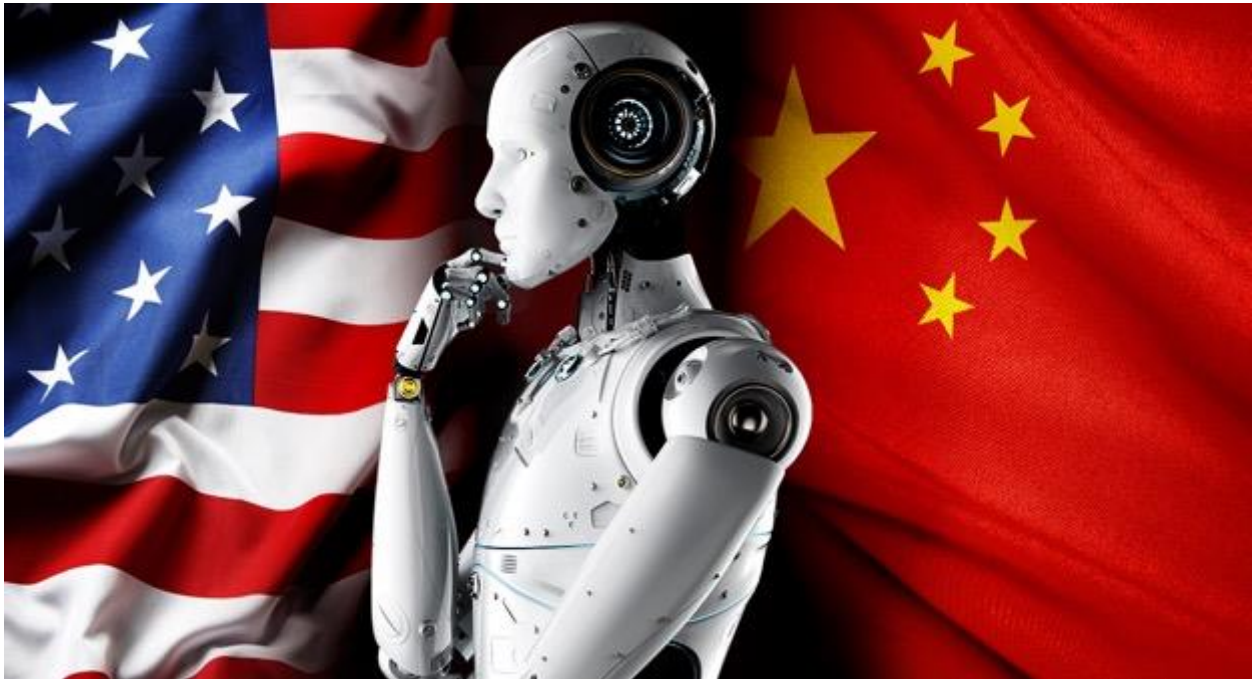


Clash of 5G Civilizations:
Why China Is Winning, Why Digital Millennials Are So
Anxious and How America Can Pull Ahead



PLUS, HOW TO GROWTH HACK THE
CHINESE E-COMMERCE MARKET

By Austin Groves
With Paul Schulte

Back book cover: China is winning the tech race — and will continue to win. While Washington is tearing itself to pieces and thinking of how to break up American tech companies, China is doubling down on 5G, electric autonomous vehicles, smart cities, Silk Road e-commerce, digital currency, quantum communications, energy storage and AI. It currently commands the heights in payments along the Silk Road, filling a vacuum vacated by an “America First” policy. This book looks at these remarkable trends through the eyes of a millennial working in both tech firms in America and China and explains how the private sector in the US cannot get this done. It also explains the roots of profound millennial anxiety and angst, primarily in the US. Our conclusion is that America needs two Apollo programs, one social and one technological. Millennials are bogged down with excessive debt, an epidemic of opioid addiction with relatives, discarded millennial veterans, incarceration as a solution for mental illness, a legacy of disturbing gun violence, rage over apathy toward climate change and endless financial scandals. No wonder why they are anxious. As these social issues are addressed, another program to spur public-private cooperation in e-commerce, payments, 5G, and AI can cause revolutionary change. Meanwhile, is the US bogged down by passé imperial attitudes inside the Beltway, a short-term corporate mindset of ‘dividends at any cost’ and boomers on the cusp of retirement who are coasting at work?

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Bios

Austin grew up in a small city in upstate New York where alcoholism and addiction are rampant. Somehow by dumb luck and the support of a few relatives and friends, he created a career in technology which has allowed him to work in IoT projects with Accenture, Verizon, AT&T and Coca-Cola (Coke). By the age of 27, he implemented IoT projects in over 40 countries. He ended up in a NYSE listed company in Shanghai which dealt directly with Alibaba and JD.com. He hired a large Chinese team and built an ecommerce business from scratch. His is an unlikely journey of a millennial traversing two worlds — the US and China.

Paul Schulte first went to China as an equity analyst with Credit Suisse in 1992. He has analyzed seven five-year plans and has conducted research on Chinese equities for over 25 years having worked with Barings, Lehman, Nomura and China Construction Bank Intl. in Hong Kong. He has also been teaching millennial graduate students on five continents since 1999. He has written three books on China's technological rise and has taught in China at Tsinghua, Fudan and Zhejiang Universities. He also worked at the White House NSC, the House of Representatives, and the International Trade Commission. He was also an advisor to the Indonesian Minister of Finance in the 1980s.

Dedicated to

All millennials: act with humility & gratitude toward the 'grownups', for you never know what you will learn -- but you will.

AND TO

All grownups: act with kindness & compassion toward millennials for even though you may not need them on the way up, you will surely need them on the way down.

Paul Schulte

Dedicated to: All those who helped me along the way, especially my mentors of all ages both in and outside work.

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Introduction

This book describes the broken system in corporate America that is hampering a generation of people full of boundless energy, new ideas, innate technology skills and inclusive vision— Millennials. While corporations in China are encouraged to innovate and are sometimes even funded by the government, most large US corporations are still very short-term focused on their next quarterly report, with managers who are nearing retirement and often care more about their ego and their stock price than learning something new. Retained earnings are going into stock buybacks — not R&D — and creating higher stock prices rather than new products. Payout ratios for dividends are 50 - 60%, so companies turn their businesses into annuities rather than plow money into R&D. This is unsettling for many reasons. The biggest one being that Americans are relying on these companies to bring the US into the world of smart cities, 5G, autonomous cars, AI, robotics, energy storage, quantum communications, and solutions to climate change while China has ALREADY implemented much of this.

The problem is that the US is now more polarized than ever. If you follow the news in the US, you will undoubtedly see the current divide in the country – a deterioration of the working class, a toxic view of the government as a way to advance national policy, an inability to stop gun violence, a runaway opioid crisis and a mismanaged trade/technology war with China. On the other hand, the Chinese government is all-in on blockchain, 5G, IoT, AI, electric public transport and quantum technology by not only supporting the private sector but also making huge investments in education, and in some cases directly funding the build-out. All these are essentially being done while Washington is at a standstill over various social issues like abortion, impeachment, gun rights or religious worship. Meanwhile, China is turning into a technological powerhouse while flying under the radar.

A large part of the polarization occurring in the US, which by no means can explain all of it, is the growing inability or unwillingness of millennials to buy into — or be let into? — the Fortune 100 companies so that they can play a vital and dynamic role in a desperately needed digital transformation. This book is about why they are not allowed into — or, more importantly, are opting out of — this world. It is also about what happens to them when they enter the corporate world but are not looked after. It is about an epidemic of anxiety among millennials — a very definite mental health crisis — which is getting short shrift by cynical older adults who think these youngsters should just pull themselves up by their bootstraps. This is an anxious generation which thrives on fluidity but which has many unidentified and under-appreciated issues which need to be addressed at a societal level in order to get the most out of the next generation of leaders. It is they who will bring the US to the next level.

For reasons which we will explain, Chinese millennials do not seem to be hemmed in by the systemic anxiety experienced by American millennials. It is illegal to own guns, so there are

no school shootings. There are no foreign wars, so there are few millennial veterans with problematic issues of PTSD and drug addiction. Universities are subsidized, so young adults don't graduate with tens of thousands of dollars in debt. Chinese millennials are more likely to grow up with an intact nuclear family and even two sets of grandparents living nearby. Addiction rates for dangerous toxic drugs in China, while growing, are a fraction of that of the US and it is very difficult to get access to drugs. China did not have a Great Financial Crisis (GFC) in 2008, so the population has higher confidence in the government and other institutions. This has allowed innovation in financial services to flourish, as there is less need to have regulators and prosecutors breathing down the necks of Bankers. The indisputable facts are that rates of incarceration, suicide, divorce, murder, shootings and crime are all dramatically lower in China than in the US.

It's not all roses, though, as a single child family does put considerable pressure on young men and women to succeed. That creates its own forms of anxiety, depression and dysfunctional family dynamics. There is great pressure to succeed academically and toe the line. The dreaded "Tiger Mom" is always hovering. And many millennials had two tiger grandmas as well who lived at home. Many of them spent 80 hours a week in high school preparing for the all important national exam to enter top universities. This pressure cooker approach to education causes depression later in life, as these people reflect on an adolescence spent buried in books.

Divorce is on the rise. Alcoholism rates are on a par with international levels. On balance, however, the data we lay out presents a society going from strength to strength. The Sackler Family and Purdue are now busy peddling OxyContin to hospitals in China, and we see early signs of inadvertent addiction to painkillers which are prescribed after any surgery. (Chinese are also being told that OxyContin is not addictive). China is, however, clearly not in a downward spiraling funk wracked by political infighting, paralysis on basic social issues or petty religious bickering. This has been an unprecedented time in human history, as more people have been brought out of poverty — more than 300 million are now have a living wage. More importantly, the migration of tens of millions of farmers to the cities to seek out a higher wage and independence is also unprecedented in human history. The overall result is a sharp fall in overall suicide levels, led by for young women. This is because can leave the strict cultural trappings of farm life and have a more independent life in the city with the hope of making good money.

This book navigates these massive historical tides — social, emotional, professional and technological — in very practical ways. It lays out the journey of a millennial who lived through the death of his father at age of 11 from alcohol-related causes. Prior to making his way into the center of the IOT drama with Accenture, we are shown a journey of courage and tenacity to overcome his own drinking problems. The journey moves into 2012 with a global approach to IOT at Coca-Cola. He then went to Accenture and did many IoT projects in more than 20

countries, including work with AT&T. After that, he was hired by Verizon to do projects both in the US and internationally. He spent time in Mexico working on projects involving US Telcos and Huawei. Then he went to China into the deep end with a NYSE-listed marketing firm. Austin was working closely with many of the leading Chinese companies in the area of ecommerce and payments. This is an American millennial with fluent Chinese who has come from 1) the top US consulting firm in internet of things; 2) the top US telecoms company and 3) a Shanghai based payments company in the middle of the Alibaba ecosystem. However, at its roots, is a story of someone with all the cards stacked against him who triumphed by reaching out to boomers. He used what worked, left behind what did not and created a world on his own with other millennials.

We have added one important feature with the aim to arrive at practical, tangible ways that millennials and older adults can have a dialogue about many of the issues named above. We have 18 case studies for broad discussion for groups in educational institutions or corporate offices. These are specifically designed for the millennials and the inter-generational adults to sit down with each other and find common ground. Millennials need to learn to upwardly manage adults who are trying to learn new things. And adults need to find the humility to allow themselves to be mentored by younger people. These case studies are designed precisely to do that. If there is any hope of solving the many serious problems confronting civilization now — whether they are technological and social — millennials and ‘inter generational adults/boomers MUST find common ground. These case studies are designed precisely to do that. The world desperately needs to deepen the dialogue NOW.

This first part of the book reflects on the major differences between the US and China through the eyes of a millennial. The second part of the book looks at the evolution of the battle for technological supremacy first from Austin’s eyes of working directly with Accenture, Verizon and AT&T. After that he offers insights from his years in Shanghai while setting up a successful ecommerce company working directly with Alibaba, Tencent and JD.com. The differences between the US and China are quite radical. At the end of Part II of this book we offer a detailed step by step guide of how to growth hack the seemingly impenetrable Chinese ecommerce market. The third part of the book looks at the serious challenges facing the US as it tries to jumpstart a national initiative to catch up with China in many areas, especially 5G, payments along the Silk Road and ecommerce. Solutions are available, but the current anti-government ideological forces running hot and heavy in the US need to reverse course and embrace some kind of public-private partnership in both social ills and technological shortcomings if the US is to stay on top. The US must set crow and start doing what China has been doing for many years. Only a public-private endeavour can build out the digital infrastructure to get to the next level. We strongly believe the US is going that path now, so it will need to backtrack on its demands that China stop government support for smart cities, 5G, AI, autonomous cars, power storage, etc. The US is starting to do this now, primarily through the Pentagon.

Part I:

This part of the book looks at the causes of the rift between the US and China through the eyes of a millennial. Where did this great Silicon Curtain gradually descending from the Sea of Japan to the Indian Ocean get its start? How did China become such an existential threat to the US? Just how far is China ahead of the US? Is there a secret sauce to China's success? We think the common narrative that China gets ahead by "stealing" is fatuous. There are real powerful dynamics going on in China which have great momentum.

On the other hand, how much of a role do the social ills plaguing America have to do with inhibiting millennial productivity? Is this really an important issue, or do millennials just need to pull-up their britches and grow up? When we started to write this book, we thought that the US merely needs an Apollo program of AI, 5G and financial technology to catch up with China. We thought a closer relationship between the Congress, Pentagon and the private sector in major cities could wake up the sleeping giant. Our somewhat shocking realization was that there are very serious social ills that are holding back millennials. They are the future of the country and these social ills are as important to solve as government gridlock.

We catalogue these issues or what we call the "Seven D's" — an opioid epidemic of legal and illegal drugs, debt, national disunity, Middle East discord, mental disorders, divorce and a social media that distorts the human person. We follow on with the discarded millennial veteran — which society wants to forget — and their high suicide rates which push up overall suicide rates. We look to the 'out of control' gun culture and the trauma many millennials experienced as they rehearsed for mass shootings and went through high school wondering, "Am I next?" We note the problem with the use of jails as a dumping ground for mental illness, creating by far the highest incarceration rates globally. We reflect on the rage of so many American millennials who look at a divided government utterly unconcerned by climate change while state governments on both coasts do what they can to protect coastlines. We see the reality of 650,000 millennial veterans from the discord in the Middle East, many of whom have legitimate mental disorders like PTSD (as many as 20% of veterans) which lead to drug and alcohol abuse. We noticed the pressure social media asserts on people through Facebook and Instagram to be more fabulous at any cost no matter what the reality. This leads to a toxic distortion between the real self and the public self, especially when many millennials are living in homes with stagnant or falling incomes and who can no longer afford a luxurious lifestyle.

Lastly, we highlight the fact that most college grads leave university with \$35,000-\$40,000 in debt with hundreds of dollars in interest payments per month before they even start to pay for their lives. America needs two Apollo programs (which we will lay out in part three) which address both the social and the technological issues.

China simply does not have many of the ills of America: no guns, no wars, no OxyContin. There are no wars, so no returning veterans. Universities are cheap. Drugs are very difficult if not impossible to get. China is doubling down on environmental issues and this is a top three issue for the government. Families are more intact. Say what you want about a 'one party' state, but the Five Year Plan is created by millions of people throughout society (from the bottom up) and it is geared to one thing: solve the problems you have laid out and you get promoted. Once it is agreed to, they stick to it. No matter how many military commissions Xi Jinping has under his thumb, he can't change it. Social media in China does, of course, create anxiety and the one child policy puts great pressure on the son or daughter to achieve. But the result is that China is climbing the ladder and is now in the top 10 best overall high school educational scores while the US has fallen to the low 20s.

As we discuss the overall differences between the two countries in Part 1 — again, through the eyes of a millennial — we will use the third person. We want to be as fair as possible to highlight the positives and negatives. As with all good narratives, the underdog (China) is given a little benefit of the doubt and the king of the jungle (The US) justifiably deserves greater scrutiny. That is the point of this section.

Chapter 1: Where did it all go wrong with the US and China

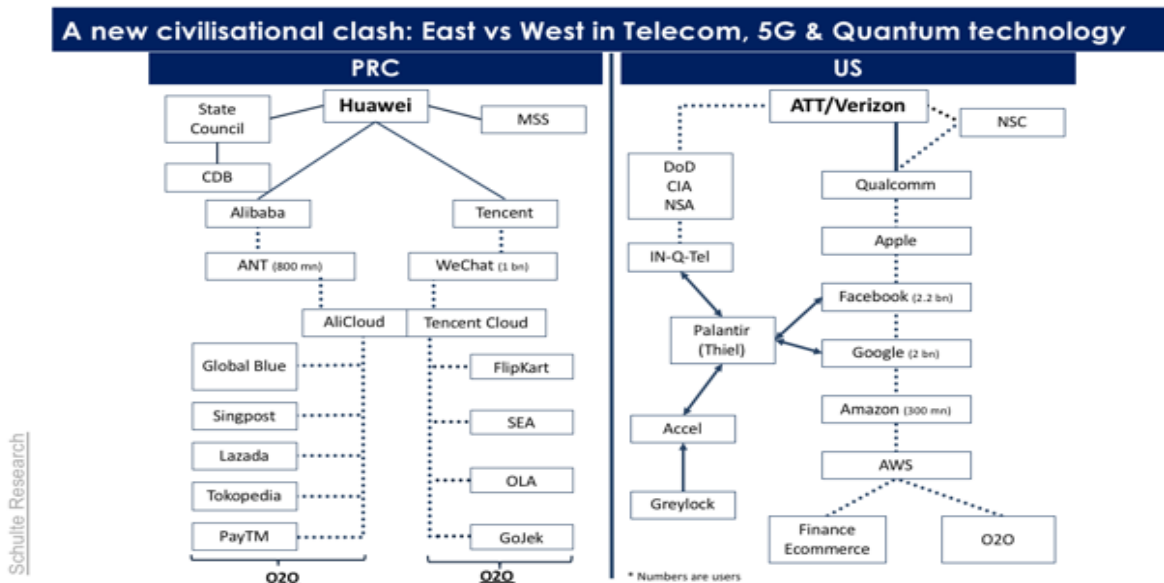
In analyzing the path to digital commerce for both the US and China, we do not want to criticize America or to praise China or anywhere else. Every country has its own social, economic and educational problems. The US is still in a position to be a dominant player in the world for decades to come. But, the US needs to wake up to the fact that EVERY country in the world, especially China, is coming to eat America's lunch. They are doing this for one simple reason: to make a better life for themselves and their children as well as to take care of their parents in old age. India is also a juggernaut in this respect. Other cities like Jakarta, London, Singapore, Barcelona, Sydney, Dublin, Amsterdam, Berlin and Seoul are on the cutting edge of technological development led largely by millennials. There are even 'long shot' cities which are now coming alive with millennial vibrancy — Bucharest, Manila, Dhaka, Dubai, Nairobi and Lagos. They will not stop.

Meanwhile, In America... Most American millennials received a good education and were kept safe in the 1980s and 1990s. They had clean, safe streets and a consistently safe supply of food and water. They are fairly technologically adept. However, a new generation of millennials throughout the emerging markets — several hundred million — have also now been educated, kept safe, fed well, have clean water, no civil war and are well-educated. They are now technically adept and hungry. They are guided by one simple goal; to make a better life for their families (both older and younger generations). They are humble, hungry, motivated and want a bigger piece of a pie that is not getting any much larger. Many millennials and older people today in the US do not realize this. At best, they are not taking enough corrective actions to maintain "the lead". At worst, they have buried their heads in the sand for years and are now out to sabotage any country that wants to get in the lead.

This is all to say that in the fall of 2018, Washington appears to have woken up to the fact that China was pulling ahead in many areas of technology. We think the spark was the launch in China of a quantum communications satellite in the middle of 2017 which showed that China was ahead in the quantum space race. However, rather than taking a page from China's book and making similar investments or engaging in public-private partnerships — a new Apollo project if you like — the strategy has been to "Stop China at all costs". This is akin to the response of taxi Drivers to Uber — try to stop them from evolving and expanding.

How did the US do this? The US first blacklisted ZTE. Then it tries to blacklist Huawei domestically. Then it arm-twisted its allies (the 'Five Eyes' countries of Canada, Australia, New Zealand and UK) to stop using Huawei's equipment. It basically blacklisted many other companies as well as imposed other tariff and non-tariff barriers. It seems the US was more fixated on the intentional destabilization of China rather than actually competing. This is surprising, since isn't the US narrative all about self-reliance, innovation and new frontiers rather than knee-capping and playing the victim? Is the US playing a schoolyard bully?

At the very least, the chart below shows that the US is trying to create a technological “silicon curtain” to prevent the vital technological centerpiece of China — Huawei and its affiliates — from buying any more technology from US companies as well as prevent them from expanding in foreign markets. And it is trying to prevent any NATO ally from buying any technology from Huawei. Huawei had even offered to sell Huawei 5G equipment — which the US currently does not make — with the course code freely available. The US refused. This leaves Qualcomm, Verizon and AT&T to rapidly create an infrastructure for 5G from a standing start, something many think is unrealistic. This causes European allies great consternation because their competitiveness will be jeopardized since China and its alliances have already implemented 5G in November.



Why is the US doing this? All countries at all times look to destabilize their adversaries — distract them, cause them to panic and force them to make unforced errors. Countries want to create impotent ‘buffer states’ to protect themselves from invasion. They steal technology whenever and wherever they can. Everybody steals technology. They throw countries off their game by creating false narratives and distract them from progress. They want to stay on top. The problem here is that the US portrays itself as a beacon of hope — the shining city on a hill — where the rule of law, fair play, hard work and self-reliance can make anyone a millionaire regardless of race, family, religion or social status. What the rest of the world sees is a powerful country acting like a school yard bully.

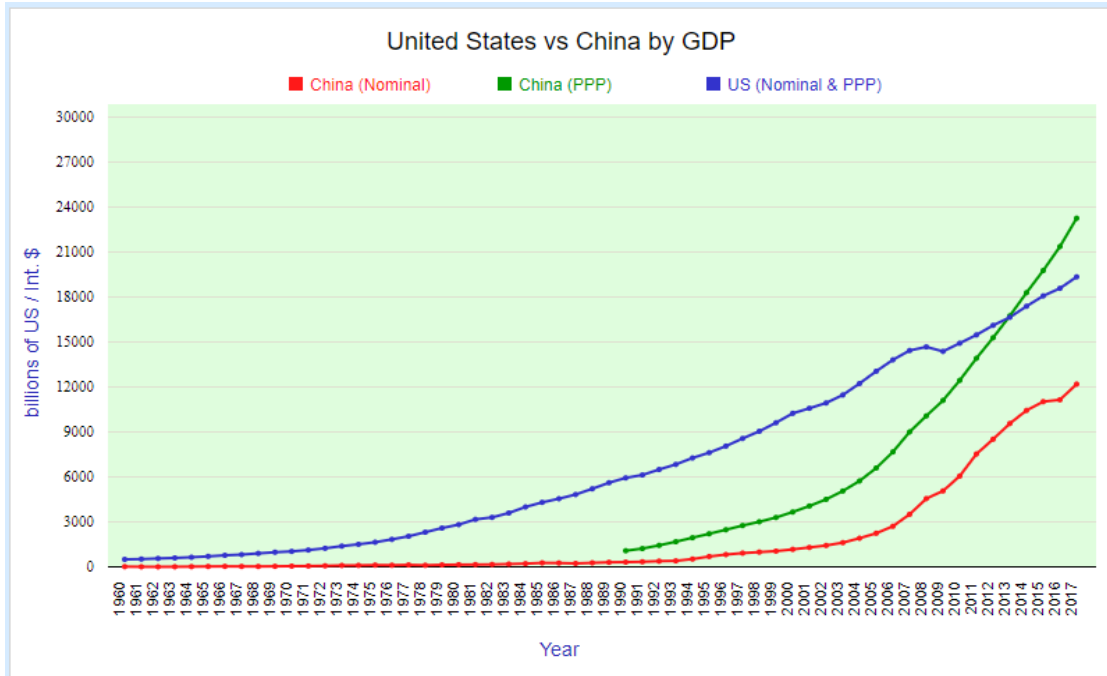
We think there is a deeper issue here at play. It is what got Donald Trump elected. In his book “Identity”, Francis Fukuyama describes a phenomenon in the US over the past decade or so which is social deterioration in the middle class. This is most powerfully reflected in one data point. We see in the US an opioid and alcohol epidemic that has broken out in rural and working class communities. In 2016, this led to more than 60,000 deaths through overdose and is causing a drop in life expectancy in the US for the first time since World War I.

Why? Fukuyama says that many of these people have seen their real incomes fall for more than 10 years and have stopped being counted in employment statistics. Tens of millions are on permanent disability, on parole or have stopped working altogether. The result, he claims, is a perception of invisibility and lost dignity. Most of all, they feel resentful and they want someone to blame for their loss of dignity. They feel someone has ‘cut in line’. China is that convenient scapegoat. How can we have not seen this coming given that some of the most popular shows on cable — Breaking Bad, Hung, Sopranos, Shameless — all celebrate the attempt at validation or redemption of invisible men and women through violent or illegal hell-raising. And lots of guns! (Fukuyama’s poignant description of a people who are invisible and walk around with a lost identity also seems eminently applicable to the woes of Hong Kong!).

