

INSIGHT.

The Journal of the American Chamber of Commerce in Shanghai - Insight May/June 2019

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PwC on redeploying MNC supply chains



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George Magnus on China's economic and industrial policy challenges



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Editor
DOUG STRUB

Content Manager
JULIUSZ MOSONI

Design
GABRIELE CORDIOLI

Printing
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(86-21) 6279-7119
Story ideas, questions or
comments on Insight: Please contact
Doug Strub
doug.strub@amcham-shanghai.org

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Shanghai Centre, Suite 568
1376 Nanjing West Road
Shanghai, 200040 China
tel: (86-21) 6279-7119
fax: (86-21) 6279-7643
www.amcham-shanghai.org

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CHAIRMAN'S NOTE



A stylized black ink signature of Eric Zheng.

ERIC ZHENG

**Chairman of The American Chamber
of Commerce in Shanghai**

The world is anxiously awaiting the final outcome of the U.S.-China bilateral trade talks. Most analysts believe there will be an agreement in the near future between the two countries that will address bilateral trade imbalances and structural issues in China such as market access and IP protection. One ramification of the U.S.-China trade tensions is a reassessment by multinational companies of their global supply chains. In recent decades China has become the world's factory by developing critical manufacturing capabilities and first-class infrastructure for global supply chains. As a result, MNCs rely on China for manufacturing ranging from iPhones to aircraft engines. "Made in China" has become a ubiquitous label not only for consumer products but also for industrial products sold around the world.

Following the punitive tariffs imposed by the U.S. and China as a result of long-standing disagreements in the bilateral trade relationship, some MNCs are reevaluating their supply chains to determine if they should develop an alternative to current strategies that rely too heavily on China. China has seen significant increases in labor and other costs over the past few years. Its competitive advantage in low-cost labor is disappearing. Some MNCs that rely on labor-intensive manufacturing such as shoes or garment manufacturing have already moved their factories to more affordable countries such as those in Southeast Asia and South Asia. However, for MNCs that require an ecosystem of efficient and innovative suppliers with skilled labor and modern infrastructure, moving their supply chains away from China is no easy decision.

Take Apple as an example. While Apple products are mostly developed in California, the company relies on an ecosystem of global suppliers that provide stellar products and services within tight timeframes at a cost that represents the best possible value to its customers. Over the years, China has become the most critical source of suppliers for Apple products such as iMac, iPad and iPhone. In fact, out of Apple's top 800 suppliers around the world, 380 are located in mainland China, including 29 owned and operated by Foxconn.

Headquartered in Taiwan, Foxconn Technology Group is a major electronics contract manufacturing company for Apple. Since 2001, Foxconn has built 29 factories in mainland China to make Apple products, among others. The bulk of Apple's iPhone line, for instance, is made by Foxconn in mainland

China. Foxconn's first mainland factory was in Shenzhen. With nearly half a million employees, it created an entire city called Foxconn City. As an OEM, Foxconn combines manufacturing efficiency with innovation. It is able to make high-quality Apple products with relatively low costs and thin margins. That's why Apple suppliers in mainland China add only about 5% value to an iPhone when it is shipped to the U.S., while the rest of the added value goes to Apple and its suppliers in the U.S., Japan, Germany, etc. Such value is why OEMs in mainland China are hard to replace. While one may argue who is the winner or loser in global supply chains, there is no doubt that Apple and its shareholders are winners; Foxconn and its 29 manufacturers in mainland China are winners; the 380 suppliers in mainland China that make Apple products are winners; and of course, consumers around the world including those in the U.S. who love iMacs, iPads and iPhones are winners.

Foxconn has a factory in India to make iPhones and, according to press reports, plans to increase its production capacity in India. While Foxconn may wish to diversify its production from China, it would be hard to relocate its 29 factories from China to lower-cost countries because those countries may not have adequate infrastructure, skilled labor, and an ecosystem of capable suppliers to meet Apple's stringent requirements for quality, service, efficiency, speed and flexibility. It would be inconceivable for many of the 380 Apple suppliers in mainland China to relocate to other countries, at least not in the near future. The Apple suppliers would only consider relocation if the alternative is feasible and offers better commercial terms.

There are millions of suppliers in China like Foxconn that play an integral role in global supply chains. They have been integrated into global supply chains as a result of globalization, and they are making positive contributions to the world economy. While MNCs may want to consider diversification as a supply chain strategy, it would make no commercial sense to arbitrarily "decouple" China from global supply chains.

This issue of *Insight* focuses on the topic of supply chain strategy under the current U.S.-China bilateral trade tensions. Several experts offer their analyses of and insights into the subject. I hope our member companies find the information helpful as they prepare themselves for a new era of U.S.-China relations. **1**

MNC Supply Chain Redeployment Under the Shadow of Trade War



Steven Zhong

Partner, PwC Management Consulting. Steven Zhong is a partner in the PwC Operations & supply chain consulting practice in China. He has served predominately global and China leading retail and consumer product companies in the areas of business strategy and operating model development, growth and profitability improvement, end-to-end operational efficiency improvement, omni-channel and digital operations, M&A, etc.

Background and impact

March 22, 2018 marked the start of the U.S.-China trade conflict. About \$250 billion worth of exports from China to the U.S. have been impacted by the additional 10% tariff, which may increase to 25% if negotiations fail. Consequently, multinational corporations (MNCs) whose business models include making their products in China and selling them to the U.S., have been hit heavily and urgently need to find ways to work around any tariffs.

As the latest tariff list drafted by the USTR illustrates, a wide range of products are included. In terms of percentage of exports to the U.S. in 2017, figure 1 shows that transportation and its accessories, electronics and medical devices, and plastic goods are the industries that exported the greatest portion to the U.S. Therefore, these sectors are more likely to face challenges.

Trade data shows that in 2017, the U.S. exported around \$130 billion worth of goods to China while receiving over \$500 billion worth of goods from China. Given the imbalance of trade volume, China is unable to match the tariff dollar-by-dollar, and thus has been seeking qualitative ways to respond. Figure 2 shows responses from over 430 MNCs about barriers they have experienced besides the added tariff.

Figure 1. Export volume of industries impacted by U.S. tariffs (in thousand USD)

Industries	Exports to U.S.	Total Exports	U.S. Percentage
Spacecraft and accessories	1,259,668	3,671,259	34.3%
Railway vehicle	3,185,704	10,971,030	29.0%
Vehicle and accessories	15,135,660	67,417,698	22.5%
Plastic goods	15,768,677	71,308,640	22.1%
Electronics	107,119,534	600,292,224	17.8%
Optics, medical devices	9,659,616	70,815,864	13.6%
Vessels and accessories	119,954	22,908,494	0.5%

Source: WIND, PwC

Supply chain redeployment and its applicability

To avoid the heavy tariffs levied by the U.S. as well as qualitative restrictions imposed by China, one solution is for MNCs to redeploy their supply chains. Interviews with executives of U.S. companies that are considering moving their factories out of China show that ASEAN countries with cheap labor costs and lower exposure to risk

from international trade disputes have become the ideal locations to which to redeploy supply chains (figure 3). Some American fashion brands and some electronic component companies have moved parts of their supply chain to ASEAN countries. The magnitude of the shift is reflected in ASEAN countries' export volumes; one example being Cambodia's shoe exports, which increased 25% YoY.

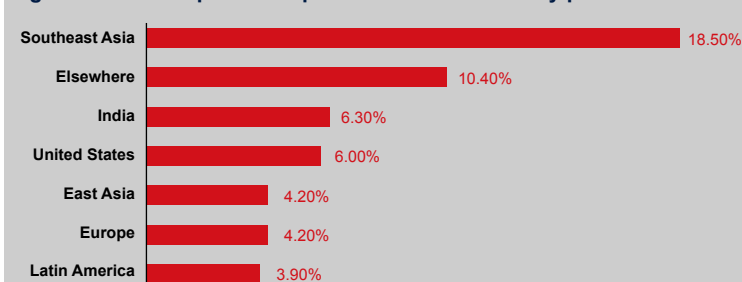
But relocation is not without risk. Since joining the WTO, China has

Figure 2. Non-tariff barriers experienced by MNCs



Source: AmCham Shanghai & AmCham China

Figure 3. U.S. companies responses on countries they plan to move to



Source: AmCham Shanghai & AmCham China

become the center of world manufacturing, and has invested heavily in logistics infrastructure and cultivated a highly efficient and effective workforce over the years. Figure 4 compares Chinese labor productivity and that of the top four ASEAN countries: one Chinese worker can manufacture about the same value of goods as four workers from four ASEAN countries combined.

Besides labor productivity, infrastructure is another key variable in the production equation, and ASEAN countries also fall behind China in this category. The World Bank ranks over 160 countries in terms of their logistics performance in six categories, and China's infrastructure ranks far ahead of all ASEAN countries (besides Singapore, which is not a typical manufacturing country like other ASEAN countries). Other category rankings are included in the chart below, and the overall landscape is clear: from a cost-performance perspective, China still leads the world in manufacturing, and any redeployment without a careful assessment of impacts may result in slower customs clearance and delivery times, lower quality goods, and a less productive workforce. In addition,

an aggressive supply chain relocation to ASEAN countries may drive up the cost of labor and production, further shrinking the benefits of relocation.

Certainly, the impact of the trade conflict and the allure of cheaper labor costs in ASEAN countries have given MNCs reasons to consider redeploying their supply chains, but problems related to ASEAN countries' logistics and productivity as well as the risks that come with the redeployment may force executives to think twice before taking action (figure 5).

Ways to play: Check these boxes before departure

Redeploying one's supply chain away from China is not a "one size fits all" solution. As such, the following is a set of topics/concerns companies should pay attention to, should they decide they need to redeploy:

1. Selective redeployment

Low-tech goods and low-value manufacturing supply chains would be the easiest and the least impacted redeployment. Key consid-

erations include, but are not limited to, costs of relocation, access to suppliers, labor market (size, wages, skill development), supporting industries, logistics and infrastructure, and the tax and regulatory regime.

However, supply chain redeployment of high-tech manufacturing and categories such as machinery, transport, and IT would be more difficult. China has invested heavily in infrastructure to ensure the quality of high-end products (in 2017, China invested 19.36 trillion RMB in manufacturing, exceeding all ASEAN countries combined). Since customers expect top quality from high-end products, ASEAN countries may be unable to meet their expectations.

2. Beware of implicit influences

Redeploying a supply chain away from China could result in retaliatory actions at the MNC's expense.

China could use its bargaining power to prohibit an MNC's product sales in China, and many other actions listed in figure 2, should the MNC decide to relocate its supply chain. To counter these influences, MNCs could export semi-finished China-made products to other countries without heavy U.S. tariffs, and re-export to the U.S. after completing assembly/production. This action requires the value portion of the product made in China to be less than that of the finishing countries, and therefore requires calculated supply chain deployment.

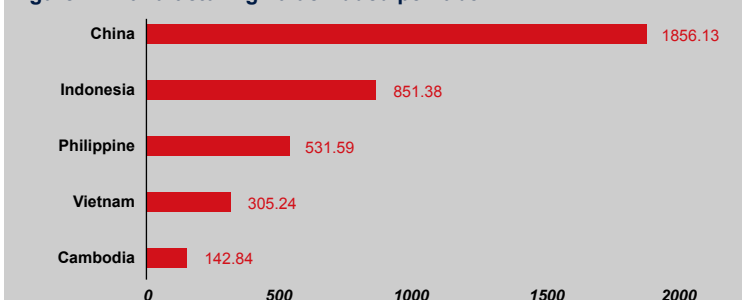
3. Favorable policies

ASEAN countries have different trade policies and terms with other countries, and MNCs should identify favorable policies and take these into consideration. For example, certain imports from Cambodia are granted zero tariffs by the U.S., and Vietnam just signed a bilateral free trade agreement with the EU, facilitating its trade relationship with the world's second largest economy.

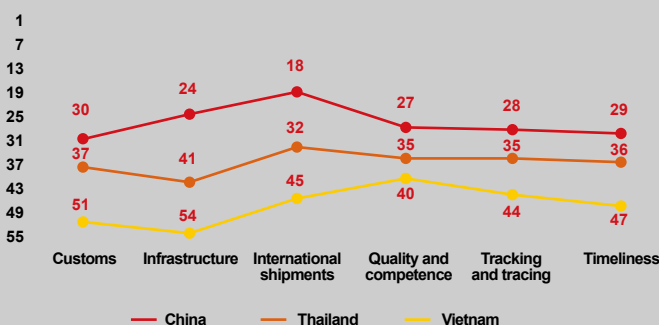
4. Geopolitical concerns

In contrast to favorable policies, MNCs need to consider the new country's policies on welcoming foreign factories: Do MNCs' main busi-

Figure 4. Manufacturing Value Added per labor



Source: NationMaster

Figure 5. Global logistics ranking for China, Thailand and Vietnam

Source: The World Bank, PwC (2016)

nesses conflict with the country's strategic goals (to avoid trade protectionism)? Does the country have a healthy and proven relationship with its trading partners? Is the country politically stable? Such questions should be raised before considering a supply chain redeployment.

