialogue groups develop research strategies in areas that are controversial, that require the work of many people in important industrial segments and academia and are "based on constructive debate and mutual trust," says Lohr. The groups review previous applied industrial research results, "the definition of general conditions to push invention and innovation, the identification of potential constraints which might derive from economical, technological or societal implications, assessment of the relevance for basic education and advanced training as well as the consideration of ethical and legal aspects. Additional results might be community building between stakeholders from various disciplines in academia as well as strengthening networks between academia and industry."

There is a "methodological approach" to taking surveys of early funding activities both nationally and internationally, "as well as the identification of concrete action areas," says Lohr. This will "ensure involvement and commitment of the relevant research community as well as federal ministries. Everyone must agree on a joint view of the future needed for a realistic research policy. Strategic Dialogues have proved to be an effective instrument for the BMBF in achieving the transfer of results from strategic processes into the development of research policy," says Lohr.

More Trade Will Solve Global Economic Problems: WTO

The global economy has suddenly hit a roadblock, according to the World Trade Organization. Since June of this year, global trade has encountered "increasingly strong headwinds" and has forced the WTO to reduce its estimate of trade growth this year from 3.7 percent to 2.5 percent. "The world needs a renewed and stronger commitment from all governments to revitalize the multilateral trading system that can restore economic certainty at a time when it is badly needed," says the WTO.

Growth In Volume of World Merchandise Trade, 2008 - 2013



Americans Are Ready To Buy Products Made In America, And So Are The Chinese

Americans are willing to spend more money on products that are made in America, and Chinese consumers are willing to spend more money on products made in America, too.

In a survey of 5,000 consumers in the United States, China, Germany and France regarding their attitudes toward the value of the "Made in the USA" brand, Boston Consulting Group found that 80 percent of U.S. consumers are willing to pay more for U.S.-made products. Less than 1 percent of Americans prefer products made in China, while 20 percent said they have no preference for products made in the United States or China.

When asked if they would pay more for a product that is made in the United States over a cheaper identical product made in China, only 6 percent said they would "definitely not" buy the product made in the U.S.

At least 20 percent of the Americans surveyed said they would be willing to pay a premium of more than 10 percent for a product made in the United States. "The premium they are willing to pay varies, ranging from about 10 percent to more than 60 percent in the categories tested," according to Boston Consulting Group. More than 20 percent of Americans surveyed said they would pay more than 10 percent more than a Chinese-made product in the following categories: mobile phones, toys and sporting goods, hand tools, household goods, electronics, apparel and footwear, tires and car parts, household furniture, household appliances and baby food. Some Americans are willing to pay up to 60 percent more for a gas range (19 percent); mobile phone (30 percent); athletic shoes (8 percent); and a wooden baby toy (63 percent).

As for the Chinese, 18 percent would pay more to buy an American-made gas range; 66 percent would pay more for an American-made mobile phone; 77 percent would pay more for an American-made pair of shoes; and 8 percent said they would pay more for an American made baby toy. Eighty-two percent of Chinese consumers say that they "feel better about" the quality of U.S.-made goods; while 68 percent said U.S.-made goods are more durable.

Every American age group and income group would pay more to purchase an American made good, but Americans over the age of 55 are more inclined (87 percent) than are Americans between the ages of 18 and 34 (75 percent). Americans with higher incomes are also more likely to pay more for products made in the United States (86 percent), versus 79 percent for low-income Americans.

Fifty percent of Chinese consumers say they "prefer a product made in the U.S. to a Chinese-made product of equivalent price and quality," according to the survey. "The premium that Chinese consumers are willing to pay ranges from about 10 percent to almost 80 percent in the categories tested. More than half had chosen U.S.-made products over less expensive Chinese goods at least once in the month before the survey."

The results indicate that "there is a big opportunity for manufacturers and retailers to command a price premium by promoting the Made-in-USA brand — not only in the U.S. but also in China," says Harold Sirkin, BCG senior partner. "Retailers may want to adjust their strategies to capitalize on the strong consumer interest." Adds Michael Zinser, BCG's partner who leads the company's manufacturing practice: "The higher brand value of U.S.-made goods is a further reason why companies should rethink their global manufacturing footprint and consider the U.S. as a manufacturing location."

Eighty-five percent of U.S. consumers and 82 percent of Chinese consumer said that they agree or strongly agree that they feel better about the quality of products made in the United States. "Patriotism is another strong consideration among U.S. consumers: 93 percent said that they would pay more for U.S.-made goods in order to keep jobs in the U.S. and 80 percent said that buying U.S. products demonstrates patriotism."