The American Middle Class: Feeling poorer and less secure

The loss of this middle-class status is particularly frightening because these people had known prosperity and then lost it. Someone needs to be blamed for the loss of their prosperity and their security. So, they feel a need to point an accusatory finger to someone — to the elites, to Latino immigrants, to China. Whichever sticks. They have had a taste of the American dream and lost it. Now, they conclude as a group that someone has ‘cut in line’ and stolen it. For Americans, the loss of real incomes IS a loss of identity. This penetrating insight seems applicable in cities which are experiencing great upheaval and blame some “other” outsider who cut in line — London, Istanbul, Hong Kong, Beirut, Barcelona. They see a foreign power — which is either imposing its will or its refugees or both — on cities which want to preserve their autonomy and way of life.

Why do Americans in particular feel they have lost their identity? Hard work in the American context confers identity. Their identity and dignity have been taken from them by “someone else”. This someone else has ‘disrespected’ their right to work. It can’t be that the plutocratic elite — the greedy 1% who now have more wealth than ever — have taken their identity, for that is Un-American. Right? Furthermore, some in the religious community will claim that believers have been disrespected by non-believers. The betrayal by this foreign non-believer has led to the impoverishment of the middle class. So, this is a crime against God, too! See the chart below to show the way in which fast growth, low inflation and high productivity allowed China’s GDP measured in purchasing power parity to seemingly pass up the US between 2014 to 2016. (This essentially measures the “expensiveness” of, say, a haircut inside each economy by an actor inside that economy). Essentially, the price of a haircut is becoming “more affordable” in China.



Source: IMF, World Bank, 2019.

The view that godless foreigners are cutting in line and stealing the American Dream from under the noses of erstwhile middle-class folks — a view which would appear strange to some readers — has sticking power. It is convenient. It sounds credible. It passes the buck to the foreigner, i.e. a ‘godless’ China or ‘rapists’ in Mexico. There is no need to reflect on either the creation of inequality by internal greed, corruption or the failure of the US government to offer adequate vital digital infrastructure to get to the next level. The chart above shows how, in purchasing power terms, China has surpassed the US. This grates on the “sole superpower” left on Earth.

The seven Ds: Divorce, debt, drugs, disorders, disagreement on climate change, discord from endless wars and a distorted sense of self from social media weigh heavily on millennials

The specific middle class examples — in particular Austin’s journey as a millennial — laid out in this book feel that they have become invisible within their own society and see themselves as betrayed by outside forces. They are afraid and their backs are against the wall, with no one to help or support them. They feel particularly betrayed by the Democrats who were in the pay of the banks in the midst of the Great Financial Crisis (GFC). These people we describe in this book in the US — including some millennials — are navigating their way in a world where their parents feel they were betrayed by the system. Someone has to be blamed.

Here's the problem. More than one-third of these millennials come from single parent divorced families and most of these families have seen a deterioration in real incomes. These millennials are saddled with student debt. Hundreds of thousands of young veteran millennials wander American cities dealing with alcoholism and disorders like PTSD. There is an out of control culture of gun violence. So many millennials know of a school or a person close to them who was affected by a school shooting. There have been 230 shootings since the Columbine High School Massacre in April 20, 1999 — one per month for 20 years. More than 400 teenage high school students have been shot during this time.

In addition, they are highly likely to be affected by addiction with a family member. They live in a culture of terror attacks in Western cities starting with 9/11. They see 'boomers' who are unconcerned by climate change and this understandably makes them very angry — great discord. They have been affected by a culture of resentment due to social media caused by a failure to have their inside and outside match.

This spills over into their social media where appearances of bountiful success must be maintained while many live in effective poverty. This magnifies the resentment of the 'have nots' because they have been coaxed into showing a false side of themselves on Instagram or Facebook which bears no resemblance to reality. They become hypocrites and live in a secret poverty while portraying success — and knowing others are doing the same. They can feel like split personalities, hypocrites, fools. They ask themselves how they can buy into something so shallow, yet they carry on with appearances. This creates anger because these millennials resent the people who have created platforms which they feel force them to lie about who they are.

Millennial obsession with image on social media reinforces feelings of hypocrisy

All of these dynamics create great anxiety. Millennials ask themselves: Who am I if I am not my social media presence? Why do I feel betrayed by adults who have broken the financial system, the political system and the climate all at once and have no solutions? Why did I take on \$75,000 in debt with no job that can allow me to have a good life AND pay my interest payments? Why has Congress done NOTHING to protect me during my high school and college years from gun violence? Why do millennials keep going off to wars that never end and come back addicted messes? There very clearly a distortion of who and what I am when it comes to reconciling me own person from my social media presence.

In addition to this anxiety, the economic decline — or an inability to even get on the highway of economic success — is seen as part of a loss of social status and identity, especially when the Fortune 500 do so little to accommodate millennials in the workplace. Someone has to be held responsible. And resentment is a highly contagious emotion. It says 'we are victims'. And victims are only ever present at a crime scene. Someone must be to blame for the crime. A culprit must be found.

While China was building out its infrastructure, the US was fighting endless wars

The first millennials turned 18 in 1998. The year before was 1997 and this was the first year OxyContin went on the market and the beginning of a runaway opioid epidemic. The year after was 1999, the Columbine shooting and the beginning of a schoolyard shooting epidemic. The year after that was 2000, then the NASDAQ peaked and began an 80% descent plagued by scandal and financial illegalities. It is, however, arguable that the year after that — the tragic events of 9/11 — largely defined this generation of millennials. The first millennials left college in May of 2001 with the narrative of a conquered USSR and a global, unquestioned and beneficent Pax Americana that was benefiting all.

After 9/11, a new narrative emerged that not everyone in the outside world was in love with America — the shining light on the hill. That young fanatical Islamic men could capture planes and drive them into the heart of American symbols killing 3,000 people was a wakeup call that all was clearly not well. The narrative of Pax Americana that the millennials swallowed with unquestioning loyalty was unraveling. Most were proud when all NATO allies came together to support the US in its hour of need. At the same time, many could not understand or fathom how so many in the world could cheer as the planes hit the World Trade Center. Something was very clearly wrong in the world and the narrative needed to be recast.

Millennials: Welcome to adulthood! Here's OxyContin, Columbine, 9/11 and the Iraq War

The years 2001-2003 were real turning point for millennials. This generational turning point is borne out in numbers that are very closely watched by the US government. For more than 20 years in the 1980s and 1990s, the incidence of alcohol and drug addiction among 7th-8th graders (aged 13-14) were falling. In the 2002-2003, the numbers showed an alarming reversal. They spiked. For the first time in many years, the incidence of drinking and drug use began to move up. This has important implications for the entire system — police forces, jails, courts. The US justice system watches these numbers very carefully in anticipation of how many prisons to build and what kind of infrastructure is required for the court system.

It was an ominous uptick and caused the system to get in gear to anticipate greater levels of criminality in later years caused by alcohol abuse and drug addiction. It is also interesting to note that the same time that the national numbers for 13-14 year olds getting involved in drugs and alcohol began to rise for the first time in decades, the national suicide rate stopped falling and instead began to rise. The trauma and confusion of 9/11 and the entry into the Iraq war — with tens of thousands of damaged veterans returning from active combat — all came to gather to cause a rise in national data on drug use and suicide. The age of mass incarceration began about this time.

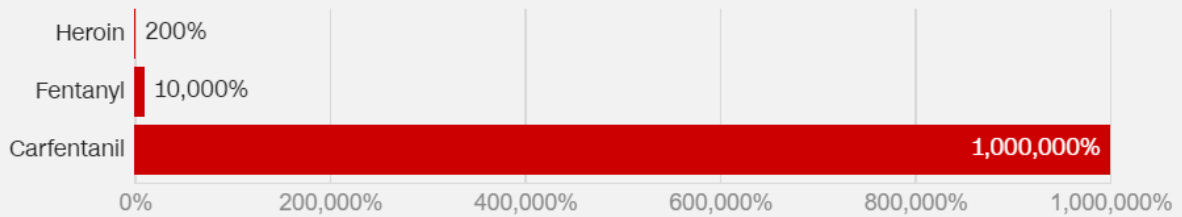
At this same time, the war in the Middle East was spreading into other continents. This would grow beyond Afghanistan to what many thought was an illegal and unjust war in Iraq. When the Iraqi army was disbanded, its remnants would spread to many countries and morph into the many-headed hydra that is now ISIS. So, the war was taken to Syria, Pakistan, Turkey and many parts of Africa. Young American soldiers barely out of their teens — hundreds of thousands — were being deployed to many violent countries on three continents with imprecise and dangerous mandates for which they were not trained. Many came home as 'millennial veterans' with PTSD and aggravated the rising drug abuse numbers which seem to have their roots caused by the residual shock and trauma caused by 9/11. (Let's not forget that an exhaustive study into why the US intelligence community missed the attacks on the US on 9/11 were due to dysfunctional relationships between and CIA and FBI as well as a profound failure of imagination by the nation's intelligence community).

The result of these endless wars in the Middle East is that many of these veterans returning from foreign wars started in 2003 had undiagnosed PTSD. This disorder is often accompanied by alcohol and drug abuse. According to the Congressional Research Service, the number of veterans that are disabled due to suffering from "wounds and injuries" is about 150,000. So, the issues with millennial veterans cause the opioid numbers to really pile up. The mental health apparatus was overwhelmed quickly. The only answer the US system had to the problem of drug addiction at the time was mass incarceration. What is more disturbing is not

the number of drug addicts piling up. The real concern is that the drugs people are now taking in mainstream society are more pure and powerful and, therefore, more toxic and deadly. For instance, crystal meth can cause long term brain damage and is very toxic. It only takes a small incremental dosage of fentanyl to cause instant death. OxyContin can trigger dependence after only a few doses. According to a New York Times article (“A New Scourge: Deaths Involving Meth Are Rising Fast”), since 2018, meth has caused more deaths in 14 of 35 states than fentanyl or OxyContin.

How potent is fentanyl?

Opioid strengths are measured relative to morphine, a powerful drug often prescribed for severe pain. Illicit narcotics are significantly stronger than the prescription painkiller as shown below in percentages relative to morphine.



Source: CNN, Heroin – WHO, Fentanyl – DEA, Carfentanil – DEA

Wars are also problematic because they are extremely expensive. As the military budgets rise overseas, domestic programs designed to help drug addicts at home are sacrificed. And law enforcement has to fill the gap and act as arrester, councilor, therapist and detox center. It is simply not cut out for this. The numbers for the ongoing wars in Iraq, Syria, Afghanistan as well as other parts of the Middle East and Africa exploded in the prime of the millennials. From 2001 to 2013, the cost of the “endless wars” was estimated at \$6 trillion. This is \$75,000 for every household when long term medical care and disability compensation was considered. The hundreds of thousands of millennial ‘wounded warriors’ are very expensive to nurse back to health, not to mention the reduction in productivity and a falling contribution to growth. More needs to be done for them. (Frankopan, *The Silk Roads*, Page 481).

On top of a burgeoning drug addiction problem starting in 2003 - 2004, something else was happening at the same time in the US. Silicon Valley was digging itself out of a deep hole during a wild and corrupt speculative bubble that ended in an 80% collapse of the NASDAQ in 2001 as well as multiple arrests and prosecutions of tech bankers. This disillusionment was occurring in tandem with Silicon Valley starting a new revolution in the digital age as the internet was starting to embed itself into society. This was the beginning of the replacement of labor with technology. This was the beginning of the end of unskilled labor — something that was already ongoing but which would pick up pace. This was also the beginning of the trade agreements which would force the US workforce to compete head on with China, Canada and

Latin America but without their healthcare and safety net systems which served as a fallback during health emergencies. At this same time, a new company in China arose to take advantage of this new technology: Alibaba.

As we will explain later, this same time in China was a time of peace — zero wars. Few millennial wounded warriors. No long-term care for disabled veterans. No overseas adventures. What was happening was a boom in domestic infrastructure. China spent trillions and built fleets of electric buses and high speed trains, highways, hospitals, clinics, stadiums, arenas, parks, megacities. It moved 300 million people from the country to the cities. It pulled hundreds of millions out of poverty. It poured money into electric cars, payments, blockchain technology, quantum communications, ecommerce, online medical services, environmental cleanup, and many other technologies.

In summary, the millennial generation entered adulthood with:

1) The scars of 9/11. Just as the first millennials turned 21, they saw on live TV the center of finance of the US as well as the Pentagon being attacked by terrorists from the Middle East — this was the first significant terrorism attack on US.

2) Endless wars. As the first millennials turned 20, the inexplicable wars in the Middle East, notably Iraq, began which politicians could not justify and which caused hundreds of thousands of young veterans to return home without help for drug-related mental illness and PTSD;

3) Deluge of new info. There was increased stress on the middle class from the rollout of the internet given the mountains of new information to digest, starting in 1998-1999, when the millennials were turning 18.

4) Student Debt. The mountain of student debt for millennials averages about \$600-800 per month in payments and the absolute amount is north of \$1.2 trillion, most of which is owed by millennials.

5) The emergence of millennials in GEMS (Global Emerging Markets). Let's not forget that this was the same time that millions of poor, hungry millennials in emerging markets were willing to work 90 hours a week for nothing in order to make something of their lives. This created hyper competition from trade agreements with China, Latin America and Canada. In addition, when the USSR collapsed and China gave up on communism and created capitalism with socialist characteristics, 2 billion people joined capitalism and the global workforce. China woke up to private sector competition.

6) Social media appearances. Constant "in your face" pressure being was created by social media sites like Facebook and Instagram to show glamorous lifestyles which were betrayed by a declining lifestyle for millions;

7) New hard drugs. When the first millennials were 16, the Sackler family brought us OxyContin. The arrival of these new and highly toxic drugs like purer meth and OxyContin lead to high death rates from addiction. Crystal meth devastated gay communities all over the West;

8) Financial scandals created by the parents of millennials. A disillusionment about institutions set in caused by endless scams like Enron, the Nasdaq crash, the GFC, Madoff, Fannie Mae, GE, AIG, Catholic Church, Boy Scouts, on and on;

9) School shootings. Rising stress came from a spate of school shootings beginning with Columbine in 1999 and persistently continuing with more than 230 high school shootings since then. More than 400 students have been shot. This caused millennials to persistently ask, “Is my high school next?” Or worse, “Am I next?” and;

10) Apathy by inter-generational adults and boomers over climate change. New evidence of systemic and potentially irreversible damage from climate change is enraging millennials who see their parents apathetic about a phenomenon which could leave many cities under water by the time millennials are 45.

These millennials have lived through major equity market collapses, a string of financial scandals, terrorist attacks, endless wars, a dramatic rise in drug addiction, and the GFC in 2008 — the effects of which are STILL being felt today.

No wonder they do not trust institutions.

No wonder they want to do things among themselves rather than work in a firm.

No wonder they don't want to own assets.

No wonder they live at home.

No wonder the addiction rates are up significantly.

No wonder about 30% of them say that anxiety affects their work productivity.

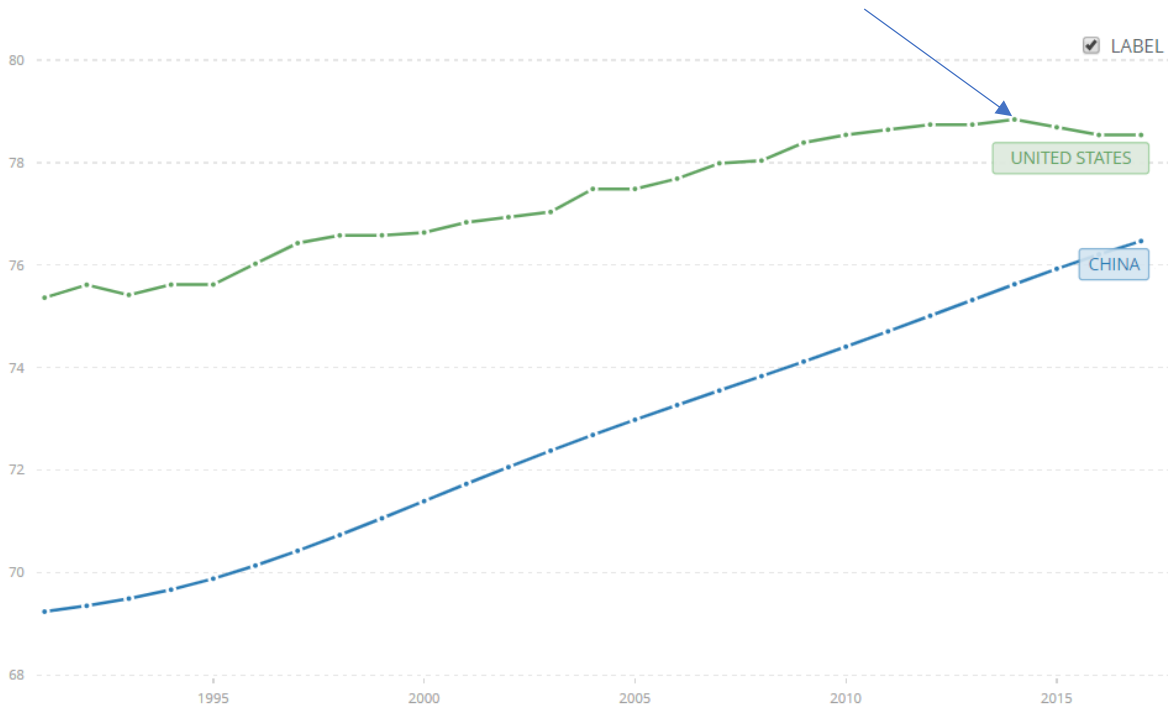
No wonder they don't trust older people.

No wonder they have helicopter parents — their fawning is an effect, not a cause.

In conclusion, in towns where Austin came from — and hundreds of others from the Appalachian belt to the Southwest — there is a problem of lost identity. The result is a desire to escape from a reality that many find unacceptable. Many logically turn to alcohol and drugs. The problem is that the recent proliferation of highly toxic drugs like crystal meth and OxyContin means that accidental overdoses are alarmingly common. In addition, the use of a firearm is a highly effective way to commit suicide. Half of all suicides in the US are with a gun. So, the combination of highly toxic drugs and the proliferation of firearms — in the midst of an identity crisis of the American work ethic — means that the life expectancy of Americans is falling for the first time since the Spanish Flu epidemic of 1918. The chart below shows that life expectancy for Americans is falling for the fourth year in a row while the life expectancy of

Chinese continue to rise. We all need to explore why this is so. That is the theme of the coming chapters as seen through the lens of Austin’s journey from suburban Pennsylvania to Shanghai.

Life Expectancy of US vs China (1990 – 2017)



Source: World Bank, IMF, 2019

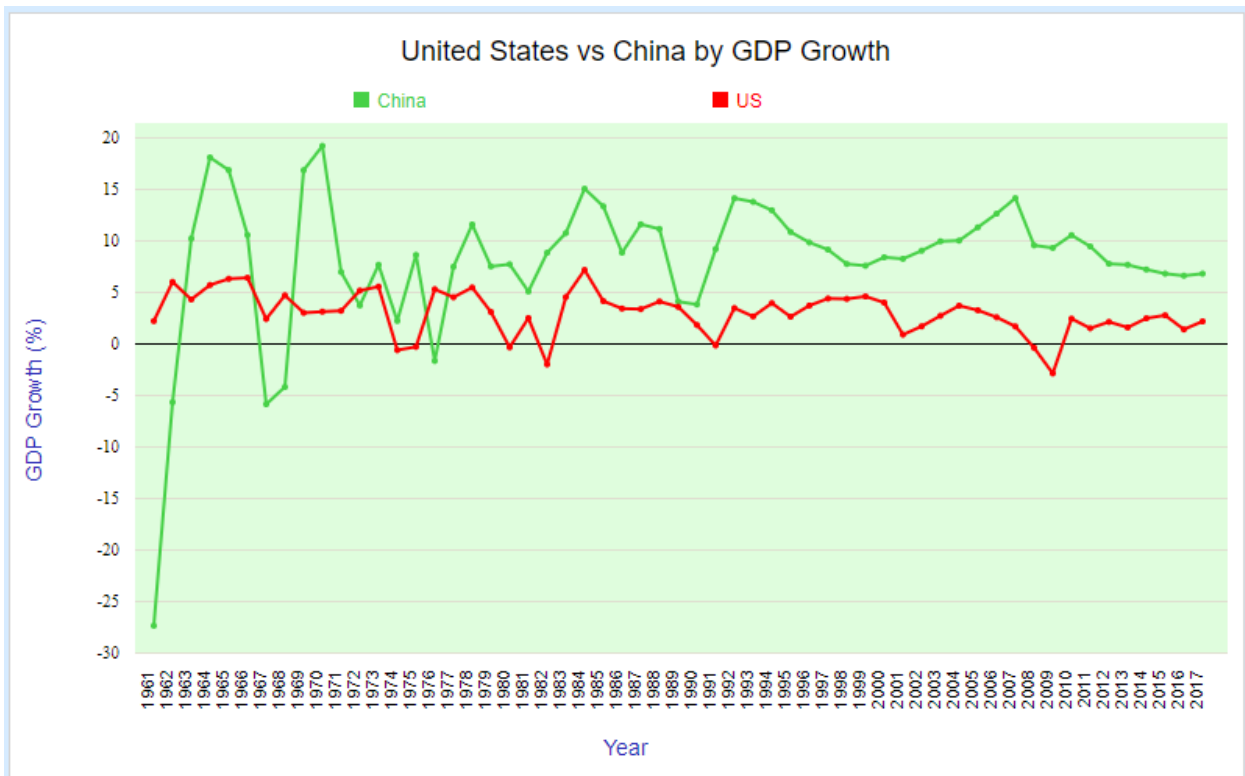
What was China doing in this same time?

Meanwhile, China had been moving from strength to strength. China had no foreign wars from 2000 to 2018 — zero. So there were no returning millennial veterans with mental disorders prone to violence or aggression. One commentator put it well: “The US spent \$4 trillion on wars in the Middle East. China spent \$4 trillion on its own infrastructure.” Due to strict laws, there are no guns or drugs. As a result, the Chinese economy went from being the 6th largest economy globally in 2006 to the second largest economy globally in 2018. As we point out in the text earlier, no foreign wars meant no returning veterans with widespread mental health issues. The system had a good handle on crime — there was little or none. Guns are outlawed. There is an almost fanatical approach to education. There was a sense of mission in a middle class which came from nothing and was extremely poor only 15 years before.

This recent burst of growth in China has also occurred at a time of great global disruption caused by a flood of technological innovation, especially the iPhone. This disruption favors the country with a more primitive economy which has “greenfield” technology. It penalizes entrenched older economies which, over 50 years, built out a complex physical and

legal infrastructure which is difficult to dismantle. The proliferation of billions of iPhones starting in 2011 - 2013 occurred just at the time when China had recapitalized its banking systems and gathered the courage and confidence to begin experimenting with financial innovation with little legacy infrastructure to hold it back. Jack Ma, the founder of Alibaba, was also in the process of raising large amounts of money for the burgeoning online shopping sites TMall and Tao Bao. This was a case of right place, right time, and right circumstances. In addition to the explosion in ecommerce and cellular payments, China was undergoing a productivity boom. As seen in the chart below, productivity growth (inflation free growth due to innovation and other factors) in China was running at 8 - 9% for 20 years while productivity growth was slowing to 2.5% for many years. The cumulative effect offers much higher growth rates with lower inflation. Hence the increase in GDP as measured by purchasing power parity.

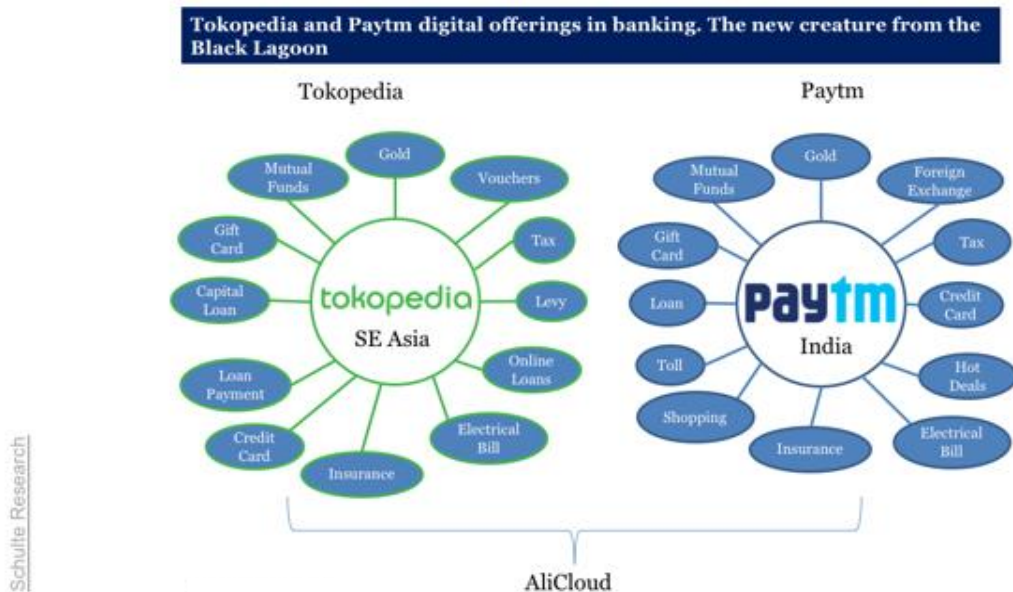
Average annual productivity growth for China from 1992-2017 was 8%; the US was 2.5%



Source: World Bank, IMF 2019

From 2012 to 2018, while the US was litigating the Great Financial Crisis and Europe was mired in Mediterranean corporate insolvency, China used the cellphone to create a new financial architecture for 1 billion people. China did this in large part because it was unencumbered by a financial crisis and had no legacy, physical, legal and lobbying apparatus. The US was dealing with: 1) a 50 year old legacy financial system made from paper checks and rusting copper; 2) mountains of toxic derivatives; 3) District attorneys who were on the warpath for bank malfeasance and 4) a housing market in free fall.

