

The Market in Review

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This week's articles and insights

1. *Watt's Up?*
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“If it weren't for electricity, we'd all be watching television by candlelight.”

- **George Gobel**

Your Index Report

	Current	Last Week	Year-to-Date
Dow Jones Ind. Avg.	34,879	- 1.59%	+ 13.96%
S&P 500	4,493	- 0.96%	+ 19.63%
TSX	20,705	- 0.43%	+ 18.77%

Watt's Up?

- Pigs.
- Toothbrushes.
- Electrical overload.
- Investment implications.

This week's letter manages to weave all of the topics above together, so read on.

Pigs are not known as the cleanest of animals, and yet they are. Few animals separate their 'kitchen' from their 'bathroom' quite as well as the pig, making them among the most fastidious of creatures.

Which is a fortunate thing, because bristles from pig and boar hides were used in ancient toothbrushes in China almost 3,000 years ago.

The history of the toothbrush is interesting. By the 1800s, the benefits of oral hygiene were becoming widely known and more and more people began to use them. Mass production of bristle-brushes took off. Next came a paste that contained soap (1824), then chalk, until a better concoction was injected into a flexible metal tube (1892) and renamed 'toothpaste'. DuPont replaced the stiff natural bristles with nylon in 1938 and the modern toothbrush was born.

Today, the global toothbrush market is about U.S. \$7 billion in size (source: Fortune Business Insights) and growing about 2.9% per year. Pretty much everyone on the planet now owns a toothbrush, or at least knows they should be using one. Most of us know of the benefits of dental health, but even more reasons keep popping up. Bacteria from the mouth has now been linked to heart issues, so keep brushing.

The oral health market is dominated by two companies – at least in North America. Colgate (**NYSE CL**) owns a dominant share through its Colgate brands. Proctor & Gamble (**NYSE PG**), through its Crest, Scope, and Oral-B lines, is the other giant.

As with just about every industry, innovation has pushed oral care in new directions. First invented in 1939, the electric toothbrush is now used by almost 40% of Americans and Canadians. This means about 131 million toothbrushes now buzz instead of, well, brush. Electric toothbrush market share, as a percentage of the total toothbrush market, is growing between 6% and 8% per year. This represents almost triple the growth of the traditional market. Proctor &

Gamble's Oral-B electric toothbrushes are one of the biggest brands, followed by Philips's Sonicare brand. Colgate is rushing to catch up.

Why on Earth is this important?

It is yet another example of the increasing electrification of our lives.

Think about your day for a moment.

You make coffee or tea in the morning, most likely using an electric kettle or coffee machine. You then cook bread with an electric toaster or warm something in the microwave. News comes to you through a smartphone or your computer, rather than a newspaper. Then you put on your Fit-Bit, Apple, or Garmin smart-watch.

And that's just to get out the door.

We use a lot of electricity in our daily lives, and the amount is only going higher with each passing year. An electric toothbrush consumes about 0.3 kilowatt hours of power per year (source: answerstoall.com), which is about 39 GW when you add up every electric toothbrush in U.S.

What does this mean in numbers we can all understand? British Columbia's new Site C hydro dam will produce about 5,100 GW per year, so powering all those electric toothbrushes across the U.S. and Canada will use about 2.8 days' worth of Site C's 365 days of annual power.

It doesn't sound like much.

Now, add in your smartphone. These efficient little wonders consume 4 kilowatt-hours of electricity per year (source: energuide). There are 290 million phones in the U.S. (source for all device data: Statista), so that's another 83 days of power usage from Site C. That's almost three months' worth of the annual output of a dam not even finished yet.

This doesn't even include your laptop, of which there are 200 million in the U.S. today. Add those in at 90kwh per year and you will need three Site C dams just to power all the laptop computers in the U.S. Canada is just a rounding error.