Another 78 percent of Americans said that buying American-made goods was good for the environment. Sixty-four percent said that U.S.-made goods are more durable; 62 percent said they buy American made goods because they "deserve it"; while 58 percent said they can afford to buy American. Another 45 percent said buying a U.S.-made good "is a symbol of status."

Retailers should use such feelings in their sourcing strategies, says BCG.

Europeans are not very interested in American products, however. "In contrast to U.S. and Chinese consumers, European consumers strongly prefer products made in their own countries," says BCG. "More than 65 percent of consumers of both Germany and France said that they would be willing to pay more for products made in their home country than for those made in the U.S."

Who's Who In Additive Mfg.

The recently created National Additive Manufacturing Innovation Institute in Youngstown, Ohio, has a new executive committee to oversee its operations. The public-private partnership will conduct research and focus on commercializing additive manufacturing technologies with a federal infusion of funding that could reach $45 million. It is part of the proposed $1 billion National Network for Manufacturing Innovation. Here are the newly announced members of the group's executive committee:

Academic:
- Gary Fedder, Carnegie Mellon University
- Jim McGuffin-Cawley, Case Western Reserve

Industry:
- Eric Barnes, Northrop Grumman Corp.
- Jim Williams, 3D Systems

Non-Profit/Association:
- Tim Shinbara, Association for Manufacturing Technology
- Mark Tomlinson, Society of Manufacturing Engineers

At-Large:
- Bill Macy, Stratasys
- Tom Stimson, The Timken Company

Government:
- Bruce Kramer, National Science Foundation
- John Russell, Department of Defense
- Robert Ivester, Department of Energy

Dow, DuPont Not Benefiting From Low Natural Gas Prices

Low natural gas prices are not helping two of the largest chemical companies in the United States, due mainly to the bigger economic slowdown in Europe.

In reporting sales that declined by 10 percent to $13.6 billion during the third quarter of 2012 as compared to the same quarter in 2011, Dow Chemical said it would close 20 manufacturing facilities globally and eliminate 2,400 positions — or 5 percent of its global workforce.

The plan will save the company $500 million annually in 2014 and will cost between $0.50 and $0.60 per share in the fourth quarter of 2012 for asset writeoffs and severance costs.

The company will also reduce capital spending by an additional $500 million.

"The reality is we are operating in a slow-growth environment in the near-term and, while these actions are difficult, they demonstrate our resolve to tightly manage operations particularly in Europe, and mitigate the impact of current market dynamics," said Dow CEO Andrew Liveris.

The company will write down its Dow Kokam assets, "reflecting weak global demand for lithium-ion batteries," says the company. It will shut down a number of small manufacturing facilities, along with the following plants it will be shutter:

- Tessenderlo, Belgium, a high-density polyethylene facility;
- Delfzijl, the Netherlands, a sodium borohydride plant;
- Midland, Mich., its Automotive Systems Diesel Particulate Filters manufacturing facility;
- Ribaforada, Spain, its Formulated Systems manufacturing facility;
- Birch Vale, United Kingdom, another of its Formulated Systems manufacturing facilities;
- Solon, Ohio, a Formulated Systems manufacturing facility; and
- Kina Ura, Japan, an epoxy resins facility.

Meanwhile, DuPont is facing similar headwinds. The company reported that third quarter sales slipped by 9 percent from the same period of 2011 to $7.4 billion, "primarily reflecting volume declines in Electronics & Communications and Performance Chemicals," the company stated. DuPont plans to save $450 million by eliminating 1,500 workers over the next 12 to 18 months.

GM To Invest $1 Billion In China

General Motors' China division has announced plans to build a new factory in Chongqing, China. The joint venture between GM China, Shanghai Automotive Industries Corp., and Wuling Motors will invest $1.06 billion in a plant that will have an annual production capacity of 400,000 vehicles and engines.

"The joint venture will adopt GM's global manufacturing processes and standards," said GM on Nov. 28. It will be third factory the joint venture has built in Chongqing in order "to keep pace with the rising demand for [GM's] vehicles," says GM. The new plant will provide the companies with the ability to manufacture two million vehicles per year in 2015.

The joint venture has been China's leading manufacturer of mini-commercial vehicles since 2006. It sold 1.3 million mini-commercial vehicles through the first 11 months of 2012, well above the 1.285 million vehicles it sold for all of 2011.

GM has 35,000 employees in China and had sales there last year of more than 2.5 million vehicles.

Governments Lock Activists Out Of TPP Trade Talks

A half dozen organizations opposed to the Trans-Pacific Partnership free trade agreement traveled to the latest round of negotiations in Auckland, New Zealand, but haven't a clue as to what went on. "We have been locked out of the entire venue, except for a single day out of the 10 days of negotiations," said the group, led by Public Citizen in the United States. "This not only alienates us as members of public interest groups, but also the hundreds of thousands of innovators, educators, patients, students and Internet users who have sent messages to government representatives expressing their concerns with the TPP."