China was able to invent a new banking system from scratch without entrenched lobbyists, copper-based telecom companies, confusing state regulators, and top heavy internet companies who were chasing Hollywood dreams. And China cleverly linked these financial services directly to people’s lifestyles. In this way, Alibaba and Tencent were able to not only offer financial services alongside lifestyle services, but also to link them together on one platform. Online purchases could be linked to savings, investments, insurance, tickets, utilities, fines, entertainment, travel, and even education. Alibaba became a “one stop shop” for almost all parts of life. It became a super-app. Nothing in the US remotely resembles this.



Tencent’s Wechat was becoming a ubiquitous chat facility for 1 billion people. In addition, Alibaba went on a stealth acquisition binge (while Tencent expanded to 49 countries) making large item purchases like PayTM, Lazada, Tokopedia and acquisitions in Europe, Thailand, Philippines, Bangladesh, Korea and Japan. In geography, reach, product offerings and customers, no financial institution globally has the reach of Alibaba. Furthermore, no financial institution EVER was able to combine more services for banking activity and lifestyle activity to more people in more countries. As far as the “space race” for financial services in Global Emerging Markets (GEMs) and frontier markets was concerned (where billions of up and coming tech savvy millennials were lapping up these services), it was game, set and match. US banks, consulting firms, financial services companies, brokers and insurance companies were caught flat-footed.

Of course, there are great pockets of immense innovation and productivity in America. But these pockets are increasingly found on both coasts — Los Angeles, San Francisco, Seattle and Portland on the West Coast. And New York City, Boston, DC, Raleigh/Durham and Atlanta on the Eastern Seaboard. Cities in the middle of the US which are innovations hubs include Austin, Denver, Chicago, Minneapolis, and a few others. These are university centers and are

making great technological strides in healthcare, bio pharmaceuticals, finance, insurtech, ecommerce, agriculture, entertainment, lifestyle, music, climate change, among others. The question is whether there is enough of a critical mass of zip codes to bring the entire country in a new direction.

Chapter 2: US versus China by the numbers

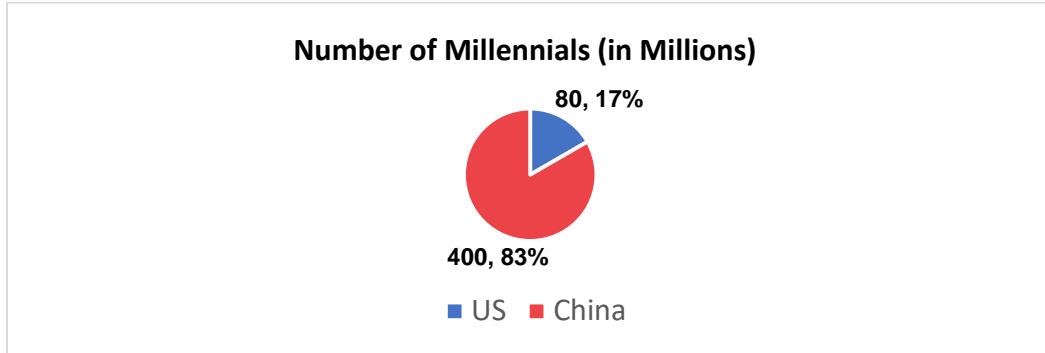
In this chapter, we want to lay out the main issues which we think have a profound effect on millennials as both social and economic actors. As we said in the introduction, all countries have their problems and all societies deal with ills. It is the human condition. However, after we did an exhaustive search on many societal issues which put pressure on millennials, we conclude that the situation in the US contributes significantly to millennial angst or anxiety in ways that Chinese millennials simply do not. We lay out ten markers and at the end we offer a case study on what needs to happen to remedy these ills. One of the powerful conclusions we have arrived at is that the Apollo program that American society needs to create in order to pull ahead of China is NOT technological but social. The core issues of drug addiction via opioids, millennial veteran mental illness and gun violence (especially in schools) — and mass incarceration as a way to deal with these ills — all need a new approach. On all these fronts, these issues hold back American society and create intense anxiety on millennials which inhibit their ability to focus, concentrate, and thrive. These ills are profound and affect the ability of people to maintain resilience in the face of obstacles or failure. The Apollo project America needs is a social one. The technological one will follow quickly.

[I: Millennial Angst: How many are there and why are American millennials so anxious?](#)

The chart below shows that there are 80 million millennials in the US, about 24% of the population. This is in contrast to 400 million millennials in China, a much higher 29% of the population. So, China has five times more millennials than the US and four times more than Europe — and a much higher proportion than both. In addition, if we compare this against the overall workforce, American millennials make up about half the workforce given that there are 160 million workers, the same as China. Chinese millennials alone are more than two times the entire US workforce.

A few other data points are instructive here. One quarter of the world's population are millennials. Gen X represents 20% and Boomers represent 17%. There are 102 million millennials in Europe, or about 20% while boomers represent a much larger proportion, or 34%. This likely is caused by low birth rates among boomers and Gen X in Europe. This legacy problem of low birth rates is most acute in Spain, which has the lowest representation of millennials in Europe, only 18%.

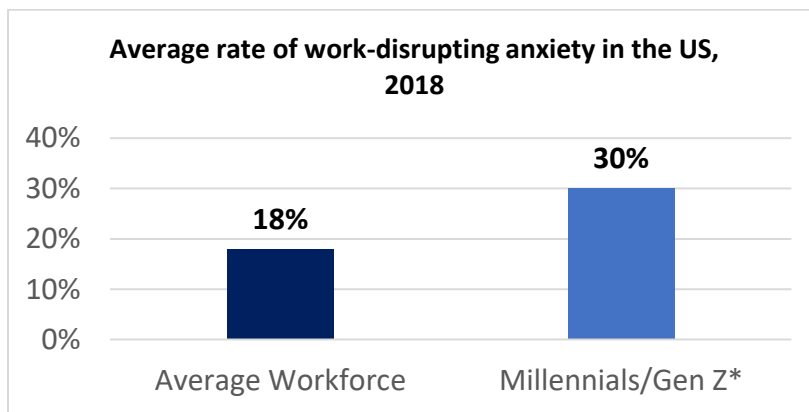
A. Millennials: How many?



Source: HSBC; <https://www.business.hsbc.com/navigator/made-for-china/six-things-you-may-not-know-about-chinese-millennials>

B. Anxiety (US): Where is the anxiety coming from?

The chart below shows that the data reflects the narrative above. The ten reasons laid out above appear to cause the high levels of anxiety (essentially debt, divorce, drugs, guns and social media pressure) among millennials. It does not seem to be about intellectual ability or self-confidence about capacity to perform skills. It is an accumulation of unhealthy, stress-inducing situations which millennials see as toxic and unacceptable but which so many inter-generational adults see as matter of fact and should be accepted as unsolvable problems. This makes millennials question their grasp on reality. There are many issues which millennials find unacceptable but which older people see as “facts of life” and cause fierce debate. These are gun control, mass incarceration for drug-related offences, climate change, ease of prescribing painkillers, systemic corruption in banks, the perceived failure of the institution of marriage, among others.

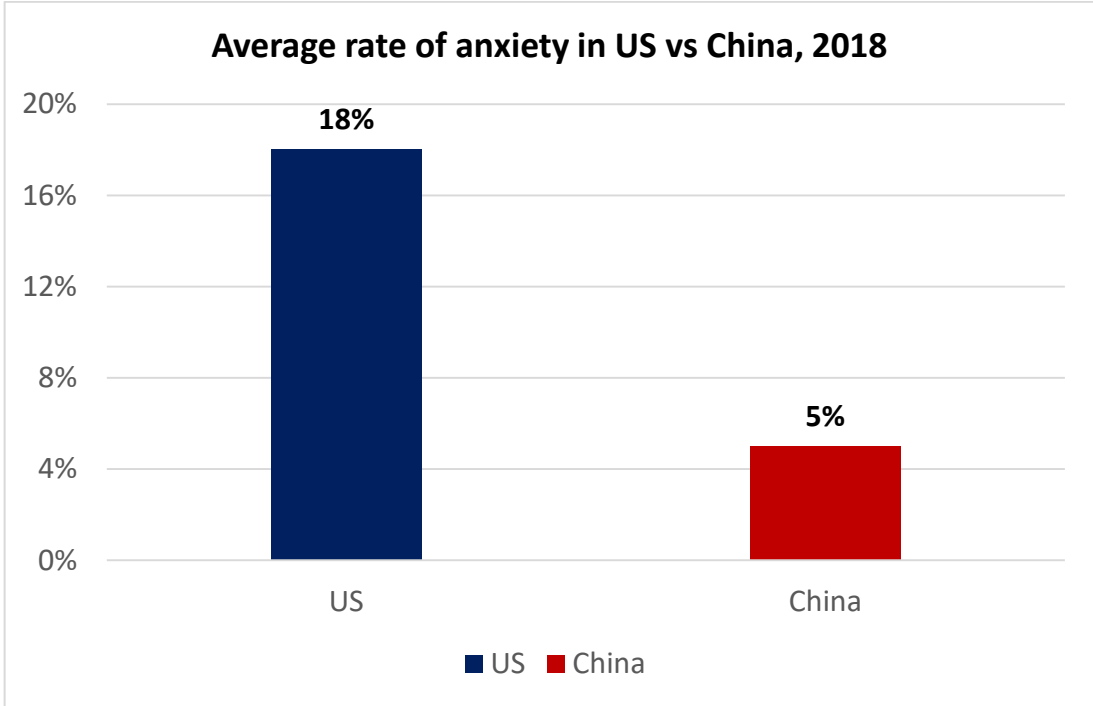


*Millennials/ Gen Z represent workers aged 18 - 34

Source: Quartz, SurveyMonkey Alliance, December 2018, https://www.talentinnovation.org/_private/assets/DisabilitiesInclusion_PressRelease.pdf

C. Anxiety (US vs China, 2018)

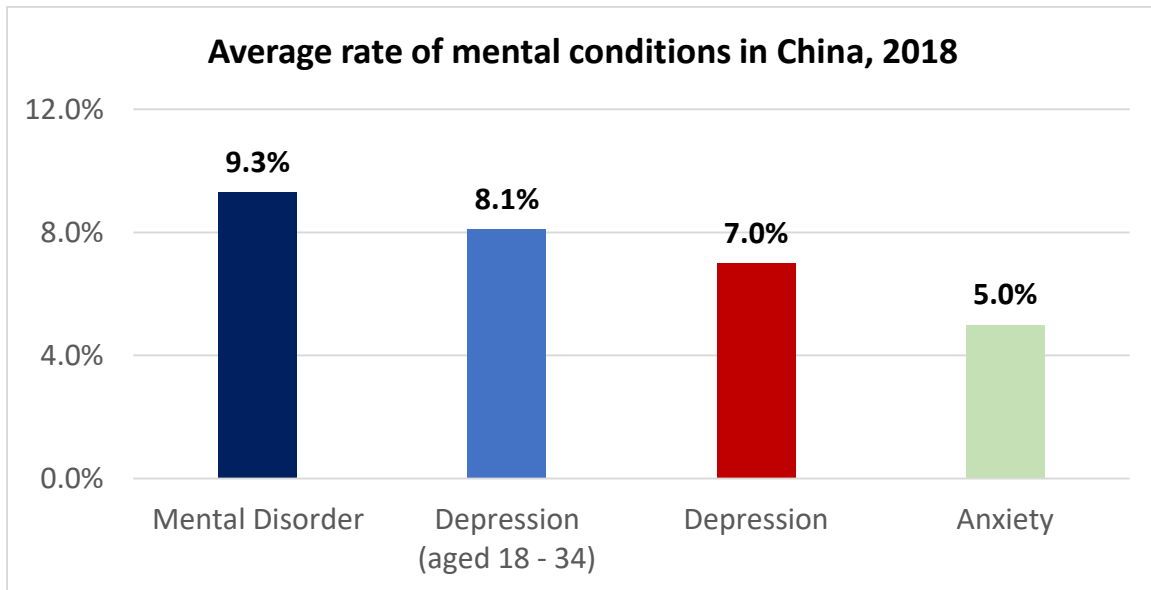
If we compare those who self-report “often of always debilitating” levels of anxiety in the workforce in the US (at 18%). The level as discovered by the Chinese Academy of Sciences in a survey of 33,000 people in 17 provinces is at 5%. These levels are much lower. Presumably, these same people do not fear handguns, school shootings and do not have access to dangerous drugs. The family would appear to be more intact and young adults are not saddled with tens of thousands of dollars in debt. The levels of homicide, crime and overdose are all dramatically lower as we will see. We want to be very clear here that the ways in which the two surveys have been conducted are different and, therefore, not exactly apples to apples. Also, these surveys on both sides are “self-reporting”. So, people may not always tell the truth as there is shame involved in admitting mental illness in both cultures. The point here is that there is a marked difference even when we take these issues into consideration.



Source: Quartz, SurveyMonkey Alliance, December 2018, https://www.talentinnovation.org/_private/assets/DisabilitiesInclusion_PressRelease.pdf

D. Mental Disorders in China

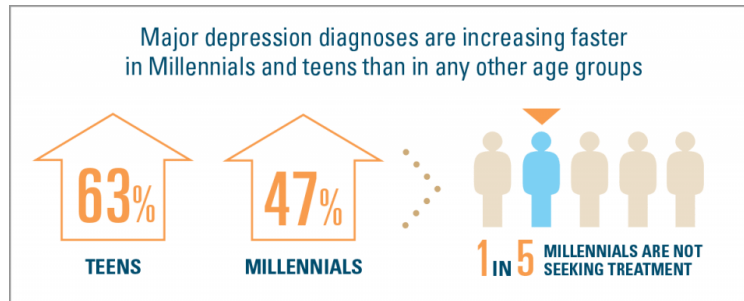
Interestingly, while anxiety in millennials in the US is substantially above the levels of anxiety noted by older Americans, levels of depression and anxiety among Chinese millennials is actually below that of Chinese adults. Depression is a feature of Chinese society, but it seems to be concentrated in the older population of those over 65 and is dominated by women. Also of interest is the extent to which levels of happiness rise (and depression falls) as people (especially women) leave villages and move to the cities. It seems that the cities offer a kind of independence and self-reliance to create a new future away from the restrictions of village life. The important takeaway here is that there is a marked improvement in mental wellbeing as people escape the economic, cultural and social restrictions of farm life and move into cities in China. As we pointed out earlier, the important takeaway in China is the dramatic drop in suicide among females as they migrate from farms to cities.



Source: Chinese Academy of Sciences, Lancet

E. Mental Disorder (US) are linked to physical sickness.

One of the main reasons that younger people can spiral downward and allow unaddressed mental issues to spill over into alcohol abuse or depression is that they are more likely to think there are not enough treatment options. 1 in 5 are not seeking treatment either because they have not diagnosed their issues or do not realize that there is a way out. Again, there is a greater acceptance in discussing and tackling mental illness on a public level in the US compared to China, but China is catching up. This is likely due to the reality that mental illness invariably has physical manifestations, notably in the incidence of obesity, Type II diabetes and absenteeism. China is seeing more of this as well. There is consensus. However, on a growing problem of obesity and Type II diabetes among US millennials.



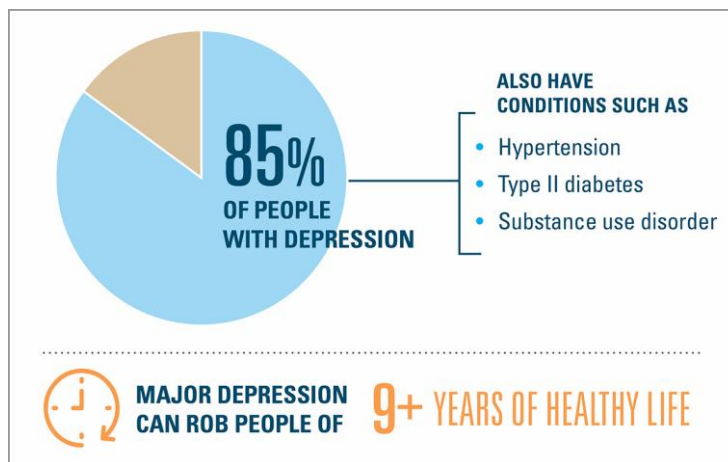
*Adults represent white collar workers aged 21 – 65

Source: Quartz, SurveyMonkey Alliance, December 2018

https://www.talentinnovation.org/_private/assets/DisabilitiesInclusion_PressRelease.pdf

F. Mental disorders and diet

Most Americans with major depression also have one or more serious chronic health conditions. Millennials have the fastest rate of growth for Type II Diabetes. High levels of anxiety and depression spill over into poor sleep, bad nutrition, fast food, lack of quiet time and inattention to “volunteerism” which seems to revivify the spirit.



Source: Blue Cross Blue Shield, the Health of America 04 March 2019

<https://www.bcbs.com/the-health-of-america/articles/two-million-commercially-insured-americans-diagnosed-major-depression-not-seeking-treatment>

https://www.talentinnovation.org/_private/assets/DisabilitiesInclusion_PressRelease.pdf

Case Study 1: Mental Health

ISSUE: Should mental health become a common workplace issue?

1. Ellen Meara, a professor at Dartmouth's Institute for Health Policy and Clinical Practice, says that economics, stress, and a deterioration in the family are all a cause of anxiety among millennials. "There is no single smoking gun." Millennials feel worse about themselves and their futures. This is leading to self-destructive behaviors which cause a deterioration in self-care about health.

2. Nadine Burke Harris, the Surgeon General of California, is a Pioneer of Adverse Childhood Experience tests (ACE). Her Ted Talk has 2.5 million hits. She claims anxiety is a kind of millennial epidemic and this untreated trauma (much of these potential issues are discussed in Chapter 1) causes adverse adult outcomes. She is a champion of a public debate on this issue. Her pragmatic solutions for adults are easy: A) how can we sleep better; B) how can we eat better; C) how can we meditate better; D) how can we use therapy better; E) how can we achieve better mindfulness?

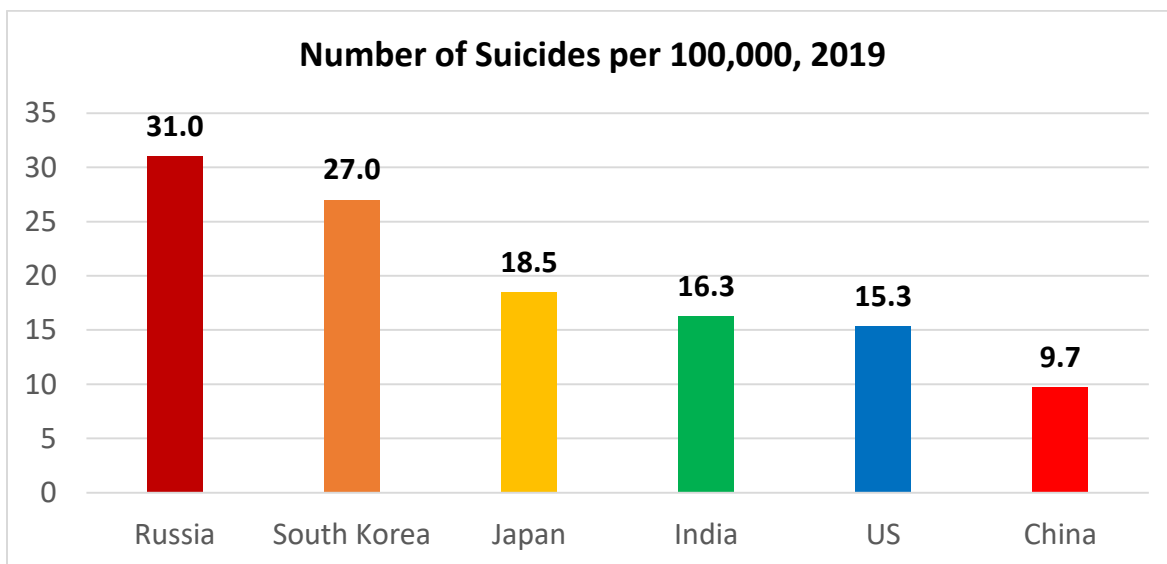
3. Aaron Harvey, the Founder of Made of Millions Foundation, quotes the WHO which says that depression and anxiety cost the global economy \$1 trillion. He makes the case for an urgent workplace conversation that is safe for employees and addresses an epidemic of anxiety in the workplace among millennials. He has created a guide to mental health in the workplace and started #dearManager social media campaign to address the issue of mental health that causes billions of dollars in lost productivity.

Discussion: Some Psychologists say that bringing up mental health in the office creates issues of privacy, legal exposure and discrimination. Should the impetus come from the employee? Is there lingering stigma to see an in-house therapist? Ten out of ten of the world's best tennis players have coaches. Why shouldn't a company's leaders? At the very least, shouldn't Dr. Burke Harris's 5 areas be given a public airing at **voluntary** lunches?

II. The Four Horsemen: civilian suicide, veteran mental illness, guns and mass incarceration

A. Suicide: Civilian Suicides rate per 100,000, 2019 (Major countries)

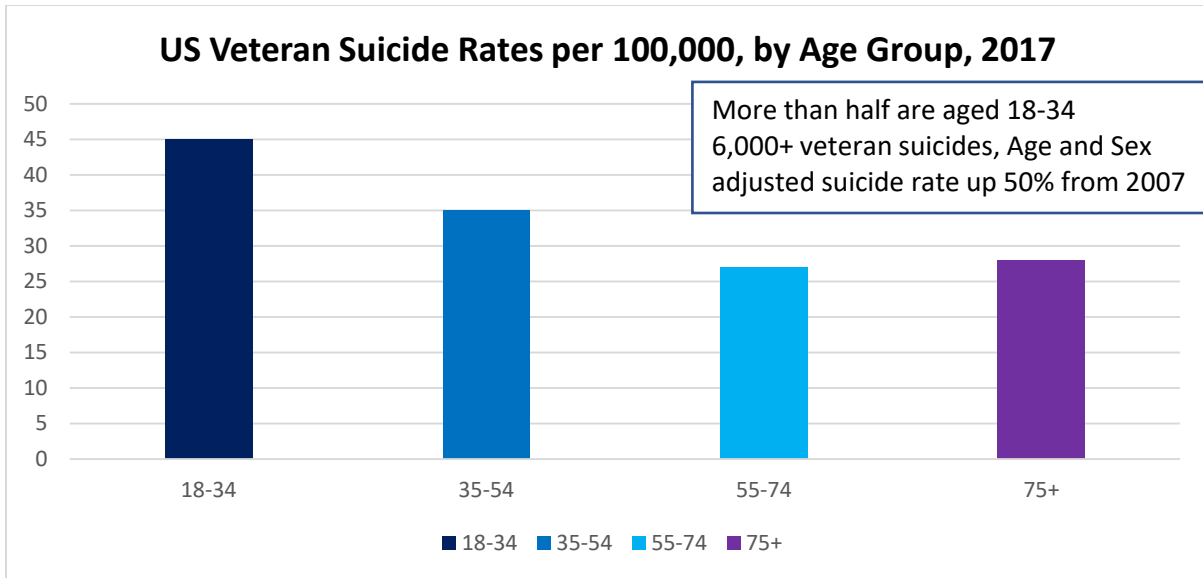
China has made great strides in reducing the suicide rate. This rate has collapsed from more than 20 per 100,000 to 9 per 100,000. In fact, this phenomenon of dramatically reduced suicide rates has been a significant factor in the increase in people on earth. At the same time, the suicide rate of Americans has risen about 20% from 12 to 15. In the past few years, most studies point to the death rate from dangerously potent drugs like OxyContin, fentanyl and crystal methamphetamine as the cause of the suicide rate. The fact that handguns are a highly effective way to kill one's self means that the proliferation of guns in American society guarantees successful attempts at suicide.



Source: World Population Review

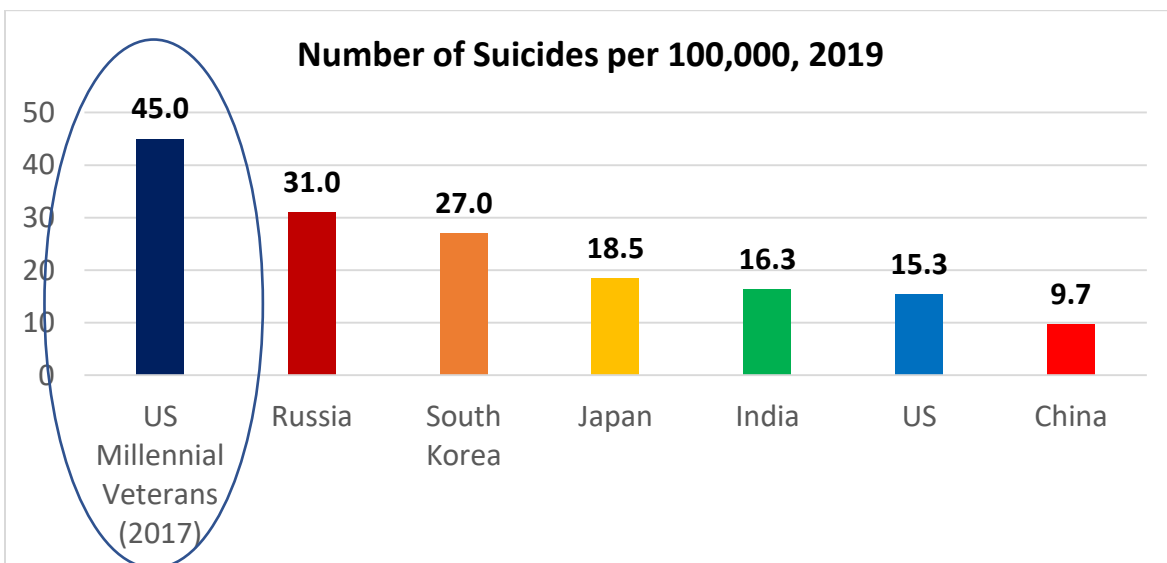
US Veteran Suicides, 2017

The peak troop deployment in Iraq was almost 200,000. These troops were rotated out every twelve months. So, it is not surprising that the CRS estimates that there about 150,000 “walking wounded” mostly millennial vets in the US. The issue of veterans returning from the “endless wars” in the Middle East, Central Asia and Africa is plays a significant role in the overall suicide rates. The suicide rate of millennial veterans (and there are hundreds of thousands of them after 12 month deployments in constant wars since 2002) is 45 per 100,000. If we compare this to the chart above, it is three times higher than the overall US average. And it is the highest group of all veterans. The number of those who have committed suicide is on the upswing and has averaged 6,100 per year. This is 20 per day — almost one every hour! There are about 500,000 combat veterans that have served in Iraq since 2003.



