



Statement before the Senate Committee on Judiciary
Subcommittee on Antitrust, Competition Policy and Consumer Rights
On Game of Phones: Examining the Competitive Impact of the T-Mobile–Sprint
Transaction

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Mr. Chairman and members of the committee, thank you for the opportunity to appear before you at today's hearing on the competitive impact of the T-Mobile–Sprint transaction. The comments today reflect my own opinion. I have no financial relationship with the parties in the transaction. I own no securities of any telecommunications or internet firm.

Thank you for a colorful title to today's hearing, which allows us an interesting starting point to reflect on the nature of competition. The key critique of this merger is that reducing the number of players reduces competition. That logic does not hold up in *Game of Thrones*: When you reduce the number of warring parties vying for the thrones, you will likely increase rivalry. Who wins is a function of innovation—with (a better) weapon and the superior strategy. The point is merely that what we care about in a competitive market is rivalry, not the number of firms. Remember it only take two to start a bar fight.

I am proud to be a part of the American Enterprise Institute where I am part of a team of adjunct scholars around the world studying technology policy. As an American based in Denmark at Aalborg University and Strand Consult, I have the benefit to study the global wireless market with colleagues who have studied the field in its innovation, engineering, and policy for more than 20 years. The situation facing the US is not unique. Consolidation is a feature of nearly every country's mobile market, driven primarily by exogeneous competition by the internet companies. We have had consolidation for over a decade, and the general trend of prices is downward.

Looking at the merger between T-Mobile and Sprint, there are two important questions: How will this merger affect prices, and how will it affect investment in infrastructure? In practice, American consumers and businesses will still be able to access some of the world's best mobile infrastructure at competitive prices, and that infrastructure will increasingly be more accessible to Americans in all areas.

In less than a generation, the global mobile wireless industry has succeeded to connect nearly every person on the face of the earth to a mobile phone and a mobile network. It is the mobile phone, not the internet, which is the world's most quickly adopted innovation.¹ Mobile networks have been leveraged to connect people to the internet, and today about half of the world's population connects to the internet with a mobile phone. During this period, mobile subscription prices have fallen more than 90 percent, while data volumes have increased thousands of times. Market liberalization and subsequent consolidation have driven this trend. Markets have been liberated from government control and subsequently consolidated through the innovative and creative ways that mobile operators combine complementary assets.² We have never had more data, more products, and better prices than today.

Looking at 2012–17, the figures from Bank of America Merrill Lynch show that averaged revenue per user (ARPU) in the US has declined from \$54 to \$45 (Verizon) and from \$43 to \$34 (T-Mobile).³ In five years, American consumers have cut 20 percent of the cost of their mobile bill while the quality, volume, and speed of the service has increased dramatically. Despite the massive consolidation in the US and worldwide telecom market over the years, consumers prices have only gone one way: down. There are few products and services that improve in quality as they decrease in price, and consumers consistently get value for money. Their outlay for connectivity, of which mobile wireless is a vital part, takes us an increasingly smaller share of their total income. People spend more as a percentage each on housing, transportation, education, clothing, food, and vacation—in many cases seeing prices increase—whereas the price of mobile wireless has fallen.⁴

Moreover, competition in the mobile market is global. The Europeans adopted the Global System for

Mobile communications (GSM) standard to give their phone manufacturers an edge. Verizon realized that their (code-division multiple access (CDMA) technology was not compatible with the cool smartphones on the GSM/WCDMA market. It would not have mattered if there were 100 CDMA mobile operators. People wanted the technology of the cool smartphones. Verizon did not copy the Europeans and launch 3G (WCDMA). Instead, they leapfrogged to 4G. The other US operators followed. It was not the number of players that triggered that race, but rather the technological development. Today, America's 4G economy supports five million jobs and adds \$475 billion annually to GDP.⁵ The rollout of a 5G network should add 3 million new jobs and contribute \$1.2 trillion to the US economy.⁶

America's mobile market also includes the competition from disruptive technologies such as voice over internet protocol (VOIP) in Skype and online messaging such as WhatsApp.⁷ These apps have collapsed what was once a major source of revenue for mobile operators in short message service and long distance calling to essentially zero. The app market has been complemented by the growth and diversification of handsets. Consumers have been enriched significantly by these hardware and software developments for which the foundation is next generation networks. In a converging world, the lion's share of the profits have been reaped by Silicon Valley firms Apple, Google, and Facebook. While mobile operators have invested the most among all players, their balance sheets have the thinnest profit margins.