The groups are concerned about provisions being negotiated by large companies around issues related to intellectual property rights that "could potentially threaten our rights, creativity and innovation," say the groups. "These new physical restrictions on us are reflective of the ongoing lack of transparency that has plagued the TPP negotiations from the very beginning."

The groups claim that industrial lobbyists are "looking to protect their outdated business models and have been provided greater access and influence over the text than our groups. We are here on the ground in Auckerland to ensure that the TPP really levels the playing field for access to knowledge, access to health and medicines, innovation and economic development around the world. The more our access is denied, the more determined we become to ensure that citizens and expert voices are heard."

The statement was signed by Public Citizen, Electronic Frontier Foundation, Knowledge Ecology International, ONG Derechos Digitales, OpenMedia.Ca, InternetNZ, Malaysian AIDS Council, Consumers International, Public Health Association of Australia, Malaysian Women's Action for Tobacco Control and Health and the American Medical Student Association.

Space Supply Chain...(Continued from page one)

we provide."

Sales of space goods and services are on a downward trajectory. For the 1,087 companies filling out the survey, sales have declined from $19 billion in 2009 to $16.6 billion in 2012. Sales to non-defense U.S. government space customers have plummeted from $7.7 billion in 2009 to $5.9 billion in 2012.

The Bureau of Industry and Security surveyed 5,000 companies in the U.S. space supply chain. Its initial review of the data involves the first 1,087 companies that have returned the mandatory survey. Companies selling basic raw materials up through the entire supply chain including semiconductors, printed circuit boards and full space systems, along with those providing services such as R&D, IT, maintenance, inspection and quality control, were required to complete the survey. The results will be used by the space agencies in the government to look at how suppliers overlap between programs, so that no one agency has to be alone in attempting to maintain key parts of the industrial base.

There are a lot of agencies involved in space, including NASA, the Air Force, Navy and Army, National Oceanic and Atmospheric Administration, FAA, National Security Agency, NRO, Missile Defense Agency and the CIA, among others.

Companies were asked about exporting their products and how U.S. export controls impacted their business. The government got a tongue lashing, compiling the largest number of comments from industry ever assembled about the export control system.

It found that 37.5 percent of respondents avoided exporting space-related products or services that were subject to the State Department's ITAR (International Traffic in Arms Regulations) controls. Thirty-one percent of the respondents said export controls provided foreign companies with incentives to avoid buying U.S.-made space products and services. Thirteen percent said the controls "caused the abandonment or alteration of space-related business lines."

Companies "don't understand the difference between the control lists and where they would fall," said the Commerce Department official. "They tend to take a pessimistic view of the burden and the potential issues required in exporting under a license." Said one executive at a small company: "In gauging which prospects to follow up with, if there is a likelihood of needing an export license, we usually drop the transaction and send the prospect to look for a solution somewhere else." Another executive with a small space supplier said, "ITAR was one of the considerations for us to leave [the] R&D business." And one executive from a medium-sized company had this condemnation: "ITAR regulation of our space products has been very successful in creating a global network of companies making competing products while ensuring U.S. companies cannot compete."

To view the initial analysis of the survey data, set your browser to http://www.bis.doc.gov/SpaceDeepDiveResults/.

McKenzie: Manufacturers, Position Yourself For Change

American manufacturing companies should prepare for a world that is turned on its head. "The shift in global demand for manufactured goods is happening at an accelerating pace, driven by the momentum of emerging economies," according to the McKenzie Global Institute. The per-capita income for more than one billion Chinese has doubled over the past 12 years. It took the United Kingdom, with a population of nine million, 150 years for this to occur with the onset of industrialization. "And China is not alone," says McKenzie.

There are 1.8 billion people in the world who are poised to join the global consuming class by 2025, "expanding markets for everything from mobile phones to refrigerators and soft drinks. These new consumers often require very different products to meet their needs, with different features and price points, forcing manufacturers to offer more varieties and SKUs. At the same time, customers in more established markets are demanding more variety and faster product cycles, driving additional fragmentation. Finally, customers increasingly look to manufacturers for services, particularly in business-to-business markets, creating an additional demand shift."

McKenzie says that conventional strategies deployed by manufacturing companies are "increasingly risky" in a transformed global economy. "Companies are becoming energized by a new series of opportunities that shifting demand and innovation are creating," says McKenzie in a study, "Manufacturing the Future: The Next Era of Growth and Innovation." Manufactures need to gain a better understanding of trends in labor, energy and innovation "and how they apply to their industries, markets and customers to identify new opportunities and develop strategies to capture them," says McKenzie. "Companies must develop a detailed, granular view of markets and customer segments to identify and tailor products and supply-chain strategies to specify sub-segments of markets."