Source: US Department of Veteran Affairs, 2019, https://www.mentalhealth.va.gov/suicide_prevention/data.asp

To show how problematic the dilemma of “endless wars” can become, we put the issue of millennial veteran suicides in the context of global suicide rates in the chart below. If we compare millennial veterans as a group to various countries, the rate of suicide per 100,000 is 30% higher than Russia. **And this serious mental health problem of suicide among veterans shows a rate which is three times higher than the general population.** Suicide has caused the deaths of far more veterans than combat since the Middle East wars started in 2001. The chart below bears repeating. It shows suicide rates of millennial veterans against world averages. It highlights a serious health crisis among veterans as these US veterans have suicide rates which are THREE TIMES higher than the US average.



Source: US Department of Veteran Affairs, World Population Review, 2019

The data point below also shows that millennial veterans face higher unemployment rates than the population. They face unemployment levels which are more than three times higher than the adult population. In contrast, China has not had an external military conflict since 1989, so basically has no returning veterans from international conflicts. The frequency of military interventions globally for the US has real and palpable consequences for hundreds of thousands of millennials who return to normal life. They face PTSD, drug addiction, aggressive behavior and consequent incarceration, high unemployment and marital problems. It's vital for a country to have precise war aims, win wars quickly and return soldiers to inactive reserve. The phenomenon of endless wars is not just spilling blood and treasure. It also has serious consequences for those who return to society with trauma — physical and mental. JP Morgan does good stuff in this area with explicit programs to hire veterans.

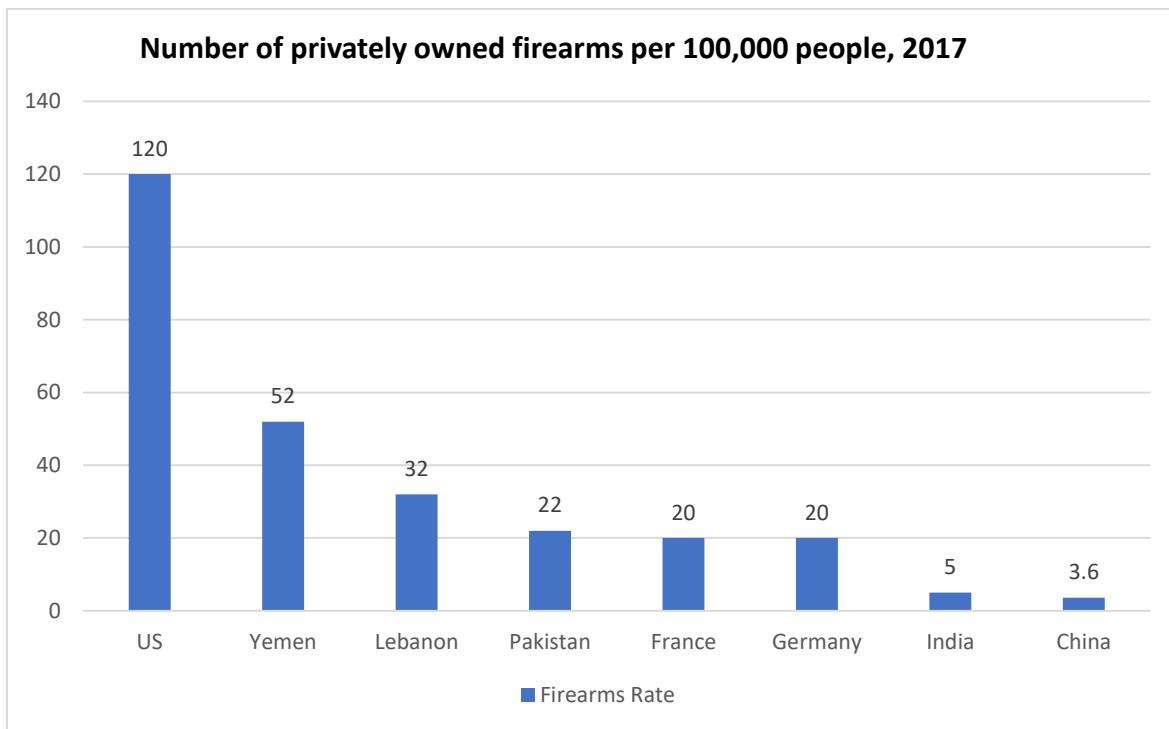
- **326, 000** unemployed veterans in 2018
- Unemployment rate for veterans aged 21-24: **14.9%** (2015)

Sources: JP Morgan Chase : <https://www.jpmorganchase.com/corporate/news/stories/gen-odierno.htm> , CNBC: <https://www.cnbc.com/2019/07/25/how-veterans-can-successfully-transition-into-the-civilian-workforce.html>, US Department of Labor: <https://www.dol.gov/agencies/vets/latest-numbers>

B. Firearms.

The ownership of firearms in the US is the ultimate third rail. No one wants to touch it. Millennials located in cities overwhelmingly are against the wide proliferation of weapons while older people, especially in the South, overwhelmingly see it as a right to own as many weapons as they can buy. The result is a society which has the highest gun ownership rates in the world. How much higher? The prevalence of guns in American society is more than two times higher than Yemen. And Yemen is enduring a full-scale civil war. The US has 120 firearms per 100,000 people. This equates to more than 300,000,000 guns — one gun for every man woman and child. This leads to a high homicide rate. But it also leads to a significant number of accidental deaths. And as we saw earlier, 50% of suicides are done with a gun. In contrast, China's gun ownership is 3.6 per 100 people, one of the lowest globally. So, there are no mass shootings or school shootings because there are no guns to shoot. China is dealing with a rash of terrorist incidents mostly by separatist Muslim groups which involve machetes or knives. These tend not to be lethal and cause serious injury. Guns are lethal and cause mass casualties. Knives don't.

Top 25 countries by firearms/GDP per capita ratio, 2017



Source: World Population Review Worldometers

The table below shows the problem with gun ownership. In the US, there are as many guys as there are men, women and children — with 50 million guns left over. China is at the bottom of the list globally at 3.9. There are two commonalities of countries with the most guns. One is a group of countries involved in recent civil war or regional war. These include Yemen, Montenegro, Serbia, Cyprus, Lebanon, Pakistan and Bosnia. The others are countries with a big outback and involve hunting and Defense against wildlife near people’s homes — Canada, Finland, Norway, Sweden. It is interesting to see how these countries can avoid mass shootings.

Top 25 countries by firearms rate

#	Country	Firearms Rate	Total Firearm	Population 2019	GDP per Capita
1	United States	120.5	393,347,000	329,064,917	\$59,939
2	Yemen	52.8	14,859,000	29,161,922	\$1,123
3	Montenegro	39.1	245,000	627,987	\$7,720
4	Serbia	39.1	2,719,000	8,772,235	\$4,642
5	Canada	34.7	12,708,000	37,411,047	\$44,841
6	Uruguay	34.7	1,198,000	3,461,734	\$16,341
7	Cyprus	34	285,000	1,198,575	\$18,695
8	Finland	32.4	1,793,000	5,532,156	\$45,778
9	Lebanon	31.9	1,927,000	6,855,713	\$7,857
10	Iceland	31.7	106,000	339,031	\$73,233
11	Bosnia and Herzegovina	31.2	1,185,000	3,301	\$5,387
12	Austria	30	2,577,000	8,955,102	\$47,261
13	Macedonia	29.8	621,000	2,083,459	\$5,418
14	Norway	28.8	1,537,000	5,378,857	\$75,428
15	Malta	28.3	119,000	440,372	\$28,585
16	Switzerland	27.6	2,332,000	8,591,365	\$80,296
17	New Zealand	26.3	1,212,000	4,783,063	\$43,415
18	Sweden	23.1	2,296,000	10,036,379	\$54,075
19	Pakistan	22.3	43,917,000	216,565,318	\$1,467
20	Portugal	21.3	2,186,000	10,226,187	\$21,316
21	France	19.6	12,732,000	65,129,728	\$39,827
22	Germany	19.6	15,822,000	83,517,045	\$44,680
23	Iraq	19.6	7,588,000	39,309,783	\$5,114
24	Luxembourg	18.9	110,000	615,729	\$105,280
25	Bahamas	18.8	74,000	389,482	\$31,858

*Firearms rate is number of privately owned firearms per 100 population
 Source: World Population Review Worldometers (GDP per Capita)

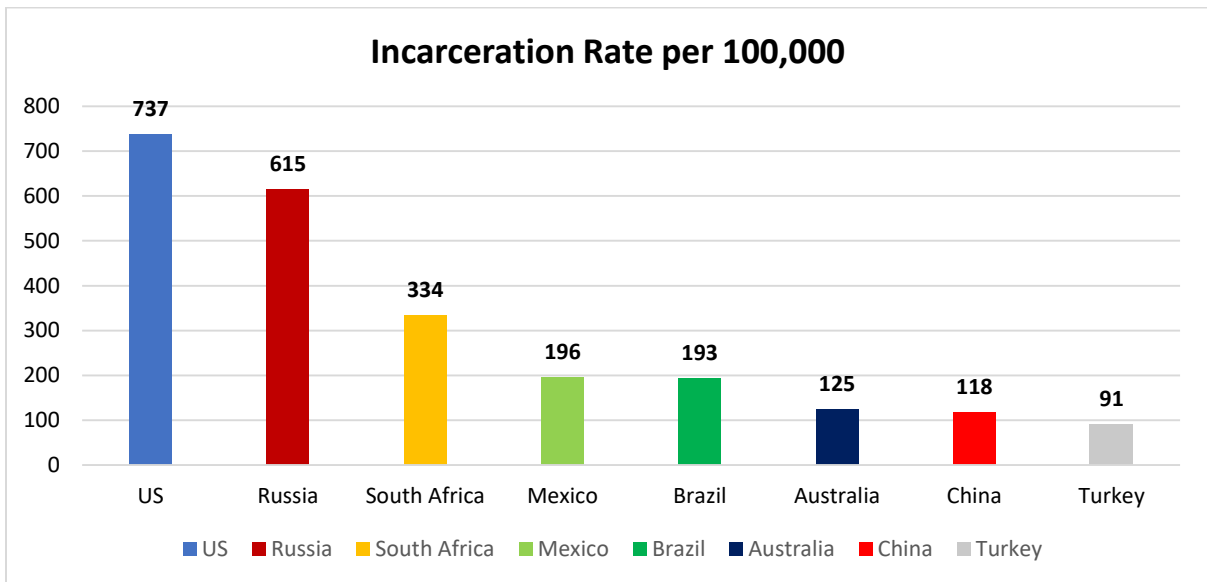
In 2019 alone, there were at least 45 school shootings in the first 48 weeks of the year. 32 were at K-12 schools. (CNN: In 46 weeks this year, there have been 45 school shootings”, November 20, 2019). The number one location for shootings was in Texas. This was followed by Georgia, Alabama, Louisiana and Tennessee. There were 26 gun deaths, including three suicides. According to everytownresearch.org, the thousands of students who witness these scenes of violence are more likely to abuse drugs & alcohol, suffer from depression, anxiety and post-traumatic stress disorder. They are more likely to have difficulties in school or engage in criminal activity. The website also tracked shootings on university campuses in 2019. There were 30 shootings at universities in 2019 where a gun was discharged on campus. The epidemic of gun violence is also prevalent on college campus life.

C. Incarceration: Mental health crisis in jails

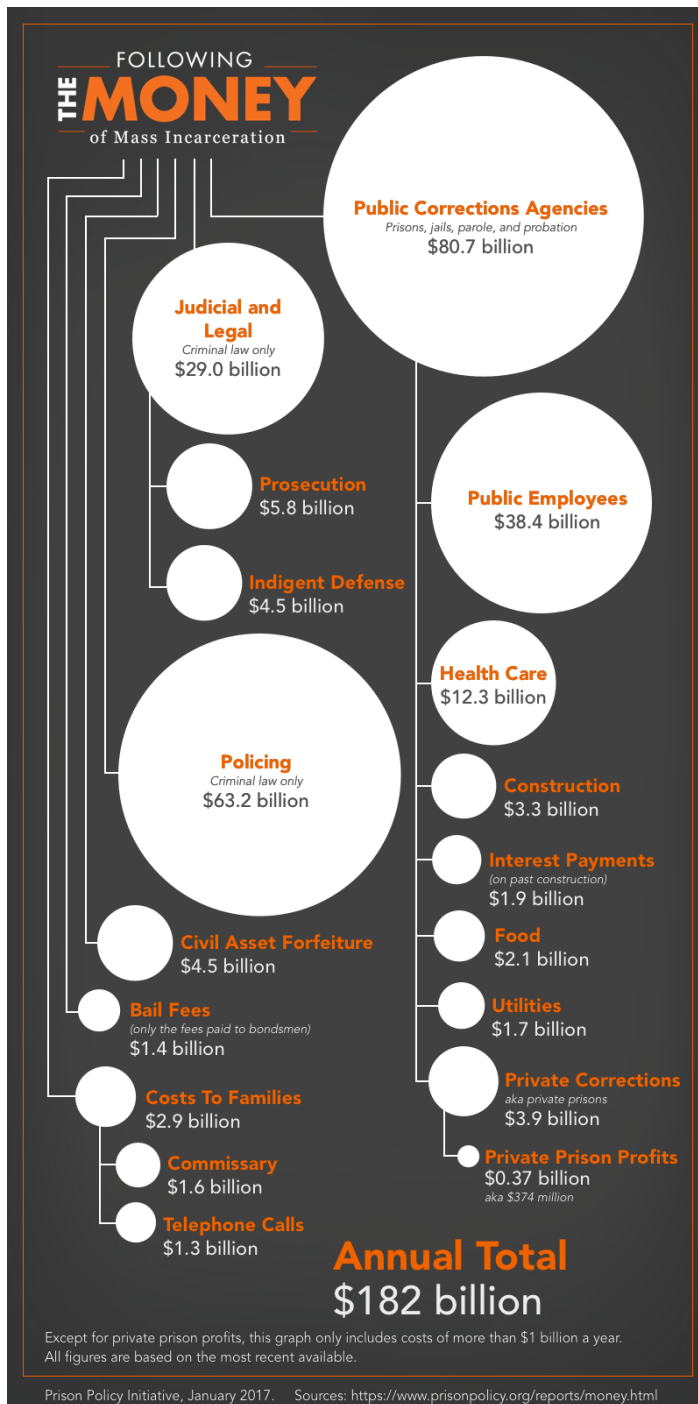
When we compare the incarceration rate globally, America comes out on top. 737 Americans out of 100,000 are in jail at any one time. And because jails are so full, sentences are often shorter. As a result, there are millions of people who on parole or probation wandering around looking to 1) make a living; 2) get cleaned up from drugs and alcohol; and 3) stay out of jail. There are more than 2 million people in jails now and more than 5 million who are on parole or probation. The numbers are stunning. 50% of Americans know someone in jail. Between 1980 and 2010, the number of prisoners has grown fivefold. On top of the 2.3 million people in jails, there are more than 5 million on parole or probation and this is a revolving number. Other numbers that are worthy of reflection about the use of the US penal system as a cure all for drug addiction and mental health issues are as follows:

1. 1 of 37 adults in the US, almost 3 percent, is in some form of penal supervision.
2. The number of people who have been on parole since 2000 exceeds 10 million.
3. 40% of those who were arrested and jailed were on parole at the time.
4. Most of these come from the same 50 or so zip codes.
5. 1 in twelve African Americans is under some form of penal supervision.
6. 8.5% of African Americans are in the penal system!
7. The US makes up 5% of the world's population but has 21% of its prisoners.
8. African Americans are incarcerated at five times the rate of whites.
9. Prisons are magnets for infectious disease: 22% have TB, Hep B, HIV or STDs.
10. Prisons are a \$180 billion business (2017), almost equal to spending on veterans.

Top countries by incarceration rate



*Incarceration rate is number of people jailed per 100,000 population
Source: World Population Review Worldometers



Source: Prison Policy Initiative, 2017

The upshot of this massive incarceration industry as a solution for society’s ills – most of which revolve around drug and alcohol addiction – is a massive bill which extends far beyond actual incarceration.

The chart on the left shows how much money is spent throughout the “jail industry.”

It’s a very hard juggernaut to stop as there are so many entrenched interests. The corrections business itself – jails, prisons, transportation – is \$81 billion.

The judicial processing is \$29 billion.

Criminal policing is \$63 billion.

And the health care bill for these 2 million prisoners is \$12 billion.

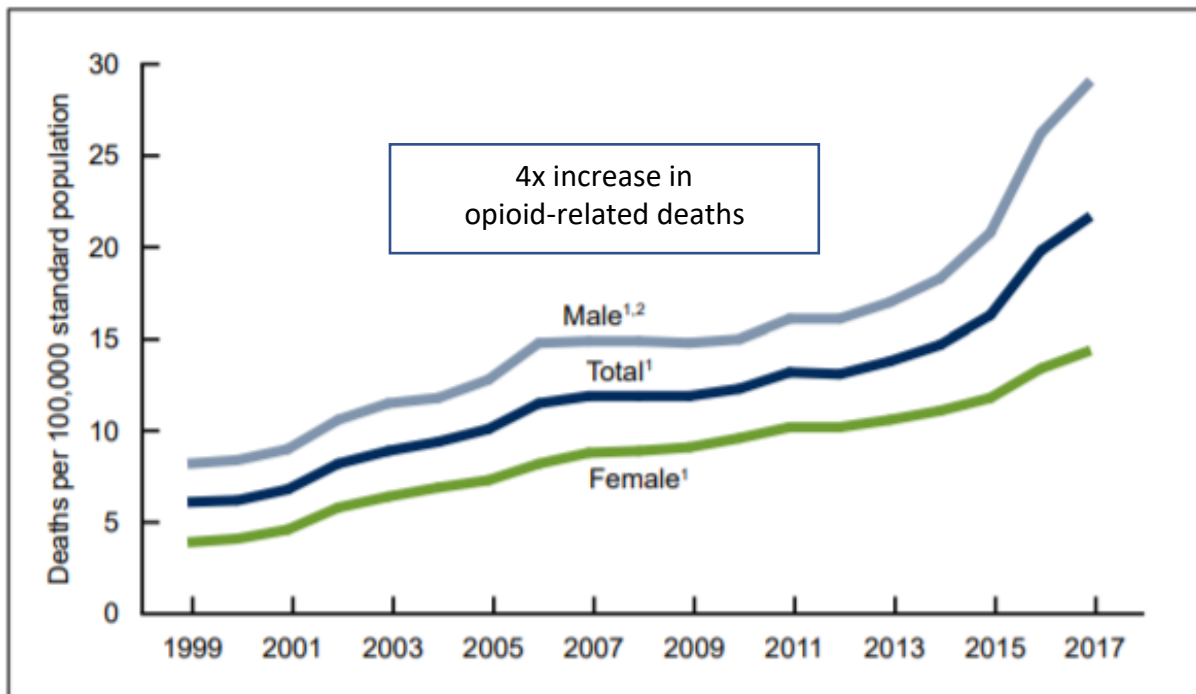
The other costs are construction, food, utilities, phone, bail and defense.

D. Drugs

One of the great insights the authors gained from writing this book together is that we now know that the serious problems with drug addiction and alcoholism in our families are a feature — not a bug — of the American landscape. Much of Austin’s story is a classic American morality tale. His Father had a long illness aggravated by alcoholism. His family was left with expensive health care bills. He was left fatherless at 11 and had no responsible adult male guidance. No wonder he — and many others of his generation — feel into alcoholism and addiction. Luckily — and with a lot of hard work, luck, guidance and a spiritual life — he escaped that fate.

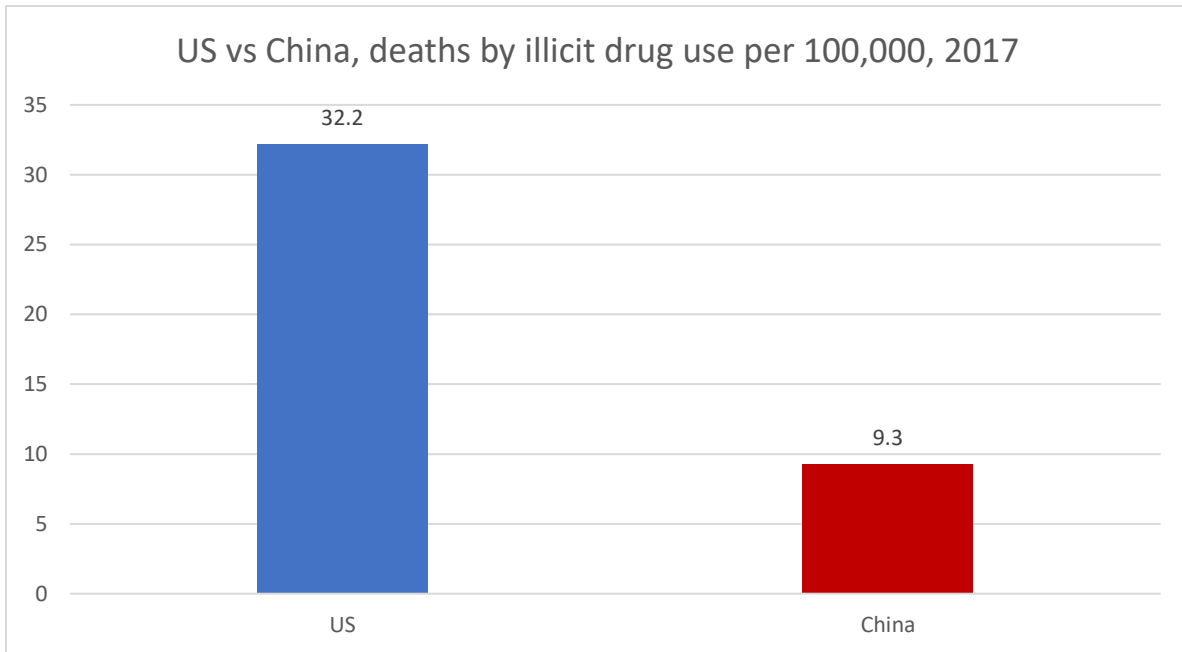
Unfortunately, the chart below shows that the deaths per 100,000 for adult males due to addiction to OxyContin have tripled. The same trend is true for females, even though they started from a lower level. The numbers are still not levelling off in 2019. Furthermore, the prevalence of injection of heroin is causing pockets of alarmingly high HIV infections. The result has been a drop in the life expectancy of Americans for the fourth year in a row. This is the first time we have seen a drop in life expectancy in 100 years. The bottom line is that there are more than 60,000 opioid-related deaths each year. **This is one opioid-related death every 10 minutes.**

Opioid deaths annually in US



Source: Centers for Disease Prevention and Control (CDC), 2019
<https://www.cdc.gov/nchs/data/databriefs/db329-h.pdf>

US vs China, deaths by illicit drug use per 100,000, 2017



Source: Our world in data: <https://ourworldindata.org/drug-use>

The chart above shows the big difference between China and the US in this regard. China has very strict drug laws which makes it very difficult to acquire drugs. The result of these strict laws is that hard drugs are very difficult to get hold of. Consequently, the rate of death by way of opiates in China is 72% lower. It is one of the lower rates globally. However, there are new data points emerging in China of Oxycontin dependence. In fact, starting in 2018, more than half of opioid painkillers were sold outside of the US. The euphemism is “medical drug abuse”. Mundipharma is a Chinese pharma company owned by the vilified Sackler family and salespeople visited hospitals to sell the drug for pain relief. There is a wide scale criminal investigation of this episode, but the cat seems to be out of the bag.

The severity of penalties for dealing drugs finds its roots in China’s own tragic national addiction to opium in the 1800s. At that time, British merchants were trading tea from India for opium from Afghanistan. Much of this was done through Hong Kong. From 1820 to 1880, the amount of opium exported to China via British ships increased nine fold to 7000 metric tons. Opium dens were everywhere and the tax on opium was a major source of revenue. China never again wishes to repeat this sad chapter in its colonial history.

