
*Grasping at
differentiated
straws*

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Commoditization
in the wireless
telecom industry

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Executive summary



The commoditization of the global wireless telecom industry continues apace. Thanks to saturated markets, booming data demand, new market entrants, ongoing consolidation, and vicious price wars, wireless service providers are fighting for market share and the average revenue per user (ARPU) is declining in many markets around the world.

There are, however, pockets of resistance to the trend toward commoditization. Several markets have managed to maintain a comfortable level of differentiation, and others have even reversed the commoditization trend.

In this study, our second annual analysis of commoditization in wireless markets across the globe, we measured the degree of commoditization in 59 markets using two key factors — the “ARPU spread” (the difference between the highest and lowest ARPUs among the operators in a particular market), and the “market share spread” (the difference between the largest and smallest shares). The goal is to create a picture of each market’s efficiency — the degree to which price wars have consumed the ability of players to create and sustain value in their market, and the willingness of consumers to switch from one provider to another.

The results offer a detailed picture of the state of the industry, the regulatory and pricing factors putting pressure on industry players, and the strategies they are using to maintain their market differentiation and the overall value of their product and services offerings.

This report discusses key findings at the global and regional levels. The complete data set with country-level analyses can be found at strategyand.pwc.com/wirelesscommoditization.

Efficient market theory

As beneficial as the commoditization trend has been for consumers, wireless operators are unlikely to be as pleased. Our global aggregate commoditization index, which is based on our second annual analysis of commoditization in 59 wireless markets across the globe, rose from 0.66 in 2016 to 0.67 in 2017, a 2 percent increase, and a 9 percent increase since 2007 (*see Exhibit 1, next page; Exhibit 2, page 7; and Exhibit 3, page 8*).

The primary driver of this shift has been the decline in average revenue per user (ARPU) that providers have been able to extract from their customers, which has fallen 3 percent since last year, and 34 percent over the past 10 years (*see Exhibit 4, page 9*). The ARPU spread, too, has contracted, by 7 percent since last year and by 17 percent over the past 10 years.

Market share spread declined by 2 percent over the past year, and by 11 percent since 2007 (*see Exhibit 5, page 10*). This suggests that providers have been reasonably able to maintain their market positions, even in the face of the greater pricing efficiency of their markets.

In a regional view, however, distinctions arise. Exhibit 2 lays out the differences in degree of commoditization in the five regions we studied, and the changes since 2006. Put briefly, no region has managed to buck the trend since 2006, and only the MENA region (the Middle East and North Africa) has become less commoditized in the past year.

Asia-Pacific. Most markets in the region are on the edge of commoditization; only Indonesia, still dominated by a single player, remains considerably differentiated. Providers in Japan have been increasing their ARPUs by shifting away from unlimited plans and focusing on content offerings and e-commerce services.

Europe. Every market here is highly saturated, and revenues in most markets are shrinking, due to declining ARPUs and very tight market share spreads. The French market, however, has stabilized into a dual market with low-cost players on the one hand and premium players on the other, reversing the commoditization trend.

Exhibit 1
Wireless commoditization by country, 2017

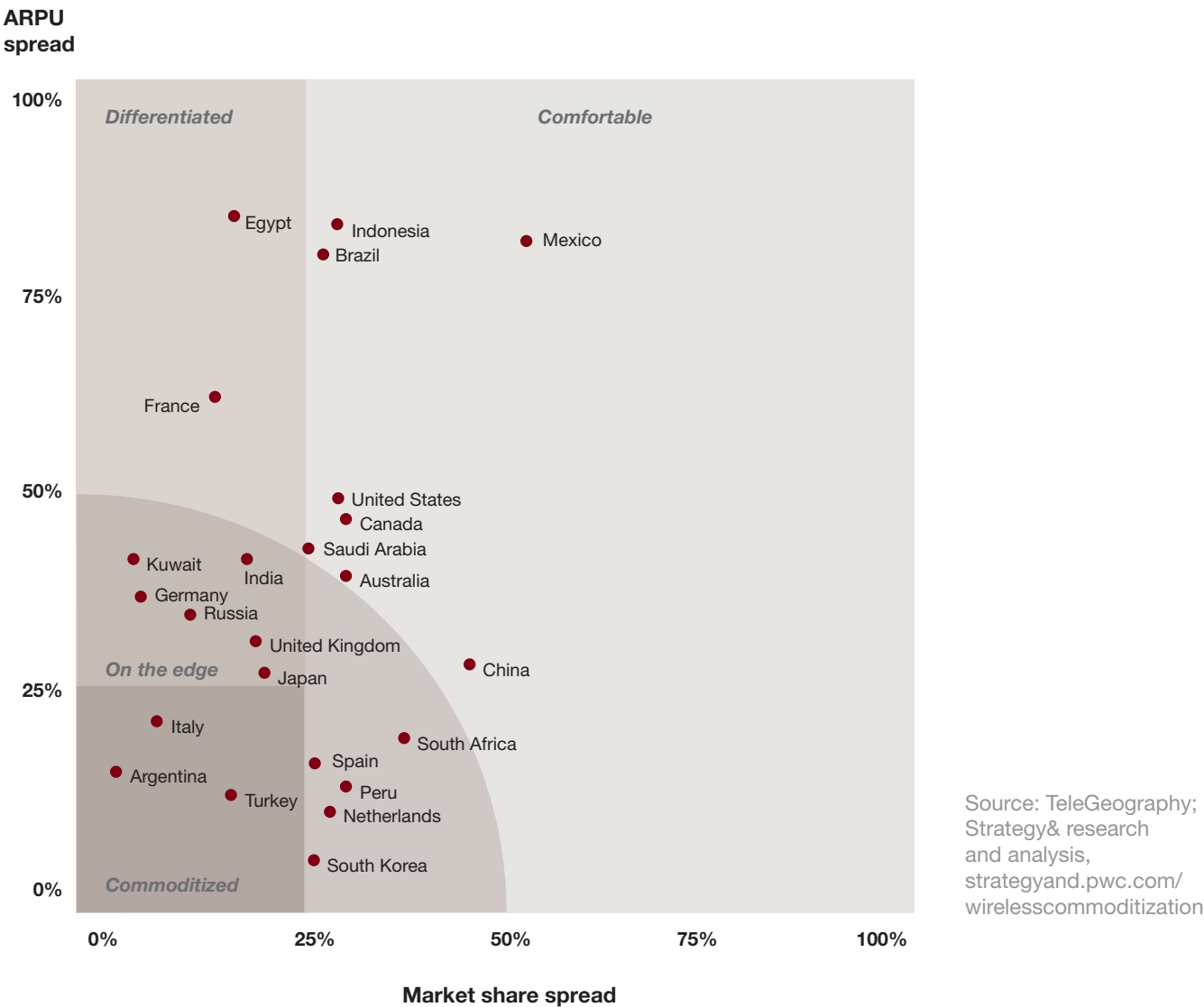


Exhibit 2
Commoditization Index by region

Region	2006	2016	2017	% change (2006–17)
North America	.42	.50	.54	29%
Latin America	.52	.57	.58	12%
Asia-Pacific	.66	.66	.68	3%
MENA	.67	.72	.69	3%
Europe	.69	.75	.76	10%
Global	.63	.66	.67	6%

Source: TeleGeography;
 Strategy& research
 and analysis,
[strategyand.pwc.com/
 wirelesscommoditization](http://strategyand.pwc.com/wirelesscommoditization)

