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Independent Investment Strategy

THEME
November 10, 2016

Forced De-Globalization (Part II): Blame Technology Not Trade

The highly rewarding era of increased globalization and global trade is coming to an end. The U.K. will begin Brexit negotiations next year and the U.S. voted this week for a new President with an anti-trade mandate. Other European nations will also hold elections over the next year and face strong populous pressures for protectionism. Assessing whether globalization is merely cresting (with trade deals remaining in place, but no new agreements signed) or a phase of "forced de-globalization" is beginning, will be paramount for investment strategy. Anti-trade policies are not a viable solution, and politicians attempting to satisfy this populous outcry will end up inflicting pain on their economies and financial markets (as well as others around the globe). It is important for investors to remember that while governments are able to enact policies and establish rules, the economic impact of fiscal and legislative policies is ultimately dependent on a profit-maximizing private sector (which will not respond positively to protectionist developments).

- Global trade, particularly with China, has taken an unfair amount of the blame for manufacturing job losses. Technology advancements have played a major role around the world.
- The invention of new technologies can permanently displace the workforce of an entire industry. This was the case for agriculture, and now for manufacturing. Politicians cannot stop this trend.
- The labor market impact of innovations is now shifting to the service sector, a trend that will likely accelerate over the next decade. Higher-skilled jobs are better protected, but not immune.
- Fixating on anti-trade or protectionism is a mistake that will cause more economic damage and loss of more jobs than it will salvage. Developing an educated and flexible workforce is the only defense against structural under-employment caused by technological advancements.
- Investors should structurally underweight risk assets of any country implementing anti-trade policies. Conversely, structurally favor assets in economies where the government is focused on creating a flexible and dynamic workforce. This theme will be a focus in our future research reports.

Today's report is the second of a two-part **MRB *Theme Report*** on the consequences of forced de-globalization. ***Part I***[1] (published on Tuesday) outlined the major economic benefits and consequences of increased global trade. Many politicians are appealing to the populous by fixating on the negatives (largely the loss of manufacturing jobs and growing income inequality) and promoting the adoption of protectionism. However, such policies would also painfully unwind the positive forces that have led to low inflation, economic and profit growth, as well as higher asset prices over the past couple of decades.

The era of increased globalization is coming to an end

Today's report (***Part II***) notes that increased global trade has taken an unfair amount of the blame for the chronic displacement of labor among under-educated and low-skilled workers. This criticism has largely emerged from a strong focus on the 2000-2007 period,

[1] **MRB *Theme Report***, "*Forced De-Globalization (Part I): Benefits And Costs Of Trade*", November 8, 2016

where the pace of trade-driven competition in the global manufacturing industry was indeed rapid. But from a big-picture perspective, technological advancements have played an important, if not the dominant, role over the past 40 years. This is a critical point, as failure by politicians to acknowledge technological innovation as a driving force could result in disastrous policy mistakes. The right policies are those that help global economies "catch up" to the pace of technological change, rather than those that force economies to take a "step back" by boosting uncompetitive industries at the expense of other sectors of the economy.

Global trade is a net positive in the aggregate for all economies that participate but (left to its own devices) the benefits are not equitably dispersed. Therefore, policy needs to focus on sustainably redistributing at least some of these gains in order to generate a win/win outcome. Fixating on anti-trade or protectionism is a mistake that will cause more economic damage and loss of more jobs than it will create. The risk/reward of anti-trade policies is even worse when one considers that modern technology rather than trade has been responsible for displacing many of these jobs (i.e. they will not be restored by protectionism).

Global trade has been blamed for manufacturing job losses, but...

...technological innovation is also responsible

Moreover, the loss of jobs experienced due to technological innovation is merely beginning. So far, the major target has been the global manufacturing sector. However, this is spreading to the service sector. Recent innovation threatens to displace a massive number of routine or lower-skilled service-related jobs over the next decade. As technology improves, higher-skilled jobs will be vulnerable. Although this will dramatically bolster corporate profit margins of companies that can adopt such technologies (rather than those made redundant), it presents a massive political issue as it will fuel even more social unrest and pressure for radical change.

Jobs lost through technological innovation are permanently gone. It is not practical or even sustainable to limit the adoption of new technologies in an economy to prevent this trend. Instead, the only defense is to build an educated and flexible workforce that can adapt more easily to new industries as their existing jobs become obsolete. Building this workforce requires material upfront funding, but the economic and political cost of not doing so will be enormous over the long haul (a taste of which will be experienced in the U.K. and potentially soon in the U.S.). Also, a skilled and dynamic workforce will also help create new industries, related jobs and wealth for the nation. Thus, education and sustainable competitiveness, rather than an anti-trade stance, should be the focal point of policy discussions. This is not currently the case in the U.S., U.K. and other parts of Europe.