4 to 3

Let's discuss the key criticism of this merger: It reduces the number of firms from four to three. The notion of the number of firms in the market is rooted in a study of industrial organizations from the 1950s, the structure-conduct-performance paradigm. But antitrust has been revolutionized with the schools of Chicago and Harvard, as well as game theory and behavior economics, and it continues. The key finding of this sweep of history and learning is that antitrust has moved away from bright-line rules (e.g., four to three is bad) because of too many false positives.⁸ Today, we put greater focus on the empirical evidence of competitive effects.⁹

This four to three theory is based on a market with an identical, homogenous good market with the same strategy. This has never been an accurate picture of the mobile wireless market. Indeed, the corporate world of the 1950s was characterized by a lifetime employment, risk-averse, collectivist, groupthink mentality.¹⁰ The CEO was the stereotypical "organization man," the "man in the gray flannel suit."¹¹ Today's CEO is the maverick in the magenta T-shirt.

The so-called maverick marketing communications and strategy and its variants have been used over the years in many countries. It is Telmore's Frank Rasumssen, CBB's Teddy Sjøgaard Pedersen, and Onfone's Morten Strunge in Denmark; Stan Miller of Base in Belgium; Xavier Niel of Free in France; Jorgen Bang Jensen of P4 in Poland; Rolf Hansen of Simyo in Germany; Idar Vollvik of Chess in Norway; and Masayoshi Son of Softbank in Japan.¹² It appears that T-Mobile studied the corporate strategy created by Stan Miller of KPN Mobile International, which the mobile operator E-Plus used against T-Mobile, Vodafone, and O2 in Germany.

Other critiques are that the merger would create collusion, but mavericks are not known to cooperate and frequently defect.¹³ There are high transaction costs to illicit coordination. There is no standard product among the firms. Each has its own marketing strategy. The market will continue to develop as a differentiated rivalry, where each firm tries to develop a wide range of differentiated products and services that cater to all sorts of consumer niches.

In any event, there is no guarantee that the market will not consolidate to three networks anyway. A cable company could buy Sprint, or Sprint could exit the market. T-Mobile is willing to pay a premium, probably more than a cable company, because the synergies are most attractive to them.

There is more than intuition that informs this analysis. Let's look at some of the key academic papers. Regulators around the world ask the same question. It is challenging because of blunt tools, imprecise data, and outdated assumptions.

Some assert that we have a competitive market today because the AT&T acquisition of T-Mobile was rejected. I disagree because the model presented by regulators does not hold up. The Department of Justice rejected the notion of merger efficiencies because, per its analysis, most large mobile service providers have reached the point of constant or even (rarely) declining returns to scale.¹⁴ It prepared a model that analyzed scale economies for 22 mobile carriers in seven countries. The study's period 1998–2007 covers companies at different stages of 2G and 3G development to attempt to extrapolate the future—before the key events of the launch of iPhone and later 4G. Oddly, the study omits results for the incumbents in three of the countries. We have a decade of more data to crunch with that model, so before relying on that analysis, we should at least plug in the numbers to see whether the model holds and go back and add the companies that were omitted. Again, we need to look at what actually happened, not extrapolations.

The Europeans made a retrospective of their decisions in Austria and Netherlands. They note the demonstrated global downward trend in average revenue per user (ARPU) per month (what an average mobile subscriber pays per month), which exists regardless of the level of consolidation, and they cannot prove that their efforts affected price.¹⁵ Separately, we can confirm in the BOFML numbers that ARPU is down and traffic up in Austria with a four to three consolidation.¹⁶ The five to four consolidation in the Netherlands also shows ARPU down and traffic up.¹⁷

Another paper claims that four-to-three mergers not only increase investment by 19 percent with merging operator but also increase price up by 16 percent.¹⁸ The study of 33 countries from 2002 to 2014 investigates entry via licensing, exit via mergers, and organic growth. While the impact of the merger to investment is not conclusive, the paper suggests to regulators that increased investment is worth an increase in price. The authors suggest that in-depth in-country studies could resolve the shortcomings of their research and suggest that the role of price could also be related to mobile virtual network operators (MVNOs), but that would require a separate study. The authors note that the pricing information in their study is imperfect. (Some countries only provide prices from two operators.) The paper focuses on the lowest priced offers but does not use the appropriate database designed to capture the relevant information. Moreover, the study does not control for differences between multi-play fixed and mobile operators (e.g., AT&T and Verizon) and “pure play” mobile operators (e.g., T-Mobile and Sprint). They believe their study is most representative of market entry (license) and exit (merger). They stress the potential trade-off between market power effects and efficiency gains stemming from mergers may be worthwhile.