Exhibit 3
Increase in commoditization in wireless markets, 2006–17

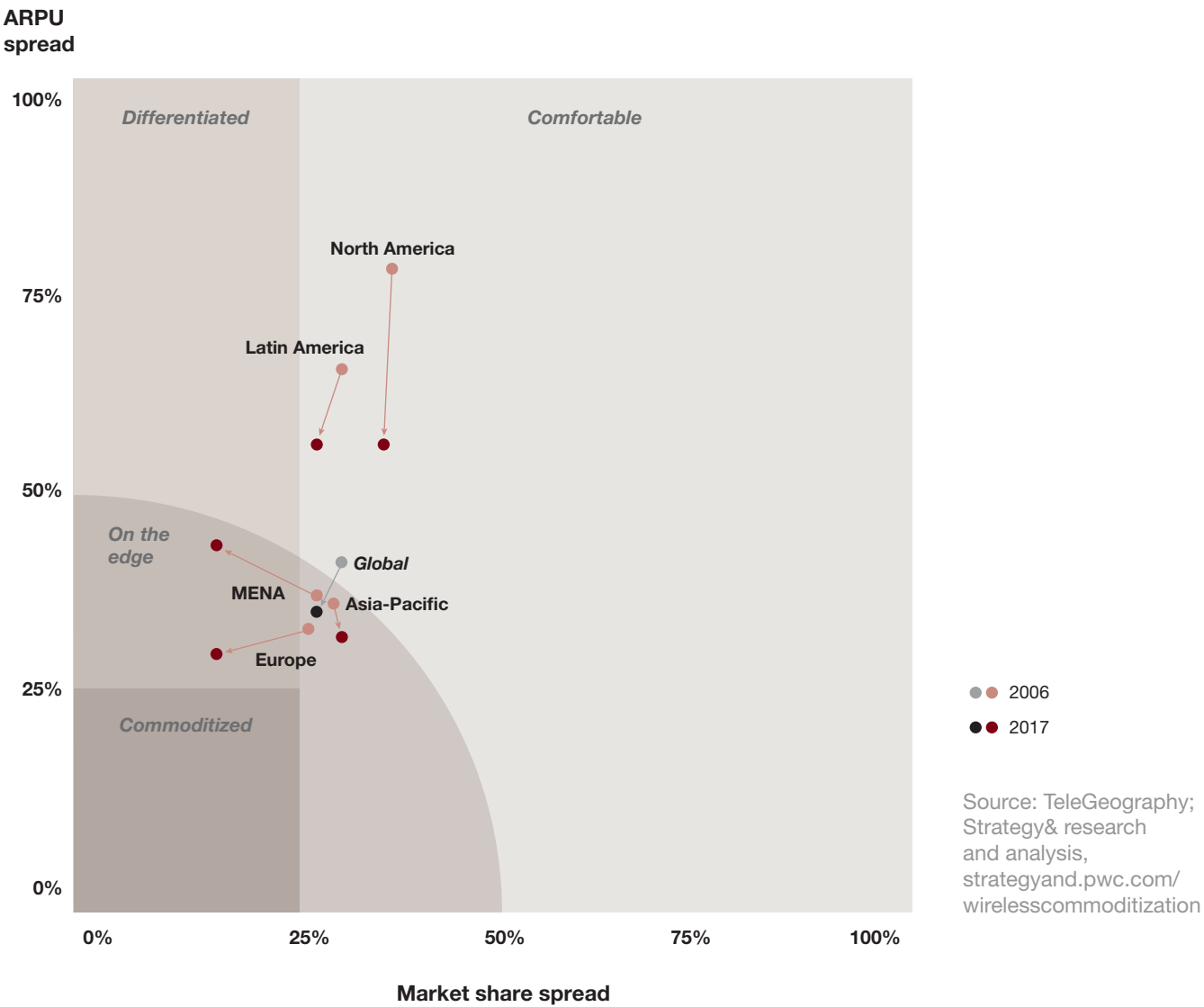


Exhibit 4
Shrinking ARPU by region, 2006–17

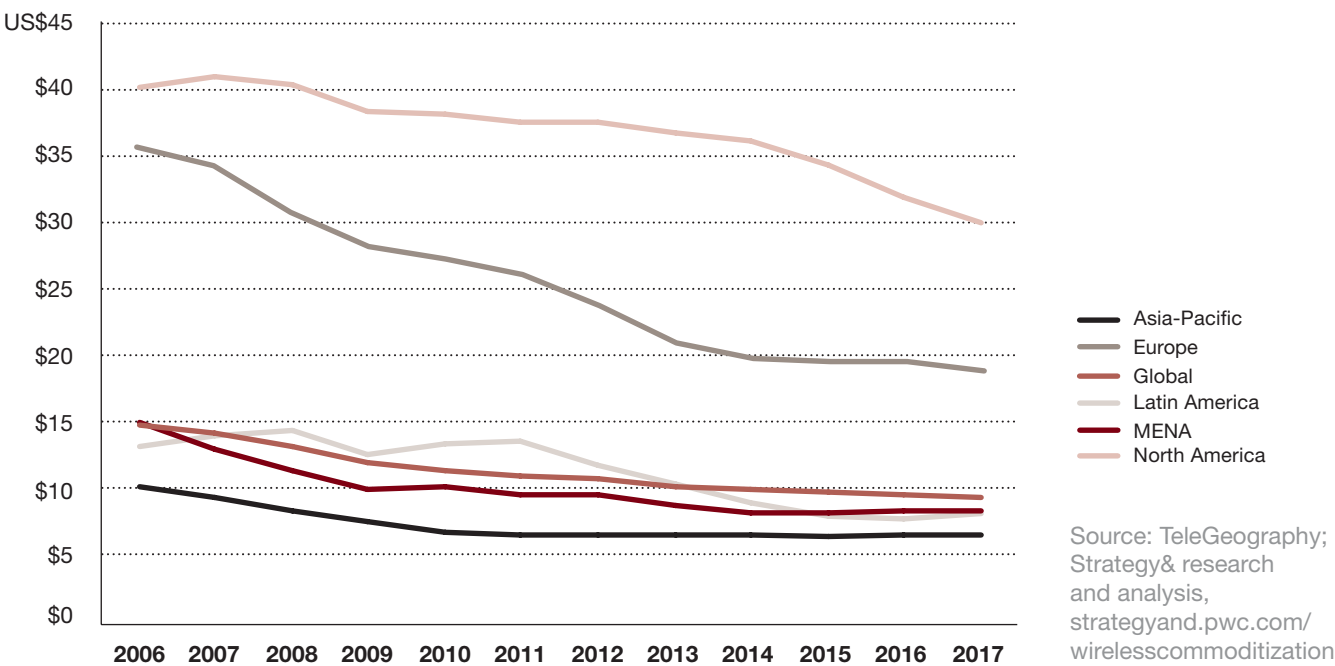
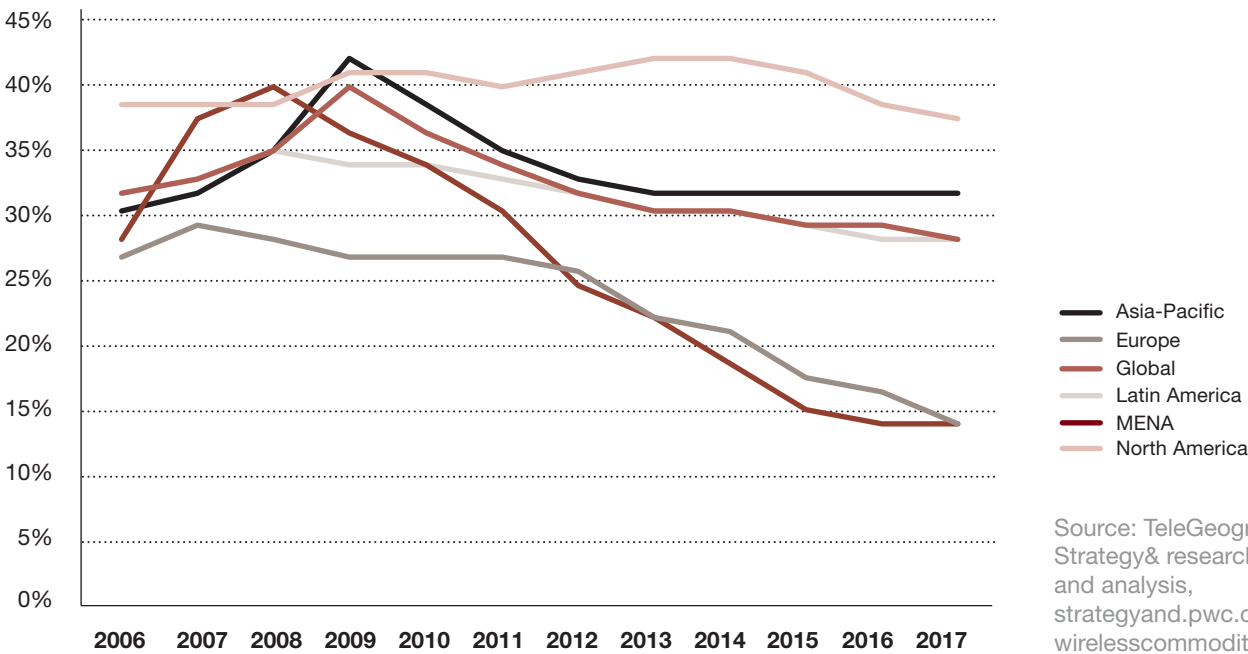


Exhibit 5
Generally declining market share spread, 2006–17



Latin America. This region's markets are highly saturated, but the shift from prepaid to postpaid plans is allowing premium segment players to retain market share. Still, average ARPUs continue to trend downward.

MENA. This region, too, is highly saturated, especially in the Gulf Cooperation Council (GCC) markets. Still, significant differences abound. Turkey, for instance, is heavily commoditized, Kuwait and Saudi Arabia are on the edge, and Egypt remains in a more differentiated state.

North America. Despite a 29 percent increase in commoditization, North America remains the least commoditized region. The rate of commoditization, however, appears to be speeding up, as both technology and new regulations reduce barriers to entry. The U.S. market is already highly saturated, while players in Canada and Mexico continue to grow their subscriber base.

Differentiation strategies

As inevitable as the trend toward commoditization appears to be, providers have tried a variety of strategies to stem the tide and create more value from their product and services offerings. Most of them focus on generating more revenue per user through different pricing mechanisms, while some rely on capturing more market share.

Pricing and packaging. Pricing strategies commonly involve offering deep discounts in hopes of capturing market share — at the risk of triggering an all-out price war. However, providers in some markets where demand for data is rising have moved away from unlimited data plans in an effort to better monetize their data traffic.

Micro-segmentation. This typically involves creating sub-brands for different types of customers, usually the most price-sensitive. In markets where prepaid plans are common, some providers have distinguished themselves by offering postpaid plans to specific segments.

Value-added services. More and more providers are offering additional services as part of their wireless plans. This can work in two ways. Some package free digital content — including social media, video, music, and gaming — as well as perks such as discounts on online shopping, movie tickets, and flights into certain plans typically offered to premium customers. Others are trying to capture nontraditional, non-telecom revenues by expanding into areas such as electronic commerce, finance, and education.

Consolidation and convergence. A sure way to improve market share is by buying or merging with rivals, although such efforts are increasingly running into regulatory hurdles as policymakers seek to boost competition in their markets. However, convergence plays for richer bundles that combine wireless with wire-line and cable capabilities are seeing continued M&A momentum, especially across Europe.

Network investments. Network coverage, capacity, and quality of service remain competitive differentiators in emerging markets, while providers in more developed markets continue to upgrade their networks to protect their core connectivity revenues.

Brand. Brand value remains a differentiator in certain markets, although this is most common in markets such as Saudi Arabia and Indonesia where a provider with a strong brand already dominates the market.

Wholesaling. Some companies are looking to augment their consumer and business revenue by providing wholesale network services to other companies, typically mobile virtual network operators (MVNOs) but also other carriers, through national roaming and network sharing agreements. Eventually, this could include providing connectivity services to industrial companies, financial-services firms, e-health providers, and others.

Surviving the storm

Perhaps it is inevitable that wireless markets around the world are becoming commoditized so rapidly. After all, most markets are saturated with subscribers, and the fast-rising popularity of the smartphone is creating enormous demand for data. It is indeed a perfect storm. Some providers will thrive by differentiating themselves through a clear strategic identity and a strong customer value proposition; the rest will end up surviving as fully commoditized utility providers. (See ["A tale of two telecoms: A look into the industry's future."](#))

Asia-Pacific

- Most markets in the Asia-Pacific region are on the edge of commoditization, with the exception of Indonesia, which is still quite differentiated due to the continued dominance of a single player.
- Positive trends in the region include a recent ARPU increase in Japan as operators shift away from unlimited plans and focus on content offerings and e-commerce services.

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Exhibit 6
Wireless commoditization in Asia-Pacific



Australia

A new entrant transforms the competitive landscape, increasing price pressure on incumbents to defend market share.

Commoditization Index score

(2016) .63 .65 (2017)

Comfortable		On the edge		Commoditized			
Market value (2016, US\$)		\$11.4 billion		Market penetration rate (2016)		119.89%	
Market growth CAGR (2011–16, US\$).....		-2.17%		Market ARPU (2016, US\$).....		\$33.13	
Number of subscriptions (2016)		28.92 million		Market ARPU CAGR (2011–16, US\$).....		-1.81%	

Major players: Optus, Telstra, Vodafone Australia

Market overview

The Australian market has managed to reverse its commoditization trend over the past few years as Telstra grew its market share and ARPU premium.

The past year saw a movement in terms of overall market structure with a slightly decreasing market share spread and increasing ARPU spread.

The prospective entry of TPG as the fourth mobile network operator (MNO), however, is expected to accelerate the growth of the price-sensitive segment and drive down overall ARPU.

Price competition will intensify, especially among MVNOs, accelerating commoditization.

Market events affecting market share spread

TPG's entry is expected to reduce incumbents' market share, especially if the company secures a roaming agreement with one of the MNOs.

Existing MVNOs predominantly competing on price are likely to be the most affected, given TPG's strategy to target the price-sensitive customer segment.

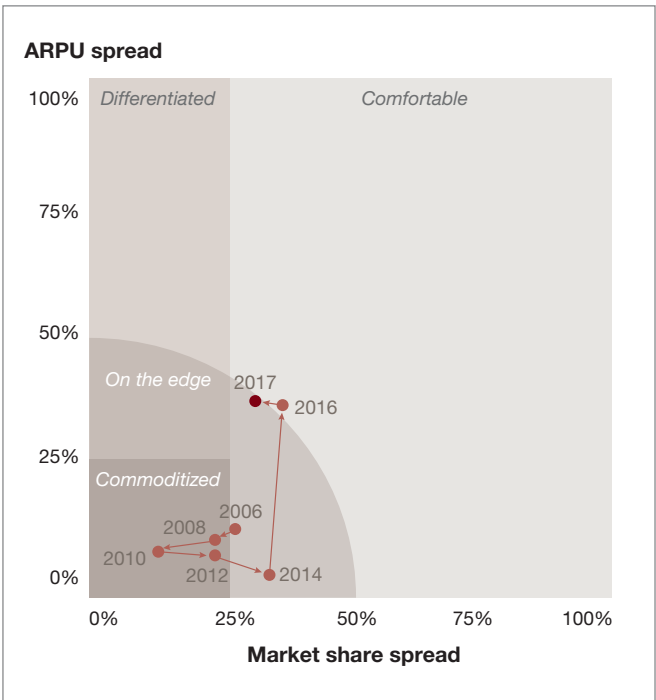
This segment is forecast to grow from 22 percent in 2017 to 33 percent in 2020, reducing the size of the potential market for premium players such as Telstra.

Market events affecting ARPU spread

Aggressive ARPU erosion is forecast with TPG's entry, especially if high-coverage roaming is provided, potentially narrowing ARPU spread.

Telstra has adopted a multi-brand strategy to respond to the changing market conditions, launching Belong to target the price-sensitive segment.

Further differentiation and innovation are required for players to maintain a price premium.



Source: TeleGeography; Strategy& research and analysis, strategyand.pwc.com/wirelesscommoditization

Commoditization declined in the past year, thanks to better technology, greater data usage, and more value-added services offerings.