In the past 15 years China has come to dominate trade of manufactured goods

One of the remarkable feats of China since its entry into the WTO in 1990 is that it became the factory of the world. In 1990, its global footprint in trade was negligible. By 2019, there was nowhere that Chinese goods were not dominant. The map below shows the countries where Chinese trade is larger than that of the US. The reality is that with the

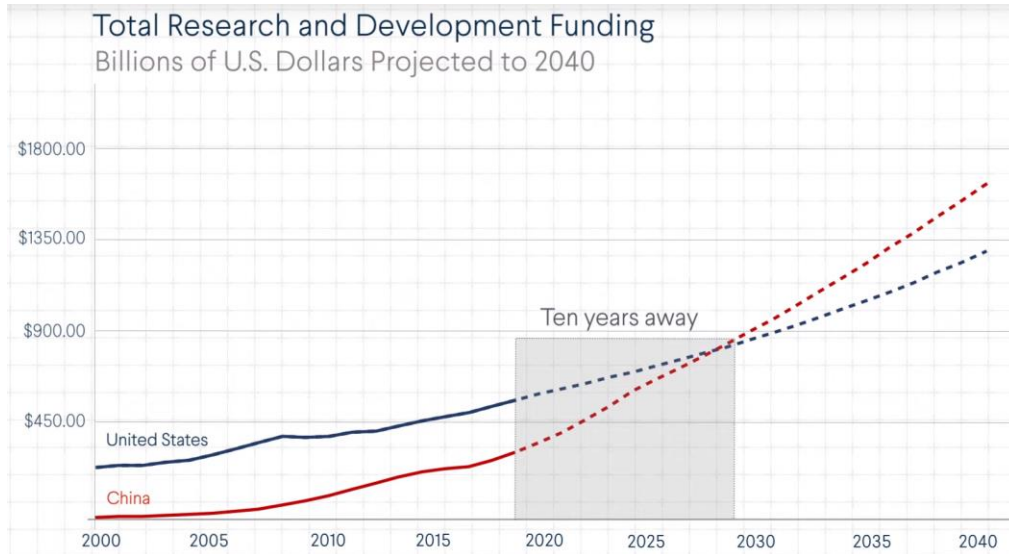
exception of Central America, Canada, France, Austria and Zimbabwe, all other countries in the world have more trade now with China than with the US.



Source: Financial Times, Pictet Asset Allocation & Macro Research; IMF Direction of Trade Statistics, graphics by Liz Faunce

III. China in the Technological Lead on Many Fronts, especially in applications of advanced technology

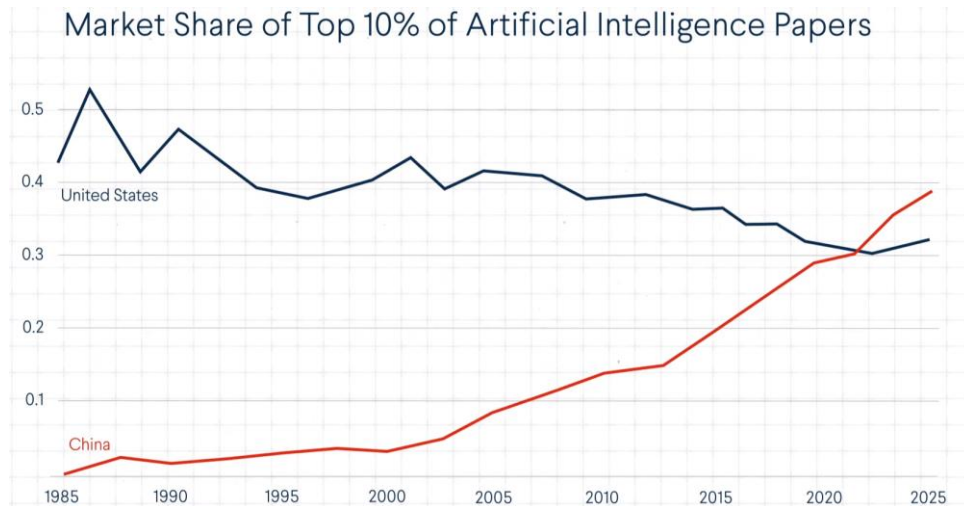
A. R&D/Education – Total Research and Development Funding, US vs China



Source: Council on Foreign Relations, *Keeping Our Edge*

The Council on Foreign Relations recently released a video which articulates the “Sputnik” moment for the US. There is a sense that the US is falling behind in many areas of technology, including 5G, advanced cellular tower technology, quantum communications, digital payments, ecommerce, autonomous cars, and digital currency coins, among other areas. It pointed out in a few poignant charts the justification for the fear. The chart above shows that in the next three to four years, China will outpace the US in R&D. There is much commingling between the private and public sector on this R&D, which is a serious sticking point in the trade negotiations. What is remarkable is that China was in somewhat of a standing start in 2005. Back then, there was very little going into R&D. That number exceeded \$250 billion recently.

R&D/Education – Market Share of Top 10% of AI Papers, US vs China



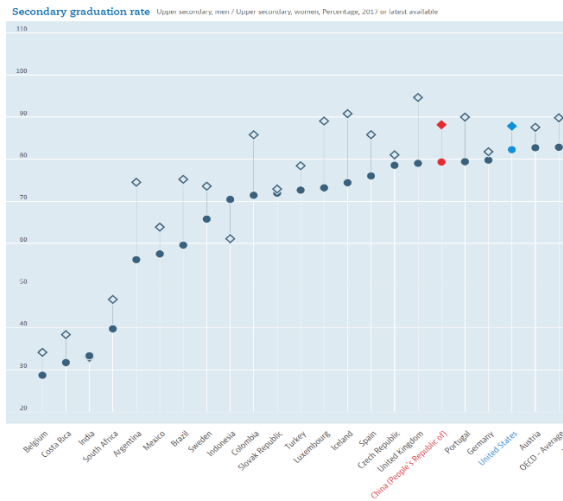
Source: Council on Foreign Relations, *Keeping Our Edge*

In the area of artificial intelligence, China is also showing great promise. The chart above shows that the market share of top 10% of AI papers which are quoted come from China. China dominance here was shown as it exceeded the US just this year. It is also the case that China had 70% of the world's patents for blockchain in 2017. Some dispute this number, but this is according to the International Patent Registration numbers. Furthermore, the proof is in the pudding, since the progress in blockchain by Alibaba, Tencent and the PBOC are undeniable. The PBOC is the first central bank globally to launch a ledger based coin. Tencent already has a blockchain based system ready to replace its Surrency system of payments.

In addition, many mainland Chinese who were studying or teaching in universities in the US are feeling a cold wind blowing through academia and are deciding to return to China to do research. There are very public stories of FBI agents visiting mainland students with student visas and asking about behavior and whereabouts. There are even stories becoming public of FBI agents interrogating Americans who have returned from fellowships at the prestigious Peking University. (Week in China, Americans at top Chinese university worried by FBI probes on return home, Aug 30, 2019 (WiC 464)).

That being said, there is a cold wind blowing inside China as well. As China stiffens its neck in response from what is perceived as an existential Attack on its technological nerve center (Huawei), there are calls for corporates and academics to help row the boat faster. Some in academia in China also feel that academic freedoms are being subsumed to national imperatives. As the "state" tries to adjust to an America which has gone from friend to foe in a quick hurry, there are calls for both corporates and universities to do some form of national service and reduce public criticism.

Education trends



B. High School Graduates

The chart on the left is a comparison between China and the US. They both rank highly on a global basis. However, China is now seeing high school rates for females exceeding the graduation rates of females in the US. The rate of graduation for boys is roughly similar at about 80%. In a recent OECD study, China ranked 6th behind Japan in math for high school testing. China was 9th in science. The US did not get into the top 20. In a recent ranking from PISA (Program for International Student Assessment), China ranked 10th behind Canada and Korea while the US came in at 31st below Spain and Russia.

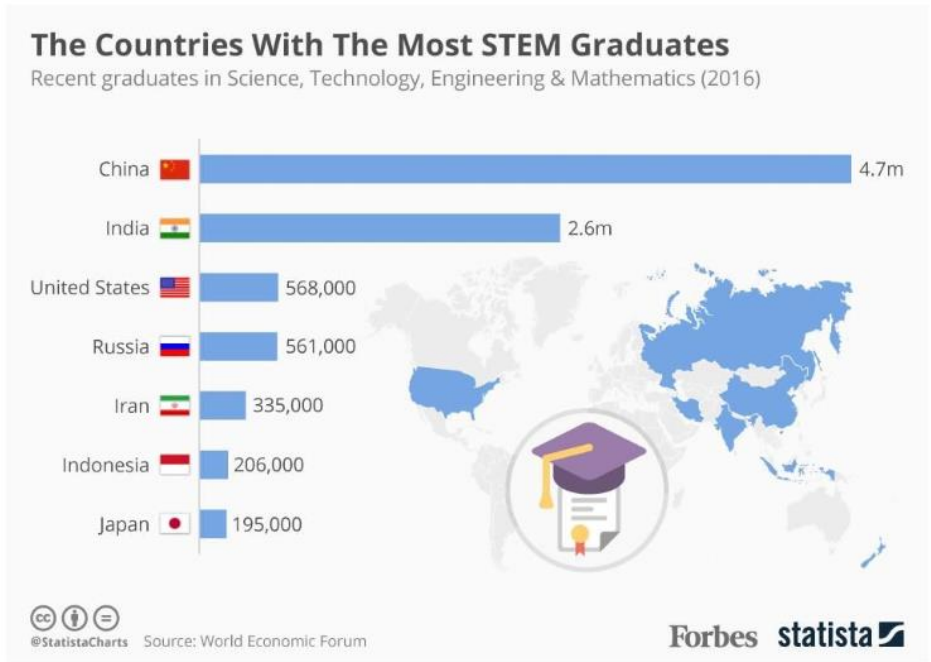
High School Graduates

2017	Male	Female
US	82.3%	87.9%
China	79.3%	88.2%

Source: Secondary Graduation Rate, OECD, 2017
<https://data.oecd.org/students/secondary-graduation-rate.htm>

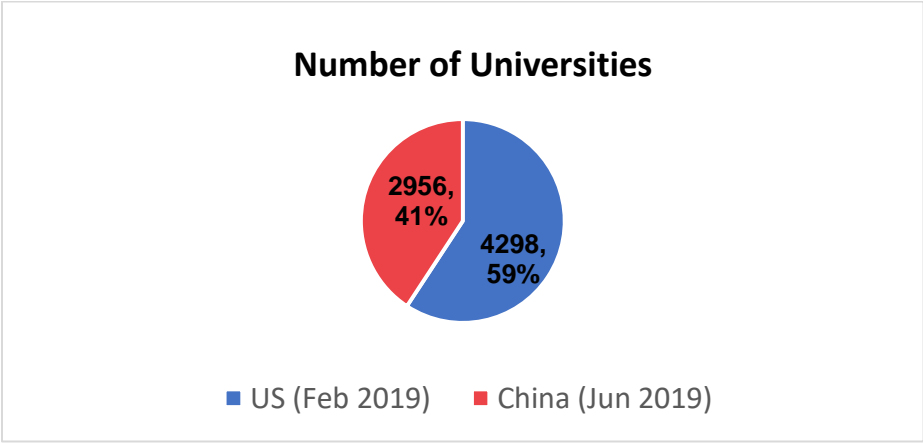
C. University Education – Countries with the most STEM Graduates

In many ways, the law of large numbers is in China's favor. The fact of having a population of 1.5 billion means if you are "one in a million", there are 150 of you. In the US, there are only 37. It should not come as a surprise that there were almost five million graduates in the STEM areas of study in 2016. This is compared to 570,000 in the US. This is a 10x order of magnitude difference and double that of India. This data comes from the World Economic Forum. Even if the caliber of study is inferior to that of universities in the US which have globally revered reputations, the sheer number of those in top universities inside China (assume it is 10%) still exceeds the total number of all those studying in the US.



Source: World Economic Forum, StatistaCharts, Forbes

R&D/Education – Number of Universities in US vs China (2019)



Source: U.S Department of Education, <https://www.usnews.com/education/best-colleges/articles/2019-02-15/how-many-universities-are-in-the-us-and-why-that-number-is-changing> ; Chinese Higher Education Preparatory website: <https://www.dxsbb.com/news/38640.html>

China has pumped a great deal of money into its university system and now boasts almost 3,000 universities and over 20 million students enrolled. There are 14.6 million in the US. In fact, Xi’An in central China is the old imperial capital and one of the largest university towns in the world. It has in excess of 350,000 college and graduate students in more than 25 universities. So, China’s universities by size and number are almost on a par with the US. There are almost as many universities in China as there are in the US.

D. US College grads owe more student debt than ever, and college costs are at all-time highs

College graduates owe \$29,000 in student debt now — more than ever before

PUBLISHED THU, SEP 19 2019 2:06 PM EDT UPDATED THU, SEP 19 2019 3:34 PM EDT



Annie Nova@ANNIEREPORTER



Nate Rattner

KEY POINTS

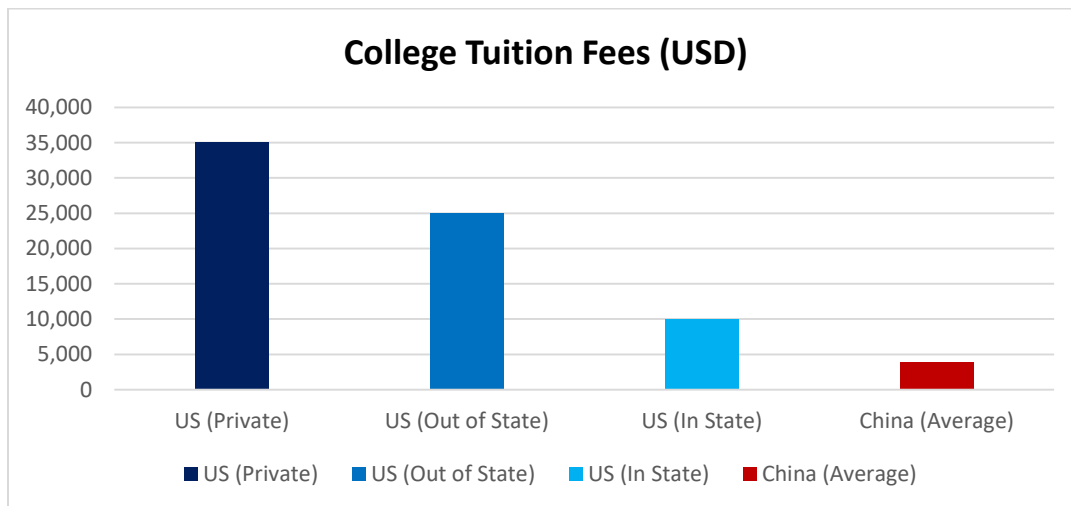
The graduating class of 2018 owed \$29,200 in student loans, up from \$28,650 in 2017, according to The Institute for College Access & Success.

Some states are harder hit than others by student debt. College graduates in Connecticut are \$38,650 in the red, for example, compared with \$19,750 in Utah.

More students are relying on private loans to fund their education.

Source: Annie Nova, Nate Rattner

R&D/Education – Student Tuition Fees, US vs China



Source: Mastersportal

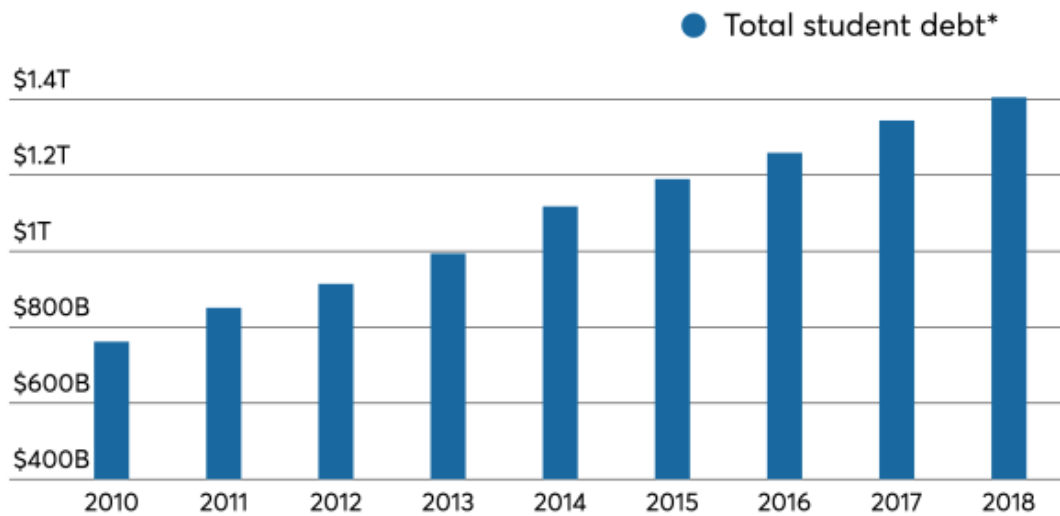
The charts above show one of the real burdens for millennials. The headline above shows the problem. The debt levels for millennials finishing college stands at about \$29,000. The monthly interest payments are, on average, \$600 - \$800 per month. So, by the time they start looking for work, they need to cover annual interest payments on student debt of about \$8,500. In pretax terms, this is about \$10,000 in revenue. This is about 20% of the average income of a college grad. If you assume that 35% of their income is spent in rent (in many metropolitan it is more like 50%), this means that, on an after tax basis, they have \$400 per week to spend on food, clothes, travel and entertainment.

By contrast, Chinese universities are subsidized and cost a fraction of the price of a US university. There are exceptions and this varies. Peking University, considered among the best in China, is \$17,000 per year. Tsinghua University, also considered among the best in China, is \$7,500. Fudan University in Shanghai is \$8,000. The MBA at Zhejiang University, considered one of the top tier universities in the country, is \$5,000 per year. This is a small fraction of the price of an MBA in the US.

The chart below shows the real problem with US millennial debt. The main generator of degrees in the US is debt-funded higher education. This has gone from \$580 billion on the eve of the GFC in 2007 to \$1.4 trillion in 2018. This is a 135% increase in 12 years and has been a cause of highly inflated university fees as well as a boon to college towns like NYC, LA, Chicago, Boston, DC, Dallas and San Francisco. (These ten cities alone have almost 4 million students propping up the local economies with this debt load). The result is that average outstanding debt since 2000 for a graduating student has gone from \$14,000 to \$29,000 today, as can be seen from above. If there is a recession in 2020 or 2021, there must be some sort of wide scale debt forgiveness program for college grads. Watch this space.

The price of education

Student debt has climbed nearly 85% in the past eight years, to \$1.4 trillion, as college costs have soared. The federal government holds more than 90% of outstanding loans, according to industry data



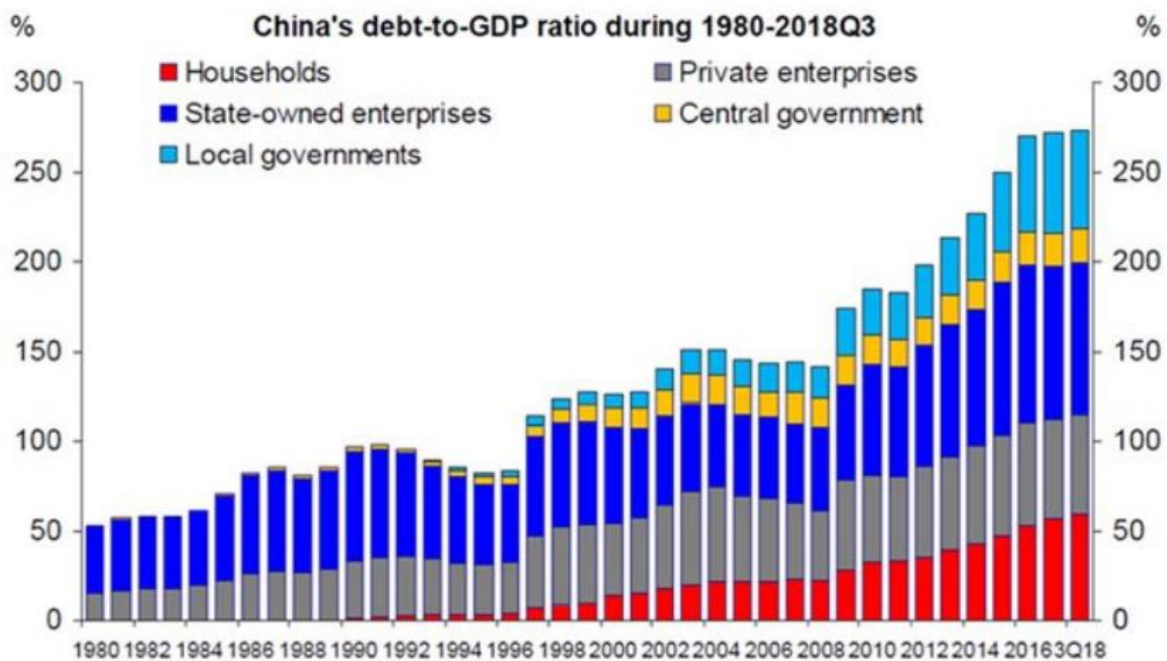
Source: Federal Reserve Bank of New York (*June 30 data)

Source: Federal Reserve Bank of New York, June 30, 2019

Case Study 2: The growing mountain of global debt concerns millennials & boomers alike

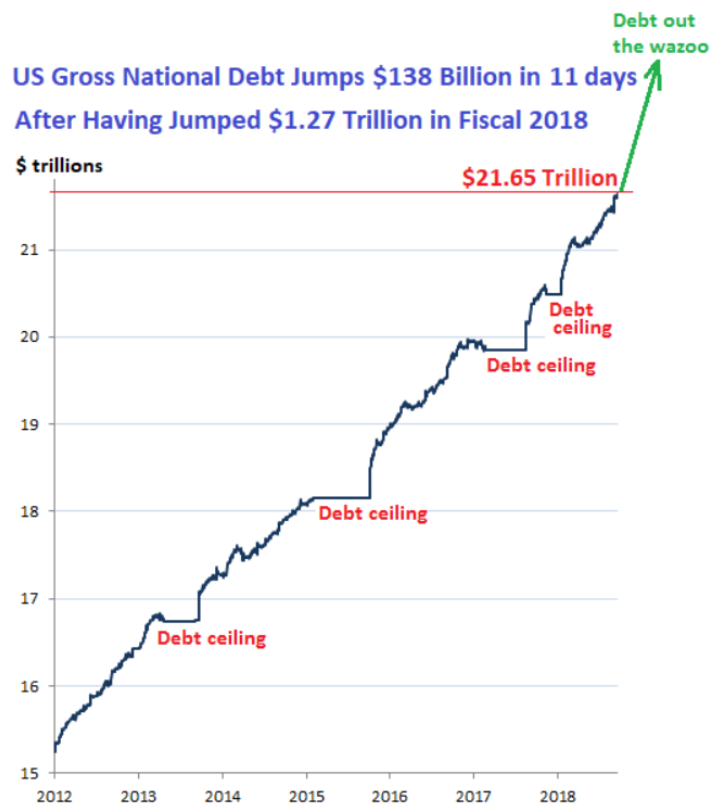
ISSUE: Is the underlying cause of concern everywhere the overall levels of debt in both the US and China?

1. The evidence of a serious debt problem in China can be seen from the chart below. The first shows the overall level of debt in China. It shows the level of debt in China has reached an all time high of 270% of GDP. The biggest growth has come from provincial governments and SOEs. These two sectors are now 140% of GDP. The plan here is to recapitalize the banks and clean out the bad debt. Then, there is a need to transform many of these disparate companies into consolidated trusts (with consolidated debt) to create pricing power and economies of scale. (This was what the US did at the turn of the 20th century by creating companies like GE, American Tobacco, General Mills, etc. Then the long term debt is transformed into long term paper and sold to insurance and pension companies — exactly what the US did in the early 1900s. That’s the plan, anyways. It is sound. You extend maturities of debt, form credible ratings agencies, create inflation and grow your way out of your problem. China has built out the country while avoiding wars and has no Medicare or social security liabilities which saddle the US.



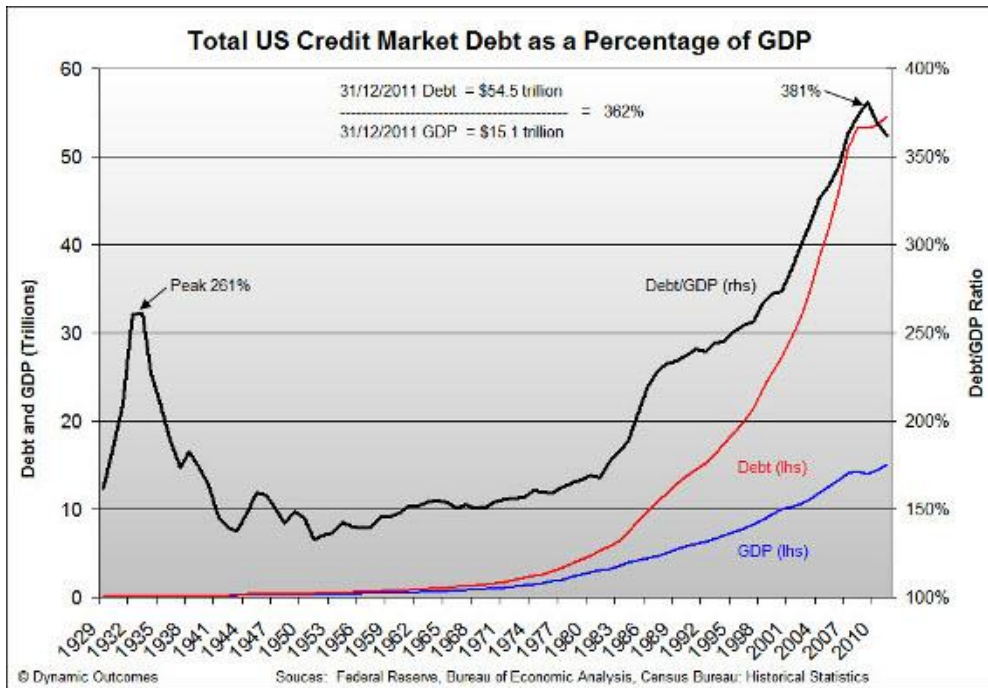
Source: Deutsche Bank Research, Torsten Slok, April 2019

2. The problem with the US is more complicated. See the chart below. In addition to the \$1.4 trillion in student debt noted above, the US has added \$6 trillion in federal debt since 2012. This debt is with central banks all over who buy this debt as they accumulate dollars from trade. In addition, the Federal Reserve holds a lot as do private banks. But there is a limit. There is something known as the Triffin Dilemma. The US as the reserve currency of the world — with the most open current account globally and the largest trading country globally — can theoretically print as much debt as it wants since. Until it can't. Triffin never said when this dilemma kicks in. The only precedent we have is the UK. In 1900, the UK Pound was 70% of the world's reserves and the UK ruled supreme. Due to endless wars protecting what was, in retrospect, an inevitable loss of empire, it went broke from all these military adventures — arguably after WWI in 1919. It was forced to get a bailout from the IMF (ahem, the US) in the mid-1950s. It took a very long time for the British Triffin Dilemma to kick in (about 35 years), but it lost its reserve currency status and experienced a long period of stagnation into the 1980s.



