Payden&Rygel

POINT of VIEW

SUMMER 2015

Our Perspective on Issues Affecting Global Financial Markets

Football and Finance: What Manchester United Teaches Us About the Global Economy and the Business of Sports

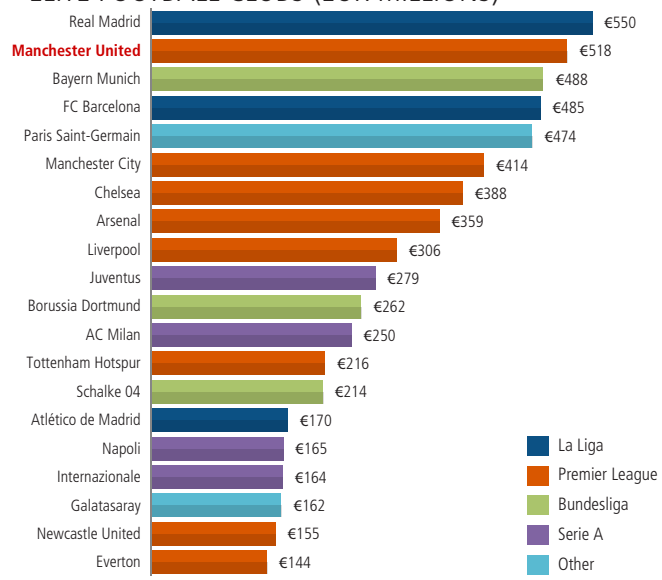
The TV buzzes on in the living room. Pre-match pundits detail starting line-ups. You press open the microwave and gingerly remove a bag of popcorn. Beer foam bubbles out of a hand-chilling bottle. Dashing to the sofa, you are just in time to witness the first touches. Rooney kicks off. The Manchester United match is underway.

Now, we are not taking sides. Manchester United is but one example of a massively successful global sports team. Training kits and shirts struck in the infamous red and white are as popular in Kuala Lumpur as they are in Riyadh. Fans around the world huddle in smoky bars, craning their necks over friends' shoulders to catch a glimpse of the action.

Manchester United is also one of the few global sports brands under public ownership, precisely why we've chosen to inspect it closely. The legendary English Premier League heavyweight must publish its financial statements for all eyes to see and scour. For the many who wonder about the business of sports, here is a rare window into the numbers. For those curious about just how profitable such an ubiquitous sports brand actually is–we have some answers.

Like other elite sports franchises (read: Real Madrid), Man U's financials tell of the profound impact wrought by globalization and digitization. No longer are packed stadiums the driver of sports profits.

fig. 1 PAY TO PLAY? A LOOK AT TOTAL REVENUES FOR ELITE FOOTBALL CLUBS (EUR MILLIONS)



Source: Deloitte (2015), "Football Money League"

*Paris Saint-Germain and Galatasaray play in Ligue 1 and Super Lig, respectively. Here they are classified together as "Other."

Top performing sports teams capture massive gains from global sponsorship and broadcasting agreements, attract the best players from around the world, and reach fans everywhere on screens big and small. Few business models look as promising as those of great sports teams in the 21st century.

MONEY MACHINE

Manchester United runs a profitable enterprise that pulls in significant revenue. In 2014, the team generated £433 million in sales. Of those sales, the club booked almost 15% as operating profit (for a total of £61 million). By way of rough example, that means for every £60 you spend on a shirt, £9 comes in as profit.

«2014 WAS A ROUGH YEAR FOR MANCHESTER UNITED. THEY FINISHED SEVENTH IN THE PREMIER LEAGUE. IT WAS THE FIRST YEAR THE CLUB FINISHED OUTSIDE OF THE TOP THREE SINCE 1991»

The football club breaks its revenues into three primary streams: commercial, broadcasting, and matchday. Commercial revenues (44% of the total) are from sponsorship agreements, merchandising agreements, and team tours. Broadcasting revenue (31%) is the result of media rights the club owns to televise Premier and Champions League matches (in case you are curious, two-thirds of broadcasting revenue is from the Premier League, while roughly one-third is from the Champions League–see the Did You Know Box). Finally, the club earns matchday revenue (25%). Just as it sounds, this is the money made at the so-called Theatre of Dreams (Old Trafford Stadium's sobriquet) on match days. Manchester United also gets a cut of "gate receipts" from other cup matches, even when it plays away from home.

2014 was a rough year for Manchester United. They finished seventh in the Premier League. It was the first year the club finished outside of the top three since 1991. Remarkably, though, despite their less-than-stellar performance, the club was still the world's second largest revenue generating football squad (see Figure 1). Consider that FC Bar-

celona claimed first place in its league twice in the last four years and still collected less revenue than Manchester United.

What about those player expenses? Employee benefit expenses were fully 50% of total revenues, costing the club £215 million in 2014. New joiners like Ángel Di María, Ander Herrera, and Luke Shaw brought player costs up 19% in 2014 (see Figure 2). Not only does the club have to pay salaries to these prized players, they also have to pay transfer fees—the cost of buying a player out of his prior contract. Man U's transfer fees owed to other teams also rose, meaning their expenses could have been even higher. Transfer fees owed by Manchester United to other teams total just shy of £120 million as of December 2014. Talk about wage growth!

GOING GLOBAL

The key to Man U's revenue generation is their global presence. As wealth rises around the world, internet access and television broadcasting will increase. The clubs with recognizable brands are those that stand to earn the most. In an age of binge-watching television shows and on-demand movies, live sports bring a special appeal to viewers.

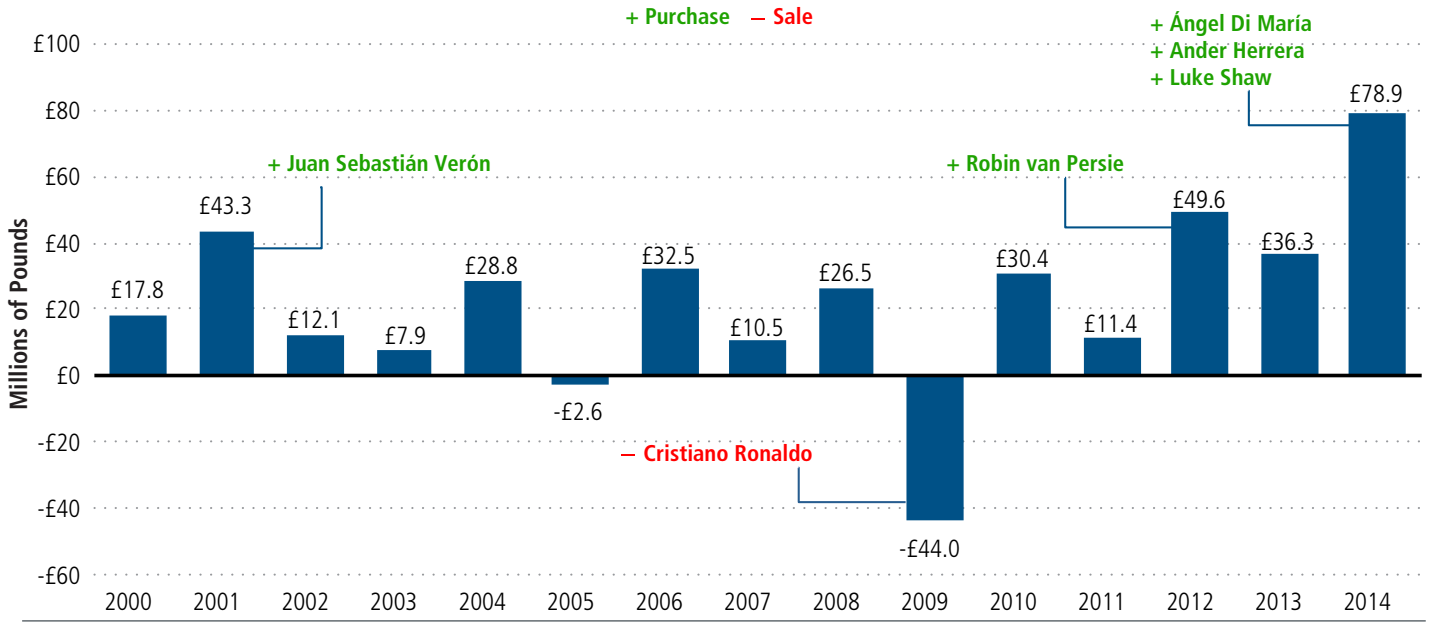
Manchester United exemplifies the benefits of globalization. Three pieces of evidence support such a claim: the comparative geographies of the team and its fan base, the specific ways in which United has made the lion's share of its money lately, and the transformation of elite football rosters into world class all-star teams.

