

What's Ahead for 2018?

Rosy outlook, transformation in the forecast.

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The

mood today within the business world—including the broadly defined technology sector—is buoyant compared to this time last year. Indeed, all signs are pointing in the direction of strong economic growth, at least for the near term. While some economists and business leaders see a possible slowdown in the rate of growth for the U.S. economy on the horizon for mid-2018, others suggest the period of sustained economic growth—now in its 101st month—will continue for at least another year or more and possibly break the record of the longest period of uninterrupted growth since the 1960s.

The backdrop for the rosy economic outlook is the accelerating pace of digital transformation, which will play out over years, not months. However, 2018 is expected to be a pivotal year as a number of emerging technologies begin to enter the mainstream. This includes the rapid growth of Internet of Things (IoT) applications in both the consumer and industrial sectors and the treasure trove of Big Data they will produce; the integration of artificial-intelligence technologies, such as machine learning, deep learning, and natural language processing, embedded in a growing number of business applications including supply chain management; as well as other innovations such as augmented and virtual reality applications that are being hyped as game changers for a variety of consumer and business applications.

The implications of this new breed of technologies on the workplace is expected to be profound, perhaps as significant as the semiconductor has been over the last 60 years. Mass adoption of AI, IoT, cloud computing, and AR and VR have the potential to reignite productivity growth and reduce costs. New skill sets will be required to develop the apps and manage the automated systems that will run many aspects of business.

Then there's the realm of politics. As of early December, the prospects of a major U.S. tax overhaul look promising, which will buoy business sentiment and economic growth. If the bill doesn't pass, it will likely negatively impact business sentiment and potentially dampen the 2018 business outlook.

There are other, more unsettling and potentially dangerous political factors that could unfold. These include a U.S. withdrawal from NAFTA, unseen consequences for Europe of Britain's 2019 exit from the European Union, a more nationalist political direction in Germany, and the implications of the new power structure in China for trade and security in the region. And then there's the worst-case scenario of nuclear war on the Korean peninsula. While potentially tectonic in their impact, the possibility of these things needs to be considered.

The backdrop for 2018

For now, the global economy is chugging along at a healthy 3.6% growth rate this year, with a forecast of 3.7% growth in 2018, according to the [International Monetary Fund](#). The U.S. economy posted a 3.3% GDP growth rate in the third quarter and is expected to post an overall annual GDP growth of 2.2% for the year, with perhaps some modest upside in 2018, according to the IMF. The two emerging economic giants, China and India, are expected to post 6.8% and 6.7% growth in 2017, respectively, and 6.5% and 7.4% in 2018, according to the IMF. The major economies of Europe are forecast to collectively post a 2.1% growth rate in 2017 and 1.9% in 2018. (See Figure 1.)

Figure 1 Global Economic Outlook for 2017 and 2018
(Percent change)

	2016	Projections	
		2017	2018
World Output	3.2	3.6	3.7
Advanced Economies	1.7	2.2	2.0
United States	1.5	2.2	2.3
Euro Area	1.8	2.1	1.9
Germany	1.9	2.0	1.8
France	1.2	1.6	1.8
Italy	0.9	1.5	1.1
Spain	3.2	3.1	2.5
Japan ²	1.0	1.5	0.7
United Kingdom	1.8	1.7	1.5
Canada	1.5	3.0	2.1
Other Advanced Economies ³	2.2	2.6	2.5
Emerging Market and Developing Economies	4.3	4.6	4.9
Commonwealth of Independent States	0.4	2.1	2.1
Russia	-0.2	1.8	1.6
Excluding Russia	1.9	2.9	3.3
Emerging and Developing Asia	6.4	6.5	6.5
China	6.7	6.8	6.5
India ⁴	7.1	6.7	7.4
ASEAN-5 ⁵	4.9	5.2	5.2
Emerging and Developing Europe	3.1	4.5	3.5
Latin America and the Caribbean	-0.9	1.2	1.9
Brazil	-3.6	0.7	1.5
Mexico	2.3	2.1	1.9
Middle East, North Africa, Afghanistan, and Pakistan	5.0	2.6	3.5
Saudi Arabia	1.7	0.1	1.1
Sub-Saharan Africa	1.4	2.6	3.4
Nigeria	-1.6	0.8	1.9
South Africa	0.3	0.7	1.1

Source: International Monetary Fund, October 2017

Other forecasters are a bit more sanguine. For example, Goldman Sachs is projecting broad-based global GDP growth of 4% in 2018, which is “meaningfully above consensus.” “For the first time since 2010, the world

economy is outperforming most predictions, and we expect this strength to continue,” the company reports.