Source: US Treasury, Wolfstreet.com

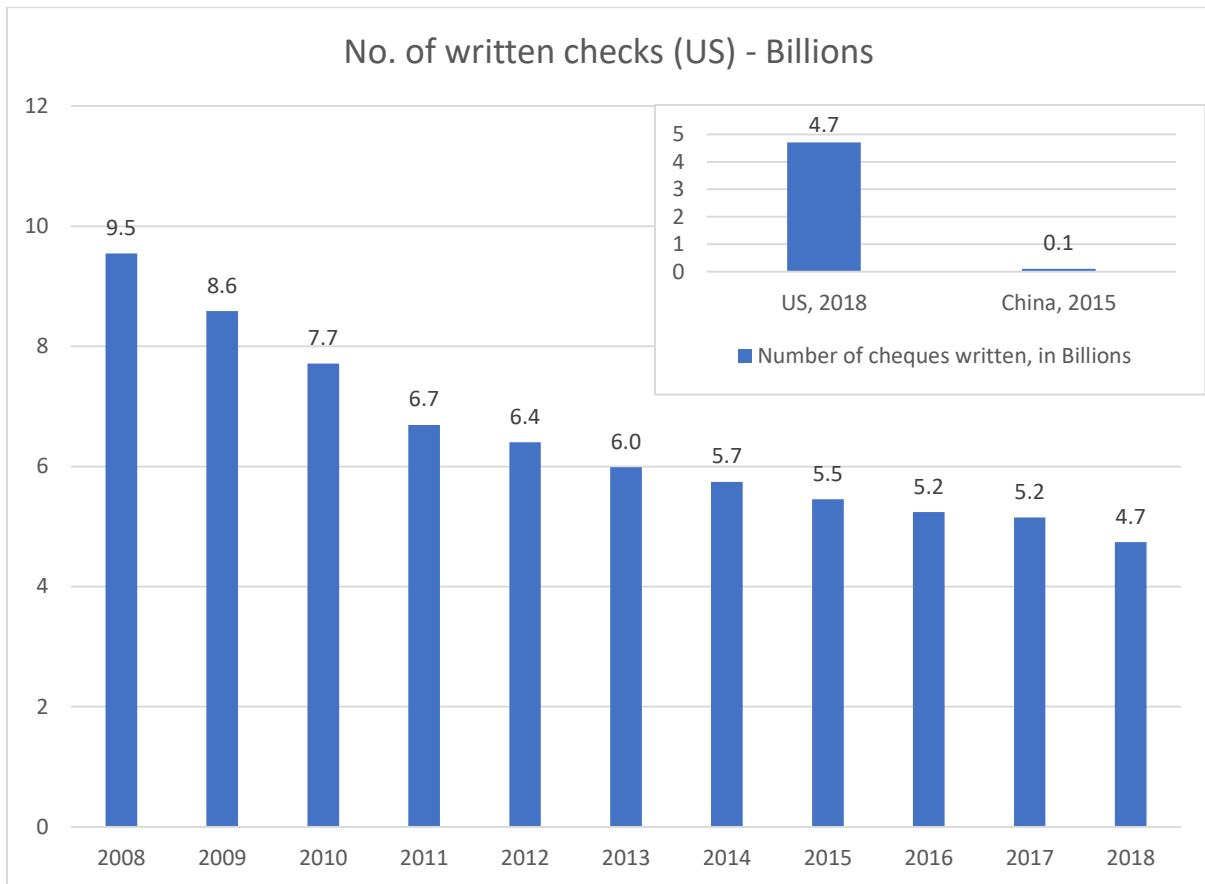
3. The net result of the accumulation of debt in the US is arguably far more problematic than China. The total credit market debt/GDP is 381% of GDP. (China's total credit/GDP is 270%). See below. This absolute number is a whopping \$55 Trillion vs \$24 Trillion for China. This does not include Social Security and Medicare liabilities due in the future, estimated to be \$50 Trillion (for Social Security alone) as of 2017 for the next 50 years. (This is according to the 2018 Annual Report of the Federal Disability Insurance Trust Funds). The red line below shows the increase in debt (\$54 trillion) relative to the blue line (GDP of \$15 trillion). So, the level of debt relative to the GDP to fund that debt is 4 times larger. The US is producing \$1 of output for every \$4 dollars of debt, not including federal obligations for retirement and medical care for an aging population (\$50 trillion). One way to deal with all this debt is inflation. The other is default. So, inflation it is. Aging populations HATE inflation and will vote out Politicians who allow inflation. So, the solution is to continue to federalize the debt, keep rates at zero, generate low growth and say a prayer. Look at Japan! **XXXX – Graph is as of 2011, do we still want to use it?**



Source: Federal Reserve, Bureau of Economic Analysis, Census Bureau, Historical Statistics

Discussion: Should we be that concerned about this mountain of debt? How has Japan been able to get its government debt to 200% of GDP? The federal debt to GDP of the US is about 95%. If this happens, growth must be kept low and inflation must be kept low. This is ideal for old people who own government debt since its value keeps going up. This is poison for millennials who want to borrow and need wage inflation. This will be a political hot potato. The alternative — a default — would bring a global depression. This must be worked out between millennials and boomers and is really the ultimate political problem in the future.

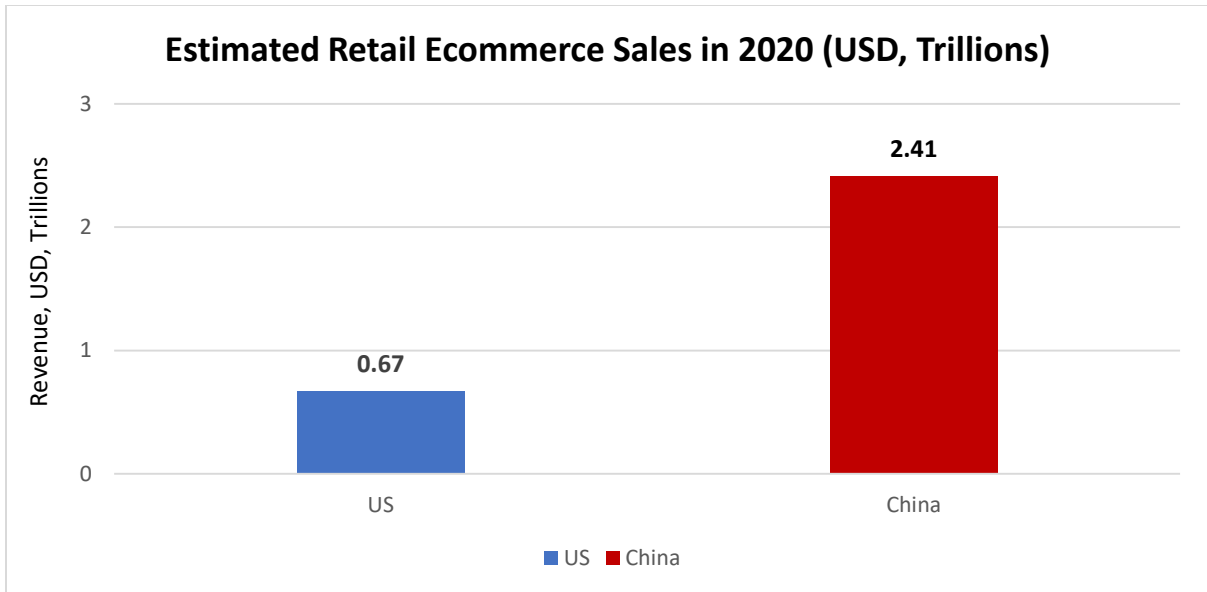
IV. Evolution of E-commerce – Cellular Payments vs Checks



Source: Federal Reserve: https://www.federalreserve.gov/paymentsystems/check_commcheckcolannual.htm, SCMP

E. Evolution of E-commerce – Retail Ecommerce Sales in 2020

One of the main reasons for the strategic panic attack that the US has had with regard to China is the reality that the PRC is far ahead in technology involving payments and e-commerce. This is true not just inside China but is most countries throughout the Silk Road, including SE Asia, South Asia, Central Asia and northeast Asia. Basically, Alibaba and Tencent cover more than 1.5 billion people across the Far East in just about any financial transaction they need. Meanwhile the chart above shows The Central dependence that the US has on checks. While the number of checks written has been cut in half, the amount is still almost 5 billion per year. This is in stark contrast to China, where both cash and check have largely disappeared in favor of cellular or electronic transactions. The number of checks for the most recent year is about 100 million. This is 98% smaller than the US. While there are very sophisticated areas of the financial sector in the US, there are also very primitive areas which need a rapid overhaul. The writing of checks is one of them.



Source: eMarketer

The point is made even harder by the chart above. China’s estimated retail ecommerce sales will surpass \$2.4 trillion in 2020 while the US should exceed \$670 billion. In 2020, China’s retail ecommerce sales will be four times larger than the US. The main reasons for this are, we think, regulatory in nature. After the GFC, there was great fear of regulators who were on the war path giving banks a total of \$360 billion in fines. SO, technology companies were not interested in playing in that area. When Trump came to power, the leash was put on the regulatory apparatus and tech companies waded into the deep end.

In addition, there was an awakening about how far ahead China was in all of the payments and ecommerce space. As a matter of national security, we believe the entire political apparatus in DC united and began a public discussion about how not to lose out on the Silk Road in this area. So, Amazon spent \$5 billion in India. Facebook Libra was launched. Google and Apple accelerated their investments in this area. It is likely that The Best Bet (though a long shot) is that Facebook Libra will launch globally, despite loud objections from Congress.

V. Huawei: Dominating 5G

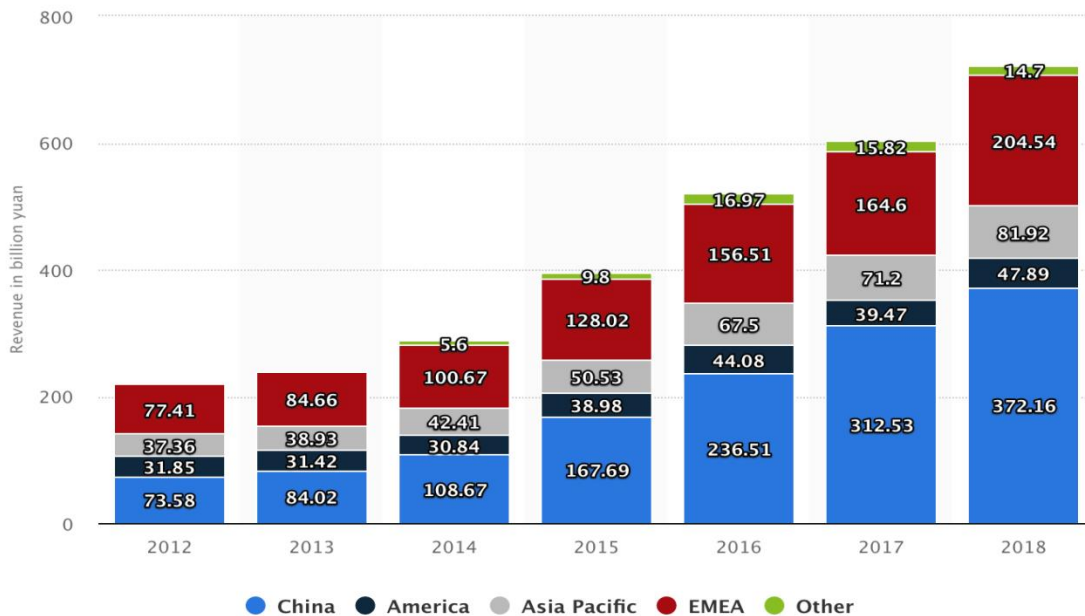
The charts below show the phenomenon that is Huawei. It has emerged as the predominant global player in 5G at a time when the US does not have a single major player in this area. Its total revenues have exceeded USD \$100 billion. It operates in more than 100 countries. It is the dominant player in Africa and Asia. And it has overtaken Apple in global market share.

Huawei’s revenue have now surpassed Boeing and they are expected to be \$120 billion in 2020. It now has 5G up and running inside China and five other countries. It should have its own 5G operating in 30 countries by the end of 2020. These countries are found along the Silk Road, Southeast Asia and the Middle East.

Huawei has made great strides in cell phones in terms of variety, price, geography and market share. It has a global market share of 31% in handsets, larger than either Ericsson or Nokia. On top of this, it has an **80% market share in 5G transmission towers**. In the smartphone area, its units shipped were 52 million at the end of 2018, passing up Apple’s 46 million units. It is also a global leader in the cloud market.

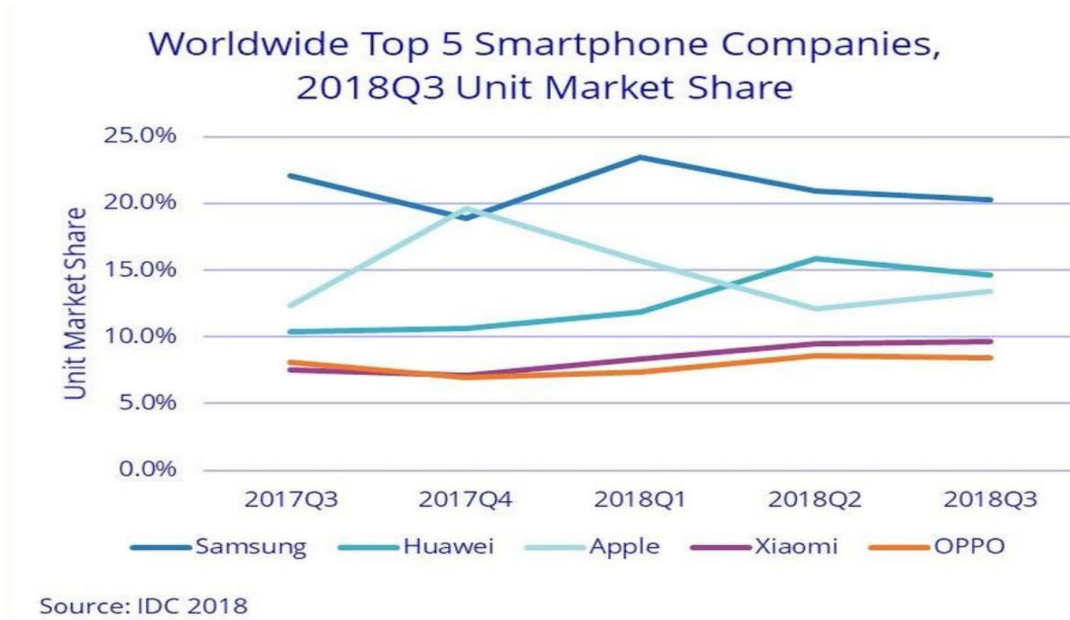
So, the charts below show that Huawei is a serious threat to the global telecommunications network that, for decades, has been dominated by the US. Many people in the Pentagon and the government think that the potential loss of control over telecommunications is a serious national security threat. It is not surprising, then, that there is an effort to constrain Huawei’s ambitions through an aggressive full court press with NATO allies. When the US put pressure on Germany’s parliament to ban Huawei from Germany, the Chinese government countered with a threat to reduce access for German cars to the Chinese cars. If the US could make false “safety” claims about Huawei, why couldn’t China make false “safety” claims about German cars in China? The conflict will continue for a long time.

A. Huawei revenue history



Sources: Statista: <https://www.statista.com/topics/2305/huawei/>

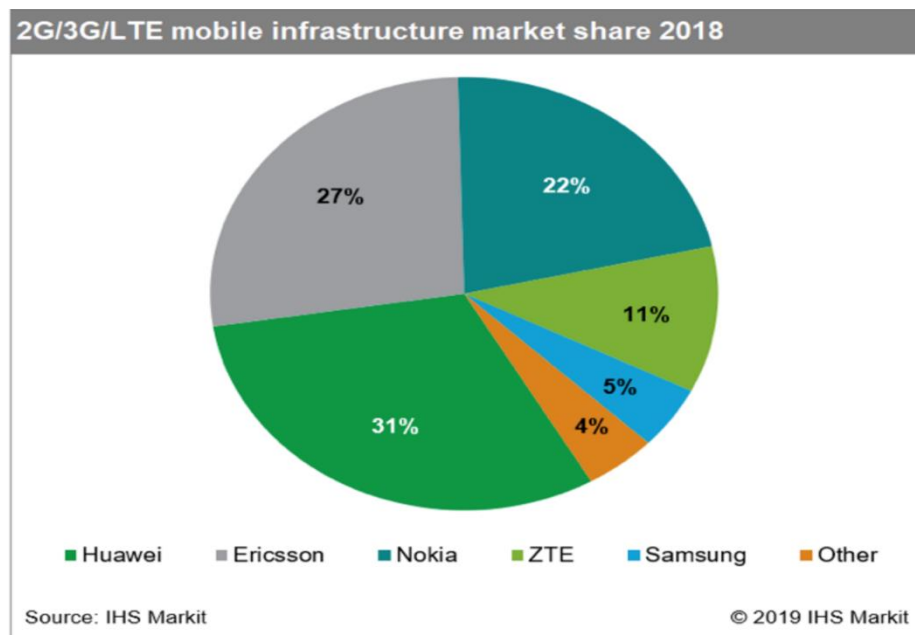
B. Huawei Market share VS competitors: Huawei passed up Apple in smartphones



14.6% of market share – 52 million handsets shipped

Sources: IDC & Forbes: <https://www.forbes.com/sites/jeanbaptiste/2018/11/02/huawei-fortifies-2-spot-in-global-smartphone-market-beating-apple-again/#10b6cf3b1305>

C. Huawei Infrastructure market share



Sources: Techblog: <https://techblog.comsoc.org/category/global-mobile-infrastructure-market/>

D. Huawei Market share VS competitors

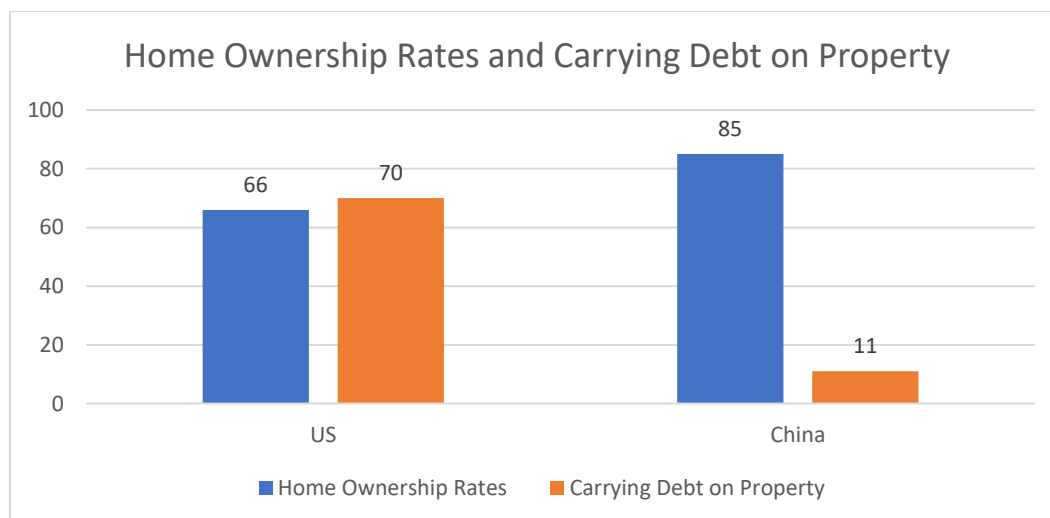
Top 5 Smartphone Companies, Worldwide Shipments, Market Share, and Year-Over-Year Growth, Q2 2018 (shipments in millions of units)					
Company	3Q18 Shipment Volumes	3Q18 Market Share	3Q17 Shipment Volumes	3Q17 Market Share	3Q18/3Q17 Change
Samsung	72.2	20.3%	83.3	22.1%	-13.4%
Huawei	52.0	14.6%	39.1	10.4%	32.9%
Apple	46.9	13.2%	46.7	12.4%	0.5%
Xiaomi	34.3	9.7%	28.3	7.5%	21.2%
OPPO	29.9	8.4%	30.6	8.1%	-2.1%
Others	119.9	33.8%	149.8	39.6%	-19.9%
Total	355.2	100.0%	377.8	100.0%	-6.0%

Source: IDC Quarterly Mobile Phone Tracker, November 1, 2018

Sources: IDC & Forbes: <https://www.forbes.com/sites/jeanbaptiste/2018/11/02/huawei-fortifies-2-spot-in-global-smartphone-market-beating-apple-again/#10b6cf3b1305>

VI. US vs China in home ownership

For a country that Brand's itself as socialist, China weirdly has a very high private home ownership rate. In fact, it is one of the highest globally. Home ownership in China is running at 85%. Furthermore, only 11% of properties in China have a mortgage. In the US, home ownership slipped a few points from 68% to 66% due to the GFC. More people decided — or were forced — to rent instead. In addition, 30% of homes are paid off while 70% still have a mortgage. So, this explains better the very high savings rate of 50% in China versus only 6-8% in the US.



Source: World Bank, IMF, August 2019

Chapter 3: While America was fighting wars, Chinese Tiger Moms were drilling their millennials

Most retired people in China today grew up under the rule of Chairman Mao, who many still worship. Needless to say, while Mao unified the country after decades of civil war, this was a time of great despair and chaos in China. These people were dragged through the famine caused by the Great Leap Forward in the 1950s and the economic chaos (and lost educational opportunities) of the Cultural revolution in the 1960s. Prior to this, China had spent the previous century being invaded, occupied, force-fed opium, and doing whatever necessary to try to be left alone. At one point in the early 20th century, China had twenty-two different sovereign court systems operating within its borders! These people have come from a history of invasion and very hard times. They are tough, gritty and resilient. There is a saying about them: They learned to eat dirt!

The period from 1990 to now — a mere thirty years — was the first time in centuries China has had real political stability and could take a coherent and unified approach to growth, development, aid, farming, technology and infrastructure. Importantly, it could do this from scratch — with no legacy copper wiring, entrenched lobbyists, and a maze of federal and local regulations and decades of corporate corruption. Arguably, it was the first time in two hundred years for the country to really organize itself as a modern nation state. These people who survived the Cultural Revolution were in the driver's seat as the economy opened up, reformed and innovated.

These now retired people — the Cultural Revolution generation — all had children who grew up and came into the workforce during the most incredible economic expansion the world has ever seen. Over 500 million people (almost 10% of the world's population) were lifted out of extreme poverty starting in the 1980s. In that time, Shanghai turned from a small fishing village to one of the largest cities in the world with an economy the size of Switzerland. Each year of their lives have been noticeably better than the previous year, and that has carried on ever since. This has created great confidence — nothing succeeds like success.

1990



2010



Where did this success in China come from as many Americans were in the splendid isolation of suburbia? Meanwhile, Tiger Mom AND Tiger Grandma were growling away

Discussion about the race between the US and China is, at its core, all about motivating, encouraging and supporting young talent. A country is about creating the capacity for resilience among the young. At this moment in time, it appears that China — for now — is doing a better job of this than the US. The main reason is something we see in newspapers all over the US: a rampant problem with alcohol and drug addiction in America.

For Austin, living with a family in suburban Shanghai in 2013 was enlightening. The secret sauce of the millennial dynamos is simple. This generation has a Tiger Mom AND a Tiger Grandma. These millennials are not spoiled. Quite the opposite. They are pushed in all directions to succeed and are often supported by two generations of mentors. What is the main aim when raising a child?

Throughout Chinese history, the path to upward mobility was within the government as mandarin was a “state-language”, i.e. the savvy and cunning bureaucrat. The influence of Confucius caused many to believe that education held importance over all else. In order to gain access to this elite group and advance within the government, you had to take written tests (kaoshi). Unlike other countries who transitioned to market economies — and where you moved up through acquiring wealth in business — China did not make this market economy transition until very recently. Therefore, education and test scores have culturally remained the number one path to upward mobility.

These Baby Boomers who grew up under Chairman Mao’s rule continued this tradition with a very strict focus on education for their children, especially engineering. While their children in the 70s and 80s were being lifted out of poverty and getting jobs at banks, etc. These grandparents then moved in with their children to help raise their one grandchild (due to one child policy). They moved in because there was an insufficient social safety net for retirees. They needed to be supported by their children.