Manchester is a city of half a million people in northern England. With a town charter dating back to 1301, England's unofficial second city however large, Manchester claims another distinction: it is home to two of the world's most powerful football clubs. Since the 1980s, United rode the wave of a globalizing game that saw footballers from all over the world come to play in the Premier League. It was also Manchester United that led the English Premier League into European contests. It was the first English team to win the European Cup (now named the Champions League). Manchester City more recently

DID YOU KNOW?

League	Premier	Champions (UEFA)
Region	England	Europe
How many teams?	20	32
How do you qualify?	At the end of each season, the bottom three teams in the premier league get relegated to a lower league. The three best teams from the lower league are promoted to the premier league	The best few teams in each European country league qualify automatically. The number of qualifiers depends on UEFA's country rankings (stronger countries have more teams). However, there are also qualifying rounds for the teams not automatically entered. For our example, Manchester United could play in both the Premier League and Champions League
How do you win the league?	The Premier League consists of a 38 game season during which each team plays every other team twice. At the end of the season, whichever team has the most points wins. Three points are awarded for a win, 1 point for a draw, and 0 points for a loss	The Champions League uses pool play, as in the World Cup. Teams are divided into groups and compete against others in their group. The two teams with the best records after group play advance to knockout stages. If multiple teams have the same record after group play, goal differential is the deciding factor
Top Dogs (Alphabetical Order)	Arsenal, Chelsea, Liverpool, Manchester City, Manchester United	Arsenal, Bayern Munich, FC Barcelona, Juventus, Manchester United, Paris Saint-Germain, Real Madrid

fig. 2 THE REBOUND IN BUSINESS INVESTMENT: MAN U'S NET PLAYER CAPITAL EXPENDITURES (GBP MILLIONS)*



Source: Company Filings

*Chart shows player spending as a positive figure and money made from player sales as a negative. The net figure is expenditures minus player sales.

«TRANSFER FEES OWED BY MANCHESTER UNITED TO OTHER TEAMS TOTAL JUST SHY OF £120 MILLION AS OF DECEMBER 2014. TALK ABOUT WAGE GROWTH!»

joined the global game, but has nevertheless quickly captured the imaginations of millions around the world.

An expanded fan base has coaxed open more pocketbooks than just those of supporters. Both Manchester United and Manchester City are currently under foreign ownership–a fact not universally celebrated, but a testament to the lure of these superlative teams.

In their annual filings from 2014, Manchester United boasted 659 million followers, a number equal to 10% of the world's population. Such orders of magnitude are more fitting of religions. Only Christianity, Islam and Hinduism claim more followers. Needing only a powerful brand and a history of thrilling football, the Red Devils faithful extend around the world. Given they have finished in the Premier League's top three for 21 of the last 22 seasons (excluding 2014/15) and won the Premier League 13 times, it's no surprise that the team garnered 64 million Facebook likes in 2013/14 alone.

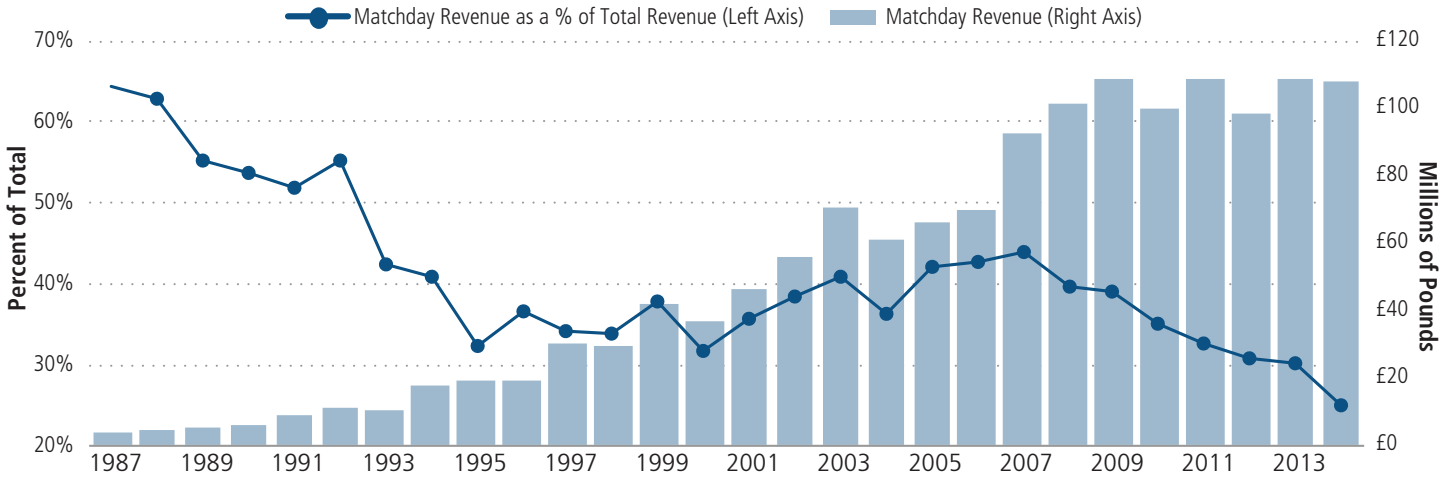
The large fan base may be impressive, but you might wonder how Manchester United translates these dispersed supporters into a business. As mentioned above, the club earns a majority of its revenue from commercial agreements and broadcasting. But it hasn't always been this way. In 1987, matchday revenue accounted for 65% of Manchester United's total revenue. By 2014, it was only 25% of total revenue (see Figure 3). That amounts to a 3.4% average annual decline in matchday revenue as a percent of the total. Note that matchday revenue increased from £4.2 million to £108.8 million since 1987; it's just that other revenue sources have far outpaced it! Where has the growth come from?.

The second visible way in which Manchester United has benefited from globalization is the club's massive boost in commercial revenue. This segment includes sponsorships, merchandising, and team tours. Remarkably, sponsorship revenue has exploded at a compound annual growth rate of 35% since 2009. Part of that reflects a rebound in the global economy. But it was not just a rising global economic tide that lifted all boats. Where Vodafone once paid an average of £8 million per year to appear on every United shirt made, in 2014 Chevrolet agreed to pay the club an average of £44 million per year to appear on the club's shirts (see Figure 4 on next page). The auto maker agreed to such a lucrative deal even despite Man U's disappointing 7th place finish.