The reason that we put more emphasis on evidence and the actual impact is that regulators have gotten it spectacularly wrong. Take the Blockbuster–Hollywood Video decision, the classic horizontal merger with two large competitors in the brick and mortar retail DVD business. In that 1950s industrial organizations mindset, the antitrust experts concluded that the deal would reduce the number of firms and hence harm consumers and competition.¹⁹ But these experts failed to incorporate the role of technology. Netflix was transitioning its service from DVD by mail to online streaming. Hollywood and

Blockbuster had a digital plan, the merger was predicated on making that investment, but the merger was denied. It possible that Netflix would have more competition had the Blockbuster–Hollywood Video been allowed. Today, Netflix has 125 million customers and almost \$12 billion in annual revenue.²⁰ It could swallow both Sprint and T-Mobile. Indeed, I wonder why Netflix, market cap \$150 billion, does not just buy them outright to create optimized distribution for its content.

There is no penalty for antitrust authorities when they get it wrong. They keep their jobs. But many jobs in forms are lost because of their decisions. Consumers and competition have suffered because of antitrust authorities and their outdated bright-line rules. Pronouncement about the preferred number of mobile operators in a mobile market is central planning, plain and simple.

Higher Prices

The other critique of this merger is that it will lead to higher prices. I find this the most absurd of all claims. Mobile wireless providers have been consolidating from five to four to three national networks for over a decade, and prices are only going one way: down. Value is going up.

First, let us recognize that mobile broadband is extremely valuable, in part because of high fixed costs, particularly price of spectrum. Logically, something with a high value has a relatively high price. But this says little about the prices consumers pay.

The key reason that prices are relatively high for consumers is misguided regulatory policy. Regulators have designed policy to force consumers to pay near 100 percent of the cost and to artificially and unfairly restrict the development of a two-sided market. Theoretically, the price of mobile broadband could be zero or very-low cost. Every single communications networks in US history allowed a two-sided market to reduce costs for end users and to increase output. When it comes to the internet, we suspend economics.

Consider when Netflix sent a DVD by the US Postal Service. The customer paid a subscription, and Netflix paid the postage. Now that Netflix is online, the customer still pays the subscription fee, but Netflix sends the postal fee to the broadband provider. The broadband provider thus must collect that fee from the entire subscriber base whether or not they subscribe to Netflix. In other terms, Netflix has been able to grow its customer base without meaningfully having to increase its delivery costs. It comprises 35 percent of downstream fixed traffic today in North America.²¹ As for downstream mobile traffic, Google makes up about 21 percent of all traffic; Facebook about 14 percent.²²

Mobile operators have attempted to lower prices, but regulators, pressured by so-called consumer advocates, tried to block these efforts.²³ T-Mobile's BingeOn and MusicFreedom were wildly popular, prompting millions of customers to switch. What was the prior Federal Communications Commission's (FCC) response and now the California legislature? To shut down a program that consumers love. This regulatory discrimination extends to various welfare-enhancing activities such as health care providers subsidizing the cost of prenatal videos through AT&T or Verizon's effort to challenge the online advertising duopoly and breathe new life into Yahoo. This ideological prejudice in which regulators, not consumers, decide the products we get to have, costs our economy about \$30–\$40 billion annually,²⁴ an amount equal to four times what we spend on the Universal Service Fund annually. We could have closed the digital divide years ago had our regulatory policy not prioritized the profits of Silicon Valley over the welfare of the poor.

In any case, we will never get 5G if we do not allow a two-sided market, pricing flexibility, and business

model experimentation. The wholesale market will have to multiply many times over, and resellers will come in entirely new guises. Consider a company such as Tesla, which sells about 30,000 cars a month, each one equipped with a mobile subscription. In practice, the Tesla is nothing more than a smartphone on wheels with a SIM card inside. To date, Tesla prepays the mobile data subscription and bundles it with the car price.²⁵ Tesla is probably the most famous de facto MVNO that you have never heard about. It, like hundreds of other companies and products such as Amazon Kindle, get to package and resell communications and never have to register at the FCC.

5G

There is no doubt much focus on 5G and how it can catalyze economic growth. Industry players make it sound easy, but past experience show how difficult and risky technological change is. Look back at the year 2000 and the dreams that ARPU would double. The 3G market did not develop as predicted, and it took years before consumers adopted it. Despite 3G's launch in 2000, the 3G Motorola RAZR phone did not appear until the fourth quarter 2006. A month later came the first iPhone, which was a 2G GSM phone. It is reasonable that companies want to merge to reduce their risk in an uncertain environment, while forging ahead with network deployment required to defend existing investment as well as to compete with other technologies.

There is a role for government here, but it is not to pick a winner or make facile pronouncements on the preferred number of players in the market. We should welcome the many American companies that want to invest in the spectrum-enabled economy, some \$275 billion through 2024.²⁶ Market-based auctions have delivered hundreds of billions of dollars to the US economy. We need government to make substantive policy such as allocating more spectrum and promoting regulatory frameworks that encourage investment, network deployment, and business model experimentation.

