

Assessment of the Conduct, Structure, and Performance of the Philippine Telecommunications Industry

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An application of the Structure-Conduct-Performance approach on the nationwide Philippine telecommunications industry, for the period 2011 to 2016, showed that the market structure is highly concentrated, with significant barriers to entry, such as capital, regulatory, and legal requirements. These entry barriers lower market contestability, or the threat of a new entrant challenging the incumbents. Nevertheless, the incumbents foil each other from exercising excessive market power of raising prices, or reducing service quantity/quality. Market structure strongly influences the incumbents' conduct, with the two players mirroring each other's strategic behaviors, particularly in terms of product and pricing, and service quality. Both market structure and incumbents' conduct impact the market performance, with industry EBITDA margins, return on equity, and return on assets having been healthy.

Keywords: Market Structure, Conduct, Performance, Telecommunications Industry, Philippines

1 Introduction

The telecommunication (telecom) sector plays a critical role in contributing directly to the Philippine economy. An International Telecommunication Unit (ITU, 2012) study estimated telecom revenues account for 2.5% (or USD 5.3 billion) of the country's Gross Domestic Product (GDP), contribute about USD 267 million annually to economic growth, generate 1.0% of total tax collections, and employ 525,000 skilled workers and professionals.

Indirectly, the societal importance of telecoms is well accepted and broadly understood, reflected in its near-ubiquitous penetration and use. One, it delivers a technological foundation for communications, which plays a central role in the fundamental operations of a society – from business to government to families. Two, it enables participation, and development of people in communities disadvantaged by geography. Three, it provides vital infrastructure for national security – from natural disaster recovery, to communication of vital intelligence (Lucky & Eisenberg, 2006).

For the period 2011 to 2016, several significant changes occurred in the Philippine telecom industry. Mobile density increased over the five year period from 99% to 124%, aided by: (1) sustained annual capital expenditure (capex) of the telecom companies (telcos) of over 20% of service revenue for the period 2014 to 2015; and (2) innovative buffet pricing and product bundles to attract and retain customers. Though telecom prices decreased and quality improved, compared to other countries, prices remain moderately high, serving as a barrier to usage, and quality was still relatively poorer. Regulators, who can influence these prices and quality, and overall industry competition, were passive and behaved administratively, and were not pro-active policy formulators and implementers (Patalinghug & de Llanto, 2005).

This paper aims to assess this condition existing in the Philippine telecom industry using the Structure-Conduct-Performance (SCP) framework. The SCP approach suggests that the industry's performance, the success of an industry in producing benefits for consumers, depends on the conduct, behavior of sellers and buyers, which depends on the structure of the market. The structure, in turn, depends on basic conditions, such as technology and demand for a product. Typically, structure is summarized by the number of firms, or some other measure of the distribution of firms, such as the relative market shares of the largest firms. Developed by Edward Mason in the 1930s, the SCP approach revolutionized the study of industrial organization (IO) by introducing the use of inferences from microeconomic analysis (Perloff, Karp, & Golan, 2007).

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Despite its ground-breaking contribution, SCP received criticism for being descriptive rather than theoretical, as the nature of these connections is usually not explained in detail (Perloff et al., 2007). Furthermore, it was criticized for being static, deterministic, and limited in its view: (1) static, given its cross-sectional perspective in explaining the industry performance that result from a given industry structure; (2) deterministic, as it took industry structure as exogenously given, and firms having no latitude to alter the state of affairs; and (3) limited, with only a relatively few, critical aspects of structure explored, such as firm concentration and entry barriers (Porter, 1981).

These criticisms on the SCP approach spurred the expansion of the IO field. Criticism on SCP being empirically focused encouraged the growth in IO theoretical research, with economists developing price-theory models, analyzing industry with emphasis on monopolistic competition, game theory, or transaction costs (Perloff et al., 2007). Also, the criticisms on SCP being static, deterministic, and limited stimulated the development of: dynamic models of industry evolution; feedback effects of firm conduct (strategy) on market structure; and a richer set of elements (e.g., exit barriers, vertical bargaining relationship with suppliers and buyers) of industry structure important to competitive interaction being investigated (Porter, 1981). In the end, the conventional SCP approach uncovered many stable, robust, and empirical regularities; it also taught much about how markets look (Schmalensee, 1989).

This paper's use of the SCP approach follows from Bain's pioneering empirical tradition of relating aspects of industry structure to conduct and performance (usually profitability), and the other hundreds of studies that his approach encouraged, that forms the backbone of IO literature (Porter, 1981). SCP is ideal given the limited time frame of this paper's data set, 2011 to 2016.