«IN THEIR ANNUAL FILINGS FROM 2014, MANCHESTER UNITED BOASTED 659 MILLION FOLLOWERS, A NUMBER EQUAL TO 10% OF THE WORLD'S POPULATION»

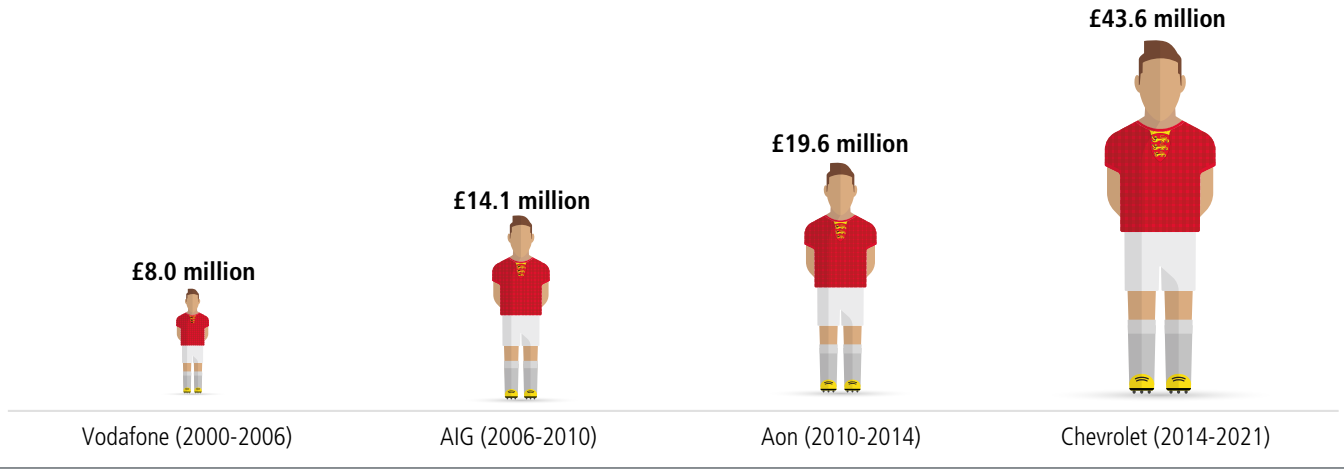
Chevrolet's parent company, General Motors, wasn't the only corporation ready to burst the dam on commercial agreements with Manchester United. German boot (cleat) maker Adidas recently dropped £750 million over ten years (£75 million/year) to be the official technical sponsor of Manchester United. The sum is only £40 million less than the club itself cost its new owners in 2005. Compare that to the £24 million/year deal Nike initiated with Manchester United in 2002. The new Adidas deal with the Red Devils (Man U's team nickname) is even richer than the £31 million/year they pay to Real

fig. 3 MATCHDAY TICKET SALES: NO MATCH FOR TV



Source: Company Filings, andersred.blogspot.com

fig. 4 AVERAGE ANNUAL PAYMENTS UNDER SHIRT SPONSORSHIP CONTRACTS (GBP MILLIONS)



Source: Company Filings

Madrid for the same technical sponsorship. The other major difference between the two clubs? Real Madrid actually qualified for, and won, the Champions League in 2014.

Regardless of how we judge the sums paid, there is no doubt that the value of global sports teams is on the rise. The globalization of sport has wrought changes on the top football clubs across Europe beyond lucrative endorsements and sponsorships. In 1980, Manchester United's roster was disproportionately from the United Kingdom–25 of 26 players. Of their 26 listed players, 9 were from England, 8 from Ireland/North Ireland, 6 from Scotland, and 2 from Wales. There was only one non-UK native: Nikola Jovanović of Montenegro.

In 2014, things looked a bit different. Roughly 1/2 of the team's roster was from outside of the UK. Across the Premier League, the data show the same. Through the 2013/14 season, players from locations other than England, France, Spain, Argentina, and Scotland played the plurality of minutes in the Premier League. One man, though, has held strong. Ryan Giggs made his debut for Manchester United in 1991 and has since made 671 appearances, all for the Red Devils. Now the assistant manager of Manchester United, Giggs has played in more English Premier League matches than Manchester City's team has in its entire history.

«RYAN GIGGS MADE HIS DEBUT FOR MANCHESTER UNITED IN 1991 AND HAS SINCE MADE 671 APPEARANCES, MORE ENGLISH PREMIER LEAGUE MATCHES THAN MANCHESTER CITY'S TEAM HAS IN ITS ENTIRE HISTORY»

THE 90TH MINUTE

Internationalization is a good thing. Markets for footballers have become more competitive, and the chances that a young kid from the Amazon finds his way to the pitch at Old Trafford are as good as ever.

Fans and supporters benefit, too. English Premier League matches were broadcast live to over 200 countries in 2009. Indeed, in the space of two decades, "English football [has] moved from mainly being watched through physical attendance to being predominantly viewed digitally." [1]

Where we suggested that Manchester United's increased proportional share of commercial revenue and decreased matchday revenue were writing on the wall, "the sale of broadcast rights outstrips matchday and other commercial income streams as the largest revenue generator at 16 out of the top 20 highest revenue generating teams in world football, contributing an average of 44% of each club's total revenue."[2]

With this walk through the finances of one of the world's most prominent teams we hope you have a better sense of how globalization and digitization have turbo-charged elite sports franchises. Organizations producing high-demand content are among those best positioned to thrive in the condensed, interconnected, informational 21st century. For better or for worse, the winner-take-all nature of global sports is here to stay.

SOURCES

1 David, M. and Millward, P. (2012). "Football's Coming Home" Digital Reterritorialization, Contradictions in the Transnational Coverage of Sport and the Sociology of Alternative Football Broadcasts." British Journal of Sociology., 63 (2). Pp 349-369.

2 Ibid.

The Fed is Not Magical... Unless You Think REITs are Magical

"Stocks and bonds around the world are a house of cards because of the Federal Reserve's bond-buying."

Investors love simple explanations for complex phenomena. So we should not be surprised to routinely hear "The Fed did it" as a catch-all reason for asset price movements and economic developments. Far be it from us to deny the Fed's place as a large US financial institution. But the Federal Reserve as the universal cause is as convenient as it is bogus.

Our work here is to dispel common notions of central banks as more than mere financial intermediaries. As we enter an era of "policy normalization," where overnight policy interest rates move higher, worries of a market apocalypse are overblown. A near $80 trillion global economy can survive the Fed's tinkering. The Fed's balance sheet, we contend, looks more like a mortgage REIT than it does the instrument of an all-powerful puppet master guiding the global economy.

Our evidence sits in plain view. Each week the world learns anew the composition of the Federal Reserve's balance sheet: what the US central bank owns and to whom it owes. The data show unambiguously that both the structure and the size of the Fed's operation are altogether common. There is no magic. Like many other financial intermediaries, the Fed uses short-term borrowing (it issues liabilities) to fund long-term assets (it holds Treasury and government backed mortgage securities).

If you thought that it is the scale of these operations which makes today's Fed unique, think again. Compared to the Fed's own history, or compared to other central banks around the world, the Fed's balance sheet isn't even very big.

«THE FED'S HUMBLE ORIGINS ARE A GOOD STARTING POINT FOR CONSIDERING WHAT THE CURRENT INSTITUTION IS AND WHAT IT IS NOT. PUT PLAINLY, THE FED'S ORIGINAL CHARTER WAS THE PROVISION OF CREDIT TO THE FINANCIAL SYSTEM IN TIMES OF PANIC AND THE REGULATION OF BANKS»

DID YOU KNOW?

