

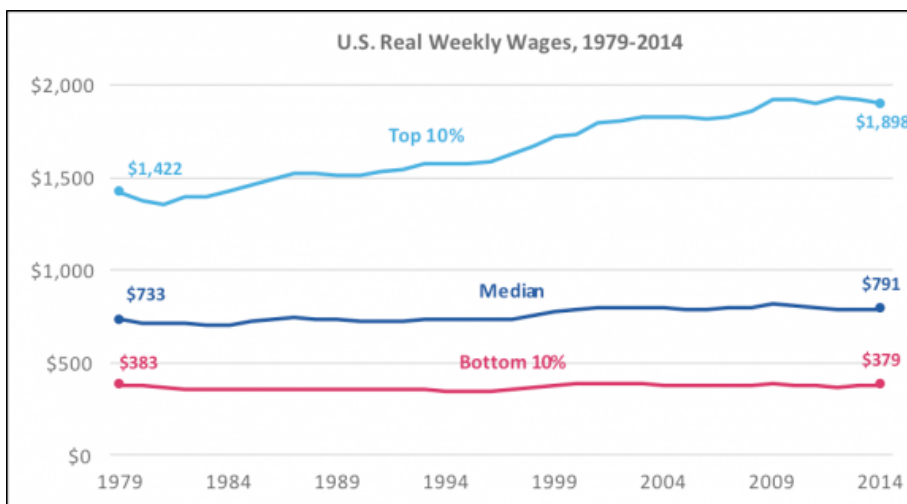
Investment Outlook

Robots Taking Over!!!

In this campaign season we've heard much talk about American jobs being lost to foreign competition, but little talk about jobs being lost to technology. Yet the effect of technology on jobs has been profound. Armies of clerical workers have been replaced by information systems. Managers who used to hire secretaries to type letters now just send their own emails. Factories where humans used to toil now have robotic assembly lines. The list goes on and on.

In the near future we will have robotic caregivers and self-driving cars and trucks. Teaching will increasingly be done by interactive computer programs. As artificial intelligence continues to advance, machines will do more and more things better than humans. Against the onslaught of technology, it seems naïve to assume society will provide a job for everyone who needs one.

Even before the computer arrived, people envisioned a future where machines did all the work. From "Brave New World" to "Ex Machina" the burning question is whether this progress will benefit the many or the few. It now appears the rich are getting richer and the poor poorer. National income numbers mask the fact that a few are doing really well while many are falling behind. According to the U.S. Bureau of Labor Statistics, median real (i.e. inflation adjusted) weekly wages went from \$733 to \$791 between 1979 and 2014. That is a \$58 increase over 35 years, which means median weekly wages have gone up only \$1.66 per year for the last 35 years. And for the bottom 10%, real weekly wages declined from \$383 to \$379. The unemployment rate is low only because many have dropped out of the workforce. One can argue about the causes, but the lack of income growth for the majority of Americans is an inescapable fact.



Source:

US Bureau of Labor Statistics

We are still in the early innings of the technology revolution. If you use Siri or Amazon Echo you know computers now talk with us. Customer service jobs will soon be filled by talking computers. Intelligent machines can now teach themselves. For instance, the self driving cars learn from their mistakes, because a human programmer cannot anticipate every situation on the road. Soon robots will teach themselves how to clean a hotel room, how to pick a peach, how to restock a store shelf.

Some may believe we can all find jobs programming computers, manufacturing computer chips, maintaining the machines. Unfortunately, computers can program themselves, humans are being banished from the clean room, and machine maintenance is being reduced by machines that monitor themselves. Maybe we will all find jobs by becoming lawyers and expend our energies squabbling over the wealth that smart machines produce. I shudder to think that constitutes the optimistic scenario.

It is clear that technology cannot be stopped. Any country seeking to limit technological progress will find itself falling behind rivals. So each country will at some point face the challenge of dwindling jobs, and I suspect the responses will be multifaceted.

One solution is population control. China and India in past decades have already employed strict population control policies. The industrialized nations are currently experiencing declining fertility rates. Couples nowadays are choosing to have one or two highly educated kids, versus having a larger family that they cannot afford to educate as well. This is a

rational response to economic incentives, and most would agree that limiting population growth is a good thing for planet earth.

Another solution is changing our attitudes about lowering our standard of living. I have some very affluent friends who find purpose in limiting their impact on the environment. Young and old are increasingly choosing apartments with amenities over the single family home. While most of us still want the big car and the big house, the anti-consumer movement is growing. If technology has put you out of a job, you can be angry about it, or you can try to feel good about having a modest lifestyle. Attitude is everything.