Manufacturing Job Losses: Source Of Political Pressure

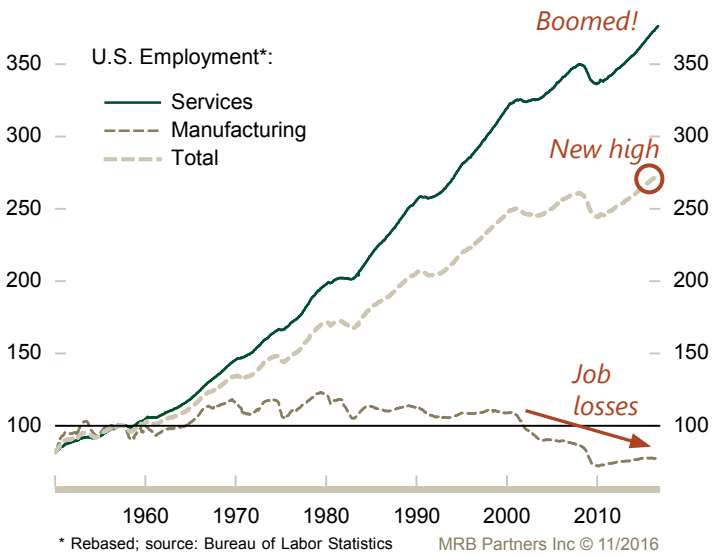
The global shift in employment from manufacturing to services has been underway for decades. Indeed, the U.S. service sector has been adding jobs at a faster clip since the 1950s, although manufacturers managed to gradually add positions until the

late-1960 (**chart 1**). Thereafter, manufacturing employment essentially stalled and began to oscillate around a relatively flat trend that would prevail for more than three decades. The all-time high in U.S. manufacturing employment was in June 1979, although headcount did not slip materially until the turn of the century.

That said, manufacturing headcount was cut by 33% during the past two recessions and never recovered materially throughout the subsequent economic expansions. Instead, employment growth has been largely reliant on the service sector. A similar trend can be seen in most other developed economies, where the data is available (**chart 2**).

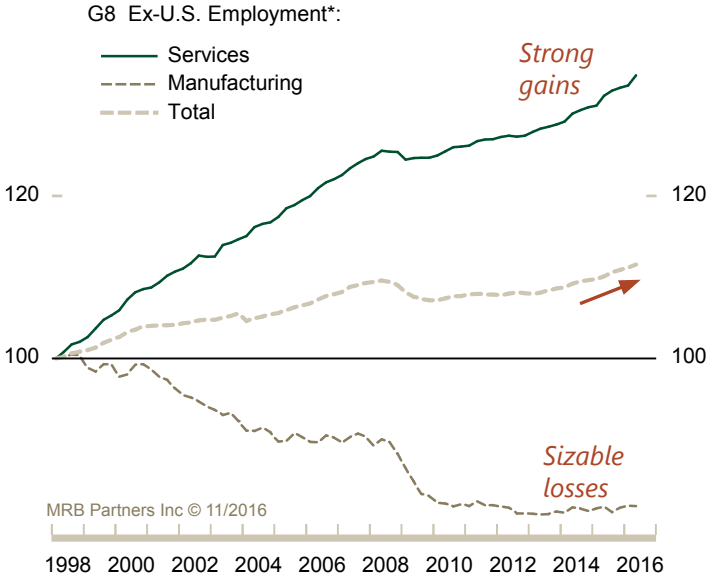
Final Word: *The decline in developed world manufacturing jobs, which were once well paid, has been a major source of social unrest and political pressure.*

Chart 1 **U.S. Jobs: Driven By Services While Manufacturing Erodes**



* Rebased; source: Bureau of Labor Statistics MRB Partners Inc © 11/2016

Chart 2 **Similar Divergence In Jobs Within The Rest of The Developed World**



* Rebased; includes Canada, France, Germany, Italy, Japan, Spain, U.K.; source: national sources

China Impact Is Exaggerated

Inexpensive imports from low-wage nations, especially China, has been blamed for hurting manufacturers and causing job losses in the U.S. and other developed economies. There is some merit to this as China has used its comparative advantage to build a global manufacturing hub. Although increased global trade has also benefited exporters in the developed world, it has presented a threat for industries with comparative disadvantages, including manufacturing (discussed in ***Part I***). U.S. and European Union imports from China have surged since 2001 (i.e. when China joined the WTO), which coincides with a sharp drop in manufacturing employment in these economies (**chart 3**).