Wait...What is a Mortgage REIT?

A mortgage REIT is a special type of real estate investment trust (REIT) which uses short-term borrowing in the form of reverse repurchase agreements to make mortgage loans, to purchase existing mortgages, or to buy mortgage-backed securities. The profitability of a mortgage REIT depends on the spread between their cost of borrowing and the return they make on their assets. What makes the REIT structure attractive? So long as certain criteria are met, the trust is exempt from taxation and public market investors can gain exposure to real estate.

Like other REITs, to maintain their status mortgage REITS must distribute at least 90% of each year's income to shareholders and must earn at least 75% of its gross income from real estate investments, among other criteria. According to research done by the Richmond Federal Reserve Bank, the first mortgage REIT still in existence today is the Capstead Mortgage Corporation, founded in 1985. Initially created for buying mortgages and making collateralized mortgage obligations, 95% of Capstead's liabilities were securities issued. Only 8 years later, though, reverse repurchase agreements accounted for 40% of all liabilities. Today, reverse repurchase agreements represent 55% of all mortgage REIT liabilities.

The gig is up. Get used to it. The Fed of the past, present and future, is just another player in the global bond market.

FROM WHENCE WE CAME

The Fed's humble origins are a good starting point for considering what the current institution is and what it is not. Put plainly, the Fed's original charter was the provision of credit to the financial system in times of panic and the regulation of banks.

Created in 1913 by the Federal Reserve Act, Congress sought to quiet the constant economic fluctuations caused by violent credit cycles. Top of mind was the recent financial panic and attendant recession of 1907 when the US banking system found itself short on liquidity. The eminent J.P. Morgan presided over (and arm-twisted) a quasi-private bailout, using the vast capital at his disposal to guarantee deposits and halt a nationwide run on the banking system.

The discovery that one powerful person stood between credit crisis and the country's financial health prompted quick Congressional action. The Federal Reserve Act "provided for the establishment of Federal Reserve Banks, to furnish an elastic currency, to afford means

fig.1 THE FED'S BALANCE SHEET VS. A MORTGAGE REIT'S BALANCE SHEET: CAN YOU TELL THE DIFFERENCE?

FEDERAL RESERVE	
ASSETS	LIABILITIES
RESERVE ASSETS	RESERVES
SDR CERTIFICATES	CURRENCY
TREASURY CURRENCY	REVERSE REPO
LOANS	MISC.
TREASURY DEBT	
AGENCY & GSE DEBT	
EQUITIES	
MISC.	

MORTGAGE REITS	
ASSETS	LIABILITIES
DEPOSITS & CURRENCY	REVERSE REPO
AGENCY & GSE DEBT	BONDS
CORPORATE & FOREIGN BONDS	LOANS
MORTGAGES	MISC.
MISC.	

of rediscounting commercial paper, [and] to establish a more effective supervision of banking in the United States…"[1]

MISSION CREEP: PRICE STABILITY AND MAXIMUM EMPLOYMENT

Life changed for the Federal Reserve in 1977. After decades of relative economic peace and no banking crises, the malaise of the 1970s combined with rip-roaring oil prices and high unemployment had Congress itching for help. Where formerly the federal government was tasked with "promot[ing] maximum employment, production, and purchasing power," advances in economic theory gave some members of Congress the idea that maybe the Fed would be better suited for pursuing such economic ends.[2]

This piece of the story is familiar to anyone who has taken an undergraduate economics course. Promulgated as an unassailable truth until 2008, more scientific-seeming economics and a general boom in global economic activity through the 1980s and 1990s convinced many that the US central bank (along with other "modern" central banks) had cracked the code of the business cycle. Buying and selling bonds, it was assumed, was sufficient to crack the whip on inflation when the economy overheated, or enable companies to hire when the gas in the economic tank was running low. But 2008 would change all of that.

INTO THE PRESENT, BACK TO THE ROOTS

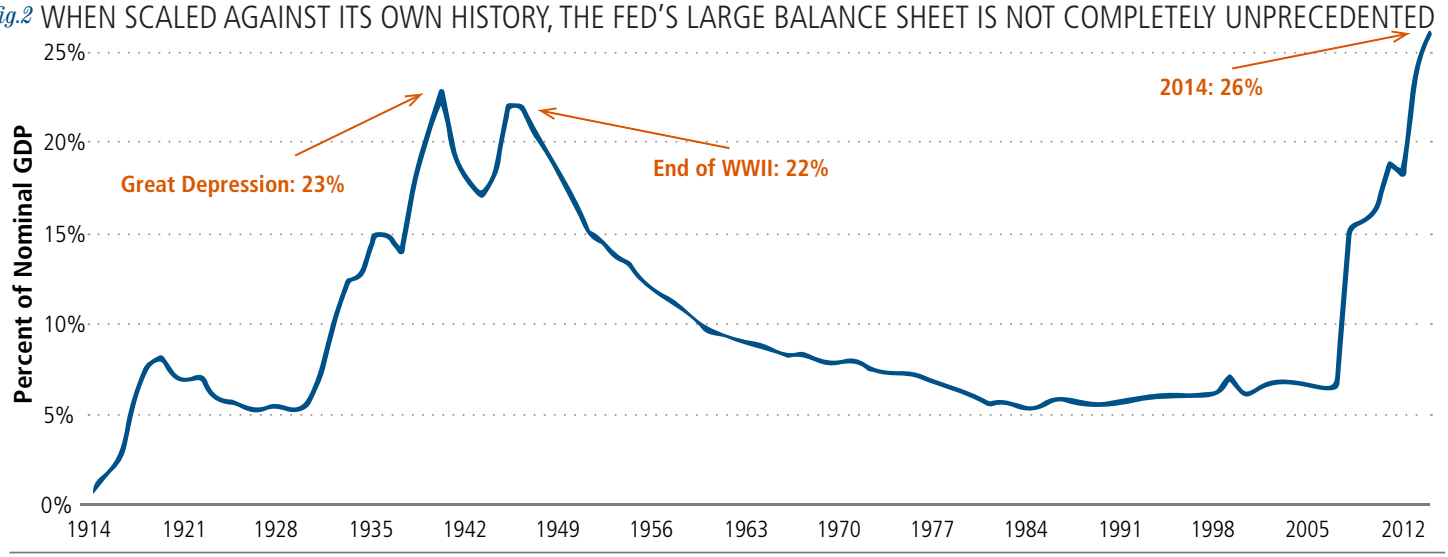
It is August 2008. Washington D.C. is muggy with late summer humidity. As New York Fed President William Dudley noted in the Fed's August 5th meeting, "the probability assigned by market participants to further easing is lower than the probability assigned to tightening." On the eve of the worst financial crisis, the central bank was squarely and firmly focused on their charge as maker of monetary policy, not as a lender of last resort.[3]

One month later and it was back to basics. Motivated by the bankruptcy of Lehman Brothers, the Fed remembered to deploy its balance sheet in the capacity for which it was originally intended: lending to those illiquid counterparties in times of illiquidity. On the one hand the Fed created "reserves" to give to liquidity-starved borrowers, on the other hand the Fed accepted securities as assets. These lending activities were not in the name of stabilizing inflation or promoting maximum unemployment. In the winter of 2008, the Federal Reserve did combat with a financial market panic.

