Epsilon Theory

# Notes From the Field

# Horsepower

August 4, 2017

**There is no animal more important in the ascendancy of Western Civilization than the horse, and no invention more important than the horse collar. It has nothing to do with warfare, and everything to do with farming and transportation.**

**Horses can work 50% faster than oxen, and they can go all day, particularly the draft horses of Northern Europe. But if you put an ox harness on a horse, the horse will choke to death. Very different bone structures, particularly with the shoulders.**

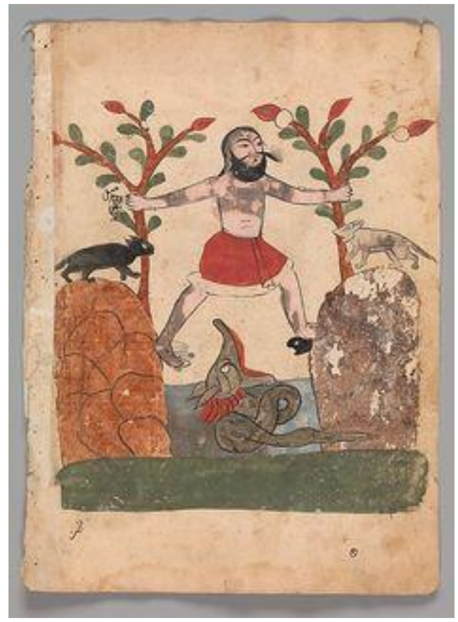
**When the horse collar was introduced into Europe in the 10th century (invented by the Chinese, of course, just like everything else of note prior to the Industrial Revolution) agricultural productivity skyrocketed. The resulting food surpluses led to a population boom, labor specialization and diversification, and the development of a merchant class. The horse collar (plus the horse shoe and the heavy plow) sparked a productivity revolution that totally reshaped European civilization and the history of the world.**

A farm should have a foreman, a foreman's wife, ten laborers, one ox driver, one donkey driver, one man in charge of the willow grove, one swineherd, in all sixteen persons; two oxen, two donkeys for wagon work, one donkey for the mill work.

**— Cato the Elder (234 – 149 BC), Roman senator, farming aficionado. Also *Carthago delenda est*.**

**I get about the same amount of work done with my John Deere 4610 as Cato accomplished with his sixteen people and five animals, particularly when I've got a 460 loader up front and a shovel mounted in back.**

***The parable of the man who has fled from an elephant***



This is the story of a man who, in fear of an enraged elephant, has escaped into a pit, into which he has let himself down, hanging down and holding on to two branches at its edge. He looks down and there is a dragon, its mouth open, waiting for him to fall so that it can devour him. Then he raises his eyes to the two branches and sees two rats at their root, a black one and a white one, that are gnawing at the two branches untiringly and without flagging.

While considering his situation and worrying about his fate, he notices near him a beehive containing honey. He tastes the honey, and its sweetness preoccupies him and the delight of it distracts him from thinking about his plight, or from seeking a means to escape. Thus he remains diverted, unaware, preoccupied with that sweetness, until he falls into the mouth of the dragon and perishes.

**— Abdullah Ibn al-Muqaffa, from "Kalilah wa-Dimnah" (c. 750).**

**An Iranian who wrote in Arabic, Ibn al-Muqaffa had a knack for telling Persian fables with a political bent. He was killed for that, of course.**

**In 1917, Pierre Cartier bought the townhouse at 653 Fifth Avenue in exchange for his most valuable two-strand pearl necklace, valued at $1 million. Today, you can get a two-strand pearl necklace of similar length and pearl size from Macy's for about $2,000. As for what 653 Fifth Avenue is worth today … well, it's a lot more than $1 million.**

Some of my happiest hours are spent on a tractor. The John Deere 4610 engine has 42.8 horsepower, which means that it generates the raw energy to lift 23,540 pounds one foot into the air in one second. That's 32 kilowatts for people who think of energy in those terms. The tractor uses this raw energy to power both a drivetrain with enormous torque and a top speed of 30+ miles per hour, as well as a hydraulic system to which you can attach loaders and shovels and the like. It's a beast, and the ability to control a beast like this is an absolute rush. My girls get this rush by riding and controlling an actual horse. I get it through a tractor that aggregates 43 horses into one hunk of metal.

The tractor isn't just a powerful beast, but — like an actual horse — is also an incredibly versatile beast. It makes me a one-man wrecking crew if that's what needs doing around the farm (and occasionally when it doesn't need doing … I've inflicted my share of unintentional damage over the years). But my favorite and best use of the tractor is to Repair and to Make. Need to grade the quarter-mile driveway? Tractor. Need to carry the lumber and lift the roof to build the mustang's run-in? Tractor. Need to shovel out the boot-sucking ankle-deep "mud" from the sheep and goat pen? Tractor. Need to brush hog a field and clear some trash trees to keep it healthy? Tractor. I am *productive* with my tractor to a degree and in a manner that I had no idea was even possible in my pre-farm life.