China, for instance, has 22 different market clusters that must be targeted independently. "In Africa, Nokia learned the consumers had a different concept of what was valuable in a mobile handset: it had to be affordable, but it also had to have a built-in flashlight and radio, as well as a waterproof case."

One consumer products company was having difficulty entering a new emerging market until it conducted detailed research. Only then did it learn that, unlike in every other nation where it sold this particular products, consumers in this emerging market required packaging that could be reused for other purposes after the contents were used up."

World Bank Report On Global Warming Is Not Very Warming

The human species might not be long for the world if it continues on its current course of burning the earth's supply of fossil fuels, according to the World Bank. If the climate warms by a projected 4 degrees C (7.2 degrees F) by the end of the century, the earthly impacts will be severe with "many unpleasant surprises," says the World Bank. A 4 degree C warming will lead to "cascading" changes in the human condition, none of which are propitious, such as increases in diseases, lack of food and water, and rising oceans that swamp every city situated at sea level.

"Heat waves, droughts, extreme rainfall, flooding events and tropical cyclone intensity are likely to respond nonlinearly to an increase in global mean warming itself," says the World Bank. "With pressures increasing as warming progresses toward 4 degree C and combining with non-climate related social, economic and population stresses, the risk of crossing critical social system thresholds will grow. At such thresholds, existing institutions that would have supported adaptation actions would likely become much less effective or even collapse."

Detrimental effects are already being felt as a result of a 1 degree C increase in global temperatures. Massive droughts in productive agricultural areas "are forcing a recalibration of important impact parameters," says the World Bank. "The scale and rapidity of climate change will not be occurring in a vacuum. It will occur in the context of economic growth and population increases that will place increasing stresses and demands on a planetary ecosystem already approaching, or even exceeding, important limits and boundaries. The resilience of many natural and managed ecosystems is likely to be adversely affected by both the development and growth, as well as the consequences of climate change."

The short-term costs of shifting from dependence on fossil fuels pale in comparison to the economic costs of dealing with the conditions caused by a radical increase in global temperature. The shift has to happen now, warns the World Bank, or the repercussions will be grave.

The unpredictable changes taking place in many of the earth's ecological systems, such as the rapid influx of invasive species, "are starting to indicate that some of these interactions could be quite profound, rather than second-order effects," notes the study. "Impacts projected for ecosystems, agriculture and water supply in the 21st century could lead to large-scale displacement of populations with manifold consequences for human security, health and economic and trade systems."

Little is understood about the full economic and human consequences caused by the ongoing collapse of coral reef ecosystems, combined with loss of marine production due to rising ocean temperatures and increasing acidification.

As the heat builds, the Amazon rain forest will start dying, the Greenland ice sheet will disappear, intense droughts will make it hard or impossible to feed 9 billion people and unbearable heat will kill a lot of people like heat waves did in France in 2003 when 70,000 perished, or in Russia in 2010 when 55,000 died. As of the first week in December, 76 percent of the contiguous United States was in drought, with 42 percent in either severe, extreme or exceptional drought.

To read the 84-page report from the World Bank, "Turn Down the Heat: Why a 4-Degree C Warmer World Must Be Avoided," set your browser to http://climatechange.worldbank.org/sites/default/files/Turn_Down_the_heat_Why_a_4_degree_centrigrade_warmer_world_must_be_avoided.pdf.

China Surpasses U.S. In Number of Patent Applications Submitted

China has surpassed the United States in the number of patent applications filed, according to the United Nations. In 2011, China's State Intellectual Property Office "became the largest in the world, as measured by the number of applications received for patents, utility models, trademarks and industrial designs," says the United Nations in its annual "World Intellectual Property Indicators" report.

China's global share of patent filings increased from 15.1 percent in 2008 to 24.6 percent in 2011.

Of the 2.14 million applications filed globally in 2011, China's State Intellectual Property Office (SIPO) received 526,412, compared to 503,582 for the U.S. Patent and Trademark Office and 342,610 for the Japan Patent Office.

"Between 2009 and 2011, patent filings worldwide grew by 293,900," says the UN report. The Chinese were the main contributor to the growth in applications worldwide — accounting for 72 percent of growth. Applications to the Chinese patent office increased by 34.6 percent between 2010 and 2011.

The Japanese Patent Office granted the most patents last year (238,323), followed by the U.S. PTO at 224,505.

The Chinese are way out in front of industrial design patent applications. Of the 775,700 total global design applications filed, 521,468 applications were submitted to China's State Intellectual Property Office. The United States was in seventh place globally in that category, with 30,467 applications or 3.1 percent of the total number of design applications worldwide.