

The First Tee...

Mr. Roboto...invasion of artificial intelligence into the workplace is proceeding slowly:

- Businesses have incentives to save labor costs with robots and smart software, but the penetration of automation technology in the economy has occurred below expectations:
 - There are few things that are more alarming to workers (and labor unions) than the penetration of automation and ai into the workplace, especially in manufacturing (*gutting the middle-class?*)
 - Despite the potential for machines to boost profits by increasing productivity and output per hour, firms have been hesitant to move away from the human element especially in client interaction:
 - Productivity growth in the U.S. has lagged during this economic cycle, posting average annual gains of 1.1%...this is the lowest level of worker efficiency gains seen in the ten economic recoveries since 1947 (*workers maxed out?*):
 - During this recovery, investment in intellectual property products is marginally higher as a share of GDP versus the last cycle:
 - A couple of key issues have been identified why second-wave technologies have been slow to be adopted...robots can do highly repetitive tasks in manufacturing but are limited in complexity and customization of tasks; the other is trust in computers doing critical operations.
- Automation is yet to have a large impact on the global labor force (according to the World Bank):
 - During the past twenty years a majority of advanced economies have reduced industrial jobs, but a large increase of manufacturing positions in Asia has compensated for the loss (evolution of cheap labor):
 - Technology gains in automation are starting to create a worker evolution, eliminating many low-skilled positions by performing routine tasks...the start of the so called 4th industrial revolution has been negligible on a global scale:
 - During the past 20-years, the share of global manufacturing jobs has declined by over 10 percentage points in many advanced countries (such as England and Spain) where jobs have shifted to the service sector ...at the same time, the share of industrial employment in some developing countries has risen by 10% or more (Vietnam went from a 9% share in 1994 to 25% in 2017).
 - Developing countries have relied on low labor costs to attract business development, as machines replace people in the workforce salaries become less relevant...technological shifts are concerning to Africa, the heir-apparent to Asia for cheap labor.
 - As automation evolves it will continue to erode-away repetitive work...especially if there is an economic incentive.
- Man managing machines...the expansion of ai, robotics and big data in the workplace is raising the demand for worker ingenuity, to reinvent a process or rapidly solve problems in an emergency:
 - There is a new alliance developing between labor and smart machines...*My heart is human...my brain I.B.M.:*
 - As lower skilled positions are replaced by technology, companies will be looking to hire workers possessing more advanced cognitive skills...including complex problem solving, teamwork, reasoning and communication:
 - Factory workers in automated operations need more than basic knowledge of machine-tool maintenance and programming...automation changes the way workers use their time, they are part of a process managed by a team:
 - Cutting edge manufacturing is moving towards mass customization...often involving engineers working closely with production staff:
 - Current ai systems do not have full comprehension of non-standard events or the ability to create innovations that improve the process.
 - Ai system machinists are typically searching for ways to refine automation, looking at data as much as materials and equipment.
 - Part of the goal is to make products at a cheaper cost by manufacturing more quickly without compromising quality or safety.
 - In an environment of customization and complexity, the key is to get the right combination of humans and machines.
 - Robots move processes while humans improve them...technology is good for transactional jobs, humans needed for transformational:
 - Robot saturation...some plants are running so human lean the employees have difficulty keeping track of what the robots need and do.
- Digital information is expected to provide the next large boost to productivity:
 - Merging big data with manufacturing is the next step in the technology resolution for many firms:
 - One of the key obstacles is inter-connecting the machines is the differentials in information-technology personnel and operational-technology staff, individuals responsible for robotics can view networks as insecure and unreliable:
 - The divide between IT and OT has been a large barrier to adoption of new technology into manufacturing, as well as cost cutting.
- **The problem's plain to see: Too much technology. Machines to save our lives. Machines dehumanize.**

Dennis DeYoung

At the turn...

The Back Nine...

Homeowner Virgins...first-time home buyers are facing purchasing obstacles:

- Higher home and mortgage costs have delayed the American dream for some Millennials
 - Real-estate food chain: first-time home buyers are getting priced out of the market, making it harder for move-up buyers to sell...every region of the country has an entry-level homeownership problem:
 - Home prices have risen about 60% since 2012, while household income has gained less than 30% for the same period:
 - The average 30-year mortgage rate has increased from 3.85% at the start of 2018 to its current level of 4.59%:
 - A half-point increase in mortgage costs equates to reducing home buying capabilities by about \$25k...and shrinking house size by 200 sq. feet.
 - A buyer with a \$2500 monthly housing budget lost almost \$30k in home purchasing power last year (*swimming against the current*).
 - Cities and states with high tax rates add another layer to home purchasing cost considerations:
 - The tax bill capped the amount of state taxes and mortgage interest that can be deducted from federal returns.
- Wage growth has improved to about 3% annualized, but housing inflation stands at 5.5%.

Market loses MOJO...the long-anticipated stock correction become reality (*reality bites!*):

- Data format: January 1, 2018 / October 1, 2018 / January 1, 2019:

Equities

Dow: 24719 / 26458 / 23327
S&P 500: 2673 / 2913 / 2506
NASDAQ: 6903 / 8046 / 6635
Russell 2000: 1535 / 1696 / 1348

Commodities

CRB: 193 / 195 / 169
Oil: \$60.42 / \$73.25 / \$45.41
Gold: \$1303 / \$1192 / \$1282
Copper: \$331 / \$280 / \$263
Natural Gas: \$2.95 / \$3.00 / \$2.94

Borrowing Benchmarks

Libor:

1mo: 1.480% / 2.260% / 2.502%
3mo: 1.694% / 2.398% / 2.807%

SOFR: (U.S Secured Overnight Financing Rate)

1day: NA / 2.25% / 3.00%

Treasuries Issues

3mo: 1.35% / 2.19% / 2.31%
6mo: 1.50% / 2.36% / 2.41%
1yr: 1.69% / 2.59% / 2.52%
2yr: 1.88% / 2.81% / 2.49%
3yr: 1.98% / 2.88% / 2.46%
5yr: 2.20% / 2.94% / 2.50%
7yr: 2.33% / 3.01% / 2.58%
10yr: 2.40% / 3.05% / 2.68%
30yr: 2.74% / 3.19% / 3.01%

Currencies

Euro: 1.200 / 1.160 / 1.146
Yen: 112.69 / 113.70 / 109.69
Peso: 19.65 / 18.71 / 19.65
Canadian \$: 1.257 / 1.290 / 1.363
Yuan: 6.506 / 6.868 / 6.878

Grain Futures

Corn: \$3.50 / \$3.56 / \$3.75
Soybeans: \$9.61 / \$8.45 / \$8.95
Wheat: \$4.27 / \$5.09 / \$5.03

Job / Inflation Indicators

Unemployment: 4.1% / 3.7% / 3.9%
Consumer Price Index: 2.1% / 2.3% / 1.9%
Core PCE Index: 1.5% / 2.0% / 1.9%

Federal Funds Open: 1.41% / 2.15% / 2.40%

Prime Rate: 4.50% / 5.25% / 5.50%

19th Hole...

One machine can do the work of 50 ordinary men. No machine can the work of 1 extraordinary man.

Elbert Hubba

Ross Elford, First Vice President

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