I've got two tractor-as-metaphor points I want to cover in this **Note From the Field**, one on investing and one on macroeconomics.

The investing metaphor is a simple one — a tractor leverages my personal strength a hundred-fold (assuming that I could lift 235.4 pounds one foot into the air in one second, which sounds about right for my maximum ability … on a good day … once … followed by a week in traction). **I can accomplish amazing things with that untiring, never flagging, hundred-fold leverage. I can also kill myself.**

In 2015, more than 400 people died in farm accidents in the U.S., and tractors accounted for about half of those fatalities. Interestingly, tractors only accounted for 5-10% of non-fatal farm accidents. When you screw up with a tractor, the consequences are deadly.

The source of a tractor accident (or in my case, thankfully, near accidents) is *always* one of two things: overconfidence or distraction. The machines themselves are phenomenally robust and well-engineered, which means that it's never equipment error that gets you into trouble. It's driver error.

Not coincidentally, the most careful, measured people I've ever met are professionals who drive big pieces of powerful machinery. There's no bravado with these guys, no "sure, I guess you can stand on that, why not?", no "yeah, be right with you, just wanna check my Twitter feed real quick." It's always measure twice, cut once, and if there's anything that's out of place or out of sight … the answer is no. They are, without exception, the antithesis of Donald Trump (in behavior I mean, not politics), which I suppose is a third tractor-as-metaphor story, given that the White House is the biggest piece of powerful machinery on Earth.

I've tried to bring this same sense of non-bravado professionalism to my farming activities, particularly whenever I'm around the tractor. I have to admit that it's a work in progress, particularly on the overconfidence side. After all, I grew up in Alabama, where invitations like, "Hey, come on over, we've got a box of fireworks and a shotgun, so we're gonna blow stuff up!" were not unknown. But there's nothing like a slight feeling of "tippiness" while you're sitting in that tractor chair with 2,000 pounds of gravel in the loader that you're carrying juuuust a bit too high on a sideways slope that's juuuust a bit too steep to refocus the mind into a more appropriate frame.

As importantly, and I think with more success, I've tried to bring this same measured sensibility to my investing activities, particularly whenever I'm around leverage. As with the tractor, the two devils to battle are overconfidence and distraction. That's not to say that underconfidence — i.e., irrationally taking too *little* risk — isn't a chronic problem for investment performance (**Rusty Guinn's recent notes are a must read on this!**). An underconfident investor will inevitably suffer the cuts and sprains of underperformance. It's the leading cause of high frequency, low severity investment accidents, and it's hard to make a living in this business if you're always banged up. But it won't kill you. Not directly, anyway.

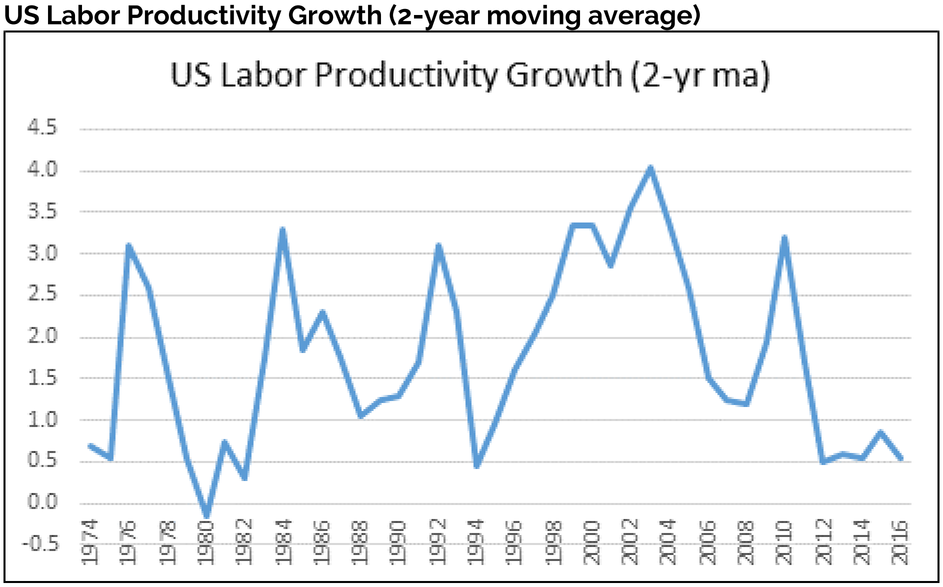
The tractor-as-metaphor is about fatal investment accidents, not non-fatal accidents. It's about low frequency, high severity market events, which are almost always caused by the use of leverage in an overconfident or distracted manner. *It's not equipment error.* It's not a risk parity fund or an LBO fund posing some sort of inherent crash risk to markets. It's the overconfident or distracted driver of a levered portfolio that poses crash risk to himself and to others, and that's what we need to guard against in ourselves and in others.