Nonetheless, the job losses attributed to increased global trade has been grossly exaggerated. Imports from Asia have increased over the past couple decades in absolute terms, but only modestly as a percentage of U.S. or European consumption. Imports from China have been much more dramatic, but China's success has come largely at the expense of exporters in the rest of Asia (**chart 4**). About 40% of total U.S. imports come from Asia, which is about the same as in 1995 when the WTO was formed. The difference

China's impact is exaggerated

is that China now accounts for 22% of U.S. imports, up 15 percentage points from two decades ago. Conversely, U.S. imports coming from other Asian nations has fallen 18 percentage points to 18% over this period. A similar picture can be observed with European Union imports.

Final Word: *China has gained tremendously over the past 15-20 years from global trade. However, a significant portion of this has been from taking market share away from other Asian exporters, rather than merely displacing local U.S. and European manufacturers. While perhaps convenient, it is inaccurate to place the blame solely on China (or emerging markets in general) for the loss of manufacturing jobs in the developed world. Another powerful force, namely technology, has also been at work (see below).*

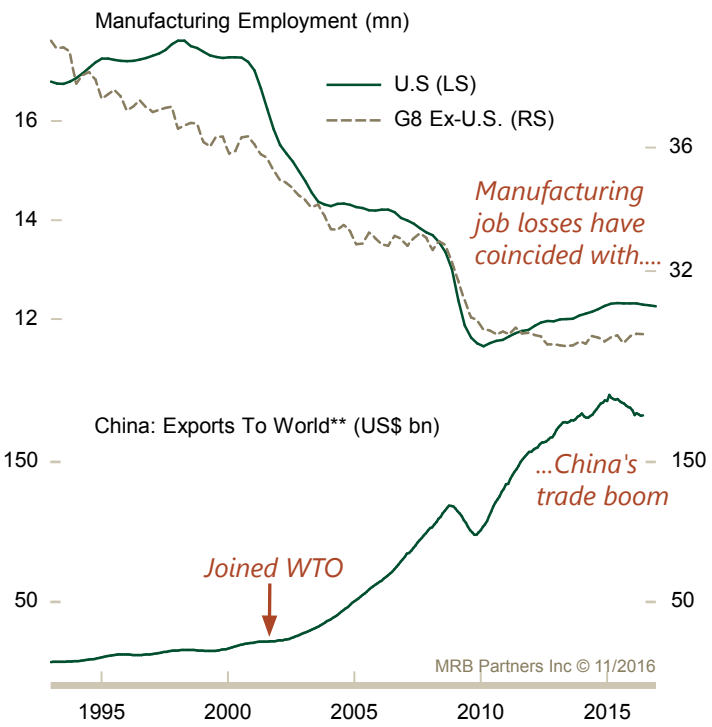
Economic Impact Of Technology

The technology revolution began as early as the 1950s, but accelerated with the introduction of personal computers in the 1970s, and then again with the launch of the internet in the 1990s. Over the past 20-years, technological advancements have continued at a rapid pace, with applications penetrating and altering nearly all business practices. This has had a profound impact on labor market trends, but has been underappreciated by most politicians.

Manufacturing Sector

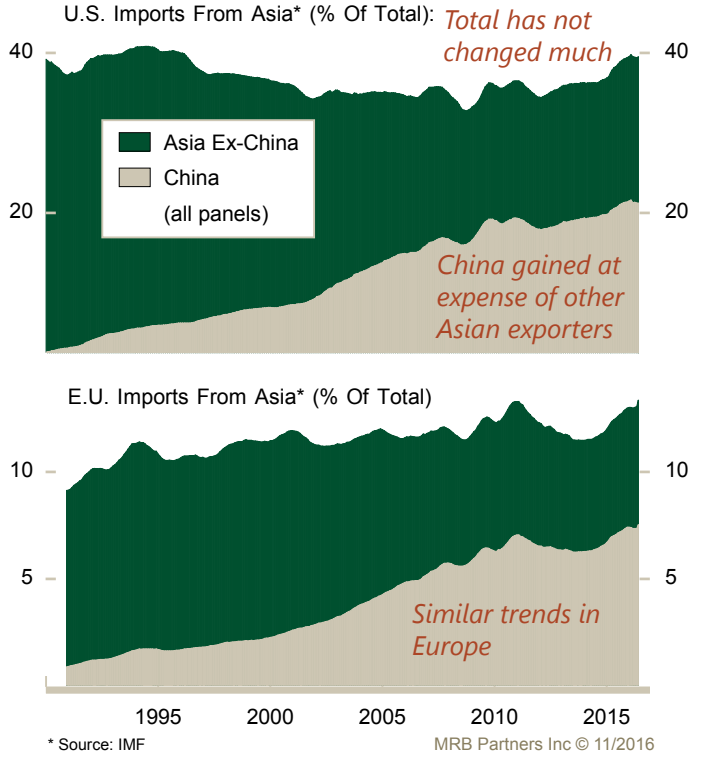
Technological enhancements have (so far) had the most dramatic impact on displacing low-skilled manufacturing jobs. The dominant driving force has been that manufacturers in the U.S. and other developed nations have changed how they produce goods, utilizing computers and robotics to enable machines to perform many routine tasks that once required human labor. Many businesses have even adopted some version of "lights off" manufacturing. **Chart 5** shows that capital