RECOVERY AND BALANCE SHEET EXPANSION, SAME OLD SONG

After 2008 the US economy recovered slowly. But the Federal Reserve's balance sheet kept expanding. In December 2014, the Federal Reserve system held $4.5 trillion worth of assets on its balance sheet, the result of quantitative easing (QE) with the aim of lowering unemployment and raising inflation. That is, Fed policy has been con-

fig.2 WHEN SCALED AGAINST ITS OWN HISTORY, THE FED'S LARGE BALANCE SHEET IS NOT COMPLETELY UNPRECEDENTED



Source: FRB, BEA, Historical Statistics of the United States/Haver Analytics.

ducted in an effort to satisfy their 1977 remit to guard employment and inflation.

Despite the different dressing, we think the substance of the operation is the same. No matter if done in the name of saving the housing market by buying mortgage debt or done in the name of lowering interest rates to boost unemployment, the Fed has deployed the same financial tools: expanding the asset side of their balance sheet by issuing reserves. The Fed is a financial intermediary. Like a bank. Or a mortgage REIT. It is not a magic puppet master controlling the macro economy.

Of course we recognize that the Fed is unique in two ways. First, banks are legally required to hold Fed liabilities as assets (reserves and currency). Second, the Fed is not profit driven. Unlike a REIT or other intermediary, if the Fed's assets don't pay, they can take losses without going out of business. Taxpayers bear the loss rather than the shareholders and creditors of a private institution.

THE ANATOMY OF A FINANCIAL INTERMEDIARY

Like any other financial intermediary, the Fed issues liabilities to fund asset purchases. In common parlance, they borrow money and invest in things that pay. Pick up a dollar bill and have a look. It says "Federal Reserve Note." It is actually a liability of the Fed! One of the ways the Fed borrows money is by issuing currency (see Figure 1 on previous page).

Another way the Fed funds itself is by issuing reserves. Just as the bank "borrows" money from you through your checking account to make home loans elsewhere, so the Federal Reserve holds account balances for banks and use those deposits to invest (or make loans to the Treasury). When the Fed buys a Treasury bond, the open market operations desk at the New York Federal Reserve contacts a dealer, gets a price quote, and buys the security by crediting that bank's account in its system.

And that "interest on excess reserves" you might have heard about? Think of it this way. Most banks require that you hold a minimum amount in your account. Banks with deposits at the Fed also have to hold a minimum amount of reserves. Like your bank, though, the Fed pays banks interest on their reserve balances that are in excess of what the banks are required to hold by law. The idea is to provide an incentive to the banks to keep their extra reserves at the Fed, just like a bank has to compete with your neighborhood credit union to attract deposits (which is probably offering more interest on a savings account!).

Fine, you might say, I get it. The Fed's operations are nothing special. But it is the scale at which they have conducted their borrowing and lending which is so inappropriate. We'd be ready with two responses. First, when scaled against GDP, the current size of the Fed's balance sheet isn't so unprecedented.[4] Following the Great Depression, and into World War II, the Fed held assets worth nearly 25% of US nominal gross domestic product. Today that figure stands at exactly 25% (see Figure 2 on previous page).

The second point to raise is that the Fed's asset holdings are more modest still when compared to other major central banks' holdings. Today the Swiss National Bank holds assets valued at nearly 90% of nominal GDP, the Bank of Japan has 65%, while the People's Bank of China holds over 50% of nominal GDP. Other major central banks have lower total holdings as a percent of GDP.

WHERE DO WE GO FROM HERE?

We've laid out two major conjectures. Number one: the Fed is just a financial intermediary which holds assets and liabilities. They do their best to adjust the size of their balance sheet to temper interest rate movements, but they are by no means in total control. Number two: historically and globally the size of the Fed's balance sheet today is common and should not alone be a cause for concern.

Putting these pieces together, the future of the US economy (thank goodness) doesn't depend solely on what the central bank does with its balance sheet. Just as we survived a rapid creation of reserves and asset purchases, if the Fed sells assets–unlikely in the short-term–the Treasury and mortgage markets will not disintegrate, even if prices make jerky adjustments.

As the Fed rolls out new programs, no matter under what guise they are sold, we encourage you to remember that the Fed is nothing special. It has a balance sheet like any other financial intermediary that it uses to buy and sell bonds. If that has an effect on macroeconomic variables like inflation and unemployment, so be it. Maybe the Fed is not just one big, slow, overly-communicative mortgage REIT. But its tools are very similar.

SOURCES

1 Federal Reserve

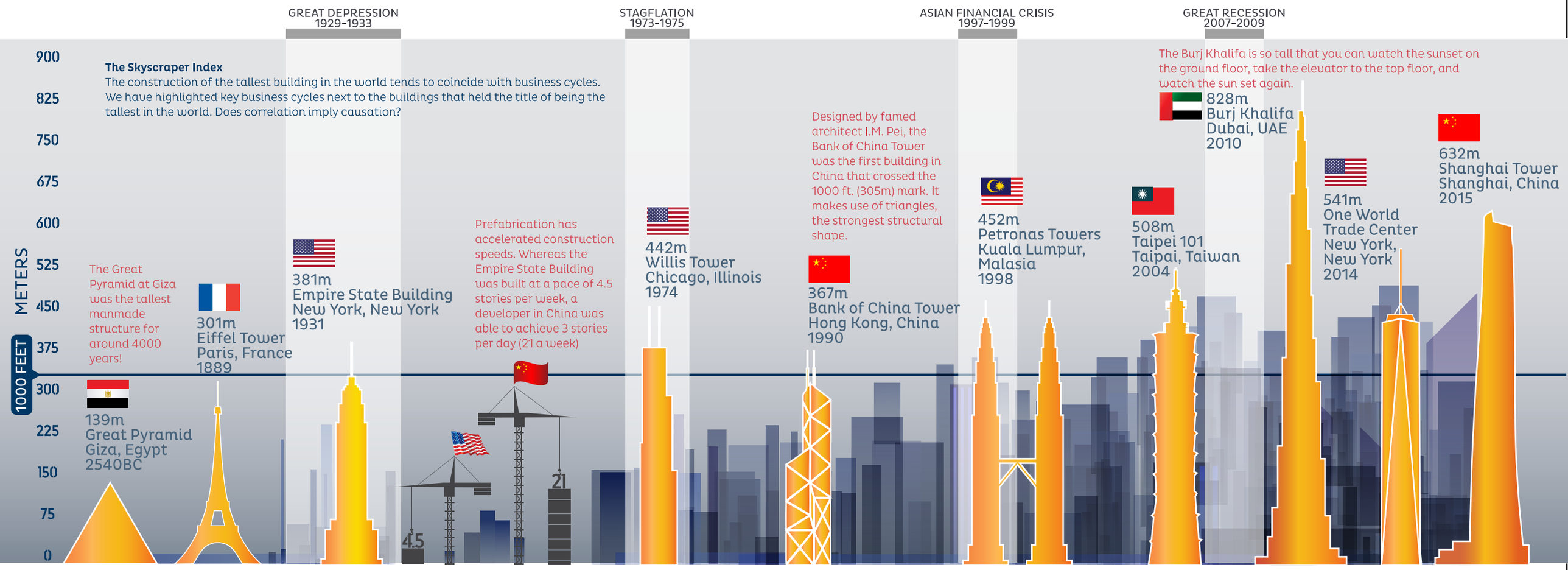
2 Meltzer, Allan (2010). A History of the Federal Reserve, Volume 2, Book 2: 1970-1986. Chicago: Chicago UP.