**How do we guard against overconfidence and distraction? By not confusing luck for skill (overconfidence), and by not getting bored with the long slog of compounded market returns (distraction).** Or as expressed in *Epsilon Theory*-speak, **by understanding the stochastic sea in which we swim**. It's not easy! And the smarter you are, the more prone you will be to hearing both devils whisper in your ear. Because you DO have skill, and it IS boring to invest with measured professionalism. But that's the job. That's the responsibility to yourself, your family, and your partners when you drive a tractor.

My macroeconomic story with tractor-as-metaphor also hinges on overconfidence and distraction, but the sources and mode are very different. The macroeconomic story focuses on the *manufactured overconfidence and distraction that are intentionally imposed on us*, creating a stable political equilibrium even as productivity growth grinds lower and lower.

Probably the biggest economic question in the world today is why productivity has stopped advancing, why we are no longer making more stuff with the people we've got.

**US Labor Productivity Growth (2-year moving average)**




Source: Bureau of Labor Statistics as of 7/13/17. For illustrative purposes only.

As I wrote in "**Gradually and Then Suddenly**", how is it possible — with the most accommodative monetary policy in the history of the world, with the easiest money to borrow that corporations have ever experienced, with all the amazing technological advancements that we read about day in and day out — that companies have not invested more in plant and equipment and technology to improve their labor productivity? How is it possible that we're not buying more and bigger tractors — not in the literal sense (although maybe that, too) — but in the figurative sense of doing more of what I do with my tractor on my farm: Repairing and Making in the U.S. economy.

My view: **The reason companies aren't investing more aggressively in plant and equipment and technology is BECAUSE we have the most accommodative monetary policy in the history of the world, with the easiest money to borrow that corporations have ever seen.**

Why in the world would management take the *risk* — and it's definitely a risk — of investing for real growth when they are so awash in easy money that they can beat their earnings guidance with a risk-free stock buyback? Why in the world would management take the *risk* — and it's definitely a risk — of investing for GAAP earnings when they are so awash in easy money that they can hit their pro forma narrative guidance by simply buying profitless revenue?

Math is a funny thing. You can increase a ratio by enlarging the numerator OR by shrinking the denominator. But we are well and truly trained to focus on the earnings numerator of our most cherished metric for valuing stocks — earnings-per-share — not the share denominator. We've been well and truly trained to believe that's what companies are *supposed* to do — grow earnings. So we don't pay nearly as much attention to the total number of outstanding shares, either for a particular company or an overall market. In fact, the traditional meaning we attach to capital markets is that the total number of outstanding shares should naturally *increase*, either by new companies going public (IPOs) or existing companies issuing new shares to raise capital in order to buy "tractors" that will grow earnings faster than the cost of that new capital. **This traditional meaning attached to capital markets — a transmission belt by which shares are issued for growth capital that increases the productivity of the firm — is dead and gone.** Instead we have had a decade of shrinking share counts, as more companies leave public markets through acquisition or going private than enter through IPOs and as more companies use cash flow and debt to buy back shares. This — plus the aforementioned purchase of profitless revenue to satisfy a narrative of growth — is *financialization*. And it works. It increases both earnings-per-share and the multiple assigned to earnings-per-share (or revenue-per-share or bookings-per-share or whatever your market narrative demands) in a less risky and more predictable fashion than making more stuff at a lower cost and trying to sell it to more people at a higher price.

That's what I think is going on with corporations, or at least the publicly traded companies that can easily tap into the magical elixir of financialization. Smaller companies and individuals don't have this access. So why aren't private companies buying more "tractors" to increase their productivity and make more money? Why aren't individuals buying "tractors" to start a productive business where they make stuff to sell at a profit?

There are two popular explanations for this lack of productivity growth in the vast real economy of private companies and private individuals, both of which are two sides of the same coin, I think, as understood through the tractor-as-metaphor.