So, in the 1990s and 2000s you have millions of families with three generations (grandparents, parents and single child) all under one roof. The education in China is improving drastically and grandma and grandpa need to help raise the kid because mom and dad are always working. Guess what grandma and grandpa make the kid do??? STUDY!

Imagine growing up a single child with four grown people watching your every move, depending on you to support them when they are older. There is no safety net, Social Security or even Roth IRA system in China. The unusual level of intellectual and emotional “care and feeding” of young people by two sets of adults may make for spoiled children. Then again, it could also make for young adults (who are constantly being pushed) with a solid center and powerful intellectual ability!

Case Study 3: Tiger Moms and the after effects: Do they create star performers or neurotic messes?

ISSUE: Tiger moms are everywhere. Should we just get over it? This can be a great icebreaker between millennials and inter-generational adults.

1. There's an old joke about tiger moms. The Jewish Tiger mom says to her son, "Eat your vegetables or I will kill you!" The Irish tiger mom says, "Eat your vegetables or I will kill myself!". Some children are dandelions who do well no matter what. Some are orchids who will wilt under severe pressure but bloom spectacularly with the right kind of detailed care, guidance and love. Does an overstressed or abusive childhood — in Israel, Ireland or China — cause winners to emerge? Does the growling tiger mom quash these orchids and make them neurotic messes? Doesn't intense attention to achieve demonstrate its own type of love? Do we need more or less helicopter moms?

2. The Tiger mom is seen as against the liberal "anything goes" Kitty Mom. This is the mother who spares the rod and spoils the child. Little is achieved by screaming at children, they say. Forcing children to do what they hate (violin lessons at seven years of age) will prevent them from naturally coming to love music. Is there a corresponding need for a "liberal" father who can offer some compassion and unconditional love? Does father's warmth compensate? Does a high value relationship outside the home (a teacher or mentor) offer a way out?

3. Does a strict and loving parent show love by imposing some sort of order? How can sons or daughters overcome the tiger's claw marks? Is a core connection of love enough even if it is surrounded by stern discipline? Isn't it a mix of love and discipline that matters? Some synthesis of tiger and kitty? (Paul had an Irish Tiger Mom (Army veteran and teacher) and a (real) drill sergeant dad who was also in the Army. Finding mentors outside the home is a way to cope. And reinterpreting the past — recreating memories — is important too.

Discussion: Everyone has a story about their tiger mom or a tiger dad. Do growling tigers turn sensitive children into orchids or messes? How can we change our interpretation of the past? Can we just take the good out of the past and change ourselves without blaming and being a victim? We all get better by talking about these issues. Group therapy is golden.

Chinese millennials: Natural dependence on the group for support. It's not communism — it's Confucianism

This book paints a somewhat benign portrait of Chinese millennials. They are in a different and early part of the evolution of nations (the take off stage which was probably similar to the Gilded Age in the US from 1890 to 1920) so they probably are better off than millennials in the United States. This is because as a society that has no legacy infrastructure and entrenched interests, there is great room for young people to invent, innovate and create new products. There are some drawbacks as well.

The vast majority of the millennials Austin hired allowed him to have very positive experiences. He worked with incredible teams. People came to the office largely with a joyful, enthusiastic attitude. They cared for each other. They were generally interested in group success. However, it's not all rainbows and butterflies.

Growing up with the pressure of being the sole provider for your elders creates a great amount of anxiety. In addition to that, the One Child Policy created individuals smothered by parents and often two sets of grandparents with a strong emphasis on thing: studying. This can create one definite outcome: pressure. On the positive side, drugs are not at all in the picture. There are no guns. Crime is not even an issue in most cities. There are no wandering veterans as there are no foreign wars. Public transportation is ultra-modern. Infrastructure is truly 21st century.

But, these millennials did lack things like play dates and team sports. At times, people wonder if some Chinese millennials struggle to work together in team settings. To escape reality, many use the only resource they had while going from school to tutoring and then to their room at night to “do homework” — their cell phone. The teams were incredible but there is a great pastime of too many: playing video games.

However, in his years of dealing with Chinese, Austin noticed few negatives compared to the huge amount of positives. He hired 20 highly skilled ecommerce personnel in a matter of weeks at an all-in cost of under 300k RMB (\$43k USD) a month. And they are incredibly grateful. Imagine trying to hire a team in Silicon Valley for that amount? By the time you factored in healthcare, salary, vacation time and bonuses, you could hire four or five Chinese millennials for that amount.

In the interview process for the company in Shanghai, Austin would give the candidates grueling job-related questions that they hadn't heard before to test their problem-solving skills under pressure. What he really wanted to see was how they could be different from the “standard practices” of the industry and find ways to bypass the typical roadblocks Chinese ecommerce companies put in place.

What Austin found was that one out of three candidates interviewed did this exceptionally well. He ended up putting together a great team. These were over 20 people from almost every different part of China, went to average Chinese universities in one of the larger Chinese cities. Most of their parents were farmers or owned small businesses but certainly knew nothing about technology or ecommerce. **“But these 20 people knew more about direct marketing, customer service, and big data than the people I knew at Accenture making \$200k a year”.**

In addition to the superior technical and functional knowledge of the industry within the team, they also worked very well together. Sometimes Austin would come across westerners who were under the impression that Chinese workers don't perform as well in team situations due to growing up without brothers and sisters and most of their early social interactions being with their grandparents. He can personally attest that his experience was the exact opposite. In fact, his team chemistry was the #1 contributing factor to their success.

The difference with his team was that everyone was willing to pitch in to help others as the company grew. There was a general level of compassion the teammates had for each other that is generally absent from many places in the world today. Every day, someone would bring in some kind of dessert or fruit for the whole team. The thing even Austin couldn't understand is they would make sure everyone on the team ate some before they even tried it. Many times, the team would eat their entire snack and the person who brought the food didn't seem to care. Taking care of their teammates was more important.

When they were very busy on Single's Day (November 11) and were bombarded with customer inquiries, Barbara, who was responsible for logistics, would without hesitation jump in and start responding to customer service inquiries to help out their customer service team. The woman responsible for customer service named Xiami would often stay up to midnight to answer customer questions to make sure a 5 star rating is maintained on TMall.

One day Austin stayed home sick and heard a knock on his door at 12:00pm. Half of the team had used their lunch break to bring him hot soup and some Chinese medicine to feel better. It wasn't just because he was the boss either. They did the same for any of teammates who were sick or had any kind of family or personal problem. These were flat out some of the most compassionate people he had ever met, and it was a pure joy to work with them every day. This in addition to superior technical capabilities were why they were able to succeed in by far the most competitive ecommerce environment on the planet.

[Alcoholism and the role it plays in the American family in the 21st century](#)

In contrast to the experience of many current Chinese millennials, too many American millennials grow up with families dealing with drug addiction and alcoholism, broken homes and single parents. Austin recalls that, among his close friends in upstate New York, he can't really name one close friend he grew up with who wasn't directly impacted by alcoholism and

addiction. Many of them were on the honor roll, or had a great talent early on for math, science, music, etc. At some point between thirteen to seventeen, many lost their way and headed to the “normal” route, which is, in many cases, living paycheck to paycheck and dealing with alcoholism or drug addiction in the family unit.

The graduation rate at Austin’s high school last year was 65%. He also notes that he never knew a Chinese person under 35 who hadn’t graduated high school. In 16 states in the US, one in five people does not finish high school. Part of life in Austin’s world of millennials is the reality that the one main cause of this failure to even finish high school is drug addiction and alcoholism in the context of broken families. How he escaped from it is nothing short of a miracle. He makes the case that this is not a bug but a feature of so many metropolitan areas in the so called “Rust Belt” and the Appalachian region of the US.

Too many Americans came from a situation akin to that of the dreadful familial conditions of, J.D. Vance, the main character in the bestselling book Hillbilly Elegy. Austin’s father died of cancer when he was 11 in which alcoholism played a definite role. He was raised by a single mother who somehow managed to raise two boys while starting her own business. Data across the US is starting to show that there is an argument to be made that this issue of alcoholism and drug addiction is a feature — and not a bug — of American life. It may be the case that this is the root of the difficult times we see for millennials in modern American society.

Is this a sign of American decline or a grass roots transition to a grittier, tougher population? You decide. Is this is the world of a grittier, meaner generation looking for scapegoats? Is this transition from a high level of alcoholism and drug addiction to a more self-reliant and “pick yourself up by the bootstraps” nationalism a trend from which a stronger nation will arise? Will China lose momentum as the US is trying to orchestrate a nationalist recovery? Will China just wait around for the US to “rise again”? These are the questions we want to answer in this book. First, however, we want to try to get to the roots of much of the malaise of the United States.

Austin wanted to pretend everything was normal growing up. Far from it. At age 47 Austin’s father had slipped into a coma and died from cancer when Austin was only 11. Treatment was expensive, and Austin’s mom had a hard time making ends meet during his father’s multi-year battle going in and out of different hospitals. Most of his family told him there was no defined reason for his death, until one day when he was sixteen. He was having a beer with his grandfather who told Austin the doctors told his grandfather that alcoholism had caused his father’s disease to turn fatal at the end.

One of the earliest memories he had of his father was when he was eight years old. He was on the way home from baseball practice and his father told him that he was going to die. For an eight-year-old, this wasn’t exactly the thing you wanted to hear. His father had been sick most of his life and this gave him a different perspective than most. It also caused him to be very hard on Austin. When Austin was getting yelled at, he never took it as cruel and it did teach him independence at a young age. Unlike the way he saw Chinese people learning to fit

into a group and put primacy on group decisions, his upbringing in New York was quite the opposite. The emphasis was on independence and self-reliance.

Case Study 4: The Undiagnosed Anxiety of the Millennials

ISSUE: Millennials as children of terror. Is this 9/11 generation tougher than we all think or has a string of unprecedented historical events created often debilitating anxiety for millennials?

1. Those born between 1980 and 2000 grew up with the memory of the Twin Towers collapsing and 3,000 people dying. They have seen horrific terrorist incidents on TV in New York, London, Brussels, Paris, and many other cities. Furthermore, American millennials say that the problem of gun violence at schools is far worse and more traumatic for them. This creates a grittiness to the way they see life. It creates a complex bifurcation of mental toughness on the one hand yet remarkable cultural openness on the other. We forget the anxiety and stress caused by so many millennials who have heard about or seen shootings in 230 schools (yes! four-hundred and twenty) since the Columbine mass shooting in 1999, the same year the first millennials turned 18.

2. Millennials have had greater access to education globally than at any time in history. They grew up in the height of Pax Americana, the collapse of Soviet communism and a booming stock market. 9/11 and the GFC in 2008 brought all of this to a halt. While they were reeling from student debt and high unemployment, the creation of the iPhone and relentless social media comparisons caused great anxiety from constant comparisons to everyone else's best moments. The result is anxiety on the job front, huge financial obligation right after college and then constant comparisons of those with more resources, fun, glamour and travel opportunities.

3. The result is a large group of millennials which are anxious and unhappy. In addition, they are stuck with massive debt which averages \$600-800 per month in payments. They are likely to come from a broken family. They are very likely to know a parent or close relative with problems with addiction. And they are likely to know someone who is a returning veteran from Middle East wars with emotional difficulties. Their anxiety is high even as many of them have had the workplace advantage tipped in their favor since their life skills and knowledge of data science, entrepreneurialism, social media and electronic interaction come more naturally. Older people are floundering in many of these skill sets (and should be far more anxious) yet millennials have shown far more manifestations of this anxiety. Study after study shows this to be the case. The numbers are in the high 20s or low 30s in terms of the percent whose work is disrupted “often” or “all the time” due to anxiety.

Discussion: This generation is, in general, much tougher than before. But the difficulties many have are often seen as being “flakey” when they are really symptomatic not of fear or irresponsibility but of anxiety. Hyper competition for shrinking professional positions while social media creates impossible expectations on lifestyle is a wicked cocktail for an anxious generation. What is being done in the workforce to deal with widespread and often debilitating anxiety? This problem with anxiety is called an epidemic and can be a source of lost productivity. Programs in the office to deal with anxiety are very likely to result in rising productivity. These include access to individual therapy counselling, group therapy, insurance plans which cover psychological or psychiatric issues, public discussion on these issues, and institutional structures to deal with psychological issues. It’s about time that the elephant in the living room is dealt with. (See the Ted Talk by Nadine Burke Harris, California’s Surgeon General, on childhood trauma and adult anxiety).

The fact that his dad was dying of cancer caused him to emphasize self-reliance to Austin. He lived with a high degree of independence, perhaps too high. He knew there were at least two occasions where Child Services was notified by either his teachers or neighbors to complain about being Austin’s absence from school or “hanging around town” unsupervised which was his father’s way of preparing Austin for the inevitable. His adolescence was more Huckleberry Finn and less John Boy Walton.

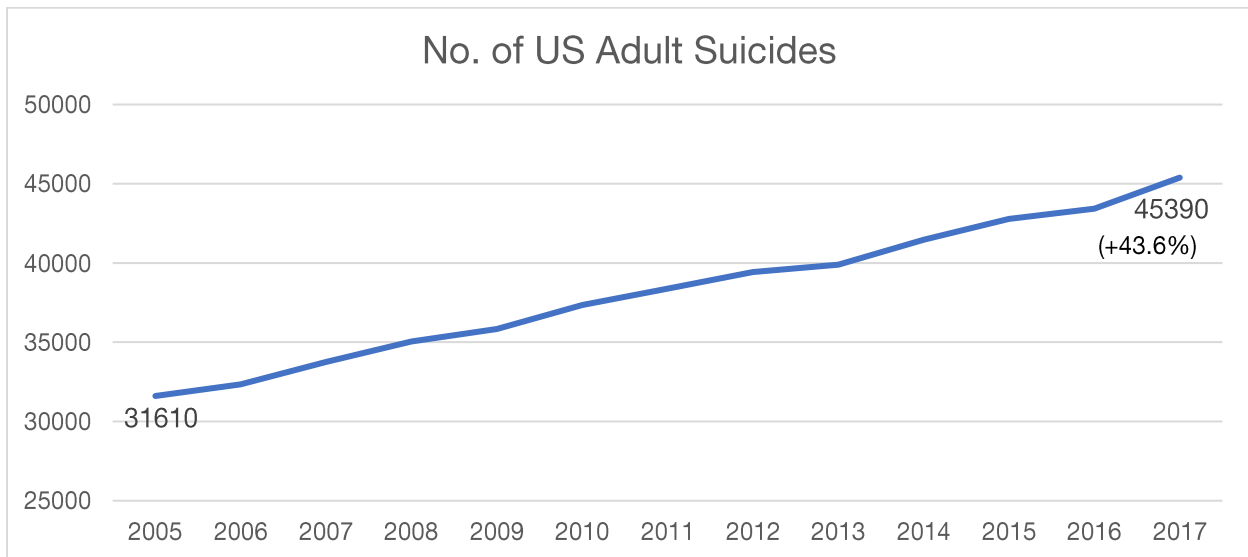
His father had not finished college and worked part time selling real estate, but mostly he spent time teaching Austin what he could do before his passing. After his dad died, there were 10 very bad years of despair for Austin. His family had no money due to the drag caused by health care costs and his mother was starting a new law practice. On the day of his dad’s funeral, his grandfather said, “You’re the man of the house now”. He was 11. This is a scary

thing without any real parental supervision. He was in a single parent home struggling to make ends meet and a mother trying to start a business while still managing to raise 2 boys the best she could.

To add to this, he had undiagnosed Attention Deficit Disorder (ADD) and had to read things two to three times to actually comprehend. From an early age, his brain was always going very fast — too fast. His mind was spinning fast and as school got harder and his depression got worse, he turned to the “wrong crowd” and drank heavily. His life slowly turned into a black hole, rarely showing up for school. He stopped caring to even call his mom. Most of the people around him, by that point, written off his chances of succeeding at anything. He was sent to several institutions for troubled youth.

Is it any wonder he developed a feeling that nobody believed in him and that everyone would be happy if he just avoided prison. Where did this come from? How does this slippery slope get going? Why are so many Americans in the grip of this terrible circumstance? Austin’s experience was that once he was in “the system” as a troubled youth, the bar immediately got set very low. The institutions never encouraged anyone to go above and beyond. They never encouraged growth or challenged the imagination. It was a question of avoiding jail — not going toward something better.

In a country where the penal system is often the answer to drug addiction, is it any wonder that the suicide rate in the US has skyrocketed. Drug addicts with a disease (accepted as a disease of addiction by the American Psychological Association for more than 50 years) are removed from society and receive a permanent blemish on their record. They can’t vote. They can’t get good work. They often can’t get into good relationships. And they are alienated from family. The result is an epidemic of suicide as seen below.



Source: US Department of Veteran Affairs, 2019, https://www.mentalhealth.va.gov/suicide_prevention/data.asp

Breaking the cycle of decline and addiction: self-reliance is ironically a detriment

Austin had never felt so alone, but he needed to prove that he could make something of himself. His high school was a toxic environment characterized by apathy for anyone who was not a high achiever. Most of the teachers are stuck teaching an outdated curriculum offering no real-life skills. Hundreds of kids in the high school had parents in active addiction or working so much they weren't able to really pay attention to them. So, they cried out for help in all different kinds of ways. There are great teachers, but these great teachers are a bug and not a feature. Looking back on it now, it's easy to tell that these great teachers were being held back by a system that failed them. With a lack of funding or accountability (and standardized testing on outdated curriculums no longer useful in today's society), it's hard to imagine how any of them stayed motivated.

Austin left high school and decided to take his senior year at a local community college. He got two jobs to pay for school — one at a local pub as a bartender and one waiting tables. Every day for two and a half years, it was school from 9am to 2pm. The restaurant shift from 5pm to 10pm. Then, bartending from 10.30pm until closing at 4am. At 19 years of age, he was mopping the floor at 3.30am and sneaking a Jack Daniels and Coke. It didn't help that he was probably drinking more than he served at these places. At 19, and in more emotional pain than he knew how to describe, the only way Austin knew how to avoid the pain was to avoid feeling anything, keep working — and drink. Dad was fond of the phrase “man up”.

By some miracle, he did very well and got a scholarship to Drexel University where, again miraculously, he held a 3.94 GPA while drinking very heavily in the fraternity scene. The sadness and despair were getting worse by the day. The problem with trying to stop heavy drinking is that it seems to be a group exercise. Self-reliance doesn't seem to work because it is an intense concentration on the self. This is a problem because the base of addiction seems to be an obsession with the self. Some outside force is needed to “snap out of” the self-obsession. Reliance on others — not self-reliance — seems to be the key to getting better. Only a ‘community’ approach can create a way out. So, a culture of rugged self-reliance to deal with a mass problem of addiction in American society will tend to backfire for the simple reason that addiction treatment seems to work when the person escapes him or herself and reaches out to others to help them heal. The problem he was facing as a problem drinker was a microcosm of the American addiction problem.

So, here's a 20 year old skinny and broke young adult living alone in Philadelphia with years of untreated trauma from a father's early death. This was covered up by massive alcohol intake and fraternity hijinks at Drexel University. Austin set up his class schedule purposely for class only Monday through Thursday mornings because he knew he'd be useless from Friday to Sunday. Needless to say, Austin was determined to succeed, and he did well in his classes (miraculously ended studies at Drexel with a 3.94 GPA).

As we move into Part II, let's review and connect the social to the technological. The future application, development and innovation belongs to the millennials on both sides of the

Pacific. There is a serious drag on American innovation caused as much by corporate indolence and an obsession with stock prices as there is with social ills which hold millennials back. China has, so far, neither of these. The main cause of the so called “trade war” between the US and China is a deep fear that Chinese millennials (and young inter-generational adults) have taken the technological ball and have run much further and faster than the US. It is not about trade imbalances. It is about the lead China has in payments, ecommerce, IOT, 5G and the mass rollout of other other cutting edge technologies. Austin was at the center of the rollout of both of these in the past 10 years and is in a great position so compare why China took the lead and what the US can do to regain it. It is a question of whether ATT and Verizon can come alive and create a mass rollout of 5G like Huawei. Can any bank generate a mass rollout of payments and make checks a thing of the past? Can Facebook Libra take on Tencent in the international arena. That is what Part II is about. Can Amazon create change from an inventory delivery company to a “full service lifestyle bank” like Alibaba? He has serious reservations. Read on.

Part III

Conclusion:

First the bad news...

I hate to be the bearer of bad news, but the fact is unless there is an Apollo-like program to tackle the technological and social issues we discussed, and a total shift in the mindset of average Americans in regards to China, US companies will lose the tech race to China. Why?

1. **Big bloated US companies simply can't and don't want to innovate. Where there is no will, there is no way.**
2. **The US government is totally divided and at a virtual standstill. Public-private partnerships can't work in a toxic anti-government environment.**
3. **The problems faced by millennials in the US are NOT going away. Social reforms are necessary to help them become more productive like a domestic Peace Corps for drug addiction treatment.**
4. **The US and China relationship is likely headed into deeper trouble after the 2020 elections.**
5. **China is rapidly moving away from the US and rapidly creating a separate internet, financial system, etc. and will NEVER put itself at the mercy of the US again.**
6. **Is China's move into emerging markets with a commitment to avoid politics smart? Yes. US intervention in local politics has been a disaster.**

Right now the US government is taking the same strategy with China as the taxi companies did with Uber. When Uber took over the transportation market and the taxi companies couldn't innovate fast enough, what did they do? Rather than innovating and coming up with a competitive service, they did whatever they could to halt Uber's progress. Utilizing government relationships to ban Uber, claiming "safety" as the issue with their service, etc. Yet is there really anyone who has ever ridden in a taxicab that can honestly say they felt "safer" than in an Uber? Did they have a more comfortable ride? Did they get a taxi quicker than an Uber? The answer to all these questions is, "No!"

1. Big bloated US companies simply CANNOT make the transition:

Aside from a few special cases like Goldman Sachs, Accenture and Microsoft we see the majority of US large corporations being disrupted. The telecom sector is definitely at the top of our list in terms of a sector that needs Apollo-like assistance in order to be able to compete internationally in the world of 5G and IoT.

Over the next 10 years new US companies without a legacy infrastructure such as Tesla and Salesforce will continue to replace many of these older companies domestically as they will

not be able to innovate fast enough. Internationally it will be a combination of these companies from the US and large Chinese multinational companies to replace systems in which the US had leadership like transportation, energy, and finance. If you don't believe it take another look at Austin's story. Accenture, Verizon, AT&T, Coke are all too short-term focused and lack big visions. Let us return to some examples:

Payments – Why was China able to completely leapfrog credit cards and go to ubiquitous mobile payments? In China today anywhere I go I can either use WeChat or Alipay for anything by scanning a QR code. Even old ladies selling corn for 1 RMB in Tibet accept Alipay. Why can't the US do the same?

I went into a CVS a few months back in Atlanta and just for fun asked if I could use my Apple Pay. The clerk proceeded to tell me they didn't accept Apple Pay, but only "CVS Pay". In Starbucks they also have their own mobile app. How can someone be expected to download a different payment system for each store they visit?

When asked why they don't use QR codes in the US the common response is "security" (Just like taxi companies used for Uber). But in all my years living in China I have never once heard of a QR code causing a security problem. But ask yourself, is having 10 different mobile payment apps linked to your bank account any safer? Do you trust that Starbucks and CVS are unhackable? I don't...

The big banks and credit card companies in the US can't even be creative in their excuses for lack of innovation. They needed to steal "security" excuse from the taxi companies. Is it more secure to link my bank account to 19 different mobile apps and trust Starbucks and all these other companies with my financial information or trust one company who is a fintech specialist like Tencent?

So what is the real reason the US doesn't have ubiquitous mobile payments? The big banks and credit cards have monopolies (just like Verizon, Comcast and AT&T), and they use their Government influence to halt progress because they can no longer innovate fast enough to compete. At least \$3 goes to the banks for every \$100 you spend with a US credit card. Why is this? Is this not easily replicable by a new fintech startup or Alibaba?

In Africa more and more places are accepting Alipay over Visa and Mastercard. Most countries in the developing world are tired of being beholden to the US treasury being able to freeze assets, banks taking huge fees for transferring money, etc. When China's blockchain and payment system goes global it will continue to lessen the influence the US has globally and will be replaced by China.

Chinese premier Xi Jinping recently made a big speech on blockchain and how it is of utter importance to China. On top of that the PBOC is busy developing their own digital currency. Meanwhile, the US congress is interviewing Mark Zuckerberg trying to dismantle Libra

because they don't understand it. While all this is happening, China will continue to spread their financial system across the Belt and Road countries.

Electric/Autonomous Vehicles: From 2014-2018 China's electric car market grew much faster than electric vehicle sales in Europe, the United States, Japan and the rest of the world combined. In 2018, Chinese sales topped 1.1 million cars, more than 55% of all electric vehicles sold in the world, while the US's sales were a little over 350,000. According to data from "Inside EVs", for the first nine months of 2019 the traditional US automobile companies (excluding Tesla) have delivered a total of 24,528 electric vehicles in the first 9 months of 2019. This is compared to Chinese companies delivering over 600,000. How is this possible? Yes, Tesla is a US company but the only reason they have survived is because Elon Musk has enough money and star power to buck the corrupt, non-innovative system. Tesla even had governors in states like Michigan blocking Tesla's from being sold in the state because they go direct to consumer (doesn't every successful company do this now?). By coming out in 2003 with a mission of only producing products that are eco-friendly didn't have the legacy infrastructure that the traditional US car companies have.