3 Minutes of the August 5, 2008, Federal Open Market Committee meeting

4 The Rise and (Eventual) Fall in the Fed's Balance Sheet, Lowell R. Ricketts and Christopher J. Walker, The Regional Economist, January 2014.

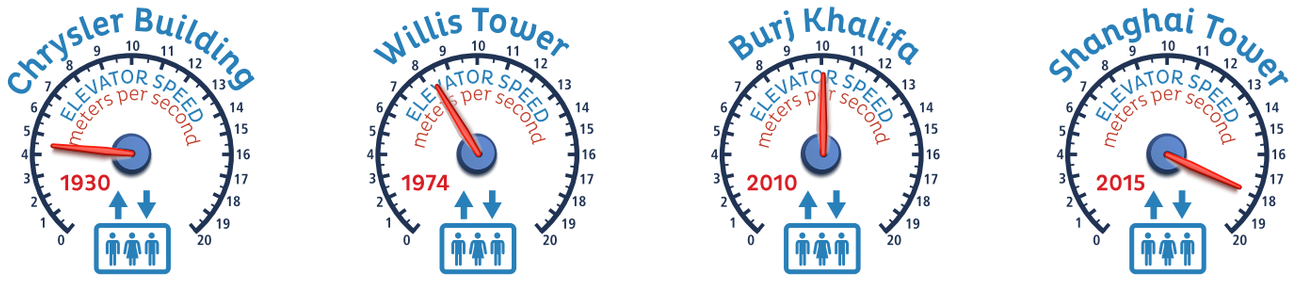
THE SKY'S THE LIMIT

By 2050, 70% of the world's population will live in urban areas. In order to accommodate this urban boom, architects, engineers, builders and financiers have looked to the heavens. The world is seeing a skyscraper boom spurred by technological breakthroughs, the growth of global wealth and the shifting of economic power from the West to the East. Here we explore how tall buildings have changed over time and if this means anything for the global economy.



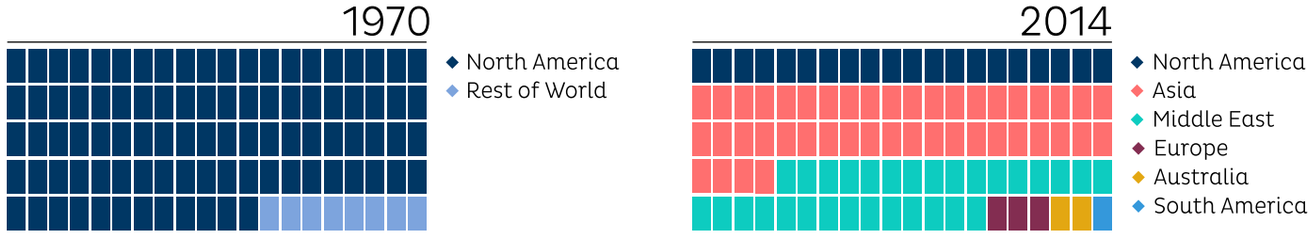
HOW DO YOU GET UP THERE?

Elevators are the secret behind the feasibility of skyscrapers. Without them, there was a limit to how tall skyscrapers could be because of how many stairs we could realistically climb. Elevators have become safer and faster through time, allowing the skyscrapers that house them to become taller. In the future, there are plans for elevators that will go higher, be stronger and maybe even move sideways.



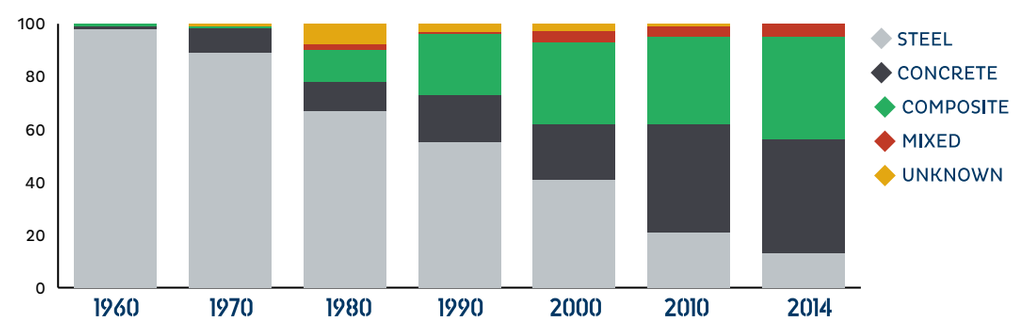
LOCATION, LOCATION, LOCATION

After being the leader in skyscrapers for years, North America (specifically the United States) has lost its crown to the rest of the world. Skyscrapers are truly a global phenomenon, and China has taken the lead, housing 42 of the 100 tallest buildings in the world today.



WHAT ARE THEY MADE OF?

The materials that go into the construction of skyscrapers have changed. While most of the tallest buildings were constructed with steel, today this material only accounts for a small portion of the 100 tallest buildings in the world. In fact, concrete and composite (using a mix of steel, concrete and other materials) construction has taken over. The developing world, where most of the tallest buildings are now located has better expertise in concrete technology than it does in steel.



Sources: Council on Tall Buildings and Urban Habitat (CTBUH) – The Skyscraper Center, Financial Times, The Guardian, Gizmodo

"This is your Captain Speaking, it is Now Safe to Move Around the Globe." Air Travel and the Myth of Stagnation

Robert Gordon, the Northwestern University macroeconomist, begins his TedTalk before an eager crowd.[1] He flashes an old, black and white photo on the giant video screen behind him on stage: it shows a horse and buggy slowly traversing a muddy, rain-soaked road. "That horse is pulling [the buggy] along at 1% of the speed of sound," he declares.

Then he switches to the color picture of a commercial jetliner taxiing down a tarmac. That's a Boeing 707, he says, "which 60 years after the buggy, traveled at 80% of the speed of sound."

He pauses, then utters the punchline, "And we don't travel any faster today." His tone is one of disappointment.

He continues, "Could it be that the best years of American economic growth are behind us? Maybe economic growth is almost over? If we invent less wonderful things, growth will be much lower."

So goes the lament of the world's most famous stagnationist. He is so-called (by us) for his insistence that human progress and innovation have slowed such that our best ideas today will be less useful in surmounting economic problems than they were in the past.