A smartphone is nothing without a network. In 2013, U.S. data centers consumed about 91 terawatt-hours of electricity and this was expected to grow 50% by 2020 (source: spectrumieee). This means that U.S. data centers alone – all those Amazon, Microsoft, and Google “server farms” - consume **34% of Canada's**

total hydroelectric output which is almost 26 Site C dams' worth of power (Wikipedia).

We are an electricity hungry society. Our needs grow every year with each new device we add to the network.

Grid Reliability

We take our electricity for granted, except for when a rare winter storm collapses power lines with snow and ice. Other than that, we just flick a switch and expect the power to be there every day. And it is – our grid is extremely reliable. It has to be - electricity powers our oil and gas supplies, our water and sewage, transportation, communications and health care systems.



Image from Shutterstock

However, the electrical grid is also very fragile. The national power network is like a swimming pool of water filled almost exactly to the rim. Any shortfall needs to be filled immediately, and any surplus dumped just as fast. Or, the whole thing collapses.

Sometimes power lines are the cause, such as when sparking from overburdened lines caused the California wildfires. Other times, it is transformers exploding during hot or frigid temperatures, such as the recent Texas blizzard. Most outages are short and annoying, but larger collapses, like the Quebec ice storm in 1998 and the Auckland New Zealand cable failure, took power off-line for weeks.

Governments in Canada and the U.S. now promise to move to electric-only cars by 2035. Can we get there? If just 15% of U.S. vehicles switched to electric by 2030, America will need about another Canada's worth of electricity generation (400 TW) to supply them (source: Powermag.com). That's a lot of new Site C

dams. Yes, electric cars are much more efficient than petroleum-fueled cars, and they can store electricity as well as consume it. But these numbers include this.

While electric power may have its advantages, it also makes us reliant on just one power type. Today, back-up power can be derived from propane stoves and fireplaces, diesel generators, and even automobiles. Without these, we become increasingly at risk of a large-scale event, such as a blizzard or a cyber-attack.

Investment Implications

Upgrades to infrastructure are a very big election promise. Build new stuff and fix old stuff that should have been fixed decades ago.

In terms of new power generation, most will likely come from solar power. Solar is just 3% of the U.S. grid today and to get closer to 40% will require spending about \$500 billion (source: Barron's). There are speedbumps in the way, however. Most solar panels are manufactured in China using questionable labour practices (i.e. forced labour) and most aluminum in the world today – used in solar panel frames – is forged in Chinese coal-fired plants.

Meanwhile, our existing grid needs extensive upgrades.

“We need to harden transmission and distribution systems by undergrounding wires, replace wooden poles with concrete ones, strengthen towers, stockpile replacement transformers and raise substations above potential flood levels.”

- John Kemp, Reuters

Many companies will benefit from this. We have already seen construction and engineering companies rise to new highs, presumably in advance of all this spending. Companies that supply electrical equipment, like Siemens, have also risen.

There are other companies providing services at the edges of the grid that should also do well in the years ahead. Finning (**TSX FTT**) is a company we own that is not often thought of when it comes to electricity. Finning supplies and services Caterpillar equipment. We added shares again this week.

AltaLink is an Alberta electrical transmission company that looks after most of the high-voltage capacity in the province. AltaLink had to replace a 1960s-vintage

power transmission line and turned to Finning for help. They supplied six Caterpillar generators for three months running 24/7 while AltaLink cut the old power line out and inserted a new one. Residents and tourists did not notice a thing was different during the switchover. Finning has an entire division devoted to reliable power generation that can be controlled remotely, and is currently monitoring 63 customers using its generators around the province.

There will be many companies that benefit from a huge infrastructure upgrade. As we describe above, expansion is desperately needed now because of all our electric toothbrushes and other devices. What happens when we start electrifying even more of our households? Here are even more electricity-consuming appliances many of us will be adding to our homes in the years ahead. And no one really knows how much power they will need.

- Electric bicycles.
- Electrically adjustable mattresses for reading, watching TV, and working in bed.
- Smart watches that monitor glucose, blood oxygen, and include an altimeter, a noise meter, and an emergency SOS feature.
- Electrically-darkened windows.
- Internet-connect doorbells, security cameras, home heating systems, and smart speakers.