Was it a secret that electric cars were going to be important? Absolutely not. So then how could Ford and Chevrolet miss the boat this far? This all happened while the US government was debating whether or not global warming was real. While democrats and republicans were debating this China, with the directive of the government developed the largest electric car fleet in the world by far. In October it was also announced that China was developing a nation-wide, charging network at the direction of the government. This all while the US is waiting on the private sector to act. How many charging stations do Ford and Chevy have? How can we expect these companies to develop autonomous driving technology if they can't even build an electric car?

PI	Global Brands	September	2019	%	P.'18
1	Tesla	49821	257082	16	1
2	BYD	13003	186195	12	2
3	BAIC	12689	107478	7	3
4	SAIC	9155	97700	6	6
5	BMW	14289	90168	6	4
6	Nissan	7209	64130	4	5
7	Geely	3873	61771	4	14
8	Volkswagen	6833	57730	4	10
9	Hyundai	9858	55927	3	8
10	Kia	3761	42651	3	19
11	Toyota	4670	41839	3	16
12	Mitsubishi	4528	40661	3	17
13	Chery	3415	37791	2	7
14	Renault	3626	35155	2	9
15	Great Wall	1877	34295	2	NE
16	JAC	407	33168	2	13
17	Changan	599	32219	2	NE
18	Volvo	4120	29285	2	20
19	GAC	4010	25116	2	NE
20	Chevrolet	2041	24528	2	12
	Others	77440	536218	33	
	TOTAL	183393	1608909	100	

5G – If you live in the US it's hard to go five minutes without seeing a commercial for Verizon's 5G network. Let's ask ourselves, if this 5G network is really so great why does a \$750,000 commercial need to be aired 20 times a day to tell people that? I remember being a Verizon employee and Verizon running commercials about IoT every day. There was only one problem, none of their IoT solutions worked.

It is somewhat shocking that the US does not have a single 5G major rollout yet while China rolled it out in 2019. There is plenty of finger pointing going on inside the US about this. But AT&T has been busy trying to reduce its debt load and cutting costs. It had its eye off the ball as it tried to improve a balance sheet that had a runaway debt problem. Presumably, 2020 will bring more focused solutions when it comes to 5G. But China already instituted 5G last November in 50 cities. A year head start does, indeed, make a big difference.

On the opposite side of this we make the argument that the opposite is true in China, where big companies are innovating in a big way. Whether China Mobile and Huawei with 5G and smart city rollouts or Alibaba with ecommerce and ubiquitous fintech. There is a real desire in China to drop the old way of doing thing for the common interest in advancement of an entire society that supersedes egos and peoples existing attachments to their comfort zones.

2. The US government is totally divided and at a virtual standstill:

While Donald Trump is undergoing impeachment hearings and Russia probes During China is laughing all the way to the bank. China is totally unified in their strategy to dominate the world in terms of technology.

This book is in no way advocating for a one-party system, however if you are going to have only one party, having one that is totally unified and dead set on world technological domination certainly has its advantages if your goal is being #1 in terms of technological power and GDP.

Confusion on how to regulate/support American technology companies: The authors been working in China for over 8 years now and not once have either of them seen an article about the possibility of the government breaking up Alibaba or Tencent for reasons of a monopoly. The reason is that China likes duopolies because they are forced to compete in everything and it gives them more control of the industries. By having Tencent control everything to do with social media it makes it incredibly easy for the government to regulate and control. Since the US cannot have the same degree of control over corporations operating within their borders, the only way to be more effective in controlling them is to break them up. While there may be a case to do this to increase competition, etc. making these companies smaller may hurt their ability to invest in quantum computing, 5G, and internet of things as we have discussed the infrastructure requires a substantial investment.

The recent technology hearings on Capital Hill have been somewhat comical to say the least. The fact that American regulators do not understand technology has a great impact on why they have chosen a “destroy” strategy rather than “compete and innovate” strategy with China. While most American politicians are lawyers by trade, Xi Jinping studied engineering at one of China’s top schools. Xi’s engineering background gives him a leg up over virtually any US politician, some of which thought Whatsapp was used to send “emails” in recent congressional hearings with Facebook. Again this is not advocating any political support or criticism, the objective is just to put the information and let the readers decide.

US politicians cannot agree on anything, the system is setup so virtually no progress is made on policy on two out of every four years. Donald Trump isn’t the only US president to face a divided congress. While the American system allows for generally more freedoms than the average country around the world, China’s one-party system is more efficient for getting policy through.

The exact opposite is true in China. While they do have their own mostly secretive way of competing for top political positions within the party, China does not have nearly the amount of disagreement on each individual issue. One big reason for this is because Chinese politicians don't have to worry about swaying public opinion on every new policy that is enacted. They only have to convince other politicians this is the best course of action and the policy is changed. Furthermore, there is a lot of debate in the background for a year about the course of each five year plan, but once it is agreed upon by the State Council, the CPPCC and the Politburo, it is set in stone for all to follow for 5 years and not even Xi Jin Ping can change it.

To give an example: Back in July 2019 when I was living in Shanghai a new policy was implemented that called for people to separate their garbage between "wet" (food) and "dry" (everything else) garbage. Once the decision was made it was announced about one week before with signs and advertisements posted all over Shanghai. Since the government controls garbage collection, they were instructed not to pick up any garbage that had not been separated.

On the day the program began EVERY one of the 26 million people in Shanghai began separating their garbage immediately. It took some getting used to, but the transition happened incredibly fast. Can you imagine trying to implement a program like this in the US where people were forbidden by law from putting food in the same garbage container as plastic or their garbage wouldn't be picked up and they would even be subject to a fine?

I'm in no way advocating for an authoritarian-like approach to governing people. The point of this example is that when you have powerful leaders who are actually motivated to do the right thing, in this case help the environment, a lot can be accomplished very quickly. China is doing the same thing now in the shift to quantum computing, education and 5G.

3. The problems faced by millennials in the US are NOT going away:

American millennials are suffering from addiction brought on by broken families & gun violence and the data suggests this is worsening. After graduating college many have big dreams that get overshadowed by seemingly insurmountable debt loads. Still some do have dreams of making a difference with their career and overcoming the debt. These optimistic millennials (like Austin) may finally get their chance and realize they have entered a workforce ruled by baby boomers focused on short-term profits.

In China the exact opposite is happening. China does also see rising rates of addiction and mental illness but they are starting from a much lower base. A big societal difference is the family unit in China is much more in-tact than the US. This is also changing in China but it will take at least a full generation to really change materially.

In addition to this with things like health care costs in the US continuing to spiral out of control and all the other various corporate scandals millennials have a fundamental mistrust for the system in general. It's almost impossible for a millennial to comprehend why they would have to pay 4x the cost of the same medicine in New York than it would be 5 minutes from the border of Canada, or why college costs 3x more than it does almost anywhere in the world. It is almost impossible for the average millennial to comprehend why people would deny climate change, block Uber from being available in their city for "safety issues" or to block Tesla because they sell directly to the consumer.

When millennials see that gun violence in schools and incarceration are more severe than any other country on earth by an order of magnitude it causes a great deal of discouragement, and eventually will lead to action against the establishment. Is this what has allowed non-traditional candidates like Donald Trump and Bernie Sanders to do so well in recent presidential elections?

4. The US and China relationship is doomed:

At the time this book was written President Trump has just signed a bill into law regarding sovereignty in Hong Kong. Right now, there are huge protests in Chile and at least a dozen other countries. There are probably 50 other countries in the world where citizens would like to have fair voting rights however the one chosen by the US to sign a bill about is Hong Kong. Why was Hong Kong chosen? These kinds of actions continue to suggest that the US would rather take a course of destabilization than competition with China. What about Kashmir? The Indian Army has occupied Kashmir and shut down the internet. India recently put forward anti-Muslim immigration legislation. What about Russia? More than 50 Journalists have been murdered by state-led actors. For this reason China will continue to move away from the US in every area possible regardless of any trade deal that is to be made.

Earlier in Chapter 2 of this book we explained why China is the way it is in terms of mindset and social structure. Many Americans especially both sides of the US Government still

simply refuse to try and see the world from China's eyes. Even though China has shown no signs of wanting to overthrow a foreign government or cause any outright harm to the US — or other sovereign nations — the US assumes that China thinks like Americans do. The truth is that China does not see in only black and white. Would China like to have the #1 economy in the world? Of course! Does the average Chinese citizen wish harm on the US so they can achieve that goal? To date we have not witnessed evidence to support this.

For the same exact reason that these legacy US companies cannot change, the Government is not likely to change in this area either. Both the administration and both houses of Congress feel it will be easier to destabilize China than to compete (Uber and taxi companies' example. Even if a phase 1 trade deal is reached with China (at the time of writing this book negotiations are still ongoing) it won't change the inevitable outcome. Too much has happened for China to ever trust the United States again.

5. China is moving away from the US creating a separate internet, financial system, etc. and will NEVER put itself at the mercy of the US again

So in the previous point we discussed why the relationship is doomed. Now we will go into what will happen as a result of this “doom” for the relationship.

As we mentioned in Chapter 2 China has a long history of being held back or hurt by foreign powers. Whether it was the United Kingdom taking over their biggest port city and force feeding the population opium or the Japanese invasion during World War 2, China along with much of Africa and South America has a hatred for foreign powers interfering and holding back progress. The difference now is that unlike South American and African countries, China now has the resources to make a stand, and that’s exactly what they will do.

Unlike the US, China can sell the concept of short-term pain to the general population in order to achieve a long-term goal. That pain right now consists of tariffs from the United States and lack of access to certain products needed by companies like Huawei and ZTE. While it is definitely having an impact on Chinese exports China is not just sitting around and waiting for it to go away. Through diversification of their economy and establishing themselves as the dominant manufacturer all across the belt and road countries China will make themselves much less vulnerable to the US if another dispute were to inevitably erupt in the future.

In the writing of this book the authors have interviewed several executives at the top semiconductor companies around the world who all believe China will have its own chip mass-production capabilities by 2024. In addition to this Huawei has already produced a version one of their mobile operating system to replace android. It may take a lot of time and investment but all available information suggests this is absolutely the path that China is headed on.

The pundits and analysts in the West still evaluate China by traditional metrics like manufacturing output. Hence, they think China is in an incredibly weak position at the time this book is being written as manufacturing PMI has been declining slightly for the past several months. What these talking heads fail or temporarily forget to realize is that China is already well on its way to being a consumption and services led economy. It has already moved its low value- added manufacturing to Vietnam and South Asia. The decline in manufacturing in China is yesterday’s news.

Misjudging the Chinese economy is exactly what China wants. While the west thinks all is going to hell because manufacturing is decreasing slightly, China’s internet, ecommerce, IoT, smart cities, high speed trains, and fintech sectors are booming. China knows this is the future and have planned for this for many years.

Manufacturing is still an important factor for China, but even though it is decreasing it isn’t decreasing to the magnitude you would expect during an all-out trade war with the world’s largest economy. Why is that? The answer is because they planned for that too. Another thing

to consider is that China is really good at manufacturing. If you don't believe it take a look at the Tesla plant in Shanghai that went from a large swamp in Pudong to producing 1,000 electric cars per week in 357 days.

While the Belt and Road initiative has been shown as a disaster in western media, on the ground in these countries it is starting to benefit all those involved. China is creating a network of other countries to sell their products to across Africa, Asia and South America Soon China will not need the US. The authors have spent a significant amount of time in places like East Africa in recent years and it's obvious the USA doesn't have the same influence anymore. China lends money with no strings attached and in return they get strategic influence. Upon interviewing several top government officials and technology executives on the ground in East Africa it seems the local people and governments adore China for five main reasons:

- A. China has introduced cheap, good quality products to Africa that were not available previously.
- B. China and Chinese companies offer loans, build infrastructure project and conduct all other business with only one goal and zero ulterior motives, to make money. Africans trust the Chinese far more than the west, and so do the Latin American countries. European countries have devastated Africa for Centuries. Between Slavery, the Berlin convention, the assassination of Muammar al-Gaddafi. The African community completely mistrusts the west.
- C. The United States has the same situation with Latin America. China is building out their wireless networks, selling cheap affordable products to their people, buying their natural resources, and not demanding any political conditions in return. Compare that to your average World Bank loan and these are relatively easy decisions for local leaders.
- D. China is creating a completely separate financial system with their own mobile payments and even cryptocurrency.
- E. From the beginning China has had a completely separate internet, this will continue.

6. Is China's move into emerging markets, primarily Africa, with a commitment to avoid politics smart? Yes. US intervention in local politics in Latin America, Middle East Asia or Africa over range past 50 years has tended to be a disaster and all too often reverts to an imperialist mindset.

In Africa and South America everywhere you look there are Chinese people building roads, bridges, stadiums and airports. China has somehow been able to come in and do something the US never did which was get a strong foothold in a country economically without causing political upheaval as a result.

While the World Bank grants small loans filled with conditions like women's rights and democracy, loans from State-owned banks in China come with zero conditions. In private conversations with both government officials and businesspeople in the region, the one thing that is clear is that nobody wants to talk about democracy. What people love about doing business with China is their only intention is to do business and make money. When your partner's intention are well known they are much easier to do business with as you understand exactly what they want.

In his book "The Elusive Quest for Growth", Bill Easterly spells out the problems of politically motivated aid. He knows of what he speaks as he was the Chief Economist for the World Bank. He makes the point through many examples that introducing political motives to aid causes perverse consequences as incentives are maligned in favor of ends that have nothing to do with welfare, economic growth or poverty reduction. In too many cases from the 1960s to the early 1990s, World Bank aid was given to countries who shared an anti-communist view and aid was withheld from countries who cozied up to the Soviet Union. It was an "us vs them" view of distributing aid. Paul saw this with my own eyes in Indonesia as an advisor to the Minister of Finance. Whenever the World Bank would stamp its feet and swing her hips over misappropriation — or theft — of aid funds, top people in the government would bring out the communist boogeyman argument and the World Bank people would go quiet. Both sides were using each other for political ends rather than directly aiming to reduce poverty. Vast amounts of resources were wasted or ended up in Swiss bank accounts.

Now the Good News...The Schmidt Committee is Capitalism with Socialist Characteristics

A national commission headed by Eric Schmidt of Google made a series of recommendations to keep pace with China's massive investment in AI as well as its significant strides in public-private cooperation. After reviewing the commission's report, as well as another report by the Congressional Research Service on AI, we have done PowerPoint summaries of both reports. The URL is: <http://www.schulte-research.com/east-vs-west-ai-and-national-security/>). We conclude that the US intends to go down a road of "China-lite". It just might be capitalism with socialist characteristics. This is neither good Nor bad. It just is. It is probably a smart thing, but it will cause a stir on the right wing of the Republican Party who believe that government will only ever make things worse — never better.

The evolution of thinking in the Trump Administration over the last three years seems to have shifted dramatically. The new Republican administration entered Washington with an intent to roll back government intervention in the economy with respect to banking, securities, environment, fracking, oil and gas, coastal development, offshore drilling, and so forth. SO, it

was a new era of “hands off” government. It was a move toward traditional thinking: “The government that governs best governs least.”

The problem is that, over the course of two years, leaders in government and industry came to the conclusion that the US economy required a wholesale upgrade in its infrastructure (indeed, its superstructure) from analog copper to high speed digital. There was a very slow recognition that the private sector by itself, for an assortment of reasons, was incapable of doing this. Getting this upgrade done requires very heavy lifting from several points of view. Put simply, it requires some organising body to get states, universities, think tanks, military, regulators, Bankers, capital markets, investors and shareholders to change their mindset to see that a common goal of upgrading the US was in the national interest and required sacrifices and compromise. This is precisely the conclusion of the Schmidt report.

In Essence, the Trump Administration will need to walk back much of its criticism of China which revolves around the use of direct state power and resources to manage resources, fund projects, inject military personnel into private companies, and/or divert federal and provincial manpower to achieve infrastructure projects which benefits publicly listed companies. We summarize below the main conclusions of the Schmidt Committee. These recommendations and their detailed programs seem to bear faint resemblance to the China 230 program to become an AI leader in innovation.

1. Global leadership in AI technology is a national security priority:

Fundamentally, the Schmidt Committee fundamentally believes that while American companies play a significant role in advancing AI research and development, the government retains a core responsibility to steer advancements in ways to protect the American people and foster basic research environment.

What China is doing: This core belief seems to drive much of the goal of China to become the world’s premier AI Innovation Center by 2030. China is already increased its R&D national Budget by 30x to 2.5% of GDP (or about \$180 bn), far ahead of the US which is at 2% of GDP.

2. Adopting AI for defense and security purposes is an urgent national imperative:

In light of the choices being made by strategic competitors, the United States must also examine AI through a military lens, including concepts for AI-enabled autonomous operations. In other words, what's good for the goose is good for the gander. If China can use Huawei as a national champion with shady connections to the military, the US now seems to reserve the right to do the same thing. This may include deeper connections between the Pentagon and Google, GE, Palantir, Facebook and Apple.

What China is doing: China has been doing this with Huawei and other companies, as does the UK, Germany, Australia, and other countries.

3. Private sector leaders and government officials must build a shared sense of responsibility for the welfare and security of the American people:

The government must strengthen industry by articulating clear standards and policies for responsible use, rebuilding trust through greater transparency, and offering a vision of a shared purpose. In other words, there seems to be a recommendation that government may need to be larger. It may need to rebuild its trust with the private sector. Governing best may include more interaction with the private sector, especially in helping to build a compelling narrative that public-private partnerships are, indeed, vital for national security, especially in the area of AI.

What China is doing: China's internal narrative is precisely built on this foundation.

4. People are still essential to government-university relationships are vital

America needs to encourage that talent to come, contribute, and stay. Within government, recruiting, training, and retaining AI-talent will be essential to maximize AI's potential. This means that a major push must come from government to offer scholarships and funding to universities to increase tenured professors, increase scholarships, pay for new departments in the area of AI to train both civilians and government officials to pump out higher numbers of AI-literate graduates which need to number in the millions.

What China is doing: China has been doing this for 15 years. Way ahead in this. It turns out 10 times more STEM graduates than the US and is ahead in facial recognition, ID confirmation, digital ledger currency, financial technology, advanced ecommerce, among others.

5. The power of free inquiry must be preserved:

The U.S. must protect intellectual property and sensitive technology to ensure that American technology and innovation is not exploited to advance adversaries' militaries or undertake human rights abuses. This means that, in order to receive greater government funding for IA, universities must agree to greater scrutiny from the FBI in order to maintain funding. So, the FBI reserves the right to create dossiers on overseas Chinese students as well as first generation Chinese students. The benefits of actionable intelligence may not be outweighed by feelings of alienation among Chinese graduate students.

What China is doing: China is seeing a reverse diaspora of mainland Chinese who are returning to universities in China for research and development in the area of AI and other cutting edge technologies.

6. Ethics and strategic necessity are compatible with one another:

The US sees an ethical imperative to accelerate the fielding of safe, reliable, and secure AI systems that can be demonstrated to protect the American people, minimize operational dangers to U.S. service members, and make warfare more discriminating, which could reduce civilian casualties.

Everyone desires safe, robust, and reliable AI systems free of unwanted bias, and recognizes today's technical limitations.

What China is doing: Both China and the US are deep in preparation for future AI warfare which can inject zero hour bots in any system to shut it down: power, water, oil pipelines, airport control towers, train systems. This can cripple critical infrastructure without dropping one bomb. The zero hour bot war is already here.

7. The American way of AI must reflect American values :

The U.S. military must find ways for AI to enhance its ability to uphold the laws of war and ensuring that current frameworks adequately cover AI.

What China is doing: Few countries are talking about this vital element of AI. AI is a new weapon akin to nuclear power. It needs something like the IAEA or the Geneva Convention to regulate its vast and intrusive power. AI can sway elections, cut off power supplies to vast populations, destroy fresh food supply in 48 hours, alter bank records, change stock prices, cause an entire fleet of civilian aircraft to become blind from one minute to the next. AI has the power to do vastly more damage to civilian populations than any atomic bomb.

Congressional Research Service Report on AI: Weaponizing Artificial Intelligence

The very recent CRS report on AI and IOT is perhaps a bit more provocative in that it takes a more hawkish view on AI and suggests that public-private projects need to be accelerated as soon as possible in order to incorporate AI in all fields of military endeavour. Again, this goes to the heart of the objection to Huawei's military connections. So, it puts the US in an uncomfortable position of being hypocritical toward China. The following 7 recommendations will go along way to advancing AI, and the biggest beneficiary will be the military-industrial complex. (Our full summary of the CRS report can be found at <http://www.schulte-research.com/east-vs-west-ai-and-national-security/>).

Again, it has taken a long time, but the penny is finally dropping for the US. Coordinated efforts with the private sector, universities, states, federal government and the military are vital to create a new infrastructure for digital services and AI. This is smart. It has socialist characteristics. It is the only way to go. It will happen. Unfortunately, the trade war that the US started with China — and which has caused so many poisoned relationships among and between the G7 — is precisely based on forcing China to abandon the things which the US will now do.

1. Intelligence, Surveillance, and Reconnaissance:

In coordination with Google, Project Maven team is incorporating computer vision and machine learning algorithms into intelligence collection cells that would comb through footage from drones and automatically identify hostile activity for targeting. In addition, IARPA (The Intelligence Advanced Research Projects Activity) is sponsoring several AI research projects - developing algorithms for multilingual speech recognition and translation in noisy environments, geo-locating images without the associated metadata, fusing 2-D images to create 3-D models, and building tools to infer a building's function based on pattern-of-life analysis.

What China is doing: The government has been working closely with Huawei, the military and private companies in the same manner.

2. Logistics:

Use in Aircrafts - Instead of making repairs when an aircraft breaks or in accordance with standardized fleet-wide maintenance schedules, the Air Force is testing an AI-enabled approach that tailors maintenance schedules to the needs of individual aircraft even as a means of midair repair. In addition, the Army's Logistics Support Activity will analyze shipping flows for repair parts distribution, attempting to determine the most time- and cost efficient means to deliver supplies.

What China is doing: Same.

3. Cyberspace Operations:

Conventional cybersecurity tools look for historical matches to known malicious code, so hackers only have to modify small portions of that code to circumvent the defense. AI-enabled tools, on the other hand, can be trained to detect anomalies in broader patterns of network activity, thus presenting a more comprehensive and dynamic barrier to Attack.

What China is doing: Same.

4. Information Operations and “Deep Fakes”:

Deep fake technology could be used against the United States and U.S. allies to generate false news reports, influence public discourse, erode public trust, and attempt to blackmail diplomats. The Media Forensics (MediFor) project, which seeks to “automatically detect manipulations, provide detailed information about how these manipulations were performed, and reason about the overall integrity of visual media.” The Media Forensics Project brings together world class Researchers to level the playing field to Attack the manipulator. It will attempt to detect media manipulation and find out how, where and who did it. Presumably, Russia will be the target of this technology. It has been extraordinarily successful in interfering in elections in many countries through false information and manipulation.

What China is doing: China is ahead in facial recognition technology.

5. Command and Control:

Multi-Domain Command and Control (MDC2) aims to centralize planning and execution of air, space, cyberspace, sea, and land-based operations. This is aimed at allowing any sensor to provide data to any shooter from any service, ally, or partner ... to achieve effects against any target. It is the most advanced application of IOT to AI that the world knows.

What China is doing: Same.

6. Semi-autonomous and Autonomous Vehicles

AI may enable the “loyal wingman” to accomplish tasks for its inhabited flight lead, such as jamming electronic threats or carrying extra weapons.

What China is doing: China is currently ahead in autonomous vehicles.

7. Lethal Autonomous Weapon Systems (LAWS):

A special class of weapon systems that use sensor suites and computer algorithms to independently identify a target and employ an onboard weapon system to engage and destroy the target without manual human control of the system.

What China is doing: Same.

In the greater scheme of things, we very clearly see sides being taken and lines being drawn. A great silicon curtain is descending from Vladivostok in the north to Singapore in the South. There is a degree to which AI is being weaponized by both sides.

Governments in Beijing and Washington are corralling universities to do their bidding. Money for R&D will be very national in nature. Only Americans will get US Government money. Chinese need not apply — that goes for visa holders or perhaps even first generation. Only Chinese will get Chinese money. Americans need not apply.

The private sector in both countries is under a new set of instructions to see the common welfare in terms of national security. Jack Ma got caught in the pincers between shareholders of Alibaba and the State Council. In a similar vein, both the CSR and Schmidt Report are very clear that the narrative must change and that the private sector must bow to new national security initiatives. So, people like Mark Zuckerberg, Eric Schmidt, Tim Cook and Peter Thiel will need to accommodate a new understanding of the common welfare which includes maintaining global supremacy. This means forging much closer cooperation with the Pentagon whether they like it or not.

Our closing thought is simple: may the best man win.

Back book cover: China is winning the tech race — and will continue to win. While DC is tearing itself to pieces and planning to break up US tech companies, China is doubling down on 5G, electric autonomous vehicles, blockchain, smart cities, Silk Road e-commerce & payments, digital currency, quantum communications, energy storage and AI. This book looks at these trends through the eyes of a millennial working in both tech firms in America and China. It shows how and why the US private sector is not getting this done. It explains the roots of millennial anxiety and angst, primarily in the US, which inhibits productivity. Our conclusion is that America needs two 'Apollo' programs, one social and one technological. Millennials are bogged down with debt, an epidemic of opioid addiction, social media obsessions, discarded veterans, incarceration as a solution for mental illness, school gun violence, boomer apathy toward climate change, endless wars, and non-stop financial scandals. Another program is needed to spur public-private cooperation in e-commerce, payments, 5G, and AI & can cause revolutionary change. Meanwhile, is the US bogged down by passé imperial attitudes in DC, a 'dividends at any cost' mindset and retiring boomers who are coasting at work?