5. Lead time fulfillment

Today, customers want their purchased goods to arrive quickly, and this requires a logistics network with adequate ports, railroads and other

facilities necessary to ensure optimal global shipping routes. MNCs should assess whether their new production locations can meet their lead time requirements, or they will have to assess the costs between lower tariffs and lower worker wages versus slower logistics and potentially inferior products.

6. Tariff engineering

If certain components of the finished product originate from China, companies may still incur the full

cost of the tariff. To avoid this, companies should closely examine their BOM (Bill of Materials) and check whether the raw materials used can work as desired against the cost of tariffs. In some cases, redeploying a supply chain out of China could lead to a net increase in costs.

7. Working environment

Even before the trade war, due to poor working conditions and prolonged working hours, some brands had pulled their production lines away from China. MNCs should closely investigate whether the country's common working environment violates their ethical guidelines, as customers now pay close attention to how their purchases are made.

8. Early Preparation

If all conditions favor redeployment, MNCs should start the process as early as possible, as the process usually takes multiple years to complete. Topics to consider include, but are not limited to, foreign trucking operations, freight forwarders, export requirements, new contracts and rates, and adjusted production schedules.

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Case study: Journey of a garment supplier

A garment supplier for a top sporting goods company, distressed by ever-increasing workers' salaries and land rents, along with tighter government regulations, was planning to gradually redeploy its supply chain out of China. Several factors prompted the company's decision to review its supply chain, and they hired PwC to provide a holistic analysis and support on redeployment decision making. One important consideration was worker skills: if garments have a straightforward design, finding skilled workers can be easy; but more delicate designs, with lace, sequins etc., often require skills that might take years to develop.

Like many other textile companies that have placed ASEAN countries on top of their redeployment list, the garment supplier favored the same area. Knowing that labor costs and rents would be much lower in ASEAN coun-

tries, we first looked at the company's export regions to help identify some differentiators that favored the garment supplier.

The company's top three export destinations were North America, Europe, and Asia. As such, we examined ASEAN countries' trading policies with those regions, and successfully matched manufacturing countries and exporting regions. For example, Cambodia was chosen to supply Europe due to its zero-tariff policy.

A lack of skilled workers and developed infrastructure in ASEAN countries can slow down the production process. To quantify these, we built a cost breakeven model with multiple adjustable assumptions, each representing factors that might impact the production process. Results showed that in the long run, redeploying the supply chain could bring financial benefits. To cope with the paucity of skillful workers, we proposed that the garment supplier train local management staff before-

hand (before the actual redeployment) so that production was more efficient from the outset.

After identifying locations for redeployment, we planned the logistics of the move. It would take two years for each new factory to start producing, and over five years before the entire supply chain could be transferred and made operable. We recommended that the client first work on the backend of the supply chain, finding suppliers in local countries, planning routes, negotiating contracts, etc. Doing so would establish a solid foundation and eventually provide a smooth transition.

Eventually, PwC helped the garment supplier select two appropriate locations for redeployment, given the scope of its business, and built a timeline to ensure an effective redeployment. Today, factories in two ASEAN countries supply the North American and European market, with lower costs and acceptable service levels required for those markets. **1**

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FOUR FORCES SHAPING CHANGE IN CHINA'S FOOD SUPPLY CHAIN

By Shirley Zhu



Shirley Zhu has over 15 years of experience in market research for the FMCG and retail industry. She has worked for Nielsen, SIG and CIC, specializing in retail and social media measurement. As program director at IGD Singapore, her main goal is helping retailers and suppliers in the FMCG sector to understand the opportunities in Asia, driving growth through market research and building commercial capability.

With a population of 1.4 billion and a rapidly evolving retail environment, China is set to be the single biggest source of global retail growth over the next few years. But how is the country's complex food retail supply chain responding to these changes? IGD has predicted the top four trends it expects to influence food and grocery supply chains in 2019 and beyond.

Opportunities for growth...

First, some background on the Chinese food and consumer goods market. According to IGD's latest forecasts, the country's grocery market is set to be worth CNY11.9bn by 2023, up from CNY9.1bn in 2018. It remains highly fragmented, with the top 10 retailers pegged to account for less than 8% of the market in 2023.

Online is by far the fastest-growing channel in China, driven by e-commerce giants Alibaba and JD.com. The share of the retail grocery market coming from online sales is set to rise from 4% in 2018 to 11% in 2023. Consumers in large cities are getting used to buying food online and improved infrastructure is enabling fast and reliable delivery to smaller cities and rural areas.

Traditional trading practices still play an important role at the national level, accounting for 42% of market share in 2018. But as modern trade – hypermarkets, convenience stores and e-commerce – continues to expand, traditional trading market share will decline over the next five years, down to 33% in 2023. Convenience and supermarkets are both gaining market share in China, while the share of hypermarkets is shrinking.

...But how is China's supply chain responding to these opportunities?

Some supply chain trends threaten to take off but never do, some fly under the radar and cause businesses to catch a cold, and some are simply hype. A small percentage,

however, are transformational. We see four trends that will shape supply chains in 2019 and beyond:

1. Micro-fulfilment on a macro scale
2. Eager experimenters
3. Clarity on circularity
4. Capitalizing on connections

These trends will support the evolution of food and grocery retail, account for new shopper demand and help build a supply chain for growth. Let's look at them in more detail and how they are playing out in China's retail market.

Micro-fulfilment on a macro scale

Shoppers today want speed and a choice of 'fulfilment' options at nominal or no extra cost – a trend that continues to fragment food and grocery retail around the world.

To meet this need in a cost-effective way, retailers are innovating and experimenting with micro-fulfilment – an umbrella term used to describe small-scale warehouse facilities situated close to consumers. A variety of very different facilities have emerged to meet local conditions and consumer demands, from retrofitted garages to Retail-as-a-Service (RaaS) automated fulfilment centers.

One consistent element is location. Largely in urban areas, these facilities tap into the "gig economy" for flexible last-mile options. Due to the growing need for space, these sites complement rather than replace traditional facilities. Technology is a key enabler, supporting operations within facilities as well as outside of them through apps for pick-up or delivery.

Last year, Alibaba's Freshippo (Hema Fresh) introduced 24-hour delivery services in its 25 stores in Beijing and Shanghai. All online orders are fulfilled by the stores, and users of the Hema app living within a three-kilometer radius of a store can now get the same 30-minute delivery service between 10pm and 7am. The new service covers most items in the store, except for some fresh produce. According to Alibaba, over 80m users of its Taobao and Tmall e-commerce sites visit between midnight and 4am, most of whom are women over 30.



Eager experimenters

IGD's second identified trend reflects the need to establish and embed a supply chain culture that encourages people to experiment. As the supply chain moves closer to a "management by exception" function, the value which people provide will involve things that we can do better than machines. As the emphasis shifts, supply chains must shape strategy and prepare accordingly. Food and grocery businesses are diversifying, playing in new areas. Simultaneously, new players are entering the industry, bringing with them new ideas. Where we look in order to learn and to be inspired is also changing, as western markets are no longer the only preserve of best practice.

Last year, in the lead-up to Singles Day on November 11, the world's biggest shopping day, Alibaba's logistics affiliate Cainiao opened China's largest robotic warehouse, the Cainiao Future Park in Wuxi, near Shanghai. The facility uses technology and more than 700 robots to control everything from temperature and humidity to guiding vehicles toward available parking space, as well as assessing warehouse storage capacities and the height of inventory stacking in real time.

This 'smart' system to manage logistics facilities at scale removes traditionally labor-intensive operations, including manual loading, scheduling and monitoring, and replaces them with systems based around Internet of Things (IoT) applications, big

data and artificial intelligence (AI).

Assembly lines are fully automated, with robotic arms and automatic guided vehicles on the warehouse floor. These self-charging robots reduce staff walking by an average of 50,000 steps a day, improving efficiency by 30%.

Clarity on circularity

Developing a more conscientious, sustainable supply chain provides businesses with an opportunity to create a competitive advantage. Turning this into reality will require a more circular approach to business activities.

The Ellen MacArthur Foundation describes the circular economy as "a framework for an economy that is restorative and regenerative by design. It entails gradually decoupling economic activity from the consumption of finite resources and designing waste out of the system."

Manufacturers, retailers and consumers all have a role to play if the circular economy is to thrive, but consumers are the catalyst for change. A progressive, ambitious Corporate Social Responsibility (CSR) strategy is now a base consumer expectation.

Leading e-commerce player JD.com is making its supply chain increasingly sustainable. Its Green Stream Initiative promotes the use of sustainable packaging materials, reducing the environmental impact of the entire supply chain. By supporting Earth Hour 2019, JD.com is giving its customers in Beijing, Shanghai and Guangzhou the option of selecting

reusable packages for an expanded range of products. It has also established a partnership with infant formula brands Mead Johnson and Wyeth Nutrition to collect and recycle empty infant formula cans. Some of the cans will be turned into pencil boxes to be donated to schoolchildren.

Capitalizing on connections

New technologies are increasingly influencing supply chain development. These include more reliable and affordable sensors in Internet of Things (IoT) devices, a better understanding of blockchain's potential, and appropriate uses for autonomous 'things' that are better able to interact with operators and environments.

In 2019, we can see a breakthrough where two or more of these are connected to help deliver a truly digital supply chain. The collective impact of combining several potentially transformational technologies for use in supply chain operations will be a game-changer.

Walmart China has been piloting the use of blockchain for traceability for over a year. Traditionally, most supply chains have involved a lot of manual processes. Tracking down a food safety issue was extremely difficult and time-consuming, especially for fresh products. Blockchain technology in the meat industry, for example, enables each entity that handles pork from farm to store to upload their certificates of authenticity, bringing more transparency and trust to shoppers.

Conclusion

FMCG retailers and suppliers in China should give careful consideration to how to use these trends to help them do the things they currently do better, as well as help them to innovate. Companies that embrace the trends identified and exploit them to deliver long-term value, while continuing to do the ordinary extraordinarily well, will be set up to win in 2019 and beyond. **I**

MITIGATING THE RISKS OF SUPPLY CHAIN DISRUPTION IN CHINA.

The rules of the game have changed - Are you doing enough to protect your company?

By Alex Bryant and Jon Anderson



Alex Bryant is president of East West Associates (EWA). He leads the development and expansion of EWA, which provides on-the-ground operational, commercial and risk management solutions for western multinationals operating in China and the Asia Pacific region.

U.S. companies in China are currently facing significant threats to their supply chains. While the risk of disruption to supply chains in China is nothing new, two of the greatest risks today are of a different caliber and for most companies unprecedented: The U.S.-China tariffs, and China's environmental protection initiatives, which are being vigilantly enforced.

In a recent survey by East West Associates of over 200 U.S. companies with China-based manufacturing plants, 84% said the U.S.-China tariffs have had a significantly negative impact upon operations, and over 50% said they believe the single greatest threat of the tariffs is the disruption of their supply chains.

Regarding the increased environmental enforcement in China, a recent article in the *China Briefing* noted, "As a result of the government's environmental protection programs, many companies are facing spiralling op-

erational costs due to the increased disruption of supply chains."

In short, the change in the risk outlook for companies is creating new challenges for supply chain stability. The problem is that many companies are ill-prepared to meet this challenge.

To mitigate these risks of supply chain disruption, companies must change their approach, and the first step is risk identification and classification. By doing so, companies are able to act immediately to both protect today's profitability and tomorrow's stability.

Supply chain risk management services

Risk management services focus on identifying and counteracting the immediate risks of supply chain disruption. The most relevant for U.S. companies operating in China are

Supply Chain Risk Assessment, and Supplier Research Audit.

Supply chain risk assessment

A supply chain risk assessment focuses on identifying all forms of risk to a company's supply chain, including environmental compliance, corruption, high operational costs and inefficiencies, capacity issues, inventory and customer order delivery, logistics and tariff exposure.

Highly successful companies continuously evaluate the effectiveness of their overall supply chain to ensure they remain optimized as business conditions constantly change. With the U.S.-China tariffs and environmental protection initiatives, the need for supply chain risk assessment is even more important for companies generating significant revenue with a global manufacturing and supply chain footprint.