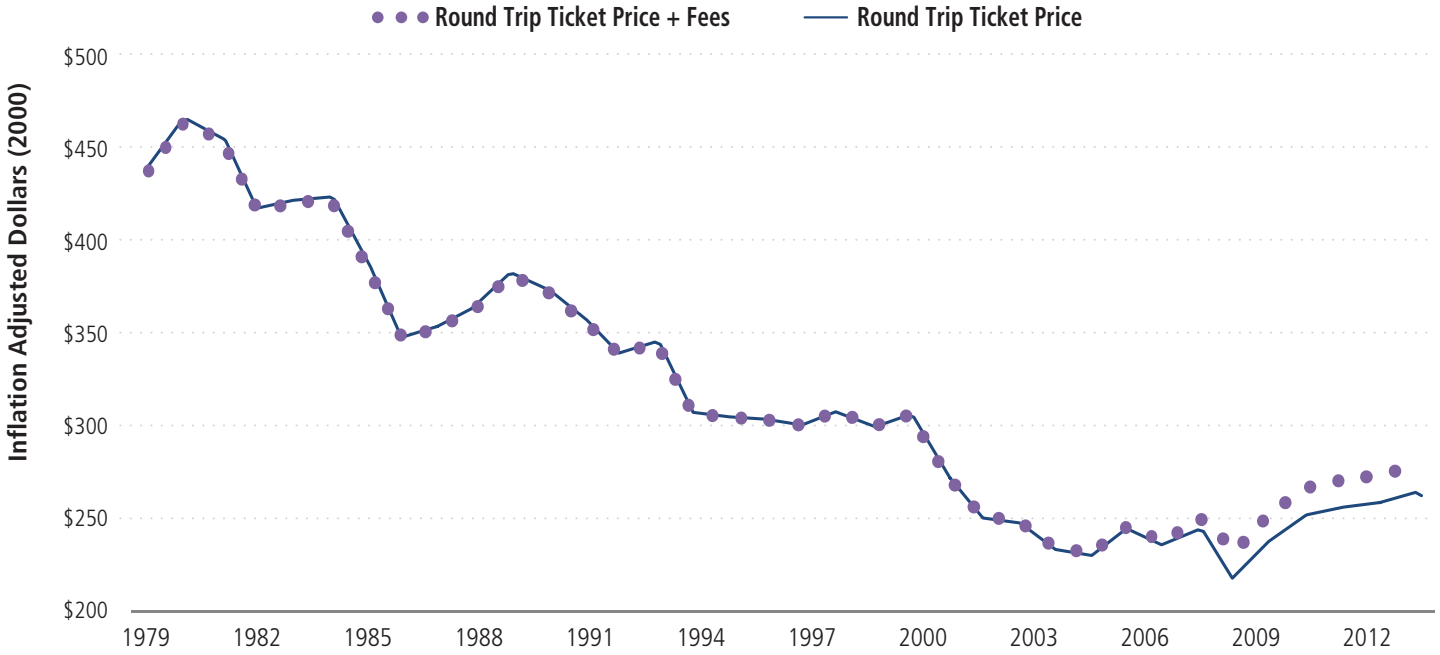
«COMMERCIAL JETS TODAY HAVE REDUCED FUEL USE PER PASSENGER MILE BY WELL OVER 70% COMPARED TO THE ORIGINAL COMMERCIAL JETS HELD IN SUCH HIGH REGARD»

Air travel is an easy and emotional example used to sell the stagnation story. On the surface, it appears that airplanes have not changed all that much in the lifetimes of many passengers.

Air travel is also fraught with hassles. We face the slow boarding process to fill rows of passengers. We face snarling lines as we pass through the bureaucratic nightmare that is airport security each time we travel. We endure restrictions on the size and number of carry-on items. We scoot miserably into the middle seat in coach class (now dubbed "economy class" on so many airlines) and pay for snacks that once were freely distributed throughout the cabin.

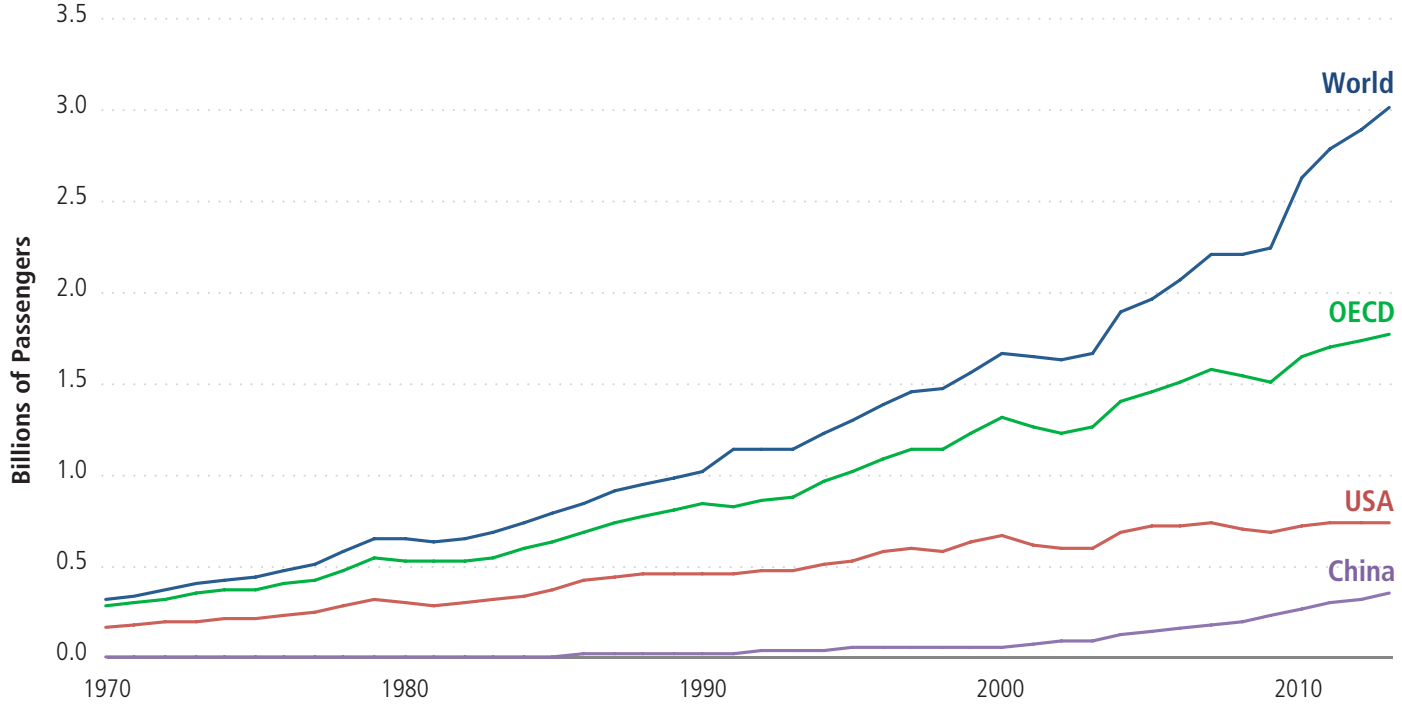
Yes, traveling by plane often feels no better than a standard bus shooting through the sky at 500 miles an hour.

fig.1 SMOOTH LANDING: THE AVERAGE US TICKET PRICE HAS COLLAPSED IN THE LAST 30 YEARS



Source: Airlines for America

fig.2 THE NUMBER OF PASSENGERS* CARRIED IS GAINING ALTITUDE



Source: World Bank

*Includes domestic and international aircraft passengers of air carriers registered in the country/region

Yet, actually, air travel is better, safer, far cheaper, and more widely enjoyed by human beings than ever before. So while air travel provides a useful rhetorical device for stagnationists to wax eloquent about the failure of economic growth, actual progress marches on athwart conventional assumptions and cries from gloomy economists.

Move your seat to its full and upright position, stow your seat back tray table and make sure your seat belt is fastened low and tight across your waist. We have been cleared for take off: let's see the truth about air travel.

THE MANY DIMENSIONS OF TRAVEL

Speed is one dimension of the travel equation. It's true that flight speeds at cruising altitude today vary from 480 miles per hour to 510 miles per hour (mph), compared to the old Boeing 707's quick, 525 mph average cruising speed. And, for the typical passenger, that means that "in 1971, a regular airliner took eight hours to fly from London to New York; it still does."[2]

«SOME FLYERS NOSTALGICALLY RECALL THE HALCYON DAYS OF AIR TRAVEL THAT FEATURED THE FINEST FOOD SERVED ON CHINA DINNERWARE, WINDOW CURTAINS AND SMOKING THROUGHOUT THE CABIN. AS IS OFTEN THE CASE, THE PAST IS NOT QUITE WHAT IT SEEMED»

But flight speed alone is a poor measure of human progress. There are engineering issues with faster planes, namely fuel economy. Flying faster means more fuel, which means higher ticket prices, all else equal.[3] For ivory tower economists, the main metric of travel may be how long it takes to fly from London to New York. However, for the average middle class person the main determinant is how big a bite out of their discretionary income a flight will eat up. So the object of the airline industry isn't necessarily to fly the fastest on every route. Instead, airlines aim to profit; that means flying most efficiently.