Commoditization Index score

(2017) .63 .65 (2016)

Comfortable	On the edge	Commoditized
Market value (2016, US\$) \$134.9 billion		Market penetration rate (2016) 93.05%
Market growth CAGR (2011–16, US\$) 5.09%		Market ARPU (2016, US\$) \$8.09
Number of subscriptions (2016) 1.31 billion		Market ARPU CAGR (2011–16, US\$) -0.63%
Major players: China Mobile, China Telecom, China Unicom		

Market overview

The investment and construction of 4G will continue to grow rapidly, but the growth rate is declining.

The scope of communications services is becoming more extensive, covering the entire value chain; operators are actively seeking opportunities in video, Internet of Things (IoT), and payments.

Nearly half of providers' income derives from value-added services, including over the top (OTT) and IoT.

Market events affecting market share spread

China Mobile began building its 4G network in 2014, a year ahead of its two main competitors, and has maintained its share advantage since then.

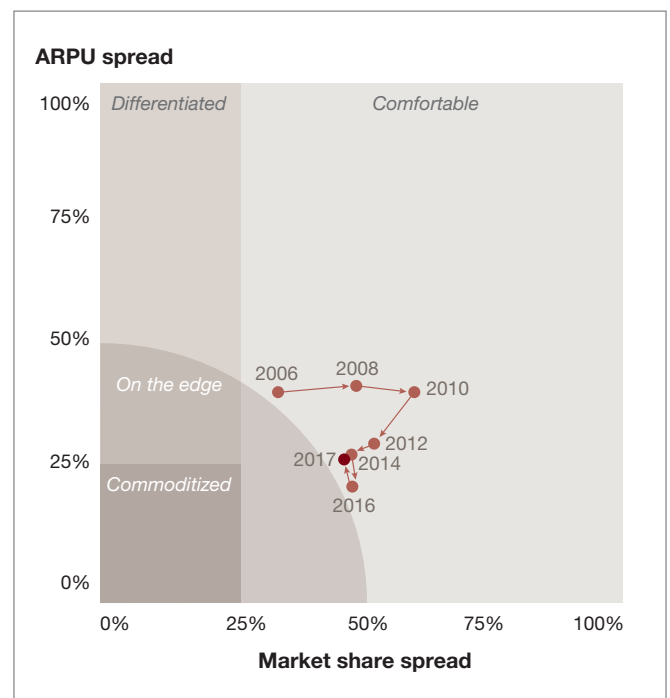
Mobile number portability is not highly promoted in China, which limits major changes in market share.

Market events affecting ARPU spread

Prices continue to decline, and unlimited monthly data plans are now available.

An increase in data traffic has maintained ARPU levels and compensated somewhat for price drops, especially for China Mobile, which experienced a fourfold increase in data traffic between 2016 and 2017.

Mobile data revenue now exceeds mobile voice revenue.



Source: TeleGeography; Strategy& research and analysis, strategyand.pwc.com/wirelesscommoditization

Indonesia

Thanks to the dominance of a single player, the market remains differentiated and isn't exhibiting signals for dramatic change in the near future.

Commoditization Index score

(2016) .43.44 (2017)

Comfortable	On the edge	Commoditized
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Market value (2016, US\$)	\$10.6 billion	Market penetration rate (2016)	137.25%
Market growth CAGR (2011–16, US\$).....	11.33%	Market ARPU (2016, US\$).....	\$2.14
Number of subscriptions (2016)	362.34 million	Market ARPU CAGR (2011–16, US\$).....	1.24%

Major players: Hutchison 3 Indonesia, Indosat Ooredoo, Telkomsel, XL Axiata

Market overview

Indonesia's wireless market continues to be a growth story, with further potential for new subscribers and smartphone penetration.

There is immense variation of ARPUs among the top three players; Telkomsel has the highest ARPU, roughly double that of XL Axiata.

It is mostly a prepaid market with a strong multiple SIM effect.

Young consumers are driving demand for new technologies and digital offerings.

Market events affecting market share spread

The market continues to be dominated by Telkomsel, with its 45 percent share.

Market leadership of Telkomsel is supported by its strong brand, currently the second most valuable brand in Indonesia.

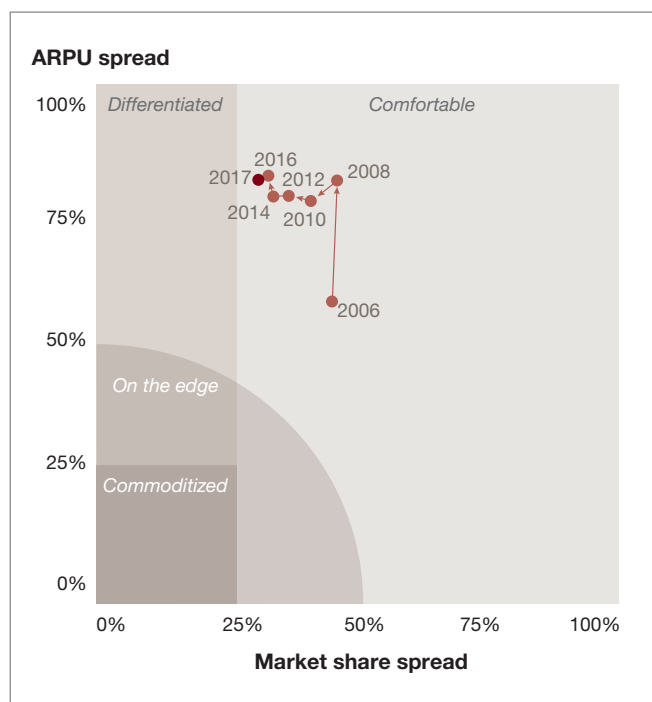
Fragmented geography plays in favor of Telkom, the national fixed infrastructure owner, enabling Telkomsel to provide coverage to remote areas and islands.

Market events affecting ARPU spread

Increasing competition is driving prices down; players are still not leveraging the opportunities for providing differentiated customer experiences to prevent further price erosion.

Complicated value propositions hinder optimization of usage and selection of the best tariff fit for customers.

Significant growth in smartphone use is increasing data consumption and demand.



Source: TeleGeography; Strategy& research and analysis, strategyand.pwc.com/wirelesscommoditization

Despite the entry of MVNOs and their aggressive pricing, the Japanese wireless market is still dominated by three players with undifferentiated offerings.

Commoditization Index score

(2017) .76 .77 (2016)

Comfortable	On the edge	Commoditized
Market value (2016, US\$) \$73.0 billion	Market penetration rate (2016) 124.39%	
Market growth CAGR (2011–16, US\$) 1.83%	Market ARPU (2016, US\$) \$45.29	
Number of subscriptions (2016) 158.58 million	Market ARPU CAGR (2011–16, US\$) -1.58%	

Major players: KDDI, NTT DoCoMo, Softbank Mobile

Market overview

Japan's wireless market is almost fully saturated and largely commoditized. It is dominated by three MNOs — NTT DoCoMo, KDDI, and Softbank Mobile.

Despite the entry of MVNOs with their aggressive pricing strategies, market share spread has been stable since around 2012, due to the three MNOs' undifferentiated pricing, network coverage, and speed.

With subscription revenues peaking, these MNOs are expanding their content businesses into areas such as healthcare, e-commerce, and music/video distribution services.

Market events affecting market share spread

The market shares of the three MNOs have not changed significantly over the past year.

Independent MVNOs' share has been stagnant due to their limited marketing mix (primarily Internet marketing), MNOs' sub-brand strategies, and the MNOs' dominant share of iOS devices.

Rakuten Mobile is planning to enter as the fourth MNO in 2019 with a strong expectation of considerable price competition.

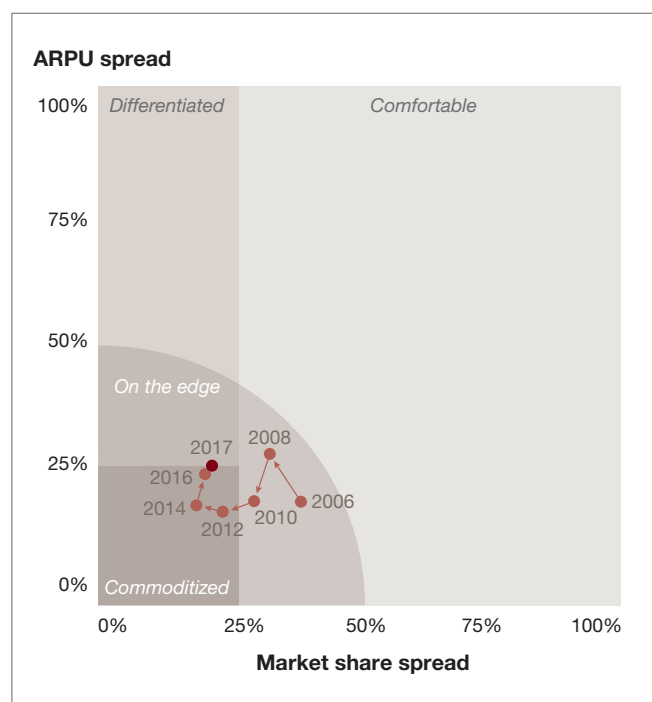
Market events affecting ARPU spread

The coordinated oligopoly by the three MNOs has continued since the 2000s, while MVNOs have added only marginal market share, leading to the market's long-term low and stable ARPU spread.

Since around 2012, however, low-cost plans by MVNOs have encouraged some price competition among MVNOs and the three MNOs, leading to a recent uptick in ARPU spread.

MNOs' ARPU (excluding sub-brands) has trended upward due to a shift from unlimited data plans to usage-based data plans and a significant increase in data demand.

The Ministry of Internal Affairs and Communications has indicated that ARPU could be reduced further because of competition from new entrant Rakuten.



Source: TeleGeography; Strategy& research and analysis, strategyand.pwc.com/wirelesscommoditization

Europe

- Most markets in Europe are highly saturated, and revenues are shrinking. As a result, most of the markets are on the edge of commoditization.
- France has recently become more differentiated, driven by the stabilization of the industry into a dual market with low-cost players on the one hand and premium players on the other.

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Exhibit 7
Wireless commoditization in Europe



France

The wireless industry has stabilized into a dual market, with low-cost players on the one hand and premium players on the other.

Commoditization Index score

		(2017) .62 .64 (2016)	
Comfortable		On the edge	
Market value (2016, US\$)		Market penetration rate (2016)	
\$21.0 billion		106.37%	
Market growth CAGR (2011–16, US\$).....		Market ARPU (2016, US\$).....	
-4.84%		\$21.49	
Number of subscriptions (2016)		Market ARPU CAGR (2011–16, US\$).....	
69.12 million		-10.56%	
Major players: Bouygues Telecom, Free Mobile, Orange France, SFR Group			

Market overview

The market has managed to remain differentiated with premium players maintaining high prices/ARPUs and dominating almost half the market.

Low-cost players (Free and the established operators’ low-cost brands) are operating in a much lower ARPU environment.

Market events affecting market share spread

Market share spread has remained relatively stable over the past year.

Orange continues to benefit from its historical operator position and remains number one, followed by SFR.

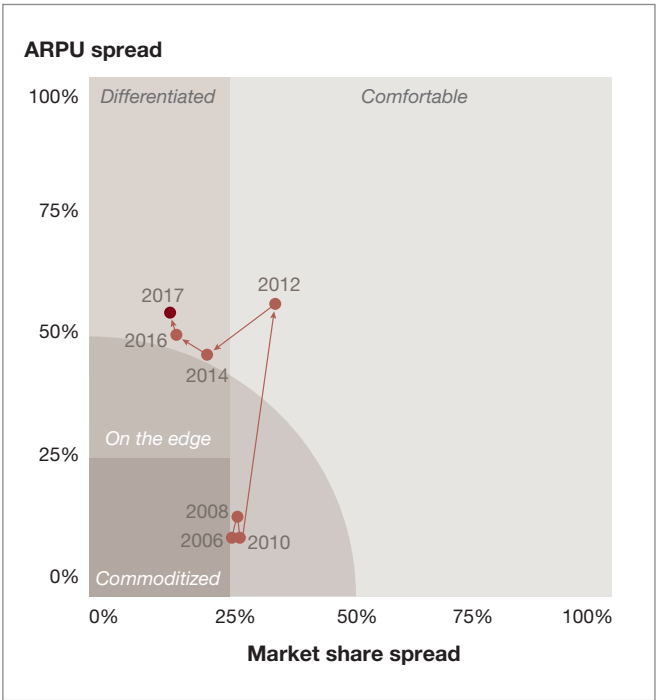
Since Free’s launch in 2012, the company’s subscriber base has grown to 18 million, but it has now begun to stabilize due to saturation of the low-cost market.