The assessment follows a detailed risk identification and classification





Jon Anderson is vice president and managing director for EWA China. He is responsible for China-based project execution and delivery. Jon has lived and worked in China since 1995 for R.R. Donnelley & Sons, Littelfuse, Inc. and Boldt Metronics.

process consisting of four steps:

1. Assess the company's supply chain strategy and key suppliers to establish a baseline current supply chain state for capacity, landed costs, inventory and customer order delivery performance.
2. Identify commercial, technical and operational "Red Flags" and potential opportunities for substantial improvements of existing key suppliers and potential alternative suppliers, including environmental compliance, material planning, and continuous improvement metrics on quality, productivity, inventory reduction and on-time delivery with particular attention on single or sole source supply channels.
3. Based on the supply chain assessment, classify the severity and probability of the risk, develop corrective actions, costs and timeline to mitigate each identified "risk" and implement in a phased approach for the company's benefit.
4. Provide on-the-ground implementation support to drive year-to-year productivity improvements and formalized continuous improvement initiatives.

The supply chain risk assessment findings will vary due to company and industry specifics – but on average, 85% of supply chain risk assessments identify moderate to significant risks of disruption to a company's supply chain. The most common risks are failure of environmental compliance, tariff exposure, operational cost inefficiencies, capacity limitations, lack of continuous improvement execution and poor quality control and management systems.

Supplier research audit

Industry best practice dictates that companies prequalify key suppliers but in an opaque business environment such as China, many companies fail to perform a detailed operational, commercial and reputational audit.

There are many different reasons for a company to initiate a supplier research audit, including their interest in learning the ownership structure of their suppliers, owner's

potential equity stake in a competitor, supplier's operational stability, relationships with competitors, reputation, financial health, detrimental litigation history and protection of IP.

A detailed supplier research audit, follows a six-step process:

1. Clarifying the specific information a company does not know about their supplier, which is relevant to their on-going supply chain arrangement
2. Conducting research, which will include talking with existing vendors to the target supplier, supplier employees and reviewing governmental relationships
3. Executing on-site inspections of manufacturing facilities to address quality programs, safety performance, labor relations, etc.
4. Analyzing the gathered information and determining whether there are any negative impacts / "Red Flags" to the customer vendor relationship
5. Presenting the findings and recommending corrective actions and a timeline to properly address any short-term and long-term challenges for the company
6. Implementing necessary corrective actions on an agreed-upon timeline.

The findings will vary due to company and industry specifics, but on average 92% of all supplier research audits identified moderate to significant risks to supply chains. The most common risks identified through a supplier research audit are unknown equity stake ownerships in competing companies, outstanding lawsuits for failure to deliver quality products on time, insufficient quality control, hidden subcontracting practices, and financial problems.

Supply chain risk diversification services

Risk diversification services focus on identifying and leveraging opportunities to assure long-term supply chain stability. Today, companies are increasingly diversifying supply chain risk through globalization, expanding and moving supply chains

across borders or relocating production facilities to other markets in the Asia Pacific region, Mexico and Eastern Europe.

Global supply chain expansion

There are many reasons for a company to expand their global supply chain, including diversifying their supply chain base to avoid U.S.-China tariffs, identifying suppliers closer to non-Chinese customers, identifying better quality and more reliable suppliers than those currently used and having access to new overseas markets by using in-country suppliers.

A detailed global supply chain expansion follows a four-step process:

1. Development of a global supply chain expansion strategy based upon an in-depth analysis of company operations, raw material and component needs, supply chain costs, existing customer base (global / local), customer base development plans (global / local), competitive environment, etc.
2. Extensive multiple market analysis: quantity and quality of suppliers with required operational and technical capabilities, availability of components and raw materials, labor costs, taxation structure, infrastructure, transport costs, global trading practices and legislation, etc.
3. Hands-on negotiations in selected country / countries: identifying potential supply chain partners, customs clearance requirements, transport partners, etc.
4. On-the-ground implementation: qualifying short-listed supply chain partners, supplier research, product sampling, legal documentation, contract finalization, etc.

Global plant relocation

By relocating a production facility to another global market (or expanding global production footprint), companies can diversify the risk of supply chain disruption in addition to reducing operational costs and creating new growth potential through a new market entry. But such an undertaking is based upon identifying opportunities both from a going-global point of view and in deciding

which market is best for your company. Then the hard work begins in the selected market.

A global plant relocation implementation consists of four steps:

1. Global expansion strategy development based upon an extensive analysis of the company's global customer base and sales development, operational requirements and future development plans

2. In-depth multiple market analysis of company-specific needs including: infrastructure, availability and quality of required supply chain partners, availability of components and raw materials, government incentives policies, labor costs, taxation structure and much more

3. On-the-ground negotiations and project planning leadership (incentives, land purchase, identifying and qualifying suppliers, legal documentation, etc.)

4. Hands-on project implementation leadership through the remainder of the project, including guidance with detailed government application and submission to ensure the highest possible corporate income tax incentives, hiring and training of senior personnel, direct negotiations with industrial estate developers, appointing project managers, developing a project delivery strategy and commercial approach, selecting designers and contractors to ensure the manufacturing plant is constructed on-time and on-budget.

Summary

Assuring supply chain stability in China has become increasingly challenging in recent years. Companies are being confronted with unprecedented risks and are forced to approach risk mitigation from a new perspective. That is not expected to change anytime soon.

Mitigating the risk of supply chain disruption is a complex undertaking, but the requirements for success can be summarized in four simple statements: Risk identification, risk containment, risk avoidance and risk prevention. **I**

GLOBAL PLANT RELOCATION CASE STUDY

THE BACKGROUND

- Ohio-based global manufacturer with operations in the U.S., China & Europe
- The Chinese manufacturing facility located in Shandong Province and in operation for eight years
- Business had been growing 12-15% and operating at maximum production capacity
- Given their growth in China/Asia Pacific, a significant increase in production capacity was mandatory
- The manufacturer required a new facility approximately ten times larger than their current facility
 - Factory was to be approximately 200,000 square feet
 - Located on a 400,000 to 500,000 square foot site
 - 200 employees (150 production staff & 50 management / engineering)
- The client hired East West Associates to expand their Asian manufacturing footprint beyond China

THE PROCESS

Step 1: Identifying the expansion criteria

- Company analysis
- 15% of Asian consumption was consumed in China
- Sales projections indicated strong growth
- Price is a major influencer
- Large products with labor intensive production process
- Expansion criteria: labor supply / costs, government incentives, inflation rates, availability of raw materials & export logistics

Step 2: An in-depth comparative analysis of six selected countries

- Philippines, Malaysia, Indonesia, Vietnam, Thailand & China
- Weighted areas of focus:
 - Government incentives, labor supply / costs, inflation rates, availability of raw materials, land costs, utility costs, ease of doing business, corruption index, domestic market size, transport & export logistics
- Expansion recommendation: Thailand

Step 3: On the ground interaction

- Met with industrial zone developers, visited eight potential sites & selected two sites for soil testing
- Negotiated conditions for property purchase & management (waste removal, perimeter security, etc.)
- Negotiated investment incentives with Secretary General of Royal Thailand Board of Investment
- Interviewed, evaluated & qualified:
 - 3 architect and engineering firms
 - 3 general contractors
 - 4 project management firms
- Presented a 360° recommendation to the U.S. Board of Directors which was approved for Step 4: Implementation

Step 4: Hands-on implementation

- Property was purchased and all pre-construction permits and licenses were acquired by October 2017
- Plant designs, construction budget / timeline & all construction partner contracts were finalized in November 2017
- Plant and equipment installation began in January 2018 and will be completed in May 2019
- Identification and recruitment of supply chain, distribution & logistics partners
- Hiring of senior management candidates

THE RESULT

Government Incentives

- Eight year tax holiday from CIT, 50% additional 5 years

Cost Reduction

- \$22.0M tax savings over 10 years
- \$4.3M annual labor savings after 5 years
- \$1.8M annual material savings after 5 years
- \$120/unit average freight savings

Growth Development

- 42% increase in sales over 5 years
- 53% increase in revenue over 5 years

MOVING OUT OF THE MIDDLE KINGDOM

MANUFACTURING'S ASEAN MIGRATION

By Dennis J. Meseroll



Tractus executive director **Dennis Meseroll** brings more than 20 years of consulting experience advising companies on their direct investment, market entry and market expansion strategies in Asia. Meseroll has led operational and financial feasibility assessments, site location analyses, and real estate and investment incentives negotiations and transactions. Clients have spanned a wide variety of industrial sectors including automotive, electronics, semiconductor, textiles and garments, medical devices, chemicals, steel and pharmaceuticals, and the telecommunications, healthcare, legal and professional services segments.

For the last 50 years, Asia's economic dynamism has been built upon a foundation of low costs. But costs change, in some cases rapidly, as economic growth, stagnating productivity and technological change alter the economic landscape. Now we are seeing the next wave of investment in Asia driven by the ongoing search for cost-effective locations.

As costs have risen and the effects of the U.S.-China trade dispute continue, China has lost its preeminent position as the undisputed lowest-cost location for doing business. ASEAN has re-emerged as a competitive alternative, bolstered by new members which have opened their economies to foreign investment. South Asia, particularly India has also finally emerged after decades of economic mismanagement as a desirable location for not only business process offshoring but now manufacturing.

For Asia's more developed economies, advantages in labor and real

estate costs have eroded, but are being offset in some countries by improvements in qualitative factors such as labor productivity, supply chain efficiency and physical infrastructure quality. That is certainly true for China, but as costs in the country rise and the application of regulations becomes more onerous, developments such as the opening of Myanmar for investment, industrialization of the economies of South Asia and the slow but steady integration of the ASEAN Economic Community (AEC), are having a significant impact on the choices companies are making for their manufacturing investments.

A growing number of China-based manufacturers are considering a move out of the Middle Kingdom, whether to minimize the impact of U.S. tariffs, to enter new markets, to reduce the risk of having all capacity in one location, or to maintain cost competitiveness. The lower cost of doing business and the promise of growth opportunities in ASEAN coun-

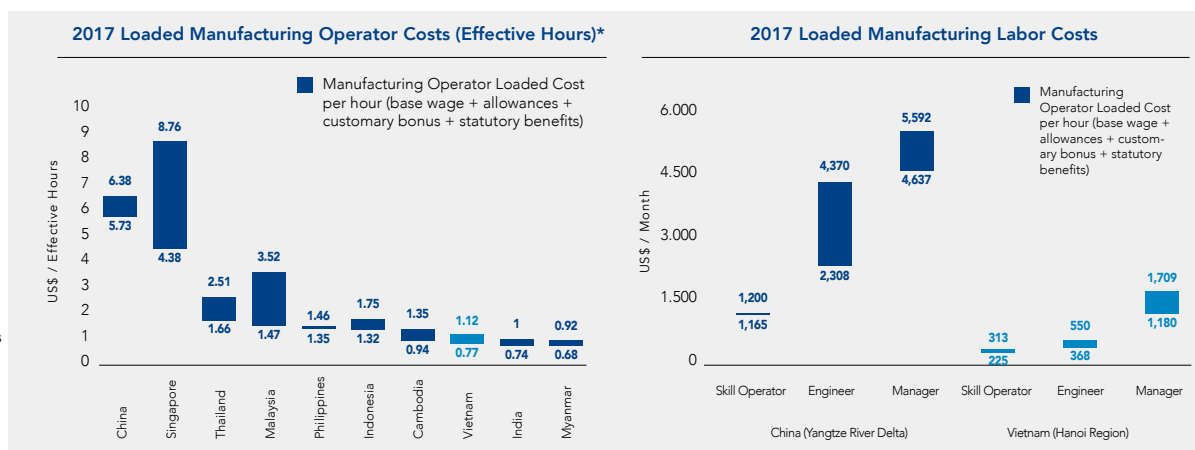
tries make them particularly attractive alternatives, or complements, to existing China-based manufacturing operations. Moreover, China's Belt and Road Initiative (BRI) is expected to contribute to the closer integration of supply chains between China and Southeast Asia, making the region an even more competitive manufacturing location. High costs and slowing economic growth in China, combined with the current global trade tensions, present a unique opportunity for companies to capitalize on ASEAN's future growth by entering these markets earlier than previously anticipated.

Manufacturing location selection factors

Manufacturing location decisions are not made solely on the basis of cost, but cost is the most tangible consideration in any location decision and is the factor most com-

Figure 1:
Vietnam –
the low cost
alternative to
China

Note: Effective Hours are calculated by dividing the average number of customary working days per month in each country by eight working hours per day and assuming no overtime.
Source: Tractus' "Cost of Doing Business in Asia"



monly discussed from boardrooms to the business media. But qualitative factors like the regulatory environment, the availability of workers with particular technical skills or scientific training, the reliability of the electrical grid and, of course, the size of the market, are sometimes equally or more important in the overall location decision.