The first explanation is that we are measuring productivity all wrong today, that the glories of modern technology have succeeded in improving our quality of life even if they are not directly benefitting our gross national product. Put satellite position-tracking technology together with mobile telephony devices and electronic payment networks and voila! … on-demand driving services like Uber magically appear, making transportation a breeze. *We're not buying more cars, but we're able to consume more driving.* It's what I'll call "experiential consumption", and it's at the heart of all of these on-demand business models that absolutely dominate the modern economy, from transportation to education to food to retail to entertainment to politics. Yes, politics. Think about how you consume the *experience* of politics today, how it's served up to you on a plate in on-demand fashion without requiring you to go out and actually participate in a political activity. If you don't recognize that this is a conscious *business model*, no different than how Domino's serves up pizzas in on-demand fashion, then I don't know what to tell you.

The second (and related) explanation for productivity loss is that job growth since the depths of 2009 has been robust in low value-added sectors like healthcare services or leisure & hospitality, but meager in high value-added sectors like IT or financial services. By value-added we mean how much revenue or profits a human being, driving whatever "tractors" are common in that sector, can add to the firm's coffers. A new hire in a software company or a bank, armed with all the leverage-increasing technologies and processes available in those fields, can add north of $300,000 to that company's revenues. Unfortunately, there are fewer people working in IT today than there were in 2007 (!), and essentially no growth in financial services. On the other hand, a new hire in the leisure & hospitality sector adds only $50,000 or so to the hiring company's revenues, but there are 20% more employees in that sector today than there were in 2007 (value added data from **U.S. Commerce Dept**. and job change data from **U.S. Labor Dept**.). The same phenomenon holds true for small business creation over the past decade, which has been dominated by low value-added gigs and personal services. It's what I'll call "experiential production", and it's at the heart of all the personal training and personal shopping and personal tutoring and "lifestyle" businesses that have cropped up after the Great Recession like mushrooms after a spring rain.

**Over the past eight years we have thrown our money into relatively unproductive activities (experiential consumption), and we have thrown our bodies into relatively unproductive jobs (experiential production).**

It's as if we've intentionally returned to the recommended farming practices of Cato the Elder in 200 BC, where instead of a tractor with a 43 horsepower engine to get the work done, we've got "a foreman, a foreman's wife, ten laborers, one ox driver, one donkey driver, one man in charge of the willow grove, and one swineherd". Because god forbid we miss out on the experience of being a swineherd. Hey, with modern technology, you can ~~drive for Uber~~ herd swine whenever you like. Just imagine the personal satisfaction, not to mention all that extra cash, that comes with "being your own boss" as an on-demand swineherd.

**It's as if we've intentionally returned to the recommended farming practices of Cato the Elder because it IS intentional.**

There is a very stable *political* equilibrium to be found in convincing a citizenry to trade, in Biblical terms, their birthright for a mess of pottage, or, in early 20th century terms, their townhouse for a string of pearls, or, in early 21st century terms, their sense of self-worth and self-actualization for the meme of "being your own boss" as an on-demand swineherd. There is a very stable *political* equilibrium to be found in convincing a citizenry to value experience and identity over stuff.

And yeah, I know this is coming across as all materialistic and crass. I know it's rank heresy to say that it's better to buy a tractor than to take your family on "the vacation of a lifetime", that it's better to stay an extra hour at work crunching on a project than to "take a little me-time" at the yoga studio. I know that it's social suicide in red states to say that fighting over gender identity and who can use what bathroom is stupidity incarnate, just as it's social suicide in blue states to say that diversity isn't even a top three goal of anything that matters, much less an end-all-and-be-all goal, and by the way you're bonkers if you think the Russians altered the 2016 election by one iota. These are all intentionally manufactured diversions of the first order, combined with a preening overconfidence generated by the wealth effect of intentionally inflated financial assets, creating a politically stable Western society of division, diversion, and debt. Yeah, that's my heresy.

Why is it stable? Because it takes governments off the hook. Taken a ride on BART recently? The NYC subway? I have, and they're appalling. But there's no public outcry for Repairing and Making these systems and hence no need to spend the money that doesn't exist or raise the taxes that can't be raised or make any of the hard choices that can't be made without running the risk of upending the entire municipal political system. There's no public outcry because you've got an army of on-demand swineherds cruising the streets of the city providing driving services for everyone who wants to consume that experience. It's the same tacit social equilibrium with EVERY government function and service in the modern Western world. Including defense. Including banking. Especially banking.

So what's to be done?

Well … you're not going to change this from the inside or from the top down. You're going to change it from the outside and from the bottom up. It's going to be a movement. **It's going to be a Maker movement and a Protector movement and a Teacher movement**

It's happening now, at least on the Making side of things (Protecting and Teaching are a little more enmeshed with government monopolies, so that may take a bit of time). It's happening with every Maker Faire and every public library with a 3D printer and every kid who learns to solder.

And every old guy with a tractor.

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