Job training is another answer. While jobs may shrink overall, displacement will be mitigated to the extent workers can obtain the skills needed for the jobs available. Perhaps we will go back to the one wage earner family.

While all these things may help, I suspect the ultimate answer will involve changing the manner in which income is distributed. Otherwise, we may face the Malthusian solution of reducing joblessness through starvation, disease and war. 43 million Americans currently receive food stamps, 73 million Americans are enrolled in Medicaid, and 32 million Americans receive the Earned Income Tax Credit. So a lot of Americans benefit from entitlement programs, but these safety nets are not enough to make low income workers feel their lives are improving. The concept of "Universal Basic Income" is gaining popularity among economists as diverse as Andy Stern of Columbia University and Richard

Murray of the Cato Institute. If we increase the dole, we must figure a way to do so without corrupting the work ethic of the recipients.

Inequality has already reached alarming proportions. The affluent can buy a VIP pass to Disneyland while the rest stand in line. They can pay extra to sit in the front at the music festival while everyone else stands in the back. They can pay for the express lane while the rest sit in traffic. It did not used to be this way. The American ideal of a classless society has been eroded. Add to this the shame and frustration of subsisting on a government handout, and you begin to understand the anger among the electorate.

When Henry Ford raised wages to an unprecedented \$5 a day, he said he wanted his workers to be able to afford to buy his cars. I wish more of our mega-billionaires would get together and figure a way to keep their customers solvent. It would be in their own interest to preserve the purchasing power of the middle class. There used to be an academic discipline called Political Economy where scholars would come up with ideas for how an economy should be organized. It has all but disappeared but we need to bring it back.

In China, Mexico, and many other countries, the state owns businesses. China is not presently a welfare state but the government has the ability to redistribute income by virtue of its large business holdings. Whether this confers an advantage in dealing with income inequality remains to be seen.

In Japan, the government has been trying for years to protect workers from

the onslaught of technology. Regulations protect small farmers and antiquated distribution systems. The result has been economic stagnation.

Fully industrialized countries are the most exposed to jobs being displaced by technology. Nations such as India which are still transitioning from agrarian economies to industrial economies should still enjoy job growth and a rising middle class.

Countries that successfully deal with job displacement will eclipse those that do not. I don't know the solution, but at least I recognize the problem. Workers who cannot adapt to the new economy need to feel they still have a stake in society. To leave them with nothing to lose is dangerous for all of us.

Implications for Investors

Joblessness in the developed nations will lead to low growth rates, lower earnings and lower stock valuations. Investors should plan for rates of return below the historical average. Computers and robotics will continue to be growth industries, but picking good investments in those dynamic industries amid sky-high valuations will be challenging.

The power industry should thrive as machines supplant human labor, hence our investment in **First Solar (FSLR)**. Mobile power sources, whether batteries or fuel cells or solar panels, will be crucial to enabling mobile robots.

Businesses that cater to the affluent, such as **Penske Auto Group (PAG)** which concentrates on luxury cars, or **Preferred Apartment Communities**

(APTS) which concentrates on luxury apartment communities, will prosper. Businesses that serve the common folk will struggle. Developed economies will struggle more because we are farther along the technology curve. Countries without adequate infrastructure to support advanced technology should have less worker displacement, so emerging economies may fare better than developed economies.

Electronic entertainment, videogames, and social networking will all grow as the idle masses will need to fill their nonworking hours with low cost diversions. **Infinera (INFN)** makes optical networking equipment enabling broadband providers to keep up with expected demand growth.

As the social fabric becomes frayed, cybercrime will continue to grow along with cybersecurity. Civil unrest will grow and maintenance of order will be a challenge, both within countries as well as between countries.

Taxes may rise to fund increased entitlement programs. If income tax rates are destined to increase, one might benefit from accelerating retirement plan distributions or social security benefits.

Conclusion

While technology promises a future of plenty, the benefits are not flowing to those whose jobs have been displaced. As technology continues to replace jobs, the middle class will struggle to maintain its standard of living. The concept of jobs

and wages only started about 200 years ago. Prior to that we had agrarian societies where peasants were bound to the land, or societies where nomadic tribes roamed the open range. Humankind survived for eons without jobs.

Our transition from an agrarian to an industrial society was long and painful. As recently as the 1930's America struggled to find jobs for displaced agricultural workers. Yet the transition brought a huge rise in living standards. We are in the midst of another technology transition. This transition is most advanced in the most democratic societies. This gives me hope that the transition will be managed for the benefit of the masses, but we need to stop focusing exclusively on trade policy and tax policy while ignoring job displacement caused by technology.

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