Location decisions are nominally irrevocable, so it's critical to make an informed and defensible decision. Choosing a location in which to invest is about comparing the relative tradeoffs among both quantitative (one-time investment costs and ongoing operating costs) and qualitative factors, based on the specific needs of a business. There is no substitute for a systematic, objective and disciplined analysis with the objective of obtaining a defensible result on a decision that will impact the

competitiveness of a manufacturing operation for years to come.

Of particular importance is the need to look over the horizon to see how trends in operating costs and conditions are evolving and how they may impact the attractiveness of a location over the long term. These trends can significantly impact the competitiveness of an investment that, once sited, is typically not relocated without a significant business impact. Moreover, no thoughtful and defensible location analysis would be complete without a thorough investigation of the risks that might adversely influence the location decision.

ASEAN opportunities

Asia is home to the most disparate range of the costs of doing busi-

ness anywhere. Total operating costs in Asia across a range of investment types are highly correlated to a country's level of overall development, with some variations in the ranking when services are considered because of the greater influence of real estate and communications costs in the overall cost structure.

Developing ASEAN economies such as Myanmar, Cambodia and Vietnam are attracting attention from manufacturers with their substantially lower labor costs, despite higher logistics, electricity and telecommunications costs. This trend is especially apparent in Cambodia, which has the lowest fully-loaded employer costs in Asia, but relatively more expensive communications, electricity and logistics costs to most common export destinations. While Myanmar comes out on top with the lowest cost of doing business for manufacturing in the region, it is followed closely by Cambodia and Vietnam. Vietnam, with better manufacturing infrastructure than either Myanmar or Cambodia, is in a highly competitive position. With a larger and more productive labor force that is lower cost than China's and its more developed neighbors in ASEAN, Vietnam has seen a significant influx of investment over the last five years, and this is only expected to increase.

Vietnam also benefits from its location on China's southern border, giving firms the ability to continue to source from their existing China supply chain. Significant investment in infrastructure projects is improving the nation's connectivity for global

Figure 2: Major infrastructure investment is linking China and Vietnam trade

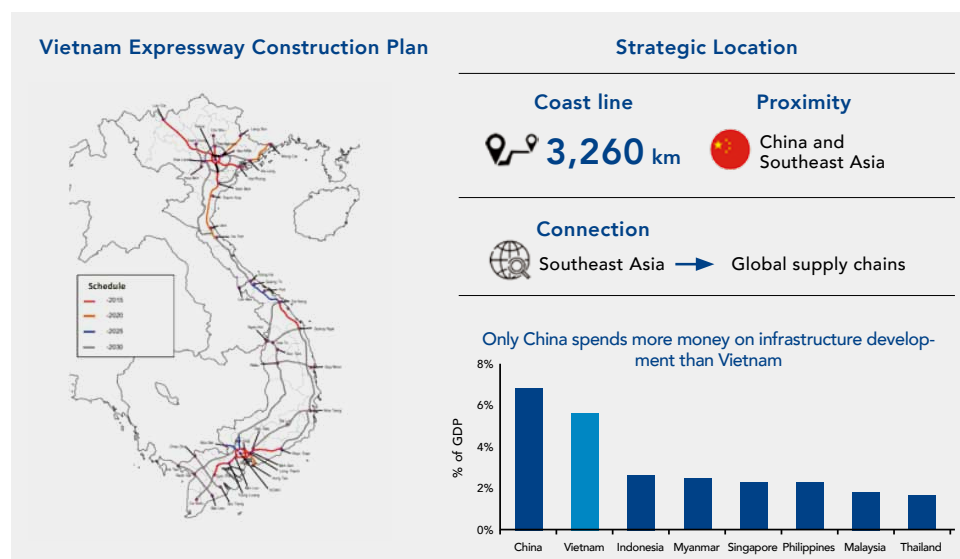




Figure 3: Thailand's developed economy offers favorable business conditions

distribution and growing consumer markets in ASEAN. Strong similarities in government regulations and a society with similar cultural norms to China make for a familiar operating environment. Vietnam's business climate continues to improve and its favorable tax incentives make an already cost competitive location a profitable one as well.

Conversely, while countries such as Singapore, China, Malaysia and Thailand consistently rank as some of the most expensive places in Asia to run a manufacturing operation, key qualitative factors can provide an important counter-balance to higher costs. World-class physical and utility infrastructure, the availability of skilled talent, deep manufacturing and services supporting industries and clusters, ease of doing business, and market access can make these countries very attractive to certain

types of businesses, where higher productivity and other operational efficiencies and access to raw materials, suppliers and markets can offset higher absolute factor costs.

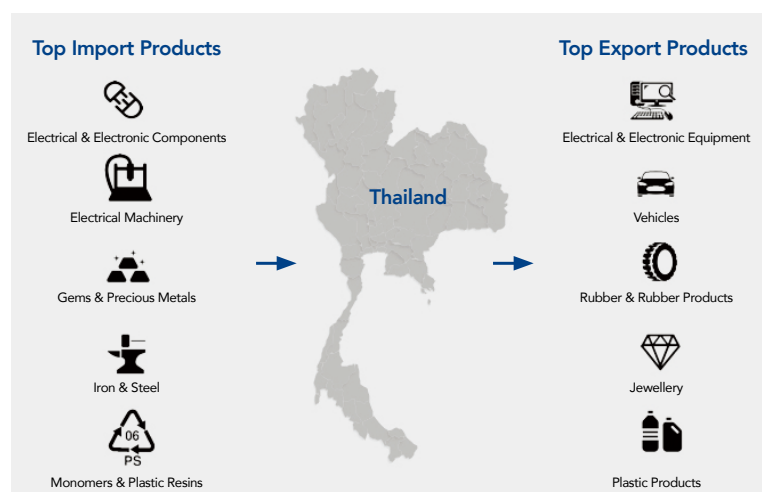
Thailand presents a unique opportunity in the area of value-added manufacturing for China-based manufacturers. Because of the depth of its manufacturing supporting industries linked to world-class industry clusters, Thailand is an ideal choice for companies seeking to add value to manufactured products. This is especially important given the current tariffs on Chinese exports to the United States. Finding an alternative to China and an export base to the US requires more than simply exporting components and sub-assemblies from existing suppliers in China and doing final assembly in another country such as Thailand due to "country

of origin" requirements. Thailand is a country where companies in diverse industry sectors can and do "add value" and use Thailand as a cost-competitive export base for high value products. The nation's strategic location at the crossroads of Southeast Asia and its planned linkages to China's BRI, qualify it as a strategic location for companies considering a "China Plus One" manufacturing strategy.

Location, location, location . . .

As companies consider their China manufacturing and trade strategies, ASEAN has become a priority search area in which to identify the optimal location for expansion. There is no easy answer to the question of which country in ASEAN and what site is ideal. However, making a decision on where to site a manufacturing facility (or service operations or a representative office for that matter) should never be made on the basis of cost alone. Qualitative factors such as market size and ease of market access, the availability and capabilities of supporting industries and access to talent also factor heavily into any investment destination equation. These and other critical and important criteria in addition to an evaluation of strategic, operational and financial risks, must be considered when making market expansion strategy decisions. There is no substitute for a rigorous, analytical and objective analysis based on data obtained through on-the-ground research on those factors that will ensure a company's long-term business success.

Figure 4: Thailand is an attractive location for value-added manufacturing



About Tractus Asia

Over the past 24 years, Tractus Asia has worked with senior executives to help them make informed decisions on where to locate their operations, how to structure their investments and how to develop and implement sound market entry and expansion strategies. **I**

ON THE FRONT LINES OF THE SHIFT

Q&A WITH DAN KRASSENSTEIN ON HIS EXPERIENCE WITH ASIAN SUPPLY CHAIN SHIFTS



Dan Krassenstein is a multilingual global supply chain executive with 30 years of international manufacturing and logistics experience. As global supply chain director for Procon Pacific, a U.S.-headquartered manufacturer of flexible intermediate bulk containers (FIBCs), he is responsible for production facilities throughout China, Vietnam and India, as well as international logistics. His career base has included Shanghai, Taipei, Jakarta, Panama, Mexico City and the USA, in industries ranging from ocean container carrier management to forwarding to contract manufacturing. Krassenstein earned his Master of Science degree in Global Supply Chain Management from USC Marshall and is an adjunct professor at UCLA, University of Dayton and SJTU Antai - with a focus on doing business in Asia and Asia supply chains.

Please describe the structure of your sourcing / manufacturing operations in China.

Procon does not own our own facilities; however, we are not a pure US importer/trading company either. We're more of a hybrid for two main reasons. The first reason is that Procon Pacific has our own WFOE in Shanghai which performs functions that pure U.S. importers can't perform. We audit not only quality of product and adherence to specifications, but also order on-time expediting, multiple vendor co-loading/consolidation, facility cleanliness auditing, and assurance that a vendor does not subcontract to outside facilities (especially prison labor).

Also, the fact that our WFOE is managed by an American (me) gives our MNC customers comfort that we are FCPA (Foreign Corrupt Practices Act) compliant. The second reason why we are more of a hybrid is that we have chosen three vendors to co-invest in the certification of the facilities - ranging from the American Institute of Baking (AIB), the British Retail Consortium (BRC) and Kosher Certification.

What factors prompted Procon Pacific to source from production facilities in India and Vietnam?

Cost, cost, and cost. In South Asia (India) and Southeast Asia (Vietnam), we gain the advantages of dramatically lower labor costs, as well as sufficient labor availability. In comparison, these are two of China's worsening weak points.

While "labor cost" has gotten the most publicity, "labor displacement" and "cost of compliance increases" are equally as important. Labor displacement essentially means that the areas surrounding traditional factory locations, namely the coastal provinces, are lacking workers. On the other hand, the hinterland provinces have many available workers. However, these workers are no longer willing to 吃苦 (eat bitterness) like their parents' generation. Cost of compliance defines where China is going in its maturity. In the earlier stages of China's development, compliance took a back seat to growth. Today, green growth counts - in terms of environmental compliance as well as social compliance.

The U.S.-PRC trade dispute was not

even in the equation until recently, but it certainly exacerbates the reasons to shift some production out of China.

What are the disadvantages of sourcing from India and Vietnam?

Communication. I am spoiled by China - both in terms of familiarity and proximity, as well as maturity in how exporters know from experience how to work with American buyers. The China suppliers know that proactive communication in dealing with problems, such as quality issues and lead time issues, is valued and that the buyer wants to be part of the solution.

On the contrary, thus far I have found that vendors in Vietnam and India, generally speaking, are more opaque and less trusting to share openly and honestly about problem issues. Sometimes these vendors just attempt to ghost me and I need to call the managing directors of the factories and explain to them that these short-term games are untenable.

How did Procon Pacific choose the locations of its additional production facilities?



I'll use India as an example. From a purely supply chain perspective, India has many different regions. We weigh the positives and negatives of these various regions when making our decisions. The negative for Eastern India, e.g. Kolkata and Chennai, is that this region has no direct container service to the U.S. All feeder vessels must transship containers via Colombo, Singapore or Busan to board a line haul vessel.

On the other hand, a positive of Eastern India is that the labor cost is lower. The positive for Western India, e.g. Gujarat and Maharashtra over Mundra and Mumbai, is that this region does have direct line-haul service to the U.S. East Coast. How-

ever, labor costs in Western India are slightly higher than the labor costs in Eastern India.

Could you talk about the "China plus one" strategy? How are those companies that failed to diversify their production locations in time being affected?

For all the negative ramifications of the U.S.-PRC trade relations, the positive aspect is that it caused many American companies to wake-up and realize the value of having sourcing options. These companies are now "scrambling" to catch up with secondary sourcing options. Those that can't catch-up may not survive - it's that serious.

You have over 30 years of experience in supply chain management. During your time in the industry, the pattern of companies moving production centers to more favorable manufacturing environments must be familiar. Do you fear that each subsequent period between needing to move is becoming shorter as technology allows countries to move more quickly up the value chain?

Not necessarily. Technology can only do so much with respect to manufacturing and logistics. The bottom line for labor-intensive product manufacturing is "labor cost." That's what initially drives the production shift. The next component relates to logistics, as you need to make sure you can move product from where it is made to where it is needed. Service frequency, transit time and reliability are logistics considerations for finding viable sourcing options.

Many people are already looking a few years down the road at the Horn of Africa (Ethiopia and Somalia, especially) as being next in line to manufacture textiles, garments and footwear, and then the container carriers will step up to the plate to offer services to bring product to market. Same same, only different! **1**

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OUTSIDE THE BOX

Q&A WITH FEDEX'S EDDY CHAN ON CHINA LOGISTICS AND SUPPLY CHAINS



As head of China and senior vice president of FedEx Express, **Eddy Chan** is responsible for the overall tactical planning and administration of the China region, headquartered in Shanghai. He is a consultant to the Shanghai World Trade Organization Consultation Center and the China Maritime Arbitration Commission. In 2011, Chan received the "Magnolia Award" from the Shanghai Municipal Government.