Goldman’s assessment reflects the general mood for the domestic U.S. market, where business confidence has been positively giddy since the election of Donald Trump as president. This exuberance is captured most dramatically by the Dow Jones Stock Index, which has climbed over 6,000 points since Trump’s election and hit yet another record of 24,300 on November 30. The S&P 500 and Nasdaq are approaching record highs as well.

The upbeat mood is reflected in consumer sentiment, driven in large part by optimism about improving economic conditions and job prospects. The U.S. unemployment rate has been on a downward slide since 2010 and in October stood at 4.1%. The closely watched University of Michigan [Consumer Sentiment Index](#) has been setting decade-long record highs for much of the year, with a peak of 100.7 in October. The Index signals a likely gain of 2.7% in real consumption expenditures in 2018, as well as very healthy holiday shopping this month, according to the latest report, which is good news for consumer electronics manufacturers.

Higher consumer and business confidence feeds on itself. According to the [Institute of Supply Management’s November survey](#) of purchasing managers, sentiment about economic activity in the manufacturing sector remains high even though the ISM’s October purchasing managers index (PMI) of 58.7% was down slightly from the September figure of 60.8. This is very positive considering the devastation caused by the series of hurricanes that hit the U.S. in August, September, and October. “Business continues to be better than expected,” according to one transportation industry survey participant.

Of course, strong business demand puts pressure on supply causing price increases and shortage of some goods. The ISM reported that raw material prices were up in October for the 20th consecutive month, including DRAM, aluminum and some plastics. Commodities in short supply include capacitors, electric components, integrated circuits, and some plastics. (See Figure 2.)

Figure 2. ISM October stats suggest continued growth for U.S. manufacturing sector

MANUFACTURING AT A GLANCE November 2017						
Index	Series Index Nov	Series Index Oct	Percentage Point Change	Direction	Rate of Change	Trend* (Months)
PMI®	58.2	58.7	-0.5	Growing	Slower	15
New Orders	64.0	63.4	+0.6	Growing	Faster	15
Production	63.9	61.0	+2.9	Growing	Faster	15
Employment	59.7	59.8	-0.1	Growing	Slower	14
Supplier Deliveries	56.5	61.4	-4.9	Slowing	Slower	19
Inventories	47.0	48.0	-1.0	Contracting	Faster	2
Customers' Inventories	45.5	43.5	+2.0	Too Low	Slower	5
Prices	65.5	68.5	-3.0	Increasing	Slower	21
Backlog of Orders	55.0	55.0	0.0	Growing	Same	10
New Export Orders	56.0	56.5	-0.5	Growing	Slower	21
Imports	54.5	54.0	+0.5	Growing	Faster	10
OVERALL ECONOMY				Growing	Slower	102
Manufacturing Sector				Growing	Slower	15

Manufacturing ISM® Report On Business® data is seasonally adjusted for the New Orders, Production, Employment and Supplier Deliveries Indexes.

*Number of months moving in current direction.

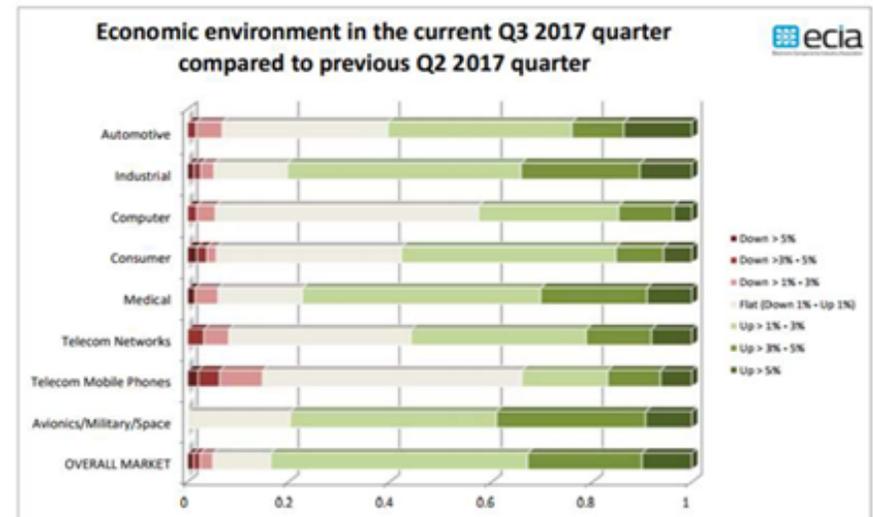
Source: Institute for Supply Management

What's driving the growth?

The general sentiment within the U.S. electronics industry echoes the general upbeat mood of solid business growth. Based on interviews conducted with industry executives, the vast majority expect revenue growth through 2018 and some project continued growth into 2019 and 2020, albeit with the occasional change of speed.