Market events affecting ARPU spread

The decline in ARPU has stabilized in recent years with the saturation of the low-cost market.

The ARPU spread has risen slightly over the past year due to a decrease in Free’s ARPU as premium players managed to maintain ARPU levels.

SFR has suffered from the disruption created by the takeover of its parent company, Altice, and from reduced network investments; it is trying to recapture share with more aggressive pricing, further increasing the market’s ARPU spread.



Source: TeleGeography; Strategy& research and analysis, strategyand.pwc.com/wirelesscommoditization

Germany

Europe's largest mobile market remains static; mobile data now makes up half the market because of wider 4G network coverage.

Commoditization Index score

(2017) .79 .81 (2016)

Comfortable	On the edge	Commoditized
Market value (2016, US\$) \$25.4 billion	Market penetration rate (2016) 143.09%	
Market growth CAGR (2011–16, US\$)..... -0.05%	Market ARPU (2016, US\$)..... \$14.52	
Number of subscriptions (2016) 117.50 million	Market ARPU CAGR (2011–16, US\$)..... -1.71%	

Major players: Deutsche Telekom, Telefónica Deutschland, Vodafone Germany

Market overview

The German wireless market's value is the largest in Europe but has declined slightly due to stiff competition and price wars.

The market's trend toward commoditization has reversed slightly in the past few years, driven mainly by its greater ARPU spread, although market share spread remains very low.

MNOs have invested heavily in their LTE networks; Deutsche Telekom claims the widest 4G footprint, with 93 percent of the population covered.

Market events affecting market share spread

The very narrow market share spread has remained constant over the past year, with the three top players maintaining their respective shares.

Telefónica's acquisition of E-Plus has not led to significant changes in market share among the three MNOs. While Telefónica's share stayed at 34 percent, Vodafone's increased slightly to 35 percent, and Deutsche Telekom's decreased slightly to 31%.

Germany remains the largest market for MVNOs and resellers in the world. Around half of all German wireless subscribers are customers of either a discount sub-brand of one of the three MNOs, an MVNO, or an independent reseller.

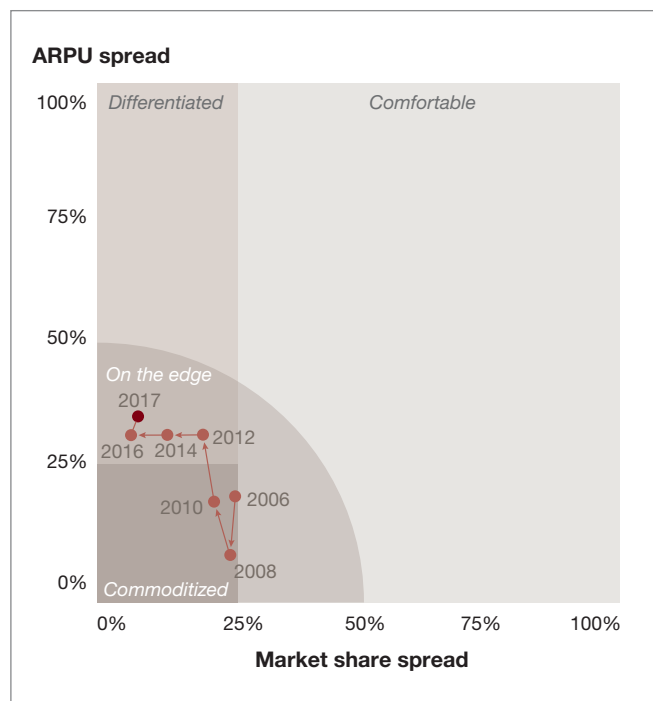
Market events affecting ARPU spread

The blended ARPU of all three MNOs has decreased slightly over the past year, while ARPU spread has remained relatively stable.

Regulations prohibiting roaming tariffs in the European Union (E.U.) have significantly affected international roaming revenues.

Free streaming bundles will limit data revenue growth.

Increased data usage by end-users will likely lead to price wars on flat data rates and another drop in mobile voice revenues.



Source: TeleGeography; Strategy& research and analysis, strategyand.pwc.com/wirelesscommoditization

Netherlands

The market is verging on commoditization, with a continued ARPU decline driven by price competition and growth in bundles.

Commoditization Index score

		(2016)	.78	.81	(2017)	
		<div><div></div><div></div></div>				
		ComfortableOn the edgeCommoditized				
Market value (2016, US\$)	\$6.1 billion	Market penetration rate (2016)				113.97%
Market growth CAGR (2011–16, US\$)	-3.84%	Market ARPU (2016, US\$)				\$24.63
Number of subscriptions (2016)	19.42 million	Market ARPU CAGR (2011–16, US\$)				-4.09%

Major players: KPN, Tele2 Nederland, T-Mobile Netherlands, Vodafone Netherlands

Market overview

The market is on the brink of commoditization, with strong price competition.

It is a fixed-mobile converged market, with high uptake of triple- and quadruple-play bundles, although bundle penetration growth has flattened.

Investments in content by the two primary players, KPN and Vodafone, suggest potential opportunities for ARPU increase.

Market events affecting market share spread

The market shares and positions of key players have not changed significantly over the past year.

The recently announced merger between Tele2 Nederland and T-Mobile Netherlands at the end of the year will likely decrease market share spread.

Tele2 is entering the market as a fourth player, building out its own network and pushing to acquire new customers through aggressive promotions.

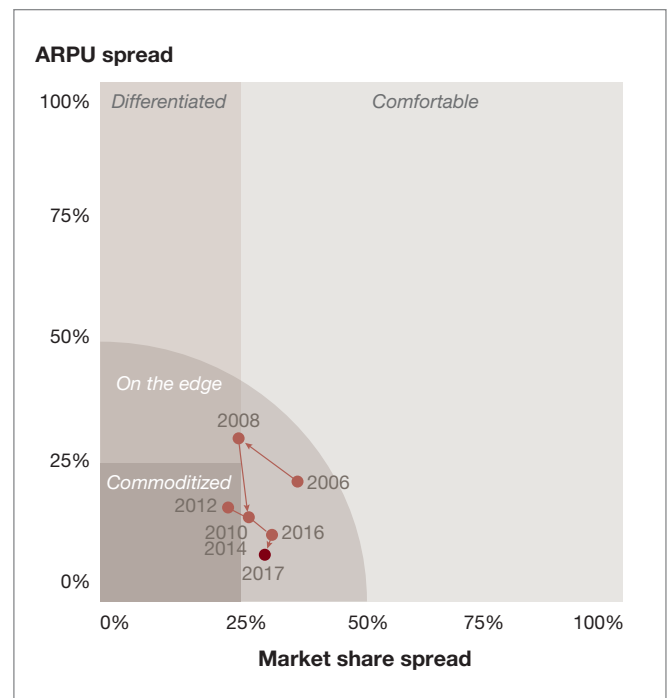
Market events affecting ARPU spread

Price competition in mobile will narrow ARPU spreads and drive further commoditization.

Abolition of E.U. roaming tariffs is leading to further ARPU decline.

Data bundles have doubled in size over the past year, but with limited revenue growth.

Continued transition from legacy to IP-based products in B2B is leading to continued ARPU declines in the B2B market.



Source: TeleGeography; Strategy& research and analysis, strategyand.pwc.com/wirelesscommoditization

Latin America

- Latin America's markets are highly saturated, and the region continues to inch toward commoditization.
- In several markets, consumers are shifting to postpaid plans, allowing premium players to retain market share, although average ARPU is trending down.
- The commoditization trend in Argentina is reversing somewhat, a sign of potential convergence among wireless and wireline operators.
- In Brazil, unfavorable economic conditions and payment delinquencies have adversely affected the revenues of smaller players, while larger players are aggressively cutting prices to retain a share of a shrinking revenue pool.

Latin America contacts

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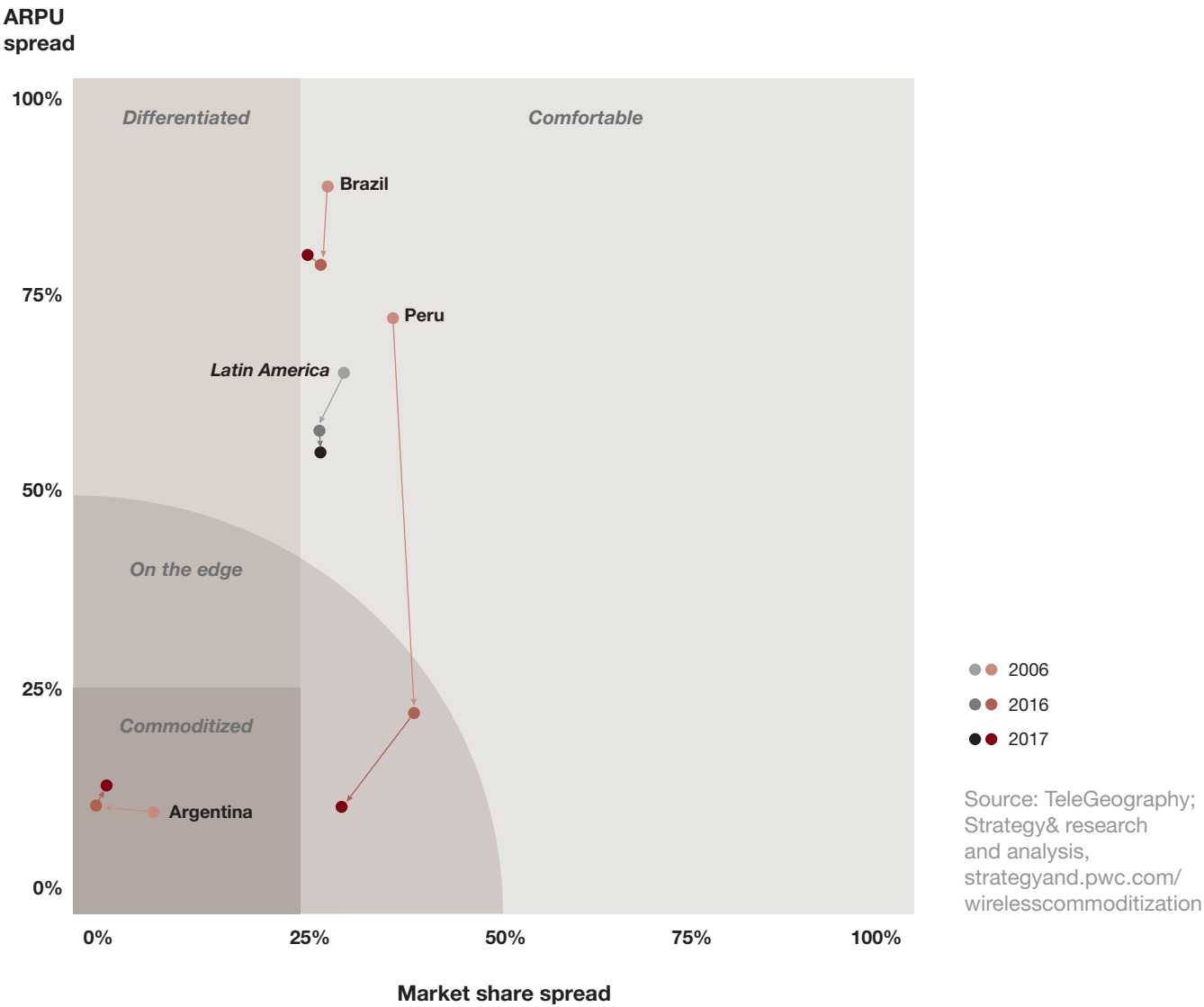
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Exhibit 8
Wireless commoditization in Latin America



Argentina

Three players are dominating a highly saturated market, while trying to transition rapidly to higher-speed technology.