What are the greatest challenges of running FedEx in China? Are they different from running FedEx operations elsewhere?

I need to emphasize that I enjoy working here every day, because every day is a learning experience. I have a lot of good colleagues who work with me to support our customers.

China is a dynamic market and quite a lot of factors affect how we provide a reliable and wonderful service to our customers. The weather or headwinds or tailwinds will have some impact on our aircraft and traffic conditions are also different from day to day. China is a very interesting market where regulations keep on changing. To a certain extent, I admit that this affects working in China, but everyone is facing the same challenges or opportunities. There are many ways for us to deal with these interesting changes:

First, we need to closely monitor the market. I have people who help me check on the major government agency websites daily so that I can see regulatory changes or changes in the overall atmosphere. With that, I know how to position ourselves or plan accordingly. Second, I have contingency plans so that we have different responses to different situations. We have contingency plans for the weather, for breakdowns of the IT system; it's important to treat uncertainty as a certainty.

Another challenge is that with the

current downward pressure mounting on China's economy, China's domestic business environment has been changing; for instance, the rising labor costs, existing grey areas and stringent environmental protection requirements. However, China is one of our most important markets in the world and we will continue our investment as our commitment to this market. We are excited to see that the Chinese central government is determined to build an open, transparent and equitable investment environment, which we believe will benefit foreign companies, like FedEx, to broaden business partnership in China. For the long-term, we are looking forward to a sustainable business and healthy growth.

FedEx is a large business serving over 400 cities in China. How do you manage such a large organization?

First, you need to give clear goals and directions to your people. We have a 'purple promise,' which is to make every FedEx experience outstanding, to keep customers happy. That's a clear goal that helps employees make decisions on a day-to-day basis. After giving them clear goals, you need the right culture to link people together. Our culture is "People-Service-Profit" (P-S-P) - if you treat people well and provide them with a good environment, they will provide excellent service to a customer. And then we can make a profit.

You need to adapt to the local environment. Some practices that are effective at headquarters are not effective here. In China you can't find big warehouses at the center of a town like in the U.S., they cost too much. So instead we have a satellite model with small operations all over the city. With that we are closer to the customer and employees are happier if they can report to those satellite stations which are near home and don't require a long commute time.

We also need to communicate closely, frequently and honestly with headquarters and manage their expectations. With that you create trust and are given quite a lot of autonomy.

The FedEx that we knew as children showed up at your doorstep with a small parcel. Now you are deeply embedded in companies' supply chains. Can you describe what else FedEx is doing?

Over the past few decades, we have made a lot of changes. We acquired companies that are focused on freight and companies focused on e-commerce. We've also acquired companies in other countries in order to expand our geographical coverage. With those acquisitions, we can offer a wide portfolio of services to our customers.

For transportation services, the network is key. Right now, we serve over 220 countries and territories all over the world. I would say that we link 99% of global GDP. Another en-

abler is technological integration. We spend a lot of time and resources understanding the technological requirements of our customers and linking that to our technological infrastructure. We see ourselves as a consultant, not a hard sell transportation company.

Local logistics companies compete with you in China and internationally. How do you stay ahead of the game?

First is to emphasize that having healthy competition means a level playing field for everyone in the industry. We spend a lot of effort in every country working to lobby the government for a level playing field... [but] we are not asking for favoritism. The Chinese government has done a pretty good job in the past decade or so to enhance healthy competition in the market.

To deal with competition, you need good employees, you need to have comprehensive policies and procedures to guide your people to deal with situations. You need to make use of technology so that you can respond to the market effectively. Third, the market is dynamic. It's very important that we listen to our customers. We identify their immediate needs, but we also learn about their intrinsic needs. We plan ahead and offer things before they ask ... that allows us to stay ahead of the competition.

The invention of the shipping container transformed the shipping industry. Is there anything similarly disruptive in logistics that you see on the horizon? Is it drones?

The invention of the hub and spoke system was a game-changer for the logistics industry, aided by the application of technology. Drones are an invention that will transform the industry. But at the same time, AI and big data will also be game-changers. Smart logistics is the key, and FedEx is very serious about this.

We recently partnered with Dean Kamen, who developed a [stair-

climbing] wheel-chair for disabled people, to develop the FedEx Same-Day Bot (see picture, below), which we thought would be applicable to the delivery industry. We built upon the power base of the iBot, which has gone through more than ten million hours of reliable, real-world operation in the United States. We have already partnered with customers in the U.S., including big names like Walgreens and Pizza Hut. We are working for certification in the U.S., and we are interested in expanding this to Asia – including China. This equipment is a combination of drone, big data, and AI, and we can address customer demands within a short period of time and deliver shipments in a reliable manner.

Imagine asking for a cool box delivery in Shanghai when it's over 35° C; a FedEx bot can arrive promptly at the front door with the goods under the specific conditions you need. This machine is a good example of how technology is applicable to the logistics industry.

The trade war has prompted some companies moving to different countries. Are you seeing any big moves from China to Vietnam, to Cambodia, to Indonesia, to elsewhere?

Each company is coming up with different contingency plans because of the trade tensions. Companies have mostly been moving to Southeast Asia, to Vietnam, Malaysia, Thailand and Cambodia. But China will still play a very important role for global supply chains no matter how the trade conflict is settled. First, the Chinese government is quite good at building infrastructure. Besides the advanced Asian Tigers, China has the best infrastructure in Asia. Second, foreign investors no longer treat China as only a sourcing center or manufacturing center. China's domestic market is now quite important. Third, the scale here is important. Yes, many companies say they will move their supply chains to Vietnam, but the country's population is only 95 million. Over a 100 million people live in Guangdong province. It's hard to

resist the massive scale of the Chinese market. Lastly, I think the Chinese government will come up with different ways to keep business in China. The question of whether these companies will move out of China can't be simplified to just the trade war.

Your business gives you a good view into a country's economy. How is China doing?

Because of the trade conflict between the U.S. and China, we saw a serious slowing down at the end of last year. In import and export terms, the past few months have not gone well. For the coming months, continuing uncertainty from the trade war make imports and exports struggle. Many customers have also stocked up their inventory to accommodate for the trade war. To a certain extent, this will have a negative impact on the import and export trade in the first half of 2019.

For the coming three years, though, I feel good. The government is doing the right things. In the National People's Congress, they clearly stated that they will simplify the administrative bureaucracy and focus benefits to businesses. The foreign investment law is also going in the right direction. In addition, the government is focusing on technological enhancement rather than low cost manufacturing to support economic growth. **I**



Red Flags on the Horizon

An interview with George Magnus

By Ian Driscoll and Leanne Quinn



George Magnus is an independent economist and commentator, and research associate at the China Centre, Oxford University, and at the School of Oriental and African Studies, London. His latest book, *Red Flags: Why Xi's China is in Jeopardy* was published in September 2018 by Yale University Press. It examines China's contemporary economic and commercial challenges and aspirations to modernity in the light of a governance system that is a throwback to much earlier times in the People's Republic. His earlier books are *The Age of Aging* (2008), which investigated the effects of demographic change on the global economy; and *Uprising: Will Emerging Markets Shape or Shake the World Economy?* (2011). He was formerly chief economist at UBS.

Many western economists criticize the inefficiency of China's SOEs and the government's intent of turning these into national and international champions. France has arguably done the same in the nuclear, rail and aircraft industries, yet few people complain about its dirigiste nature. Is China's approach really any different?

Certainly, amongst western nations, France is exemplary in the sense of its dirigisme and its state enterprises and state sponsored efforts in things like space, high-speed rail and nuclear.

I think it's different in China's case. I don't think the issue is that China nurtures national champions or that companies get special privileges from the government and are favored and earmarked to achieve great things in the future. That phenomenon is not unique to China at all.

What makes the difference is three things. The first is the Party's role in China, that is the politicization of state policy towards state enterprises. This is some-

thing that westerners find different and a little bit threatening, particularly because China is not just a big country but is now deemed to be, in many respects, an adversary rather than just a customer and competitor.

The second way people feel that China is different is because of the whole panoply of industrial policy that goes along with that. There is concern about the way in which industrial policy discriminates in China, allegedly, in favor of domestic enterprises as opposed to foreign, and, within the domestic enterprises, in favor of state-owned enterprises rather than private enterprises.

On February 19, the *People's Daily* ran an editorial in which Xi Jinping is quoted saying, "The status of public ownership is the backbone of our economy and must not be jeopardized and the leading role of the state-owned economy must not be questioned." When people look at that from outside of China, they feel that the scales are tipped in a way that is unique. That is not the hallmark of the French pol-

icy or any other western country.

The third is about the rights of redress to correct what companies may feel are unfair policies or injustices. It is the absence of what we would call the rule of law, and the subordination of law in China to the whims of the Party and the state. People feel that if there is discrimination, whether it is about procurement, special favors, or industrial policies, it is difficult for these to be corrected in the way that you might have recourse in a western country. That is why it is felt that China's practices are unique and not akin to those of France.

Some economists argue that *Made in China 2025* is ill-fated because it emulates unsuccessful policies plied by Japan's MITI in the 1980s. Do you subscribe to this argument? Or could China pull off *Made in China 2025* if it continues to throw cash at industries like chip manufacturing?

I don't have any doubt that China will continue to throw cash at the ten sec-

tors – eleven now if you include AI as a generic sector. Everyone wants to be top dog in technology. That applies equally to the U.S. and Europe as well. It has not just enormous commercial application in the future, but also for defense and military purposes too. I don't imagine that the intent of China is matched in places like DARPA and other establishments and intelligence services in the west.

We shouldn't criticize China for wanting to prioritize its technology and to articulate a view which many of us are coming around to, which is that the world is bifurcating between two technological universes. We will be very wary about using Chinese technology in our economies and the Chinese don't want western tech companies given free license in China. Then there is the emerging developing countries, where it is full-on competition to see who can gain a foothold.

Made in China and other advanced technology policies have security and foreign policy implications. They morph very easily from commercial and military capacity into soft power and security,

control, and influence. It is in this sense that I think we should expect the Chinese government to continue to back further and promote its technological ambitions, whatever the cost. Obviously, if in the next ten years China went through a period of economic stagnation or very slow growth, then there may be financial constraints, but the intent will still be there.

For the Japanese, competition was purely a commercial issue, and in the end the comparative advantages they enjoyed were chipped away at and then mastered by American and western tech companies. China is already a leader in mobile payments and e-commerce, and 5G, also electric vehicles. Some think that in AI, China's catch-up trajectory is a big threat. Soon after he came to power, Xi made quite clear how he saw China's historic role and function and I think that MIC 2025 is an integral part of what he sees as China's ambition.

You write that China's GDP targeting is a "license to deliver bad GDP." Do you see any signs that China will wean itself off the practice?

At the 19th Congress, there was suggestion that once the Party's commitment to double income per head between 2010 and 2020 had been achieved, that growth targets thereafter may be abandoned. There has not been any suggestion since then that that will be the case.

What I meant by "bad GDP" is the creation of un-commercial construction projects and economic activity. At some point in the future this will have to be written down or written off because it is un-commercial. In a state-run economy, this can take much longer than in a western economy. In a western economy, we more or less have to write down bad investments in real time, but this discipline doesn't exist in the same way in China. That does not mean that they get a kind of pink slip that allows them to do this in perpetuity. The longer that this goes on and the greater the accumulation of un-commercial debt or bad credit-created economic activity, obviously the bigger the adjustment will have to be when it comes.

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In *Red Flags*, you suggest that the U.S. should use carrots and sticks to nudge China toward a more level playing field in trade and investment. By jettisoning TPP, has the U.S. thrown away one of its best sticks?

Yes. I think the U.S. administration's early stance on trade and on America First type policies made allies in Asia, and across the Pacific question America's commitment to their economic security and possibly even national security.

A year later, the Trump administration came out against the Chinese in terms of tariffs and the trade war. Now of course, we are not sure where the Trump administration stands, whether they want a trade deal at any cost or whether the U.S. Trade Representative's underlying concerns about China's industrial and technology policies are likely to prevail. I take on board the idea that not everything with the TPP echoed or resonated well with the concerns some people had about the U.S. economy or the previous U.S. administration, but it was an extreme and damaging thing – almost self-harm, really – to play loose with the institutional structure of U.S. foreign and trade policy in Asia, and indeed elsewhere.

Things are different now. In the past, China was encouraged to "follow our practices" and align its interests with the western world, and this flowed in large measure from the coherence with which the United States acted as a benign global hegemon and was looked up to by allies. It wasn't always agreed with, but it was respected by other allies in its broad geographic alliances.