Missing Jobs, Missing Workers

Whoops.

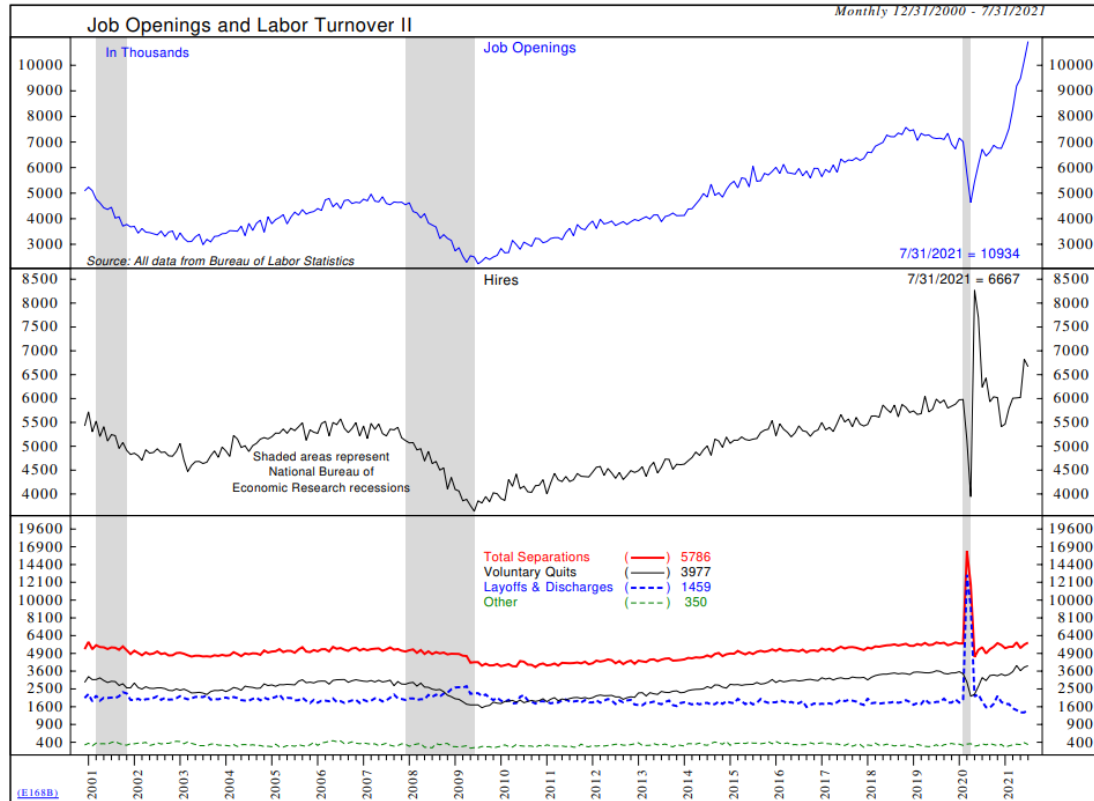
The U.S. expected 750,000 new jobs in August, thanks to a re-opening economy. Instead, just 235,000 were created. What happened?

Well, the Delta-variant of Covid-19 happened. Travel, eating out, and entertainment all slowed to a halt. The Accommodation/Leisure/Food Services sector added 377,000 new jobs per month since May. Then in August, they added zero. A recent survey of 400 business travelers said they would postpone trips due to the recent outbreak.

It looks like they did just that.

There are other reasons for uncertainty in the economy, some of them obvious and some kind of mysterious.