Chart 3 Has China Killed Manufacturing Elsewhere?



* Includes Canada, France, Germany, Italy, Japan, Spain, U.K., and U.S.; source: national sources
** Smoothed; source: IMF

Chart 4 China's Impact Has Been Modest On U.S. Or European Manufacturers

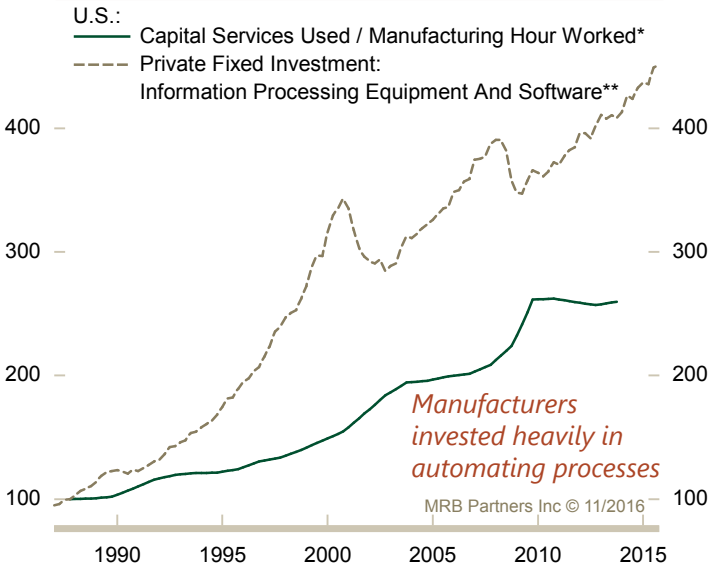


* Source: IMF

services used per hour worked in U.S. manufacturing has more than doubled over the past three decades[2]. Total U.S. business sector investment in information processing equipment and software has increased more than fourfold over the same period.

This increased technology has made manufacturers more productive (**chart 6**). Although manufacturing sector productivity has slowed in recent years, it is 2.5 times greater than it was 30 years ago. U.S. manufacturing output has also risen during this period, but only by 1.8 times. The gap means that fewer workers are now needed to produce the manufacturing output demanded. This has been a major cause of job losses within the sector. Manufacturing output kept up with productivity until about 2000, which meant that the global economy was able to absorb the larger amount of goods produced, but that U.S. manufacturers did not require more employees. Likewise, U.S. manufacturing sector employment stalled. Since 2000, a major divergence has built between output and productivity. Manufacturing workers are now able to produce about 60% more per hour than they did at the turn of the century, yet output has remained largely unchanged. In turn, fewer manufacturing employees have been required. Most other developed economies show similar trends.

Chart 5 The Adoption of New Technologies In Manufacturing Has Been Dramatic



* Rebased; source: Bureau of Labor Statistics
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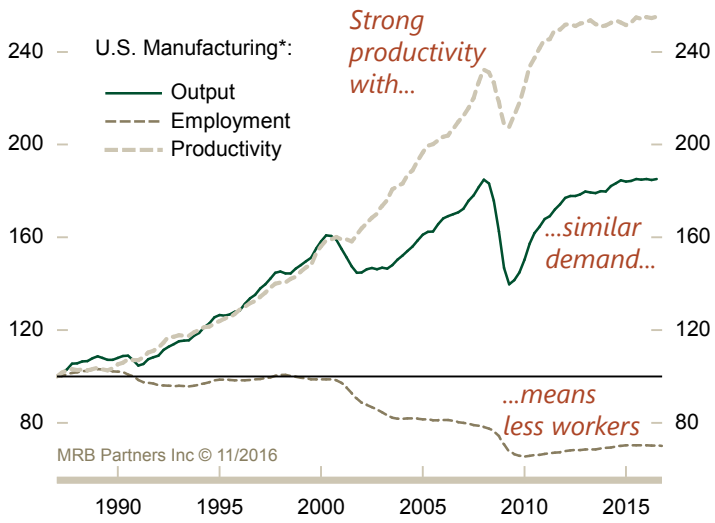
Chart 6 Increased Manufacturing Productivity Has Displaced Workers