Commoditization Index score

(2017) .91 .93 (2016)

Comfortable	On the edge	Commoditized
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Market value (2016, US\$)	\$5.6 billion	Market penetration rate (2016)	141.45%
Market growth CAGR (2011–16, US\$).....	19.50%	Market ARPU (2016, US\$).....	\$7.35
Number of subscriptions (2016)	62.02 million	Market ARPU CAGR (2011–16, US\$).....	15.42%

Major players: Claro Argentina, Grupo Clarín, Movistar Argentina, Telecom Personal

Market overview

The market is highly commoditized with limited differentiation between carriers.

The industry has been growing due to increases in market penetration and value-added services.

The market is entering a saturation stage, and it will be critical for operators to migrate the user base to services with higher ARPUs.

4G technology is being rapidly adopted but is still in an early development stage with around 30 percent penetration three years after launch.

Market events affecting market share spread

Market share spread is very narrow; market leaders Claro, Personal, and Movistar jointly serve 98 percent of the market, with each operator controlling about a third.

Grupo Clarín, Argentina's biggest media company, recently acquired number four player Nextel, potentially indicating a consolidating trend in the industry.

Cablevisión (also owned by Grupo Clarín), the market leader in broadband and pay-television services, has announced a merger with Telecom Personal that will close in 2018. The integrated company will become the first quadruple-play operator in Argentina, although the impact on market share remains unclear.

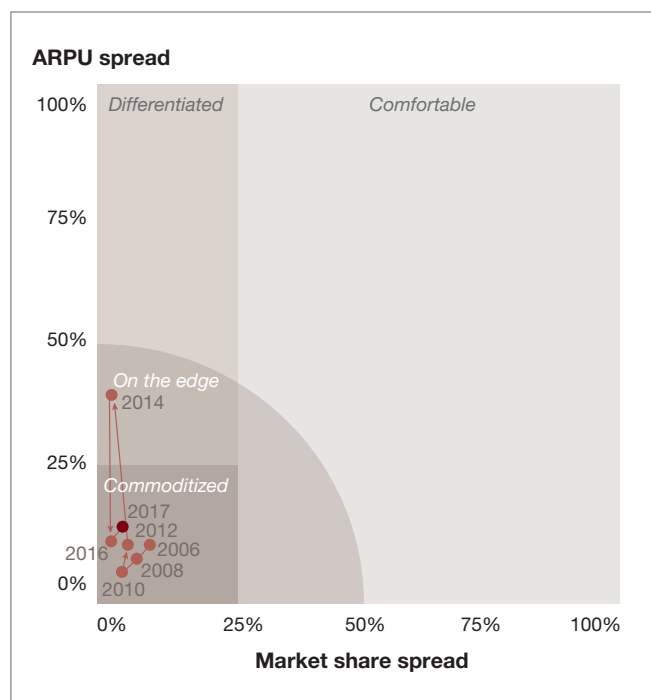
Market events affecting ARPU spread

All three major carriers' offers are similar, with limited differentiation, resulting in a narrow ARPU spread.

Prepaid services account for more than 80 percent of subscribers, generating low ARPU.

Operators are investing in the deployment of high-speed networks, which will allow them to sell higher-value-added services and increase ARPU.

The new government, in office for two years, is slowly deregulating market prices, which may lead to more differentiated pricing strategies in the medium term.



Source: TeleGeography; Strategy& research and analysis, strategyand.pwc.com/wirelesscommoditization

Brazil

Market leaders continue to compete on price to maintain market share; macroeconomic conditions make competition difficult for smaller carriers.

Commoditization Index score

(2017) .46 .47 (2016)

Comfortable		On the edge	Commoditized	
Market value (2016, US\$) \$18.5 billion		Market penetration rate (2016) 118.40%		
Market growth CAGR (2011–16, US\$)..... 0.15%		Market ARPU (2016, US\$).....\$6.10		
Number of subscriptions (2016) 244.06 million		Market ARPU CAGR (2011–16, US\$).....-2%		

Major players: Claro Brasil, Oi, Telefônica Brasil, TIM Participações

Market overview

The market remains relatively non-commoditized, with very high ARPU spread.

Wireless net revenue, however, continues to decline, from 71 billion Brazilian reais (BRL) in 2014 to 64 billion BRL in 2016, due largely to the country's weak economy.

Connections also fell, from 280 million in 2014 to 244 million in 2016, mainly due to a reduction in interconnection rates.

The market's economic challenges have led operators to reassess partnerships, while several small operators have faced bankruptcy, impacting associated carriers.

Market events affecting market share spread

While shutting down operations elsewhere in Latin America, Nextel continues to maintain its small share of the market, while the top four players maintain their shares, leading to little movement in market share spread.

The competitive landscape remains intense as competitors have modestly capitalized on Oi's bankruptcy-related turmoil. Oi lost about 2 percent in market share from 2014–17, and continues the trend.

Stronger adoption of postpaid plans continues to favor market leaders.

Unlimited voice plans offered early adopters some advantage, but only briefly, as other operators started offering similar plans.

High delinquency rates have spurred some players to be more restrictive in certain market geographies and market segments, adversely affecting market share.

Market events affecting ARPU spread

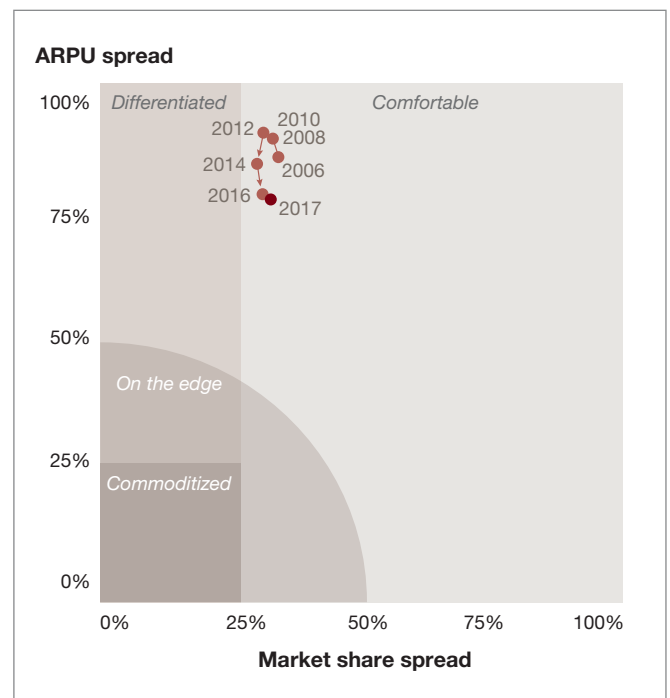
Hyperaggressive pricing of mobile broadband has been met by commensurate growth in data usage.

A recent move toward unlimited voice plans put additional pressure on declining voice ARPU.

Market challengers (mainly Oi and Nextel) continue to undercut market leaders in price, at times by more than 30 percent for a given consumption pattern.

Market leader Vivo, the brand Telefônica Brasil goes to market with, has not fully embarked on the latest wave of price cuts, maintaining a healthy ARPU gap with its direct competitors.

Claro has also attempted to achieve greater differentiation through heavy network investments, bundled offers, and migration from prepaid to postpaid plans.



Source: TeleGeography; Strategy& research and analysis, strategyand.pwc.com/wirelesscommoditization

Middle East and North Africa

- MENA markets are highly saturated, especially the GCC countries.
- Markets are at varying stages of commoditization, with Turkey heavily commoditized, Kuwait and Saudi Arabia on the edge, and Egypt more differentiated.
- The commoditization trend has reversed in Egypt, driven by the market leader's focus on postpaid and corporate customers, despite a decline in the market's overall ARPU.
- Overall revenues in Saudi Arabia are shrinking, but the market leader there has managed to maintain its position by focusing on postpaid customers, preventing the market from becoming fully commoditized.

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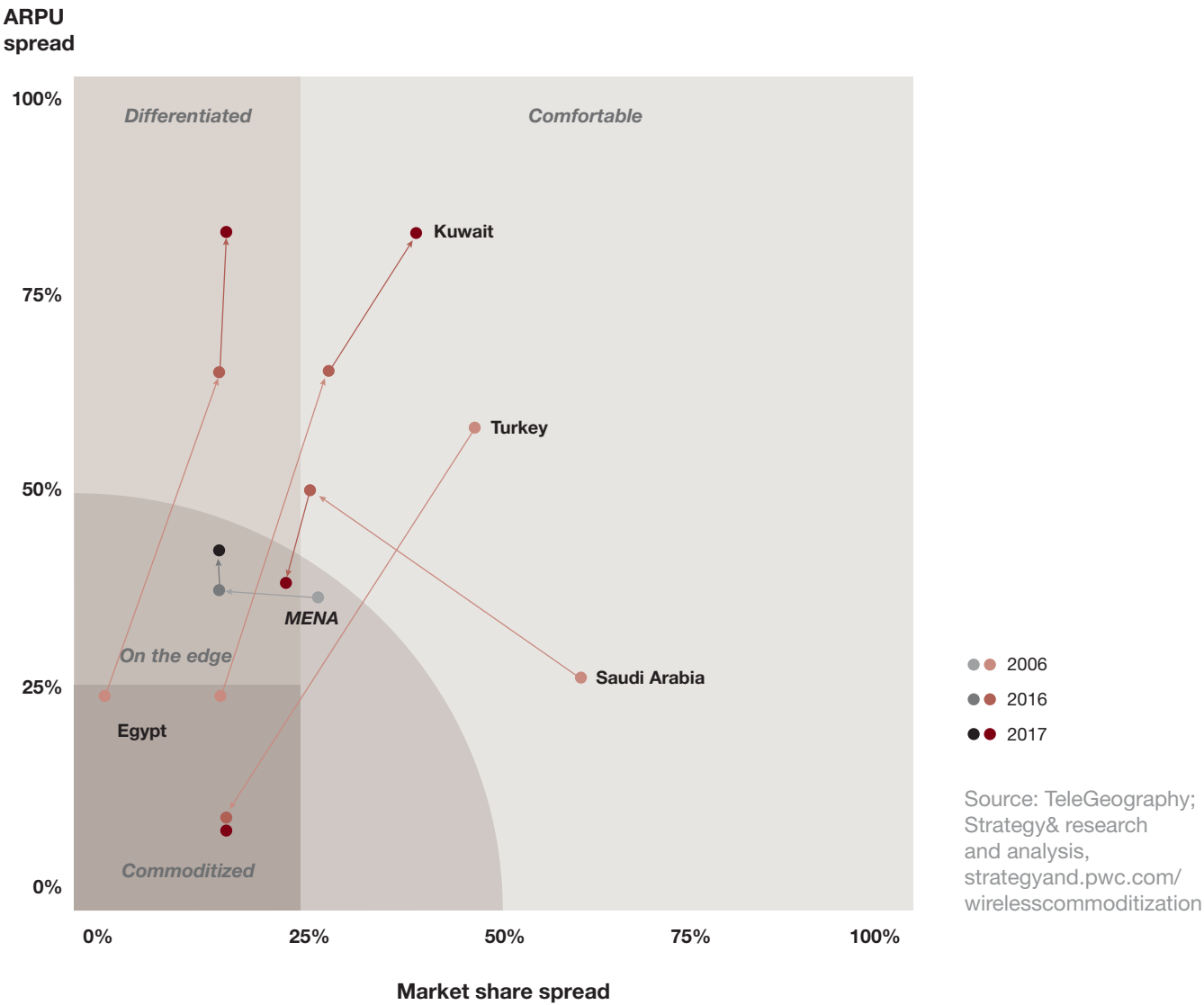
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Tarek Matar and Yusuf Bulut contributed to this report.