For example, it is a mystery where all the workers are. We have the highest number of job openings in 20 years, with over 10 million in the U.S. remaining unfilled:

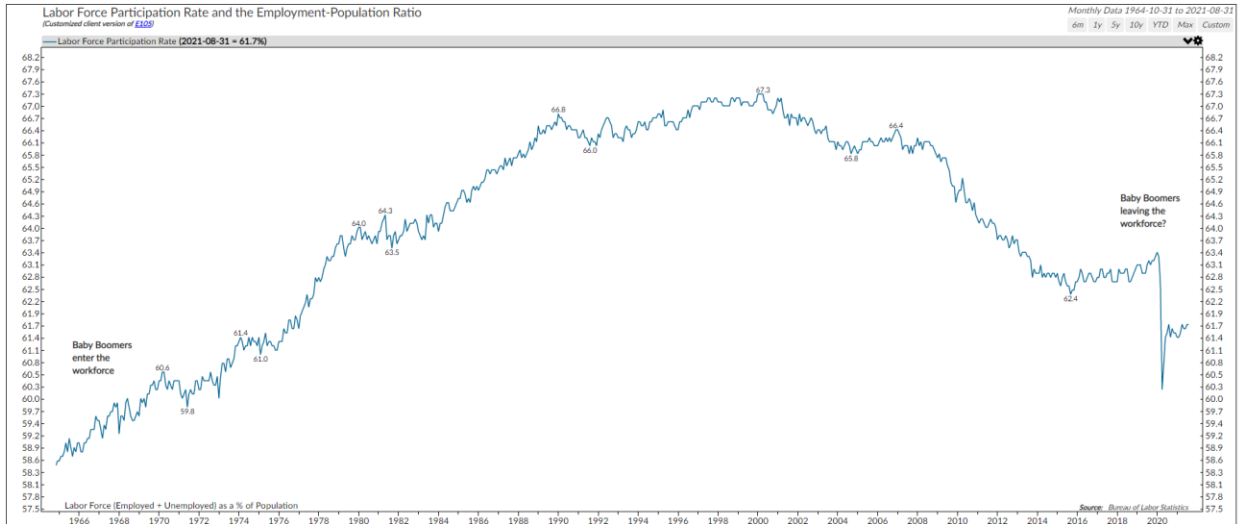


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Where did all the workers go?

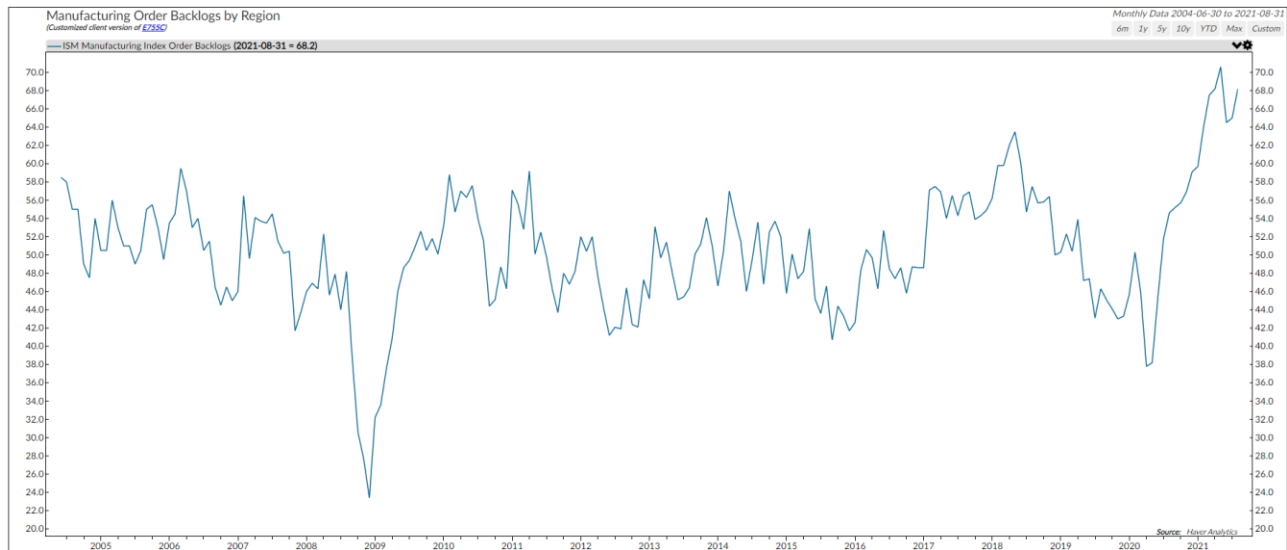
Some have chosen to collect unemployment benefits rather than work. There may also be a giant wave of retirements happening.