* Rebased; source: Bureau of Labor Statistics

China's inclusion in the WTO generally coincided with the fall in manufacturing employment. China has certainly had an impact by taking market share, which has curbed the growth in manufacturing output in the developed world. However, the larger force has arguably been technology-driven productivity gains among U.S. and European manufacturers. Global competitive forces may have accelerated the adoption of technology, but this 40-year trend had been well established by the turn of the century. Regardless of the catalyst, new technology has now been added to manufacturing processes, making many jobs obsolete.

Technology has had a massive impact on manufacturing

Likewise, the number of manufacturing jobs are now contracting in most economies, including more recently in China (**chart 7**). Thus, it is not just that developed nations are losing market share to their emerging markets counterparts. Productivity enhancing

[2] Note: series accounts for the depreciation of capital assets over time.

technology has increasingly penetrated manufacturing across the globe in recent years, reducing the need for lower-skilled laborers everywhere.

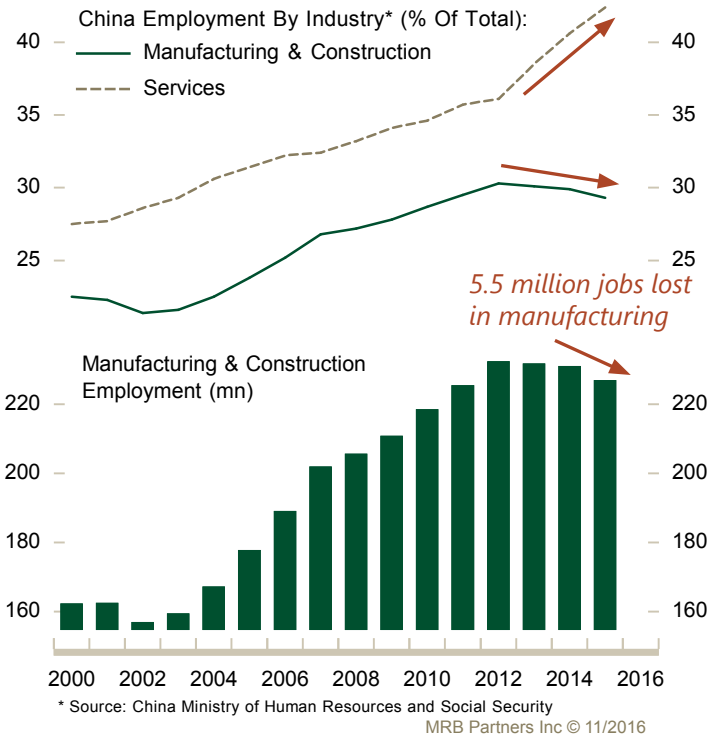
Industry studies have also shown that while manufacturers have been cutting under-educated workers, they have been adding educated labor. The reason is that increased technology in manufacturing processes alleviate the need for many unskilled workers to perform routine tasks. However, a few higher-skilled workers are required to operate the machines that automate those tasks. Thus, the displacement of under-educated workers experienced in the aggregate economy (**chart 8**) is also occurring within the manufacturing sector.

Aside from a productivity boost that reduces the need for as many manufacturing workers, technology has also fundamentally changed the items the world consumes, reducing the proportion that is attributed to traditional manufactured goods. Services have accounted for an increasing proportion of the U.S. consumption basket over the past few decades (**chart 9**). Although global households now purchased more computers and cell phones, many other items and enhancements have been reduced to mere software or app updates. For example, calculators, novels/books (including encyclopedias and phone books), newspapers, maps, music CDs, movie DVDs, etc. are all now either downloaded or streamed on computers or smart devices. Likewise, an increasing number of automobile, machinery and appliance updates are software based. There is no longer the need for manufacturing facilities to produce these products or distribution channels to ship them. In turn, these jobs are permanently lost.