Regulators have also failed us by delivering a sub-optimal spectrum policy that constrains supply, which also contributes to high prices. Indeed our wireless economy was delayed about half a century because regulators wouldn't even allow the market based auction.²⁷ Spectrum policy was conducted to satisfy²⁸ the 60 or so federal agencies that possess two-thirds of our nation's prime spectrum resources, free of charge, leaving the private sector, which actually pays for the right to use the airwaves, with less than 20% percent of the spectrum best suited for mobile broadband.²⁹ That the industry can create so much value for our economy with so little spectrum is a testament to innovation and proof that market actors make efficient use of scarce resources.

We need more spectrum at all levels. I applaud the FCC's upcoming vote to make more mid-band spectrum available.³⁰ States and municipalities must streamline policies to infrastructure deployment.³¹ Old siting and permitting rules designed for large cell towers must be modernized for today's smaller and less-intrusive technologies—most critically the deployment of small-cell antennas in their communities. Small-cell, shoebox-sized antennas are critical to building more dense networks needed to enable 5G. We should recognize and embrace the diversification of the mobile industry value chain, which is diversified across networks (a variety of strategies using different spectrum bands, fixed satellite, satellite, landline fiber, and cable and DSL technologies); terminals (notably smartphones and tablets at all price points, not to mention the emergence of the near-infinite number of connected devices—Americans are well on their way to adopt pre-5G products such as Amazon Alexa and Google Home³²); and the universe of apps and services. There is a lot of 5G excitement about 5G, and the operators' announcements show that the technological development drives the companies' investments.

The International Telecommunication Union is still working on the standards, but that should not stop this fertile period of experimentation, innovating a range of 4G and pre-5G services. It is not clear how much of the value that mobile operators can capture. Historically, the value has gone to Silicon Valley. The launch of the iPhone did little for operators' share price, but it has been great for Apple.³³ Looking at the great value created with the launch of smartphones and app stores that dominate the mobile services market, there is little value for operators—value added to those who make hardware as well as services such as Google and Facebook.

Conclusion

In 1996 Congress certified the will of the people and the bipartisan consensus that the internet should be free and unfettered from state and federal regulation.³⁴ The birth and growth of the commercial internet is the greatest free-market success story in history. It unleashed \$1.6 trillion in private investment in next generation communications networks,³⁵ an amount in hard assets larger than any other American industry.³⁶ The US is less than 5 percent of the world's population but enjoys about 25 percent of the world's private outlay for communications networks, a staggering figure.³⁷ This was what was required for us to get leadership in 4G, and at a minimum we need to maintain and grow this level so that we can lead in 5G.

Telecom regulation is not driven by market failure, but rather market success. Mobile operators should be celebrated for their accomplishments, achievements made essentially without government subsidies. Instead, a chorus of regulatory advocates and media outlets claim that mobile operators block the very innovation their networks enable. This claim is not only illogical and preposterous but also harmful and distracting. While we split hairs on market definition and magic numbers, we have lost focus on a bigger, more important issue. China is about to eat our lunch in the internet economy. China already has the edge on 5G³⁸ and supplanted the US as the world's largest mobile app market by downloads and revenue for two years running.³⁹ As the *New York Times* describes, Alibaba, Baidu and Tencent make Amazon, Google, and Facebook look tame.⁴⁰

In closing, I want to thank the committee for giving us the opportunity to reflect on our progress. *Game of Thrones* offers a lesson in civilization illustrated through George R. R. Martin's depiction of late medievalism inspired by actual events and characters, notably the War of the Roses in the 15th century. It is no coincidence that during that period many began to escape serfdom to the New World, heralding the Age of Discovery. The many settlers who followed fled the rule of kings so that they could live under the rule of law. What ultimately liberated the wretched European serfs was free enterprise: the rise of commerce and the merchant class and people being able to own their own property and monetize their labor and inventions.

I submit that the same powerful, transformative, and ultimately uplifting force of enterprise is exactly what is going on today in this merger and the larger digitally connected industries in general.

So back to the key questions. How will this merger affect prices, and how will it affect investment in infrastructure? In spite of or because of consolidation, consumers have never had it better than they do today, and that trend should only continue. Government should not freeze the market in place, saddle it with some arbitrary number, or favor some players in the name of the "public interest." The role of government is to protect freedom, entrepreneurship, and competition. We should welcome 5G because it is another milestone in the never-ending story of our civilization as a constant, dynamic evolution, continuously improving our quality of life.

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