Exhibit 9
Wireless commoditization in the Middle East and North Africa



Despite intense competition and low ARPU, the commoditization trend has reversed in Egypt.

Commoditization Index score

		(2017) .50	.59 (2016)		
Comfortable		On the edge		Commoditized	
Market value (2016, US\$)	\$3.4 billion			Market penetration rate (2016)	98.24%
Market growth CAGR (2011–16, US\$).....	4.87%			Market ARPU (2016, US\$).....	\$4.95
Number of subscriptions (2016)	95.8 million			Market ARPU CAGR (2011–16, US\$).....	0.73%
Major players: Etisalat Misr, Orange Egypt, Vodafone Egypt					

Market overview

In this predominantly prepaid market, there is low ARPU and overall subscriber stagnation.

Market commoditization declined significantly over the past year, driven by greater ARPU differentiation, due largely to market leader Vodafone's increased focus on postpaid and high-end segments.

There is continued room for growth in data, with data penetration standing at just 37 percent.

There is a low but rapidly growing smartphone penetration.

Market events affecting market share spread

The market is competitive with a fairly low market share spread; share among operators has remained largely stable over the past year.

Vodafone remains the market leader in both subscribers and revenues, and has the strongest growth in mobile data.

Etisalat's market share is growing as it shifts focus to the youth segment, with its large data appetite.

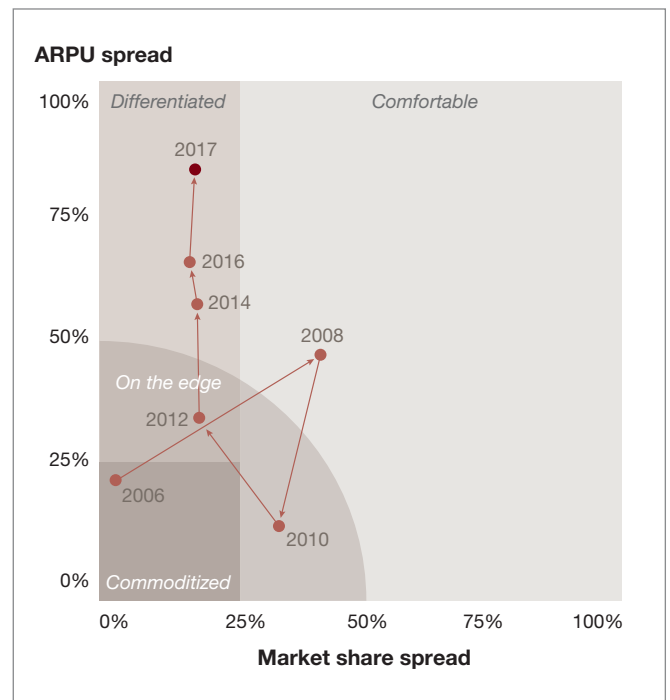
Telecom Egypt, the country's fixed operator, recently launched mobile operations on 4G, potentially changing market share dynamics going forward.

Market events affecting ARPU spread

Overall, ARPU spread has increased, largely as a result of market leader Vodafone's success in growing ARPU amid premium brand positioning and a focus on postpaid and high-end segments.

But Egypt's ARPU remains lower than that of comparable countries such as Brazil, Nigeria, Thailand, and Colombia, driven mainly by price-based competition.

Market ARPU continues to drop due to high data allowance packages recently offered by Etisalat.



Source: TeleGeography; Strategy& research and analysis, strategyand.pwc.com/wirelesscommoditization

Commoditization has accelerated in a highly saturated market in which data potential has been neutralized by aggressive price wars.

Commoditization Index score

Comfortable		On the edge		Commoditized	
				(2017) .77	.81 (2016)
Market value (2016, US\$)		\$2.6 billion		Market penetration rate (2016)	
Market growth CAGR (2011–16, US\$).....		3.19%		Market ARPU (2016, US\$).....	
Number of subscriptions (2016)		7.4 million		Market ARPU CAGR (2011–16, US\$).....	

Major players: Ooredoo Kuwait, VIVA, Zain Kuwait

Market overview

Kuwait enjoys among the highest mobile, smartphone, and Internet penetration levels in the region.

Despite subscriber stagnation, market value has been growing, driven by data.

Operator strategies are consistent, focusing mainly on increasing data appetites with the aim of monetizing data.

Increasing commoditization in the market is driven by lower ARPU differentiation among players.

Market events affecting market share spread

Second and third players VIVA and Ooredoo are adopting a landgrab approach with significant price reductions, resulting in a decreased market share spread and accelerated commoditization.

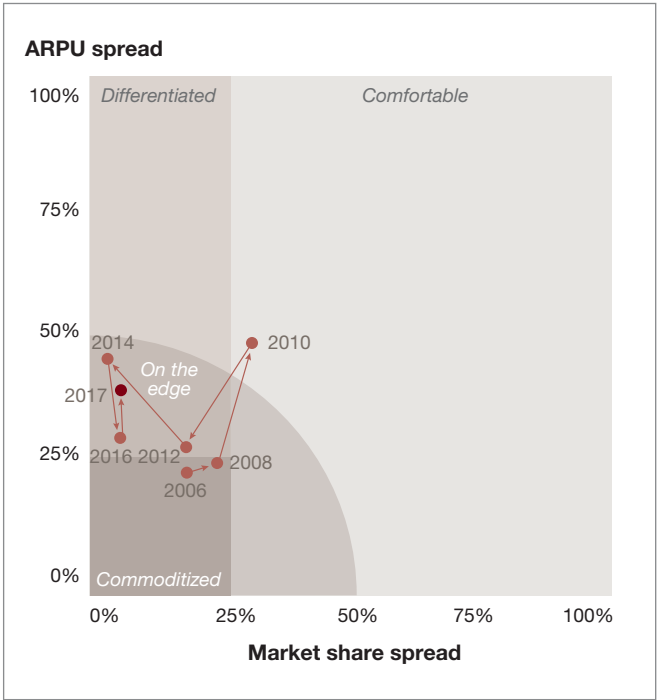
Ownership of multiple SIM cards is rising as customers jump between plans to take advantage of promotions, further decreasing market share spread.

Market events affecting ARPU spread

Intense price competition and aggressive promotions on data are exerting downward pressure on ARPU levels and further decreasing ARPU spread.

Absence of a regulatory authority to limit price wars and prevent value destruction has accelerated the commoditization trend.

Offerings are primarily differentiated by price, with no evidence of differentiation on other dimensions, such as user experience.



Source: TeleGeography; Strategy& research and analysis, strategyand.pwc.com/wirelesscommoditization

Saudi Arabia

STC remains the leader in a shrinking market due to subscriber stagnation and aggressive promotions.

Commoditization Index score

		(2016) .62	.68 (2017)
Comfortable		On the edge	
		Commoditized	
Market value (2016, US\$)	\$11.9 billion	Market penetration rate (2016)	149.16%
Market growth CAGR (2011–16, US\$).....	-2.20%	Market ARPU (2016, US\$).....	\$18.497
Number of subscriptions (2016)	49.13 million	Market ARPU CAGR (2011–16, US\$).....	-0.75%
Major players: Mobily, Saudi Telecom Company (STC), Zain Saudi Arabia			

Market overview

Subscriber growth is stagnating, with already high penetration levels among Saudis and a dwindling expat base.

Market value is shrinking, driven by aggressive price wars on both voice and data.

Players are focusing on improving data profitability, streamlining operations, and rationalizing capital spending.

Players are beginning to embrace and invest in digital adjacencies, including the cloud, digital platforms, fintech, and payment systems.

Market events affecting market share spread

Market share differentiation remains stable, with market leader STC reaping more than 50 percent of subscribers.

Mobily's market share has been dropping steadily, driven by financial difficulties and a change in management.

Zain dominates the data SIM market thanks to its attractive unlimited plans; its market share has remained steady over the past two years.

MVNOs have been steadily gaining traction, particularly among tech-savvy youth.

Market events affecting ARPU spread

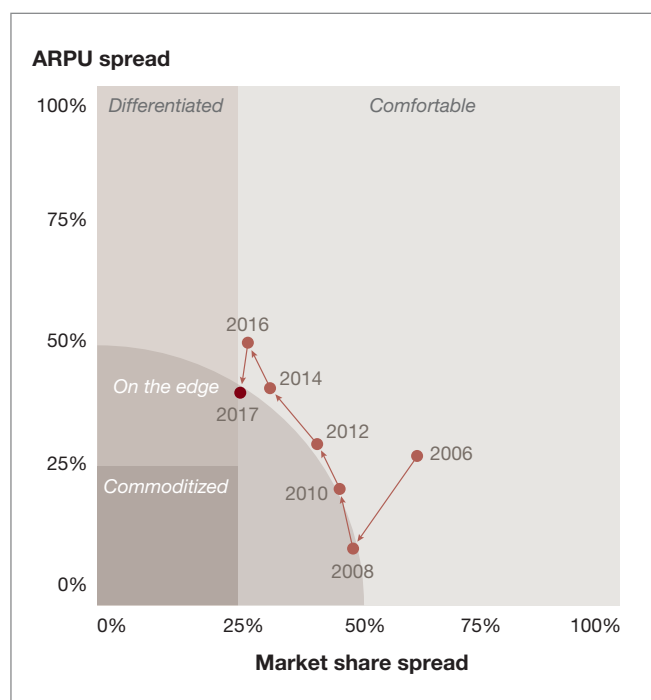
Overall, ARPU spread has remained steady, largely due to STC's ability to sustain its high ARPU.

STC has managed to sustain its high ARPU and premium pricing due to better quality of service, brand equity, and a community advantage on voice.

Aggressive promotions initiated by Zain and MVNOs, and often followed by STC and Mobily, are driving ARPU levels down.

Unlimited data offers pushed aggressively by the industry are also putting pressure on ARPU levels.

Zain increased its ARPU significantly over the past two years by tilting its subscriber mix toward postpaid subscribers and encouraging usage.



Source: TeleGeography; Strategy& research and analysis, strategyand.pwc.com/wirelesscommoditization

Turkey

This highly commoditized market is pushing providers into digital adjacencies.

Commoditization Index score

(2016) .86 .86 (2017)

Comfortable	On the edge	Commoditized
Market value (2016, US\$) \$8.7 billion	Market penetration rate (2016) 94.00%	
Market growth CAGR (2011–16, US\$)..... 11.29%	Market ARPU (2016, US\$).....\$8.58	
Number of subscriptions (2016) 75.06 million	Market ARPU CAGR (2011–16, US\$)..... 5.36%	
Major players: Avea (Türk Telekom), Turkcell, Vodafone Turkey		

Market overview

The market is highly commoditized and has not shifted much over the past year in terms of market share or ARPU spread.

Declining profits and subscriber stagnation combined with market commoditization levels are pushing telecoms toward digital adjacencies such as advertising platforms and digital MVNOs.

Turkcell recently launched Lifecell, a digital brand, and plans to launch fintech solutions. Avea is focusing on the millennial segment and has increased focus on its venture capital business.

The impact of these efforts remains unclear.

Market events affecting market share spread

The market has witnessed a high degree of churn, with more than 2 million subscribers moving to new providers every quarter.

As a result, the share for market leader Turkcell has decreased slightly while those of the second and third players have increased.