Distribution And Warehousing

The displacement of under-educated and low-skilled labor caused by technological innovation goes well beyond manufacturing. Technology has dramatically

Chart 7 China: Similar Labor Trends Now Beginning In China



* Source: China Ministry of Human Resources and Social Security

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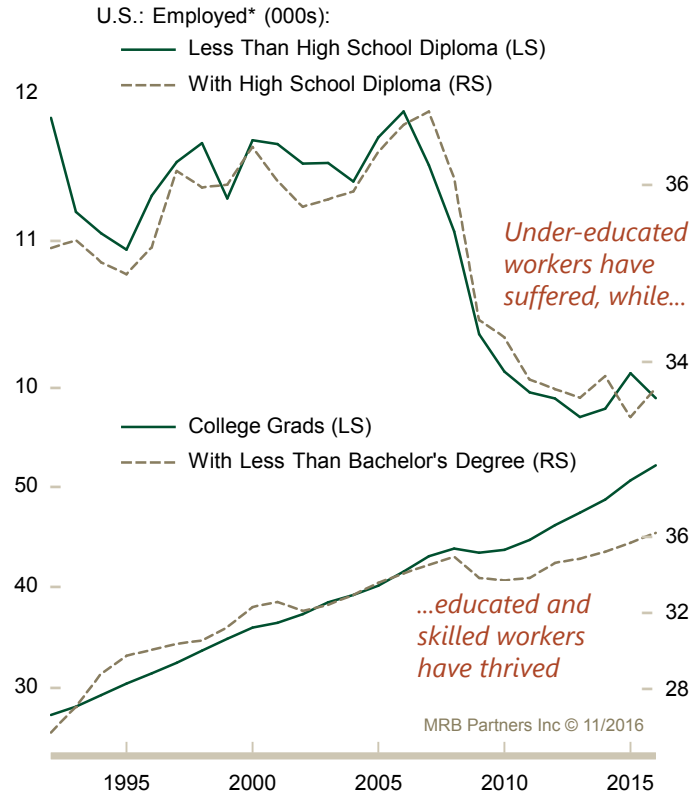
Chart 8 U.S.: Education Determines Job Prospects



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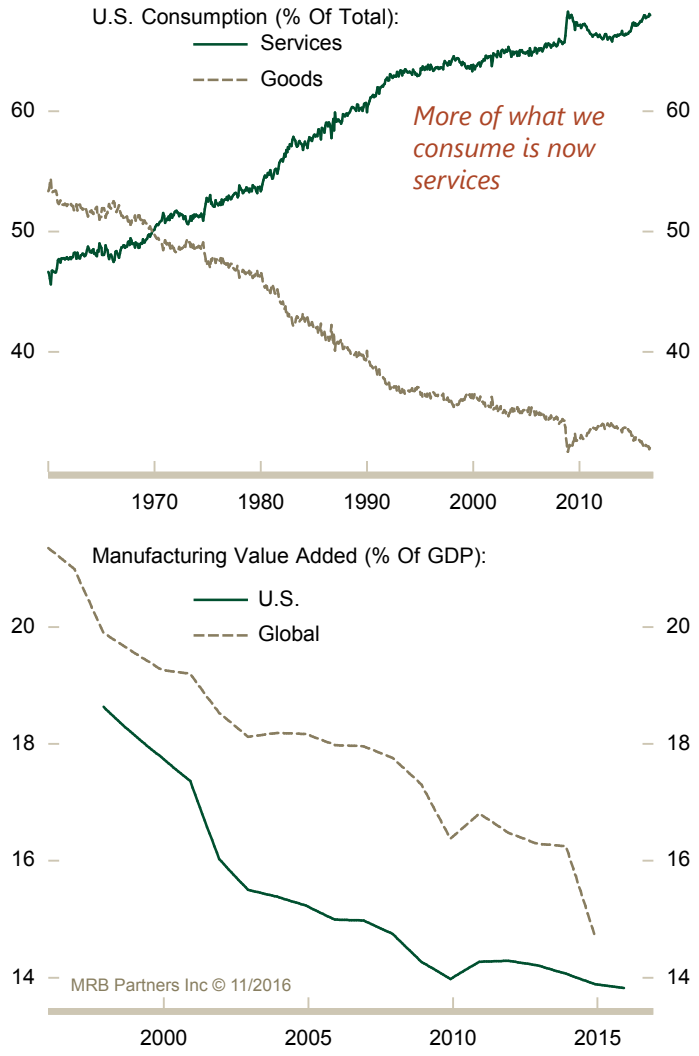
* 25 years and over; source: Bureau of Labor Statistics

enhanced logistics, the distribution of goods, and just-in-time inventory management. This reduces the need for labor in many of these functions. It also decreases the demand for manufacturing that was historically required for chronic overstocking, as well as the production of items for transporting and warehousing goods (including vehicles, machinery, shipping containers, stock shelves, etc.). Moreover, many traditional brick and mortar stores have closed due to the Amazon/Alibaba effect, causing additional job losses. In turn, related lower-skilled manufacturing, warehousing and distribution jobs have been cut, benefiting corporate profit margins and creating disinflation.