Now, though, in the wake of not only China's greater self-confidence, but also the Trump administration's policies, China seems much more inclined to paddle its own canoe, and define its own interests both within established global governance systems and outside them. The United States in withdrawal mode – as the TPP withdrawal demonstrated – is in effect a license to China to press on. It exacerbates the adversarial chasm between the two major powers and gives China every justification for thinking that it doesn't have to bend to pressures which otherwise might have been more forceful.

In recent years China has placed ideology over pragmatism. If China is unwilling to change its ideology, what can it do within its current ideological strictures to ensure economic growth continues?

Every economy, including China's, has a sustainable rate of growth – what we call trend growth or potential growth, and it is given by a number of supply side factors. From one year to the next you can change

long period of time. But this is where ideology gets in the way.

This commitment means that China is unlikely to pursue what we in the West would regard as the appropriate policies to sustain good growth over the long term. It doesn't mean China can't do it for a while, but I think that it will run into road blocks and constraints. Arguably, we may be now seeing some of those constraints. For example, what we call here in Brexit



▲ Small-scale infrastructure development

Photo by Leanne Quinn

tax rates, you can change infrastructure spending, you can change all sorts of things that affect demand from one year to the next. The supply side of the economy is given to you by the quantity and quality of the labor force, and the efficiency with which you put capital to use.

In the medium- to long-run, you can bolster trend growth by boosting total factor productivity. This is not easily measurable but it is an efficiency term. It comes from how you deploy labor and capital to produce something bigger than the sum of the parts. This is about institutions, it is about law, it is about competition policy, it is about regulatory policy, it is about technology.

Looked at this way, China could of course do a lot of things to sustain reasonable rates of economic growth because it is in a strong position to control and influence all the main levers of economic growth. It has an economic and financial system in which it is predominantly an owner and a participant so it could create higher rates of growth for a

Britain, cake-ism – the idea of having your cake and eating it – is taking root in China. Cake-ism, as we know, means pursuing incompatible goals. Can you deleverage the economy while at the same time sustaining elevated rates of growth which are not compatible with that de-leveraging? The question is rhetorical, and already in 2019 we have seen that the authorities are backing away from deleveraging in order to boost growth, and stimulate the economy again.

This could go on for a little while but if you do this, then you are not going to succeed in reducing financial instability risk and cutting the leverage out of the financial system and the economy. I don't think it is possible to do both, and another moment will come in the near future when China will again be obliged to make difficult choices.

More broadly, Professor Stein Ringen at Oxford has written a book in which he talks about China as being a control-ocracy. The thesis of more and more control, stifling of initiative and the rising influ-

May / June 2019

ence of the party in all walks of economic and social life, does not sit comfortably with the economic goals that China has set for itself in the next 20 or 30 years. Certainly not from a western economist's standpoint.

You suggest that if the economy slows China might have to row back on ideology. How would you envisage such a process unfolding and where do you imagine the government loosening the reins? Is the recent effort to placate entrepreneurs with cheaper loans already a sign of this?

I can't see that the question is answerable under the governance system that Xi Jinping has introduced and to which the senior echelons of the Party seem committed. If I can just back track for a second, in a theoretical or other world context, I would echo some of the sentiments that have been made by Chinese intellectuals over the last year ... that the government is reciting the wrong narra-

tive. The essence is that China owes its success to the influence of the Party, the role of state enterprises, and industrial policy, and these have brought China out of poverty and brought the country to where it is today.

The critique from some prominent intellectuals is that this train of thought is not true, and that the reason China has been successful is because it adapted markets to its own circumstances, encouraged entrepreneurship and the dynamic creative forces of private enterprises, and learned from the outside world things that it couldn't do itself and maintained open engagement. These are two very different narratives.

The government may well have been taken aback by a flagging private sector over the last year or two, but it is not negated by the soft rhetoric that we have seen or the meetings that have been arranged to assure private companies that they are still important, or the encouragement of cheap loans to private entrepreneurs or to get banks to lend more.

In a way, the banks are conflicted. They are being told to raise their capital ratios and de-risk their balance sheets but are simultaneously being told to increase their exposure to the riskiest enterprises and the riskiest forms of lending in the economy, which is small and medium size enterprises and smaller private companies. There is an incoherence in that kind of strategy. I don't expect cheaper loans to solve the problem. I think it is an attitudinal problem. When I recited the quotation from *People's Daily* at the beginning of our chat, it vindicates or corroborates the idea that China's priorities, regardless of what leaders say in public, are to the state sector and the primacy of the state sector in the economy in critical areas in the future.

This may not be of great relevance to small family businesses and micro-enterprises, but I think it certainly makes a big difference to what people generally regard as the most dynamic part of China's economy. **1**



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China's Innovation Policy and the Quest for Semiconductor Autonomy

Q&A with Dieter Ernst

By Doug Strub



Dr. Dieter Ernst is senior fellow at the Centre for International Governance Innovation/CIGI (Waterloo, Canada) and at the East-West Center (Honolulu, USA). He is an authority on trade, global production networks and the internationalization of research and development in high-tech industries, and innovation policies in the United States, China, India, Taiwan, Korea, and Malaysia. Ernst has provided testimony to U.S. Congress; served as member of the National Academies "Committee on Global Approaches to Advanced Computing" and advisor to the Organisation for Economic Co-operation and Development, Paris.

Can you give a brief overview of China's history with manufacturing semiconductors?

Over the last 60 or so years, China's semiconductor industry has come a long way from being a completely government-owned part of the defense technology production system, with state-owned enterprises (SOEs) as the only players, toward a gradually more market-led development model. The role of SOEs has dramatically declined, and deep integration into global networks of production and innovation has transformed decisions on pricing and investment allocation, with private firms as the main drivers.

Despite decades of efforts to develop a robust domestic semiconductor industry, China remains weak in the design and fabrication of leading-edge memory and processors. This weakness is particularly grave for fabrication, where SMIC and other Chinese players continue to lag two generations (ca. four years) behind in leading-edge process nodes.

Of particular concern is the persistent gap between semiconductor consumption and production. China has been the largest market for semiconductors since 2005. Yet only slightly more than 15% of China's total semiconductor consumption is supplied by China-based production in 2018. And foreign companies with fabs in China may account for almost half of that domestic fab capacity. China's domestic semiconductor manufacturing technology and capabilities have

failed to keep up with the country's chip design needs.

In recent years China's efforts to develop its domestic semiconductor industry have intensified, including a multi-billion dollar semiconductor fund. Can you talk about China's semiconductor ambitions and the policies it has implemented to achieve these goals?

China's semiconductor trade deficit has more than doubled since 2005, surpassing crude oil to become China's biggest import item. This massive import dependence explains why the Chinese leadership at the highest levels has made it a priority to catch up and forge ahead in this industry.

Like in the U.S., national security needs play an important role. However, all these motivations are dwarfed by economic considerations.

Semiconductors are critical for sustaining Chinese exports. Secure access to leading-edge semiconductors is thus of critical importance from a Chinese perspective. To the degree that a tightening of U.S. control over semiconductor exports might imperil such access, this seems to have encouraged renewed efforts in China to push toward increasing self-reliance in this industry.

Key policies include the *National Semiconductor Industry Development Guidelines (Guidelines)* and the *Made in China 2025 (MIC 2025)* plan, published by China's State Coun-

cil in June 2014 and May 2015, respectively. Both plans are backed by huge investments – \$47bn for the National IC Industry Investment Fund, and \$300bn for MIC2025. A range of support policies cover intellectual property, cybersecurity, procurement, standards, rules of competition (through the *Anti-Monopoly Law*), and the negotiation of trade agreements, like the *Information Technology Agreement*. The objective is to strengthen simultaneously advanced manufacturing, product development and innovation capabilities in China's semiconductor industry as well as in strategic industries that are heavy consumers of semiconductors.

In July 2017, the State Council released the *Next Generation Artificial Intelligence Development Plan (AIDP)*, a detailed roadmap for developing an increasingly integrated AI ecosystem. This policy outlines China's strategy to build a domestic AI industry worth nearly US\$150 billion in the next few years and to become the leading AI power by 2030.

A unifying feature of these plans is to secure timely and cost-effective access to advanced semiconductors that are needed to upgrade China's manufacturing and service industries and for modernizing its defense and security sector.

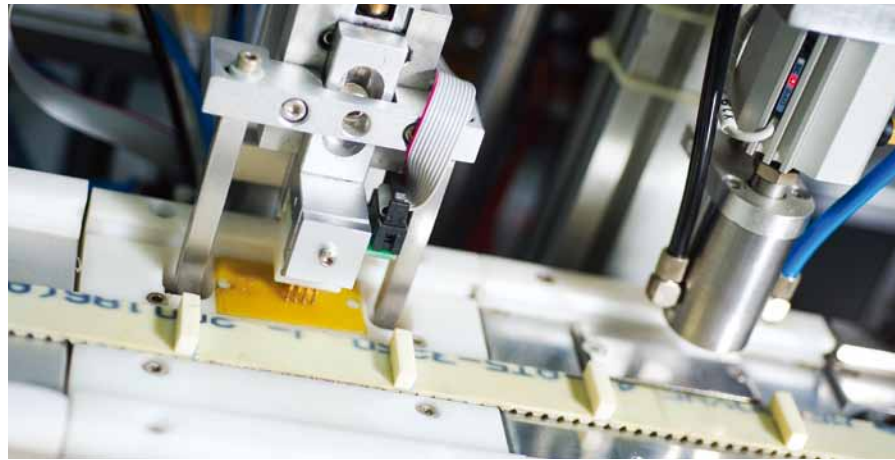
Have these policies been successful? How are China's semiconductor manufacturers performing today, are they closing the technology gap with foreign companies?

It is too early to assess whether these policies will reduce the still quite substantial technology gap that separates China from the U.S. in semiconductors. However, these policies no doubt will have an important mobilization effect. They will broaden China's semiconductor technology portfolio and strengthen the bargaining power of China's leading OEMs (like Huawei and Lenovo) relative to international semiconductor firms.

In my view, the mobilization effect is critical. What really matters is the message these policies will convey to all domestic

semiconductor technology portfolio. Until recently, China has focused primarily on logic semiconductors and mixed-signal integrated circuits for mobile communication equipment (including smart phones), and on the assembly, testing and packaging of chips. Since the start of the 13th FYP, China's semiconductor industry strategy now covers a much broader range of products and value chain stages, with a focus on memory semiconductors and AI chips.

Barriers however are looming. The memory market is highly concentrated – with Samsung as the predominant leader.



and foreign stakeholders within this industry as well as along its value chain:

- No effort will be spared to implement a massive increase of the production/consumption ratio of semiconductors.
- Markets will play a "decisive" role (i.e. a greater role than before) in determining the range of products, markets and value chain stages. While "The State strikes back" in the broader economy – to paraphrase Nick Lardy – the rules of the game may be slightly more flexible in critical industries like semiconductors.
- Firms that participate in this contest will profit and grow, while firms that stay on the sidelines will lose out.
- Benefits include preferential tax treatment, land and monetary subsidies, R&D and labor incentives, and access to RMB equity funds.
- These benefits apply to both domestic and foreign players – at least for now.

There is no doubt that this systemic and more market-driven approach to industrial planning has captured the attention of both domestic and foreign firms.

China is also broadening its semicon-

Late entry into such a market will come at a very high cost. Most importantly, access to core technologies has been drastically reduced by the U.S. government's tightening control of core technologies. All of this raises the cost of catching up in memory. Over time, however, there is little that can stop China from becoming a serious contender in this industry.

As for AI chips, our research finds that China is still way behind in these rapidly evolving markets where CPUs, GPUs, and FPGAs intensely compete with new special-purpose AI chips for algorithms used in deep learning neural networks. U.S. firms are ahead in all these fields.

Huawei's subsidiary HiSilicon is the only company with sufficient design and engineering talent to compete with the large international firms. However, Huawei itself remains heavily dependent on core ICs from U.S. and other foreign industry leaders. Regarding AI chips, Huawei has heavily invested in the development of leading-edge processors as part of an integrated AI stack around Huawei's Mindspore framework. However, Huawei contin-

ues to rely on foreign suppliers for CPUs, GPUs, FPGAs, and high-end memory.

China's leadership believes that a robust domestic AI chip industry is urgently needed if China wants to sustain its still highly fragile achievements in commercial AI applications. References to the ZTE shock and the current tensions around Huawei are used to support this position.

Critical voices within China, however, emphasize the immense challenges of developing an integrated AI chip value chain. These voices suggest that "slightly-behind-the-leading-edge" chip architectures and process nodes would be good enough for diffusing AI technologies across China's manufacturing and service industries. At the same time, there are expectations that big changes in mainstream chip architectures may open new opportunities for Chinese firms to leap-frog into some niches of the AI chip market, especially if this is done through strategic partnerships with leading U.S. and other foreign semiconductor companies.