The percentage of the population “participating” in the job market is back to where it was in 1976. This was just a decade after the Baby Boomers began entering the workforce. Baby Boomers began trickling out of the workforce in 2009. Covid-19 may have pushed millions more out permanently:

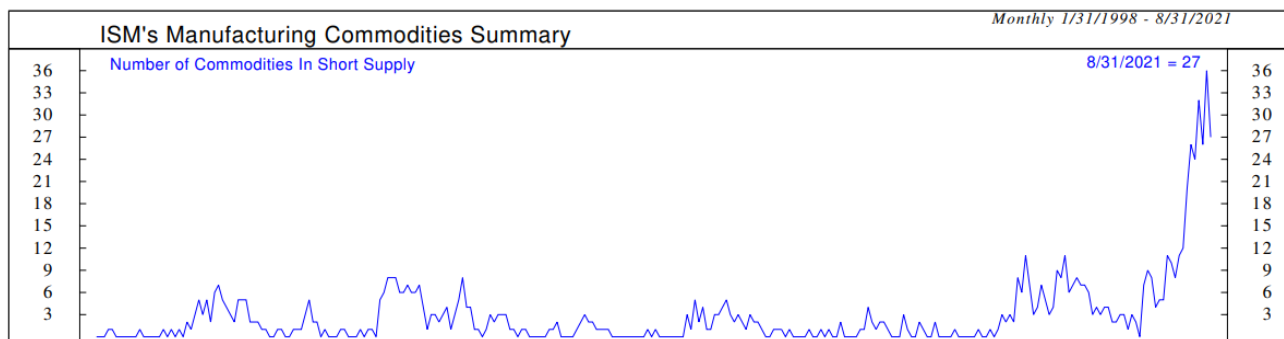


There are other issues the economy is grappling with. Anyone order a couch, a refrigerator, or paint recently? The wait is measured in months, not days. Ports are backed up in every country.

The Manufacturing Index of Order Backlogs is the highest in 15 years.



Part of the backlog problem is the shortage in commodities. Of 36 commodities tracked, 27 are in short supply. Prices of palm oil and copper are at all-time highs:



Countries like Chile, Italy, and India have all passed the peak of infections due to the Delta variant. We remain hopeful that Canada and the U.S. are there, as well.

Memories of 9/11

Saturday, September 11th, is the 20th anniversary of the 9/11 attacks in New York. Everyone old enough remembers exactly where they were that day. I was here, in the office, wondering why the markets had suddenly been halted. Lisa was stranded in San Diego at a conference with no flights allowed home. When I heard the news, I called my wife and said “turn on the TV.” My son was 6 years old and he still remembers that morning.

The years before 9/11 seem more innocent than those that came after, for the aftershocks that hit Iraq and Afghanistan are still being felt today. There is a definite parallel to the pandemic of 2020: we didn’t know what freedoms we had – crowds, and travelling without tests and vaccines – until we lost them.

We are nearing harvest time in the calendar, which is the seasonal turning point of the year. Harvest typically starts in late September, which was when the ancients put down their swords and returned home to pick up their scythes. Autumn marked a return to peace and family as villages put up their stores in preparation for winter.

Watching the days shorten and the nights cool, we think back to 9/11 and hope for more peace in the world. We are certainly due.



Freedom Tower, New York City (image courtesy of Julien Di Majo)

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Prices shown as of September 9th, 2021

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