Chart 9 **Manufacturing Now Accounts For A Smaller Portion Of Consumption**



Service Sector

Technology has also increasingly penetrated the service sector, a trend that will likely accelerate over the next decade. For example, technology has already removed the need for most telephone operators and dispatch personnel, as well as many mail couriers and finance professionals (including bank tellers, traders, etc.). It is also increasingly displacing checkout staff at gas stations, grocery stores, pharmacies and fast food chain. Moreover, the global consolidation of what was once large numbers of local businesses also removes redundancies and labor. This includes online retailing (including Amazon and Alibaba), hospitality sites that replace travel agent and hotel demand (including companies like Priceline and Airbnb), taxis and car services (including Uber), an aggregating of global IT with innovations like cloud computing.

Many of these trends have much further to run in terms of saturating the service sector in a way that has occurred in global manufacturing. Indeed, the force of technology displacing service-based jobs is merely beginning. It will present a much larger threat to jobs for under-educated and low-skilled workers over the next decade than will be experienced heading forward in the manufacturing sector.

Technology`s impact on service sector jobs has merely begun...

...this will be a huge theme over the next decade

Future Disruptions Caused By Technology

Innovation continues to progress at a rapid pace, making it very difficult to assess the full scope of potential job displacement. However, there are a few budding technologies that could have dramatic ramifications, including:

- **Driverless Cars And Drones:** The invent of these vehicles has the potential to make drivers virtually obsolete for personal transportation, trucking distribution, and delivery services. The efficiencies obtained could also reduce aggregate vehicle demand, causing another headwind for manufacturing and related jobs.

- **3D Printing:** The invent of 3D printing could further reduce the need for manufacturing and distributing goods. As local printer shops form or eventually 3D printers become commonplace in businesses and homes, a wide range of products can be created on the spot, by merely downloading specs. This has potential to cause additional job losses in manufacturing as well as distribution channels, much like the has already occurred for items that can be utilized in software or online form.

- **Virtual Reality:** This technology has countless applications that go well beyond the gaming industry. It is still early to determine how quickly virtual reality will be adopted, but it could meaningfully impact nearly all industries, including military, education, health care, and entertainment. This will undoubtedly create many new skilled jobs, while removing others (most likely low-skilled workers).

Technology can permanently displace jobs of an entire industry...

...just like farming

Final Word: *The technology revolution has been a massive and underappreciated force in displacing under-educated and low-skilled labor. The largest impact over the past 20-year has been on manufacturing. However, technological innovations are now replacing many service sector jobs, a trend that will likely accelerate over the next decade. Also, as technology advances, job losses will occur in higher-skilled positions.*

Manufacturing Is Following The Path Of Agriculture

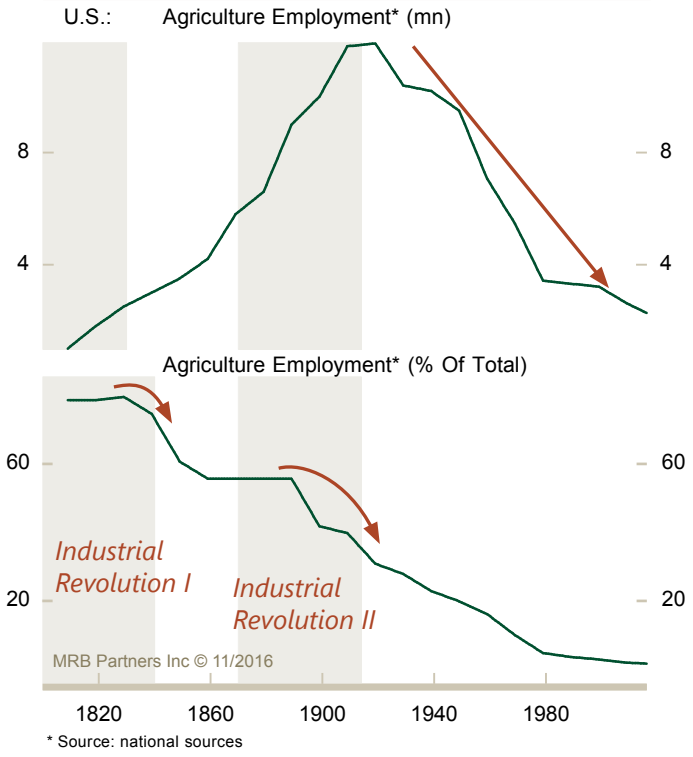
There is little that policymakers can ultimately do about the shrinking of their domestic manufacturing sector in response to new technologies. In many ways, the analogy is with the decline of agricultural jobs in the 19th and particularly 20th century (**chart 10**). The Industrial Revolution (1760 to sometime between 1820 and 1840) and the Second Industrial Revolution (1870-1914) both ushered in an era of rapid innovation, new machinery and advanced equipment. Adoption of these new technologies (during and in the years following both industrial revolutions) along with improved crop engineering, allowed farmers to dramatically increase yields per worker. This contributed to a massive reduction in the size of the agricultural labor force, much of which was eventually absorbed by manufacturing hubs in the major cities.