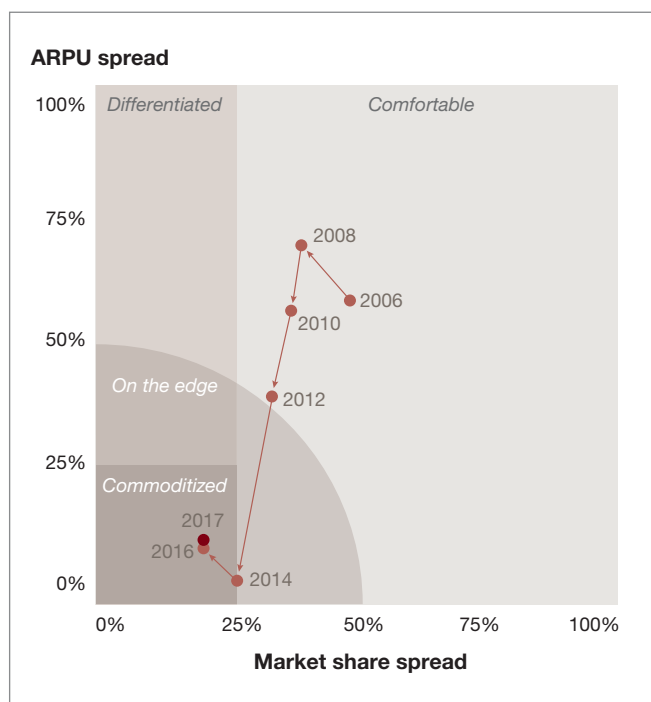
Overall, market share spread has remained relatively stable.

Market events affecting ARPU spread

Following the launch of 4.5G services in April 2016, mobile data consumption increased 77 percent in the third quarter of 2017 over the comparable 2016 quarter, largely compensating for the decrease in prices.

Increasing the postpaid base also drove ARPU levels up by 53 percent in the third quarter of 2017.

Still, ARPU spread has remained relatively stable.



Source: TeleGeography; Strategy& research and analysis, strategyand.pwc.com/wirelesscommoditization

North America

- Countries in North America have been unable to solve the commoditization problem — the rate of commoditization in every market has increased faster since 2016 than over the past decade.
- As technology and regulation reduce barriers to entry, competition is increasing.
- Driven by high saturation levels, competition in the U.S. market has become especially aggressive, whereas continued subscriber growth in Canada and Mexico has offered some relief.
- Major players in Canada are exploring bundling strategies as a way to protect share and increase stickiness, but it is unclear whether bundling alone can protect companies from competition from new entrants.

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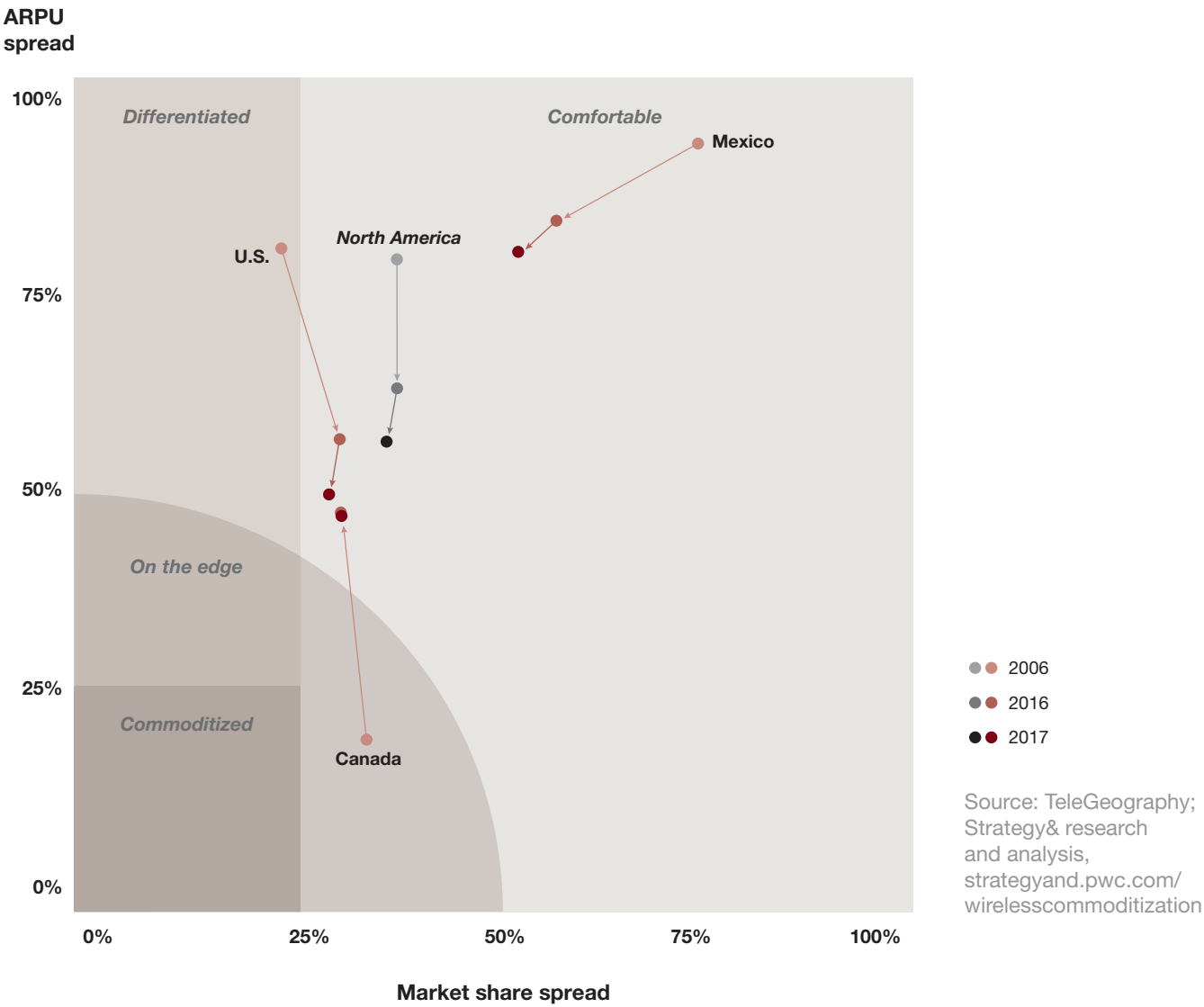
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Exhibit 10
Wireless commoditization in North America



Canada

Ongoing consolidation has stabilized the market, but it is on the cusp of further commoditization as national players focus on gaining market share.

Commoditization Index score

(2016) .61 .62 (2017)

Comfortable	On the edge	Commoditized
Market value (2016, US\$)\$17.0 billion (CAD21.17 billion)	Market penetration rate (2016) 82.48%	
Market growth CAGR (2011–16, US\$)..... 4.92%	Market ARPU (2016, US\$)..... US\$48.81 (CAD61.01)	
Number of subscriptions (2016) 30.75 million	Market ARPU CAGR (2011–16, US\$)..... 2.03%	

Major players: Bell Canada Enterprise (BCE), Rogers, Telus

Market overview

Canadians' appetite for data and high-speed connections continues to grow; the number of total subscribers has grown 3.2 percent since 2015.

New entrants such as Freedom Mobile have tried to gain share through low-cost data plans, but larger operators have followed suit; most players are willing to engage in price competition.

Carriers continue to increase publicly available hotspots — to more than 27,000 by the end of 2016 — to allow customers access to voice and data.

Market events affecting market share spread

Nationally, the three major carriers collectively account for 89 percent of wireless service subscribers, with smaller regional MNOs and MVNOs making up the remainder.

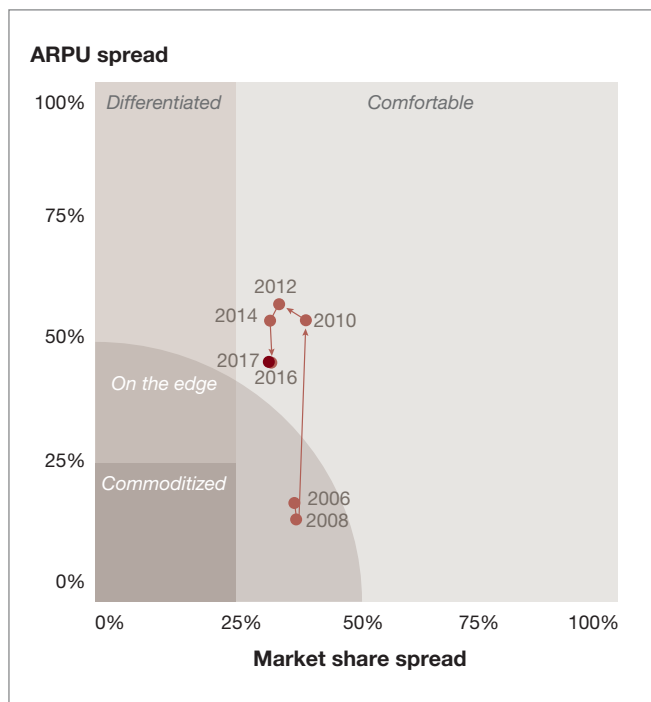
Market consolidation continued as BCE completed its acquisition of regional competitor MTS, creating three wireless options in Manitoba (BCE, MTS, Telus, and Rogers); market share spread declined slightly.

Market events affecting ARPU spread

Spending on communications services continues to rise, with the average household spending the most ever on mobile wireless services in 2017.

Amendments to the original Wireless Code — including overage and roaming caps, consent regarding changes to key elements of contracts, and discounted service trials — gave providers greater ability to manage rates, and therefore ARPU.

Geographic concentration of major markets plays a role in the rise of bundle discounts, allowing for greater capture of customer value. However, there is no direct push to promote quad bundles, so the impact on ARPU remains slight.



Source: TeleGeography; Strategy& research and analysis, strategyand.pwc.com/wirelesscommoditization

Mexico

The regulatory environment has fostered competition; AT&T appears to be bringing the U.S. playbook to Mexico and expanding aggressively.

Commoditization Index score

(2016) .30 .34 (2017)	
Comfortable	On the edge
Market value (2016, US\$) \$9.6 billion	Market penetration rate (2016) 84.82%
Market growth CAGR (2011–16, US\$).....-1.60%	Market ARPU (2016, US\$).....\$11.53
Number of subscriptions (2016) 109.55 million	Market ARPU CAGR (2011–16, US\$)..... -9.55

Major players: AT&T Mexico, Movistar, Telcel

Market overview

Telecom reform in 2014 positively affected the market, increasing competition and lowering prices.

AT&T has become the fiercest competitor against incumbent Telcel, with higher market share growth in 2017. However, Telcel remains dominant, with more than 70 percent of the market.

The MVNO sector grew from seven to 13 players from 2014 to 2017, increasing the competition for ARPU while pushing prices down.

Market events affecting market share spread

Since telecom reform was approved in 2014, the entry of new companies into the market, strategic alliances between competitors, and the establishment and modification of specific rules for dominant operator Telcel, among other factors, have generated a new competitive dynamic.

AT&T showed the strongest growth, expanding coverage across the country and offering lower pricing plans that include free roaming and broadband usage when traveling in the U.S. and Canada.

Telcel quickly followed AT&T’s free-roaming offering in order to defend its position as market leader, although its revenue growth is slowing.

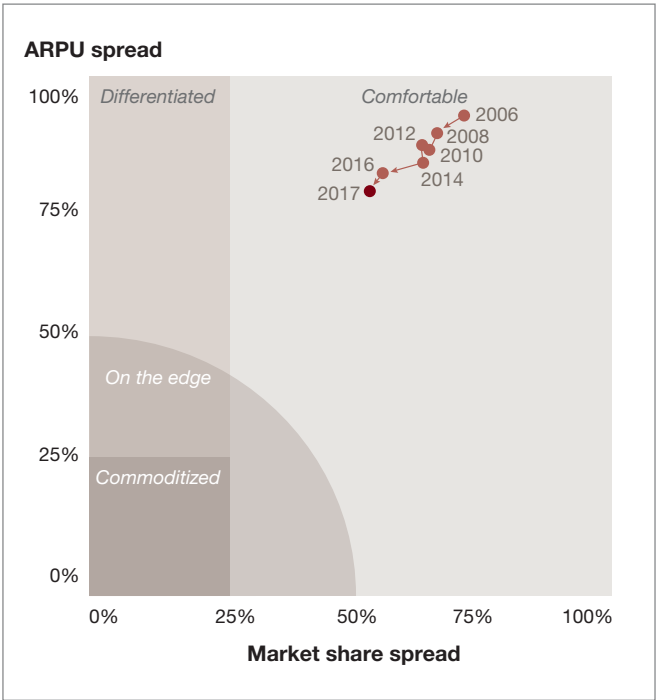
Number two player Telefónica, which owns Movistar, remains a key challenger to Telcel, but with slower growth than AT&T.