It will be interesting to see whether the U.S. government will be able to effectively block U.S. companies like Nvidia, Intel, Qualcomm, and Xilinx from continuing to cooperate with Chinese companies. These U.S. companies critically depend on China, the largest worldwide semiconductor market.

In September 2016 you wrote that "global cooperation to integrate China into the semiconductor value chains makes more sense than ever, both for the incumbents and for China." Can you elaborate on that argument, and do you still feel this way today?

In 2016, I was reasonably optimistic that trade and investment conflicts with China could be gradually reduced if the U.S. government and the private sector would join forces in reforming key aspects of U.S. trade policy on China. The prevailing view has been that China's innovation policy presents a homogenous picture of a monolithic top-down "model of neo-mercantilist state development capitalism." I argued that this picture fails to capture the surprisingly fragmented Chinese innovation system where diverse stakeholders with conflicting interests are lobbying intensely on specific provisions of regulations, standards, measures, and guidelines that operationalize the leadership's broad-brush strategies.

In a paper prepared for the U.S. Defense

Department's Minerva program, I proposed that USTR China policies should pursue a strategic approach informed by research on China's fragmented innovation system and the conflicting agendas that drive China's innovation policy. The underlying assumption of that paper was that "asymmetric interdependence" provides ample scope for cooperation between the U.S. and China in the IT sector.

For American firms, China's policy to upgrade manufacturing and services will create new markets for production equipment, core components, circuit design software, system integration and intangible knowledge on how to ramp up yields of complex fabrication processes. Equally important for the U.S. is continuous access to China's vast pool of IT talent. For this to happen, both the U.S. government and the private sector would need to join forces to enable U.S. firms to stay ahead on the innovation curve.

"Asymmetric interdependence" implies that China needs the U.S. even more, both as a market and as a source of technology. As China continues to lag behind the U.S. in innovation capacity, the U.S. can still play an important role in shaping the scope and speed of this cooperation process. The pa-

per emphasized that implementing such cooperation between countries at different stages of development would only work if both countries accept that their economic and political systems are different.

I no longer share this optimism. There is no doubt that both the U.S. and China have squandered this unique opportunity. As the rise of economic nationalism in the U.S. interacts with the recentralization of state control in China, it is now much more difficult to identify and mobilize stakeholders in both countries who would be willing to compromise and to find areas for selective cooperation.

Today's global economy is not promising. Intensifying trade, investment and technology conflicts are likely to dominate U.S.-China economic relations for quite some time. It will take many years to repair the damage. But more fundamental forces are at work. In both countries, ideology shapes industrial and trade policies. In the U.S., industrial policy remains a taboo, denying the important role played by the Defense Department and especially DARPA in creating America's IT industry.

Obama's Advanced Manufacturing Partnership (AMP) program remained half-hearted and did not provide the big push

in education, basic research and innovation infrastructure necessary to upgrade the U.S. innovation system.

By contrast, China's leadership is eager to use all the tools of industrial, trade and competition policy to co-shape international standardization and to catch up and forge ahead in advanced manufacturing and services. While U.S. analysts typically see these policies as a ploy for world domination, in China they are viewed as unavoidable if the country wants to move beyond the outdated "Global Factory" model based on low-wage mass production. In essence, moving up the value chain through innovation is China's response to its slowing economy and the increasingly severe economic, social and environmental costs of its outdated development model.

In addition, there is a fundamental shift in the dynamics of global competition. Until recently, the main rivalry was in manufactures trade. Today, the contest is for dominance of the data-driven economy and AI. The current AI and big data boom has deepened U.S.-China rivalry. It is this new data-centered competition that explains the proliferation of U.S. technology export restrictions. **I**

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China and the Middle-Income Trap

By David Hicks



David Hicks is a Juris Doctor and Master in Public Policy degree candidate at Harvard Law School and Harvard Kennedy School.

In 2007, several years before China's economy began to slow, the World Bank, in a report on East Asian economies, raised the theory of a "middle-income trap." It described the challenge developing countries face when they are too rich to enjoy quick growth from low-wage labor, but insufficiently advanced to have the high-skill innovation needed to compete with high-income economies. Whether China's growth might slow when it reached this middle-income space became a popular topic for discussion by foreign economists and Chinese policymakers alike. Is the theory correct, and if China is headed for a protracted slowdown, how can it escape the trap?

What is the middle-income trap, and what does it mean for China?

The term 'middle-income trap' was coined in 2007 by World Bank authors Indermit Gill and Homi Kharas, but its underlying theory first appeared in a 2004 *Foreign Affairs* article by Geoffrey Garrett. His simple observation: "middle-income countries have not done nearly as well under globalized markets as either richer or

poorer countries, and the ones that have globalized the most have fared the worst." Pointing to middle-income economies in Latin America and Eastern Europe, Garrett argued that economic liberalization had not helped propel middle-income economies to high-income status because it put them at a disadvantage when competing with technologically sophisticated high-income countries.

The middle-income trap's validity is still debatable. "It's not universally accepted that the middle-income trap actually exists in the macroeconomic space," said economist George Magnus, author of *Red Flags: Why Xi's China is in Jeopardy*.

One challenge the theory faces is the vague way in which it has been interpreted. Michael Pettis, professor of finance at Beijing University's Guanghua School of Management, points out that "the middle-income trap is a really imprecise idea. Whenever growth slows down, we talk about a middle-income trap, but it's not really clear exactly why it slows down."

In essence, the middle-income trap theory is simple – middle-income countries can stagnate economically because they are too rich to compete on low-cost labor and too unsophisticated to compete on high-tech. But applying the theory

to the real world poses challenges. The *Economist*, in a report entitled *The middle-income trap has little evidence going for it*, noted many circumstances in which a country might be classified as being 'trapped' in middle-income status, despite their growth being seen as universally impressive. The magazine also challenged the broad criteria for what constitutes middle-income. China would have been classified as middle-income in the midst of the Great Leap Forward, for instance, (since GDP per capita exceeded \$590 in 1960) and also classified as middle-income in 2008 (since GDP per capita fell below \$13,300, the upper-bound). Something economically meaningful happened in China between 1960 and 2008, but the middle-income trap theory seems to gloss over it.

Despite disagreement around whether or not the trap exists, there is consensus that East Asian economies such as South Korea, Hong Kong, Singapore and Taiwan have transitioned from mid- to high-income status. Garrett argues that their success is, at least in part, attributable to the staged way in which they opened their economies to the world, giving preferential treatment to infant industries like electronics and automobiles until they

were mature (around the mid-1980s), before liberalizing further and allowing international competition. In contrast, Garrett points out, Latin American countries that quickly opened their markets to the world, following the wisdom of institutions like the IMF and U.S. Treasury, stagnated and have since been unable to escape middle-income status.

The World Bank today classifies countries with a GNI per capita between \$996 and \$12,055 as “middle income.” China’s GDP per capita in 2017 – the most recent year for which World Bank data is available – was \$8,826.99. China has reached that level quickly, mainly because it mobilized the country’s massive workforce into low-skilled export-driven manufacturing jobs. Growth in GDP per capita has been consistently positive since 1977 – but since peaking at 13.64% in 2007, the growth rate of GDP per capita has steadily declined, falling to 7.33% in 2012 and 6.3% in 2017. Critics say this slowdown is no reason to claim the middle-income trap has taken hold. For context, U.S. GDP per capita grew 1.46% in 2012 and 1.55% in 2017.

So, with a trend toward slower growth, is China falling into the trap? Magnus thinks it is too early to say. “I don’t think it’s been a middle-income country for long enough to basically say categorically that it is trapped,” he said. “You need to see a country remain a middle-income case for many years – and China really only became a middle-income country in 2012-13. In the next five to seven years, we should have a much clearer idea of what China’s trajectory is likely to be.”

Pettis supports that view, saying that “anyone who understood the Chinese growth model would have known that growth rates were inevitably going to slow down.”

Consequences for China if they do fall into the MIT

While the theory is debated, there is more certainty about what happens to China if the trap exists and the country falls into it. Stagnant growth could seriously challenge China’s ability to repay its debt, and could lead to social instability. There are many reasons the world should care about China’s economy, but one is that middle-income countries contain more than two-thirds of the world’s pop-

ulation and constitute about one-third of global GDP, according to the World Bank. Thus, if China can demonstrate effective ways to attain high-income status, it may provide a path to growth for other countries.

The consequences of indefinite stagnation at middle-income levels could be significant, and the Chinese government treats the theory seriously. *China 2030*, an influential 468-page report published in 2012 by the World Bank and the Development Research Center of China’s State Council, listed policies it said are required to avoid falling into the trap, including “structural reforms to strengthen the foundations for a market-based economy,” advancing policies that encourage more innovation, and encouraging environmentally friendly economic development. Chinese Premier Li Keqiang and Vice Premier Liu He purportedly advocated for this Development Research Center-World Bank collaboration, indicating possible concern among the Chinese leadership about the problem.

Lou Jiwei, China’s outspoken former Minister of Finance, has also expressed worry about the middle-income trap. In

to high-income status requires a brief review of economic growth theory. Capital and labor are the main determinants of economic growth. To get an increase in potential output – i.e. to sustainably move from middle- to high-income status – requires an increase in capital or in the quantity and quality of labor. The efficiency with which those inputs contribute to a national economy, though, is determined by other factors such as a country’s institutions or management techniques. ‘Total factor productivity’ is the term for these other dimensions.

Sometimes called the “measure of our ignorance,” increasing total factor productivity is one way economic policymakers sustain growth rates in the face of a relatively fixed supply of labor and capital. To keep growing, China must increase its capital stock, labor, and other factors related to total factor productivity. In a 10-year retrospective piece on how their understanding of the middle-income trap had changed since they coined the term, Gill and Kharas said they wish they had paid more attention to demographics, entrepreneurship, and external institutions, all of which are tied to total factor produc-



▲ Not the total factor productivity solution

2015, he said China had a 50/50 chance of falling into the trap, but revised that prediction two years later, telling journalists he believed that “after the sweeping reforms we’ve been carrying out since two and a half years ago, China is likely to become a high-income country in three to five years.”

Understanding why “sweeping reforms” might help get an economy from middle-

productivity. In a paper on the middle-income trap, several IMF economists noted, “the success stories of East Asia ... are underpinned by robust [total factor productivity] growth.”

China today faces several challenges that could keep it from high-income status, including high levels of corporate debt, a declining working-age population, and a lack of the financial and legal institutions

that tend to inspire investment, a key way to increase capital stock. As Pettis points out, "The U.S. is richer than China because its financial system, legal system, and other institutions allow American workers and businesses to exploit investment more productively."

This is a variation on the idea advanced by Garrett in his original article on the trap: "Middle-income countries need broad and deep institutional reforms in government, banking, and law to transform economies that stifle innovation into ones that foster it with strong property-rights regimes, effective financial systems, and good governance."

It's worth asking whether there is a link between the middle-income trap and a country's system of government: are China's one-party system and strong central state control an advantage or disadvantage when facing the trap? Industrial policies such as Made in China 2025 – seen by Chinese policymakers as a key way to reach high-income status by moving up the manufacturing value chain – are generally discounted in the West, written off as inefficient ways to allocate resources. But

George Magnus argues, "We don't know that for sure." As Garrett stated in his original article on the theory, it was their de-

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"In essence, the middle-income trap theory is simple – middle-income countries can stagnate economically because they are too rich to compete on low-cost labor and too unsophisticated to compete on high-tech."

”

liberately staged openings to the outside world that allowed many East Asian countries and their infant industries to reach high-income levels, while those Latin American countries that opened quickly

found themselves trapped and unable to effectively compete in the global market.

Conclusion

The middle-income trap theory discussion is still unfolding. But as China's growth decelerates, the middle-income trap serves as a warning for what can happen if the country neglects reform of its financial and legal institutions or fails to improve the skills of its labor force.

As the Asian Development Bank economists Juzhong Zhuang and Donghyun Park observed in a 2017 article for the China Daily, "Over the past five decades, total factor productivity growth has accounted for almost 30% of economic growth for those economies that transitioned to high income status, as opposed to 10% for the economies that remained in the low- or middle-income category."

If China does transition from middle- to high-income status, how it gets there will be instructive to the other 100-plus middle-income countries hoping for the same rich fate. **1**



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Board of Governors Briefing

Highlights from the March 21 meeting

CHINESE GOVERNMENT MEETINGS

The Chairman briefed on the Chamber's meeting in February with the Shanghai Government. The meeting was organized by the Shanghai Commission of Commerce (SCOFCOM) and included the heads of 15 municipal government agencies. Deputy Secretary General Shang Yuying, who is also head of SCOFCOM, oversaw the 3 ½ hour meeting which included 11 AmCham member companies.