“Everything is firing on all cylinders,” one industry executive remarked. This sanguine perspective is reflected in survey data of members collected by the Electronic Components Industry Association in October, which captures year-on-year growth in economic activity by industry. In all industries but two, the majority of respondents reported increased activity. (See Figure 3.)

Figure 3. Broad-based growth in Q3 2017 of suppliers by industry



Source: ECIA

But what's driving the expectation of continued and sustained business expansion? One answer is the Trump effect. Specifically, the business-friendly attitude of the Trump administration and the Republican control of both Congress and the White House.

Another factor is the widely held belief that production growth will accelerate across virtually all industries and all regions in part because everything everywhere is on a path to become more digital and connected: smart cities, smart cars, smart factories, smart clothing, and so on. There's broad-based buy-in to the idea that technology transformation is accelerating and requires the manufacture of new infrastructure, which underpins the sentiment of continued strong growth in industrial production.

Indeed, many of the technologies on which the transformation rest are growing at double-digit rates; for example, cloud computing, IoT, robotics and artificial intelligence. Market researcher [IHS Markit](#) forecasts the IoT market will post growth of 15% a year for the next decade or more, impacting nearly all market areas. The industrial IoT sector will post growth of 23% a year through 2021. Similarly, the forecast growth rate of [cloud computing](#) for 2017 and 2018 is in the high teens. IDC projected earlier this year that total spending on IT infrastructure products—server, enterprise storage, and Ethernet switches—for deployment in cloud environments will increase 15.3% in 2017 to \$41.7 billion.

IT infrastructure spending is a vital enabler of digital, connected business opportunities. For instance, locating compute power at the edge of the network reduces latency in communications which enables ultra-fast communication. [MarketstoMarkets](#) forecasts edge computing spending worldwide will grow at a 35% annual rate for the next five years to nearly \$7 billion in 2022.

There's a knock-on effect for many industries of the introduction of edge computing and advances in cloud computing in general. For example,

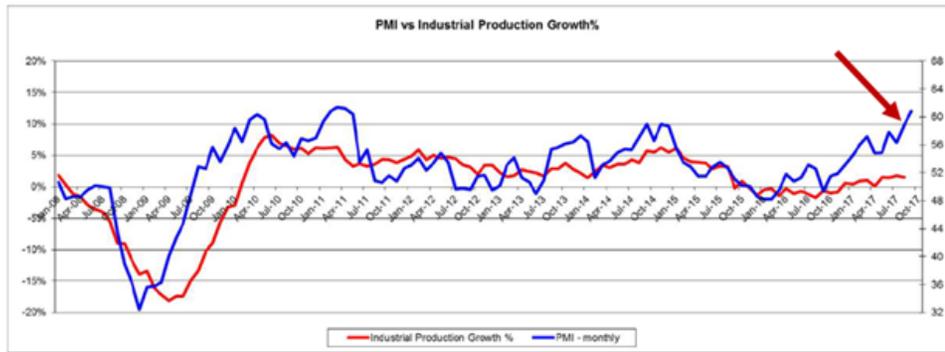
the growth of the autonomous vehicle market is dependent on network equipment companies and communications service providers investing in edge compute infrastructure. As the network infrastructure lowers data latency, car-to-car and car-to-infrastructure communication improves, making autonomous driving safer. This in turn accelerates the pace of growth in the autonomous vehicle market. One sign of this acceleration is the willingness of states to approve testing of fully autonomous cars on public roads, which will accelerate the commercialization of this brave new world of driverless transportation. A recent case in point is the [California Department of Motor Vehicles](#), which announced in October it would allow driverless vehicles—with no human inside—to be tested on public roads in 2018.

[Nvidia's CEO Jensen Huang](#) in late October said it will take no more than four years to have fully autonomous cars on the road. In the auto industry, four years is a blink of the eye in terms of the development of new vehicles. And companies like Nvidia, which produces semiconductors for artificial intelligence applications that are used in autonomous vehicles, are members of the supply chain that will benefit from the introduction of driverless cars.

The autonomous vehicle market is forecast to grow at an annual 40% rate between 2017 and 2027, according to Research and Markets.

Of course, not everyone agrees that industry sentiment about growth is on the mark. Some point to the growing gap between the PMI and U.S. industrial production growth, which has been increasing over the course of the year. (See Figure 4.) They warn that this divergence could be a case of over exuberance on the part of purchasing managers who are disconnected from the reality of industrial production. If the gap does not start to close, the sentiment may be an indicator of a bubble in the hot economy, according to some industry insiders.