Market events affecting ARPU spread

Market ARPU has been declining since 2013, due in part to regulatory measures such as the elimination of national long-distance charges.

Despite the reduction in ARPU, the market’s increase in voice calls and mobile data and services consumption, sales of high-end phones, and the addition of new lines have resulted in positive growth in total market revenues.

The new asymmetric regulatory mechanisms favoring new entrants and requiring market leaders to divest are expected to produce an effective re-leveling of the market by 2020, more balanced market competition, and continued ARPU decline.



Source: TeleGeography; Strategy& research and analysis, strategyand.pwc.com/wirelesscommoditization

United States

Short of game-changing mergers, the market is witnessing accelerated commoditization pressures driven by aggressive pricing tactics.

Commoditization Index score

(2016) .57 .60 (2017)

Comfortable	On the edge	Commoditized
Market value (2016, US\$) \$193.3 billion	Market penetration rate (2016) 106.79%	
Market growth CAGR (2011–16, US\$)..... 1.52%	Market ARPU (2016, US\$).....\$38.64	
Number of subscriptions (2016) 346.49 million	Market ARPU CAGR (2011–16, US\$).....-2.70%	

Major players: AT&T, Sprint, T-Mobile, Verizon

Market overview

Subscriber saturation and increasing commoditization have limited market growth despite a significant increase in data demand.

The accelerating commoditization trend is largely driven by declining ARPU differentiation.

While carriers are trying to protect their core connectivity revenues through aggressive pricing and network upgrades, they are increasingly looking toward innovation, mainly in content and IoT.

Market events affecting market share spread

Verizon and AT&T remain market leaders, between them serving almost 70 percent of the market; T-Mobile's share gains enabled it to pass Sprint in Q4 2015 to become the third-largest operator, reducing slightly the industry market share spread.

T-Mobile's growth has slowed, however, primarily because Verizon followed the rest of the players and introduced "unlimited" plans to bolster share.

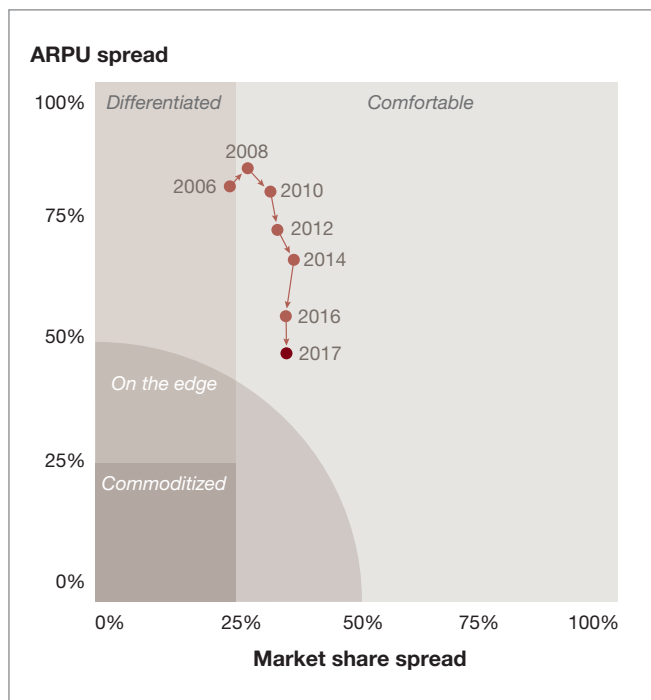
Step-changes in market share driven by M&A are unlikely after the T-Mobile/Sprint deal fell through.

Market events affecting ARPU spread

Aggressive promotion tactics initiated by T-Mobile and Sprint, and often followed by AT&T and Verizon, are driving ARPU levels down.

Subscription video bundles aimed at price differentiation (T-Mobile/Netflix, AT&T/HBO Go, Sprint/Hulu) are creating a new market dynamic.

In the absence of major consolidation efforts such as T-Mobile/Sprint and game-changing M&A such as AT&T/Time Warner, aggressive price competition will continue to drive further commoditization.



Source: TeleGeography; Strategy& research and analysis, strategyand.pwc.com/wirelesscommoditization

Other regions

Exhibit 11

Wireless commoditization in other countries

Commoditization Index

Country	2006	2016	2017
Russia	.51	.76	.76
South Africa	.64	.69	.71

Source: TeleGeography;
Strategy& research
and analysis,
[strategyand.pwc.com/
wirelesscommoditization](http://strategyand.pwc.com/wirelesscommoditization)

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Jessica Hichens contributed to this report.

The market remains on the verge of commoditization as players try to shift away from price-based competition.

Commoditization Index score

		(2016) .76 (2017)	
Comfortable		On the edge	
Market value (2016, US\$)		Market penetration rate (2016)	
\$13.2 billion		174.6%	
Market growth CAGR (2011–16, US\$).....		Market ARPU (2016, US\$).....	
2.95%		\$4.3	
Number of subscriptions (2016)		Market ARPU CAGR (2011–16, US\$).....	
256 million		-11.73%	
Major players: Beeline, MegaFon, Mobile TeleSystems (MTS), Tele2 Russia			

Market overview

Market saturation and increasing competition led to a decrease in overall market revenue in 2016, despite a significant increase in data demand.

The trend toward commoditization has been driven historically by decreasing ARPU spread. Over the past year, however, market share spread has also declined significantly.

Carriers are trying to avoid commoditization by focusing on data monetization, innovative services such as OTT offerings and the IoT, customer experience, and network coverage and quality.

Market events affecting market share spread

Market shares of key players have not changed significantly since last year.

MTS and MegaFon remain market leaders, serving a combined 60 percent of the subscriber base.

Market challenger Tele2 has reached a 16 percent market share, causing a slight decrease in market share spread.

Recent launches of MVNOs may add competitive pressure, despite having little impact yet on market share.

Market events affecting ARPU spread

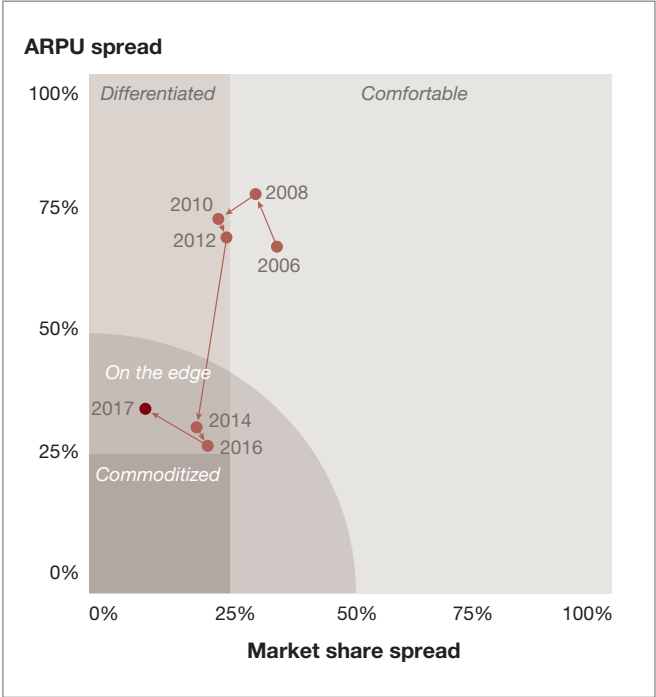
ARPU spread decreased consistently from 2008 to 2016 as aggressive competition drove down the ARPUs of MegaFon, MTS, and VimpelCom, and the ARPU of Tele2 increased.

In 2017, ARPU spread rose slightly as major carriers tried to shift competition away from price.

Providers boosted their value-added services and loyalty offerings — mobile TV, e-commerce, cash-back deals — to avoid competition based purely on price.

Major price challenger Tele2 announced in mid-2016 a strategic shift from a pure “discounter” model to a “lifestyle enabler” model.

Providers suspended unlimited data offers to increase data monetization.



Source: TeleGeography; Strategy& research and analysis, strategyand.pwc.com/wirelesscommoditization

South Africa

High and increasing commoditization in this low-ARPU market is sustained in large part by price competition, notably on data.

Commoditization Index score

(2016) .69 .71 (2017)

Comfortable	On the edge	Commoditized
Market value (2016, US\$) \$7.0 billion	Market penetration rate (2016) 145.65%	
Market growth CAGR (2011–16, US\$)..... 1.78%	Market ARPU (2016, US\$).....\$6.54	
Number of subscriptions (2016) 82.61 million	Market ARPU CAGR (2011–16, US\$).....-2.72%	
Major players: Cell C, MTN South Africa, Vodacom South Africa		

Market overview

The market is highly saturated; multiple SIMs per user is the norm.

The postpaid market is showing lackluster growth, partly as a result of macroeconomic conditions.

Regulatory uncertainty persists, notably around the government's information and communications technology policy.

Commoditization is increasing, driven by price competition in data and little differentiation in players' offerings.

Growth strategies focus on data usage and digital content.

Market events affecting market share spread

Changes in market share are due largely to improvements in network coverage, speed, and price, particularly for data; no new entrants are expected to significantly disrupt the market in the near future.

Vodacom and MTN maintain more than 75 percent of the market by number of subscribers.

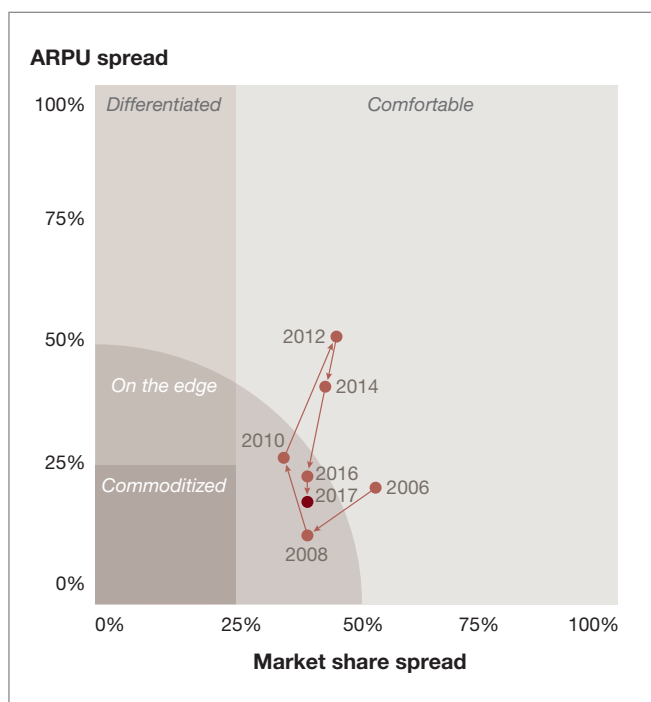
Vodacom has shown strong growth since 2016, notably in postpaid subscribers. It has increased its dominance over MTN, which has struggled with fluctuating market share.

With a 5 percent market share, Telkom is still a small player, but it has gained some share as a result of its ultracompetitive data prices. As a result, market share spread has declined a little, but ARPU spread has increased.

Market events affecting ARPU spread

Commoditization remains a threat as a result of increasing price competition and a "follow the leader" approach to innovation.

ARPU spread between postpaid and prepaid customers is exacerbated by persistently high data prices, despite downward pressure as a result of increasing regulatory involvement and competition from Telkom.



Source: TeleGeography; Strategy& research and analysis, strategyand.pwc.com/wirelesscommoditization

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