FOREIGN INVESTMENT LAW & U.S.-CHINA RELATIONS

The BOG discussed the current state of the U.S.-China trade negotiations and the recently passed *Foreign Investment Law*. While there has been much discussion about agricultural and energy purchases, AmCham continues to push for structural changes to be a part of the deal. For the *Foreign Investment Law*, the group believed that there were still many unanswered questions about how it would be implemented.

ETHICS COMMITTEE

The President reported that Helen Yang will join the Ethics committee. The committee chose a chair from within the group and selected Joanne Wood.

Highlights from the April 18 meeting

JOINT EUCC/GERMAN CHAMBER MEETING

Leon Tung, YRD director, reported that the Chamber's Nanjing Center broke even after three years. Membership has doubled since 2016, likewise the number of events. In the future, the Nanjing Center will emphasize briefings over breakfast events. Following initial success, the Leadership Development Forum (LDF) is expected to grow participant numbers. The Nanjing Next Summit, themed around blockchain, was cited as an example of the further potential of the Nanjing Center.

YRD OUTREACH

The Chair reported on AmCham Shanghai's recent YRD outreach efforts including meetings with the Nanjing vice mayor, Jiangsu Provincial officials, tours of Byton, and the opening of the American Village in Changxing, Zhejiang. Members were pleased with the government meetings which allowed them to meaningfully interact with government officials and discuss specific problems. The Byton tour provided members with a peek into one of the hottest startups in the auto sector.

QUARTERLY FINANCIAL UPDATE

Vice President Helen Ren provided the quarterly financial update. According to her, AmCham Shanghai met its top-line and bottom-line goals. There were a few challenges however, including membership renewals. The Board urged that AmCham Shanghai staff prioritize its programs and stressed that the Chamber should not draw too much on its reserves.

MEETING ATTENDANCE

Governors: Eric Zheng, David Basmajian, Jonathan Heimer, Helen Hu, Christine Lam (by phone), Nancy Leou, Simon Yang, Tony Acciarito, Tom Ward, Han Lin, Grace Xiao

Regrets: Eddy Chan, Stephen Shafer

Attendees: Wallace Walker, Ker Gibbs, Shilpi Biswas, Titi Baccam (notetaker)

MEETING ATTENDANCE

Governors: Eric Zheng, David Basmajian, Eddy Chan, Jonathan Heimer, Helen Hu, Christine Lam (by phone), Nancy Leou, Tom Ward, Han Lin, Grace Xiao

Regrets: Tony Acciarito, Stephen Shafer, Simon Yang

Attendees: Wallace Walker, John Van Fleet, Ker Gibbs, Helen Ren, Leon Tung, Jessica Wu, Titi Baccam (notetaker)

The AmCham Shanghai 2019 Board of Governors



Eric Zheng

Chairman of the
Board of Governors



Board Vice Chair

Eddy Chan
FedEx Express



Board Vice Chair

Christine Lam
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Han Lin
Wells Fargo



Michael Rosenthal
U.S. Green Solutions



Tom Ward
PIM China Ltd.



Grace Xiao
UCB



Simon Yang
Aptiv

2019 AmCham Ball

AmCham Shanghai members enjoyed a night of revelry at the annual AmCham Shanghai Ball on April 27 at the W Hotel. Some 350 guests danced, dined on fine foods and bid on exclusive items at both live and silent auctions.

This year's theme was the Pirates Ball, which spurred many of the guests to dress like true buccaneers of lore. The evening's entertainment included live music from the Shanghai Sheiks, resident band at the Shake Club, as well as an appearance by Sevi Ettinger, daughter of an AmCham Shanghai member and rising musical star. Dance performers and DJ Salva Mendez bookended the evening's entertainment. Pirate Michael "Arghhh" Rosenthal served as a swashbuckling captain of ceremonies.



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As in previous years, the evening's highlight was the live auction as guests outbid each other for items such as business class airplane tickets, hotel stays and a Rolling Stones framed autograph. The ball also included a silent auction.

Proceeds from the ball will be donated to Teach Future China, a UNESCO co-founded charity that organizes college students to teach music and art through an online platform to children in rural communities.

"Once again we are grateful for the generosity of our members. Since 2004, the AmCham Shanghai ball has raised over 11 million RMB for local organizations, a sign of our members' unerring commitment to the communities where they live and work," said AmCham Shanghai President Ker Gibbs.

AmCham Shanghai would like to thank our sponsors for their generous support of this event. **1**



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Event Report

U.S. AMBASSADOR TO CHINA VISITS AMCHAM SHANGHAI

On April 3, The U.S. Ambassador to China Terry Branstad visited AmCham Shanghai, where he listened to the opinions of 13 company executives from major American multinationals operating in China that represent the finance, retail, manufacturing, healthcare and technology sectors. The discussion included a wide range of issues. Most participants were optimistic about the business outlook for 2019 and indicated that Chinese authorities had remained helpful and attentive through the U.S.-China trade conflict, but they also acknowledged that many structural issues in the trade relationship and in China's domestic market need to be resolved. AmCham Shanghai expressed hope that the Trump administration can soon move beyond tariffs in dealing with Sino-U.S. trade disputes by striking a comprehensive and enforceable deal that addresses the issues highlighted by our members.



SUZHOU INDUSTRIAL PARK TAX BUREAU DISCUSSES INDIVIDUAL INCOME TAX

On March 21, the AmCham Shanghai Suzhou Center hosted Suzhou Industrial Park National Tax Bureau for a dialogue on the newly revised Individual Income Tax Law. Over 30 companies showed up the event and raised their questions about quotidian issues following the official launch of the new IIT law. Ma Yan, the deputy director of the Jinji Lake Business District, Tao Ming, and Zhang Yuan, delivered the presentation and facilitated the discussion. The speakers also updated members about changes to tax regulations after the "Two Sessions" and how to best comply with them. Over 20 questions were raised during the

Q&A session. AmCham Shanghai's Suzhou Center hosts its Finance Management Forum every month



DIVING DEEP INTO CORPORATE INNOVATION

On February 28, AmCham Shanghai's Technology and Innovation Committee hosted its "Diving Deep into Corporate Innovation" Program at the Sukhothai Shanghai. Sophie Sun from Merck China introduced Merck's strategy of tapping into their global network and their launch of Innovation Hubs in Shanghai and Guangdong to spur corporate innovation. Walmart's Andy Lei shared how Walmart is leveraging technologies to drive the evolution of the retail industry, like developing their mobile programs on WeChat. James Chou of Microsoft explained how Microsoft has empowered startups around the world through their ScaleUp Programs globally. Through his extensive experience working in the industry, Chou also provided key metrics of successful startups as well as tips for jump-starting corporate innovation projects. Dr. Shameen Prashantham, associate professor of International Business and Strategy at CEIBS, explained why, how, and where corporates partner up with startups and their potential for gains for both parties. After presenting their ideas, each speaker participated in a lively panel discussion.

SEE HER, HEAR HER, BE HER

On March 4, AmCham Shanghai hosted its WeForShe 2019 Conference with a record turnout of 430 attendees. The annual event, aimed at raising awareness of women leaders in the workforce and eroding barriers to their prog-



ress up the executive ladder, included a series of presentations, panels and afternoon leadership sessions. Shirley Leung gave the opening keynote speech.

Following Leung's speech, a handful of women executives appeared on a panel under the banner Blazing New Trails: Leading in Male-Centric Industries. The discussion commenced with an enumeration of the hurdles some had encountered when assuming leadership roles in traditionally male-led industries. The panelists included Jennifer Goforth of GM China, Diana Yang from Dell, Claudia Suessmuth-Dyckerhoff of Roche, and Ellen Sun from UTRC. The second executive panel addressed supporting female in-

clusion. The panel featured Jessie Zhang from Eaton, Jun Dong of TMall Global, Chris Stijnen from Bristol-Myers Squibb, Annabelle Vultee of EF, and Erin Meagher from 3M. The third panel focused on women in the media. The panelists included Jingqing Cai of Kering, Rory Macpherson of Brunswick, Melinda Po of Edelman, and Allen Wan from Bloomberg. Christian Lee of WeWork Asia delivered the closing remarks. **1**



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A packed house for the Monthly Member Briefing



AmCham Shanghai



Panel discussion on how AI is interrupting supply chains



Mingling members



Welcome to AmCham!



Dr. Wu Xinbo discusses U.S.-China trade relations



A scoop of former and current journalists discuss China's future



Executives sharing their insights

Month in Pictures



AmCham Shanghai welcomes jazz legend Wynton Marsalis



A troop visit



Michael Pettis shares his views on China's economy

BITS AND BOBS

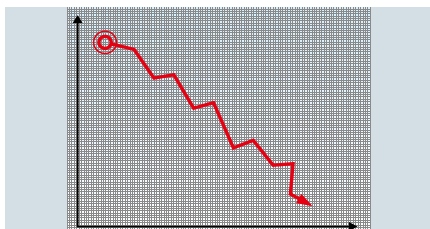


The snippets below are drawn from Weekly Briefing, the Chamber's email newsletter. In addition to business, economic, legal and trade matters, it occasionally touches on the more lighthearted, perplexing or downright crazy aspects of life in the Middle Kingdom.

Not in the mood for marriage: Betrothal rate drops for sixth year straight

The latest data from China's National Bureau of Statistics and the Ministry of Civil Affairs show that the Chinese marriage rate — the ratio of registered marriages to total population — hit a new low in 2018; at 0.72%, it was the lowest since 2013. The data also showed geographic discrepancies: marriage rates in economically developed areas are lower than in less developed inland areas. Shanghai and Zhejiang province ranked last at 0.44% and 0.59%, respectively, while Guizhou led the country at 1.11%. More Chinese are choosing to get married later. Before 2013 the largest proportion of marriages came between 20 and 24; now they're at 25 to 29.

Many of China's young no longer view marriage as an immediate necessity; instead they see the institution — and the children (or cost centers) who invariably come with it — to be an undue financial burden in today's world, according to Xinhua. During the 2016 to 2017 school year, total household expenditure on national basic education was RMB 1.9 trillion, or 2.48% of the national GDP in 2016.



▲ Putting family planners out of business

China's Sherlock doesn't have a pipe — she sniffs for drugs

This week, training began for the cloned "Sherlock Holmes of police dogs," part of an

effort to increase efficiency and decrease costs of training K-9s. The two-month-old dog from Kunming, named Kunxun, was cloned from a miracle-mutt from Puer named Huahuangma. Kunxun is already excelling in early training. The cloned hound was produced by Beijing-based Sinogene and Yunnan Agricultural University in Kunming.

Clones like Kunxun could be boon to China's policing and cloning industry. A crime-solving dog usually takes five years and to up 500,000 yuan to train. This clone should be ready to take on the criminal underworld at only 10 months old, and cloned dogs should come in at bargain prices in the future. Those involved in the project hope to mass produce drug-sniffers in 10 years.



▲ Baggage claim nightmare

Honey, I shrank the cities

A study by Tsinghua University has shown that, contrary to common perception, many of China's cities are shrinking, not growing. Between 2013 and 2016, when monitoring the intensity of night lights in more than 3,300 locations, researchers found that lights had dimmed by at least 10% in 28% of the studied cities. Today, 938 cities in China are on the decline, a number that surpasses all other nations. Especially pronounced are regions historically reliant on traditional industry and natural resources, such as Heilongjiang.

The research project was headed by Long Ying, who worried that the contraction was going unnoticed by city planners who are still drawing up plans on the assumption that urban areas will continue to expand. He said that this was often based on population and economic data provided by local authorities, much of which had been inflated, adding that

"many landscapes in the U.S. rust belt could be the future of some of China's shrinking cities." Many residents of Heilongjiang are already experiencing that future.



▲ White elephant of the future?

Bringing flash to your splash

While we strain to keep toilet stories from soiling these humble pages too frequently, we are heedful of our public service role. Thus we bring news that you may wish to inspect the wiring of any recently acquired "smart" toilet seat. After testing these seats purchased online, Shanghai's vigilant authorities learned that 40% had the potential to inflict electric shocks. Their sale is now banned. Faults that may have sparked these intelligent comfort stations into incommensurate mode included exposed wires, improper voltage and a lack of a ground wire.

Some 11 out of 28 batches of toilet seats failed the Shanghai Market Supervision Administration spot check, including Korean and U.S. buttock thrones, some priced at nearly RMB 4,000. For those flush with cash, top-of-the-range intelligent toilet seats include bidet function, white noise generation, music and heating. What the banned Shanghai seats offered was a possible bonus: lightning for your thunderbox. 1





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