In theory, governments could restrict or heavily tax and deter the use of these technologies, and close the nation to global innovation to protect workers in a specific industry from becoming outdated. Obviously, this is an extreme approach that would be impractical and hard to implement. Politicians are not currently entertaining such initiatives, although

China has adopted isolationist policies in the past (due to other national objectives), which effectively limited outside influences and the adoption of newly developed innovations. The outcome was not positive. Slowing the adoption of technology effectively curtailed the pace of domestic development and weakens a nation's competitiveness, as other countries will not follow suit.

Final Word: *The invention of new technologies can permanently displace the workforce of an entire industry. This was the case for agriculture in the 1800s and 1900s, and for manufacturing more recently. There is little policymakers can do to prevent this trend from occurring.*

Chart 10 **Manufacturing Is Fading Like Agriculture**



* Source: national sources

Policy Solution: What Can Be Done?

Employment redundancies caused by technological innovation presents a major policy challenge. Governments cannot simply set policies to defensively protect against this type of labor displacement. At the same time, the speed of the innovation and breadth of the industries being impacted, makes it difficult to predict and manage even if such policies existed.

Instead, developing a flexible workforce that can adapt easily is the only credible solution to reduce the potential for chronic labor market displacement. ***Part I*** of this report outlined the case for a substantial fiscal initiative to retool and better educate the domestic workforce, lifting the country up the global value chain. This helps protect against foreign competition, as well as new technologies that make employees redundant. As one example, the non-English speaking world has tried to make sure that their kids have exposure to English because it is so dominant in global business. This has been happening for decades. Yet, few people in developed nations are talking about doing the same for the other dominant business language that is emerging, namely coding.

Protectionism will not restore obsolete jobs

Again, we acknowledge that retraining and educating a workforce is an expensive proposition with notable upfront costs, especially for a country like the U.S. with a sizable under-educated population. However, leaving this part of the population to struggle is not sustainable over the long haul. Social unrest will build and policymakers will be pushed into radical change, as the U.K. and now the U.S. have experienced.

The funding for retraining will need to come from increased taxation or government debt (i.e. taxes on future generations). Fortunately, much like increased global trade,

technological innovation provided a windfall gain for a segment of the population in developed economies, namely capital owners and skilled workers. While the pace of gains derived from global trade have slowed substantially, outsized returns are still being generated in the tech sector. Although perhaps politically unpalatable, higher taxation of this windfall gain is appropriate. Capital owners and skilled workers will still benefit more than others, but some of the wealth can be taxed for retraining purposes.

The irony is that by the time the public and politicians typically realize that the gains being generated in a sector are the flipside of a growing imbalance, it is usually far too late to tax adequately to pay for the cleanup/repair (as seen with the financial sector and global trade). We expect the same will be true this time around with the technology sector.

Final Word: *Developed nations need to focus on building an educated and flexible workforce. This is the only defense against structural under-employment caused by technological advancements.*

Nations need to develop educated and flexible work forces...

...this is the only defense against structured under-employment from technology

Market Implications

Part I of this report outlined the economic and financial market ramifications of a nation attempting to actively pull back from global trade. Briefly, such actions will weaken its economy, structurally eroding the value of its domestic assets and currency, while triggering global backlash. Protectionist policies would not salvage many jobs, and instead cause high burdens to the domestic consumer and/or taxpayer. This is especially true since part of the blame for the loss of low-skilled jobs has nothing to do with global trade, but rather technological innovation.

Final Word: *We will look to structurally underweight and/or short risk assets of any country implementing anti-trade policies. Conversely, investors should structurally favor assets in economies where the government is instead focused on developing an educated and flexible workforce. This theme will be a focus in our future research reports.*

Phillip Colmar

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