For efficiency, the key consideration is fuel burn per passenger mile–especially given the sky high price of jet fuel in the 21st century so far. Commercial jets today have reduced fuel use per passenger mile by well over 70% compared to the original commercial jets held in such high regard. Further, planes today made from lighter, composite material can carry two and a half times as many passengers or fly two and a half times farther! Look out your window as you take off: the wing tip devices alone have dramatically reduced fuel consumption. Modern jet aircraft are also 75% quieter than the first models and each new model gets better.

To be fair to aeronautical engineers, we (humans) have flown faster: the Concorde jet graced the skies between Europe and New York for 30 years, flying at roughly twice the speed of sound. But, com-

«SINCE 1970, THE INFLATION-ADJUSTED COST OF AIR TRAVEL HAS DROPPED BY MORE THAN 60%»

plaints about the "boom" sound that rippled through the atmosphere generated by the supersonic aircraft limited its routes. It turns out sonic booms over the Atlantic Ocean are preferable to large booms heard daily over major cities.

So we have outpaced the 707's speed. For the airlines, it isn't economic to do so. Even if cruising speeds of today's major airlines are slower, the planes are more fuel efficient, carry more passengers per flight and are far quieter than ever before.

CHEAPER THAN EVER

Some flyers nostalgically recall the halcyon days of air travel that featured the finest food served on China dinnerware, window curtains and smoking throughout the cabin. As is often the case, the past is not quite what it seemed.

The problem? A ticket on an airplane in the 1950s came with a first class price tag and was therefore out of reach for the average potential flyer. Back then, more than 80% of the US population had never been on a flight.

Today, the average ticket is cheaper than ever before. Adjusted for inflation (the erosion of each dollar's purchasing power over time), the average round-trip domestic fare in the US fell from $442 in 1979 to $275 in 2014 (see Figure 1 on page 10). That represents an annual savings of approximately $20 billion for US travelers.

Globally, air travel costs have plunged as well. Since 1970, the inflation-adjusted cost of air travel has dropped by more than 60%. The combination of less government regulation, more fuel efficient technology and low-cost air carriers (e.g., Southwest and Ryanair) has opened flight to the masses. What was once a luxury has become a necessity for all.

MORE TRAVELERS THAN EVER BEFORE

As ticket prices plunged, the number of travelers took off–literally. One passenger bravely embarked on the first commercial airline flight on New Year's Day, 1914. A century later, 8.5 million passengers performed the same New Year's feat. Similarly, in 1948, approximately 120 flights criss-crossed the Atlantic between the US and Europe each week. In 2014, more than 1,200 flights per day crossed between Europe and North America alone.

The world's airlines carried more than two billion passengers in 2009–a record at the time. To put that in perspective, imagine the entire populations of China, America, and all of the European Union flying each year. And the flying population had doubled in the twenty years leading up to 2009, after also doubling from 1979 to 1989.

fig.3 STAY SAFE, TRAVEL IN THE AIR: FATALITIES PER BILLION PASSENGER MILES

Source: Savage, Ian (2013). "Comparing the fatality risks in United States transportation across modes and over time." Research in Transportation Economics 43, pp. 9-22.

«IN 1948, APPROXIMATELY 120 FLIGHTS CRISS-CROSSED THE ATLANTIC BETWEEN THE US AND EUROPE EACH WEEK. IN 2014, MORE THAN 1,200 FLIGHTS PER DAY CROSSED BETWEEN EUROPE AND NORTH AMERICA ALONE»

Some imagined that the global financial crises would put a dent in passenger travel. But it turned out to be "light turbulence" in an otherwise smooth ascent, with the passenger tally reaching new heights by 2013, when more than 3 billion people flew, the all-time record high. Many of those travelers were outside the OECD countries (see Figure 2 on page 11).

It turns out that "the wealthier we become, the more we value our time, and the more we value our time, the more likely we are to fly."[4] As per capita gross domestic product (GDP) rises toward $60,000, flights per capita in each country approach 1. That doesn't mean every resident will fly each year, but the number of flights will mirror the population. Over the next two decades, conservative estimates point to 6 billion airline passengers on an annual basis.[5]

It should not be surprising then that the countries becoming wealthy the fastest will yield the most passengers in the decades ahead. The bulk of those new passengers, nearly 1 billion, will depart from China. But, the US is still expected to add an additional 600 million passengers to the airways.

"THE SAFEST PART OF YOUR TRIP IS NOW OVER"

The last, but in our minds most important point to consider, is safety. Fatalities due to air travel accidents have dwindled despite the meteoric rise in flight volumes. Whereas the original airlines recruited pilots who had experience with emergency landings, today the fatalities per billion miles traveled in the air are just a scant 0.07. As some pilots are fond of reminding passengers as they disembark the plane, arrival at a destination airport is the end of the safest part of the journey.

In fact, fatalities from air travel are lower than all other major forms of transportation. Riding a bus? Per billion miles, fatalities are 0.11. How about driving a car? 7.28 fatalities per billion miles. How about riding a motorcycle? Per billion miles, the deaths are off the charts…212.57 (see Figure 3 on previous page). Better to stay at home than take your Kawasaki on the 405 freeway in Los Angeles or the Autobahn in Germany. So while CNN churns out endless hours of footage on tragic air accidents, the truth of the matter is that they disconcert us so because they are rarities, not regularities.

KEEPING THINGS IN PERSPECTIVE

Contrary to the "stagnationist" claims, travel is better than ever. It is easy to find points to criticize if we isolate a certain aspect of travel (e.g., flight times between two major cities) and it is easy for the pessimists to prey on the emotions of stressed-out travelers.

But, as is often the case with economics, the popular story fails to look beyond one number. Once you examine the details, the truth is not a lack of progress but that of staggering advance.

Just a little more than 100 years ago, in 1899, a young man penned a letter:

> "I have been interested in the problem of mechanical and human flight ever since as a boy I constructed a number of bats of various sizes. . . . My observations since have only convinced me more firmly that human flight is possible and practicable. It is only a question of knowledge and skill as in all acrobatic feats."[6]

That's Wilbur Wright, of Wright Brothers fame, the two brothers who gave humans flight for the first time over the beaches of Kitty Hawk.

With flight accessible to a greater number and a greater share of the global population, the dream and allure of flying will spread. Who says another Wilbur Wright is not thinking up an even better, cheaper, and safer flying machine? After all it's just an acrobatic feat we humans have learned.

For now, passengers can move on to complaining about something else–like the poor quality of in-flight WiFi (yes, access to the internet, something that did not exist 30 years ago!) and why they can't stream Netflix at 38,000 feet.

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4 Kasarda, J., & Lindsay, G. (2011). Aerotropolis: The Way We'll Live Next. New York: Farrar, Straus and Giroux.

5 International Air Transport Association

6 Tobin, J. (2003). To Conquer the Air: The Wright Brothers and the Great Race for Flight. New York: Free Press.

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