Figure 4. Is the divergence of the PMI and industrial production growth real or a bubble?



Source: Allied Electronics

Managing the future

Bubble or not, digital transformation is an important contributor of economic growth and the general mood of business optimism, with implications for the workplace now. [Forrester Research](#) expects “digital employees” to start entering the white-collar workforce in 2018. Today, nearly half of all jobs face losses to automation from software robots that perform increasingly complex tasks, according to Forrester. These bots—think Alexa or Siri—will have the tools to predict customer needs, provide customer service, and improve the customer experience. By 2020, according to Forrester, humans will work alongside software robots, and leaders will manage workforces that are part robot and part human.

As AI technologies advance, the categories of jobs performed by humans that will be at risk is likely to expand. For instance, diagnosing medical ailments and diseases, performing legal research, and managing procurement and supply chain functions. According to a [survey report by McKinsey & Company](#), chief procurement officers believe adopting digital

procurement practices could deliver significant business value, including the potential to increase annual savings by 40% and spend 30-to-50% less time on transactional sourcing.

Such a development would create supply chain nirvana that delivers visibility across the extended supply chain, according to McKinsey. “Imagine a procurement team so deeply connected to every tier of its supply base that it has access to all relevant data on cost structures, supply availability, lead times, financial and operational risks, and service and quality metrics. This procurement team would be well-positioned to negotiate the ‘right’ prices, instantaneously adapt its own planning, or switch to alternative suppliers in the event of supply shortages.”

This is the idealized future state, but current forecasting techniques are still based large on projections of historical supply and demand data and sentiment indices. For now, the focus for many forward-looking procurement organizations is to start to apply AI tools to improve the forecasting accuracy of demand for finished goods, and material requirements, prices and availability.

Of course, AI tools have a distinct advantage over humans because they can access and analyze vast quantities of relevant data very quickly, including product introductions, supplier and distribution inventory, weather, seasonality, changes in customer perception, advertising campaigns, local labor strikes, and so on. IoT and cloud computing are enabling technologies for generating the data to track production, inventory levels, and real-time transit of supplies and end products. The cloud provides the analytical muscle to make sense of the data.

As AI, IoT, and cloud continue to rapidly infiltrate procurement and supply chains organizations, there will be winners and losers. Companies that invest early will likely attain a competitive advantage, so there’s an incentive to invest now in the tools and applications.

The challenge for many organizations is the lack of skills to evaluate and manage the new tools. In 2018, supply chain and procurement leaders will need to focus on recruiting competent technical staff, with the requisite AI skills and experience. Of course, they will be competing not only against their traditional rivals but with their counterparts in many other industries who are also looking for AI expertise.

The elephant in the room

The political climate around the world shifted significantly in 2017. Consequences of this shift will influence economic activity for years to come. On the positive side for U.S. businesses is the expected tax cut legislation that, if passed by Congress, will have a positive impact on the U.S. business outlook in 2018.

There are other possible consequences of the changing political climate that could dampen growth. One imminent challenge close to home for U.S. manufacturers is the North American Free Trade Agreement (NAFTA) renegotiations now underway between Canada, Mexico, and the U.S. If the negotiations culminate in a new agreement—which modernizes the existing agreement—the results could prove advantageous to U.S. businesses, including automotive and technology companies.

However, the Trump administration has threatened to withdraw from NAFTA if the U.S. negotiating team doesn't get what it wants. The latest two rounds of negotiations in October and November left [the three parties at odds](#) over a few issues, including the rules of origin and the process for resolving trade disputes. In October, U.S. Trade Representative Robert Lighthizer called for raising the threshold of rules of origin for autos to 85% from 62.5%, of which half of the parts that come from North America must originate in the U.S. Both Mexico and Canada are opposed to the change. (The trade representatives in charge of the NAFTA trade portfolio did not attend the November round.)

A U.S. withdrawal from NAFTA would require the three countries to comply with World Trade Organization (WTO) standards. Currently, [WTO tariffs](#) on goods entering the U.S. average 3.5%. The NAFTA tariff rate is 0%. Initially, the collapse of NAFTA would add cost to U.S.-made goods, including autos and electronics making them less competitive internationally. More significant is the impact on supply chains that have been created over the last 20-plus years between the three countries. The end of NAFTA would surely prompt a multiyear overhaul of supply chains by manufacturers in all three countries, affecting the global competitiveness of many U.S. industries. One possible consequence is the flight of manufacturing from North America.

Should NAFTA negotiations collapse, the rosy 2018 outlook would suffer a serious blow. For now, though, business sentiment and the financial markets are betting on business-as-usual.

By Bruce Rayner, Contributing Editor

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