The definition of the market of interest¹ is key in the SCP approach. The markets of interest for the telecom industry are the mobile-cellular and fixed line operators, providing voice and data (broadband) services². Galla (2016) asserted that the Philippines telecom industry is currently heavily dominated by mobile communication, with the players shifting their emphasis from legacy telecoms of voice and short messaging, to data services, and internet connectivity. To the extent data is available, discussion is further subdivided to cover the prepaid and the postpaid markets. Due to the level of data disclosed by the telcos, the market cannot be subdivided into retail and wholesale. Lastly, the geographic scope of the market is national.

This paper divides into 5 sections: Section 2 covers Structure, Section 3 Conduct, and Section 4 Performance. Lastly, Section 5 concludes this paper.

1.1 Evolution of the Philippine Telecom Industry

The Philippines' telecom industry expanded rapidly since its liberalization in the 1980s, when consumers waited up to 10 years for a landline connection and service quality was generally poor. A series of telecom reform from 1989 to 1995³ opened up the industry, and saw an expansion in the number of players. This eroded the dominant operator, Philippine Long Distance and Telephone Company's (PLDT) market share, particularly during the past decade, as consumer preferences shifted increasingly towards mobile broadband and digital services, disrupting traditional voice and SMS streams (Oxford Business Group, 2017). However, the fragmentation and lack of economies of

¹ Telecom industry encompasses multiple service providers, including telephone companies, cable system operators, internet service providers, wireless carriers, and satellite operators. It also now includes software-based applications with a communications emphasis, and intermediate layers of software incorporated into end-to-end communication services. It also includes suppliers of telecoms equipment, and software products sold directly to consumers, and also to service providers, as well as the telecoms service providers (Lucky & Eisenberg, 2006).

² They also provide interconnection services, but this service is not discussed in this paper.

³ In 1989, the NTC awarded two international gateway facility license to two non-PLDT players. In 1992, Congress granted franchises to the following mobile carriers: Piltel, Smart, Globe, Islacom, and Exotelcom. In 1993, then President Ramos signed two EOs: 1) EO 59 mandated the compulsory interconnection of authorized public telecoms carriers in order to create a universally accessible, and fully integrated nationwide telecoms network; and 2) EO 109 required all mobile-cellular operators to install at least 400,000 telephone lines within three years, and International Gateway Facility (IGF) operators to put up 300,000 lines within five years. In 1995, RA 7923 The Public Telecommunications Act was passed; it sought to promote and govern the development of the telecoms industry, and to improve the delivery of telecoms services.

scales of the service area scheme led to a series of consolidations and merger since the turn of the century, and the current duopolistic state with an industry Herfindahl-Hirschman Index (HHI)⁴ of 5147.

PLDT in 2000 acquired and consolidated the wireless companies Smart and Piltel, effectively complementing its existing fixed line businesses. In 2008, PLDT, through Smart, purchased Connectivity Unlimited Resource Enterprise Inc. (CURE), one of the four recipients of 3G licenses awarded by the National Telecommunications Commission (NTC) in 2005. In October 2011, PLDT acquired 99.4% of the outstanding common stock of Digital Telecommunications Philippines, Inc. (Digitel), which owns the Sun Cellular brand, giving it control then of over two-thirds of the industry subscribers.

Meanwhile, Globe in 2001 acquired Islacom (now Innove). In October 2013, Globe acquired 38% interest in Bayantel, and by July 2015 owned 98.6% of the company after a debt-to-equity scheme. In May 2013, ABS-CBN Convergence, Inc. ("ABS-C", formerly Multimedia Telephony, Inc.) announced the launch of its mobile brand – ABS-CBN Mobile; it is supported through a network sharing agreement with Globe, wherein the latter provides network capacity and coverage to ABS-C on a nationwide basis.

In 2008, San Miguel Corporation (SMC) in partnership with Qatar Telecom, bought interests in Liberty Telecom Holdings, Inc., and announced plans to enter the mobile and broadband businesses. In 2010, SMC acquired 100% of Bell Telecommunication Philippines, Inc. Also in 2010, SMC acquired 40% of Eastern Telecommunications, and by 2011 owned 77.7% of the company.

In May 2016, PLDT and Globe announced that they were acquiring a 50% stake each in the telecom business of SMC, worth a total of PhP 69.1 billion. This transaction was the subject of legal battle, as PLDT and Globe insisted that the deal was already "deemed approved" when they notified the Philippine Competition Commission (PCC) of the transaction; they cited PCC memorandum circulars as support. Meanwhile, the PCC said the law precedes any circular, and the law empowered them to review a deal and its implications (Jiao, 2016). At the end of May 2017, PLDT and Globe paid the last tranche of payment, despite the PCC's insistence that it should hold off pending final courts' rulings (Montealegre, 2017). In mid-October 2017, the Court of Appeals (CA) decided that the acquisition was considered deemed approved by operation of law, and should be recognized by the PCC (Torres-Tupas, 2017).

2 Structure

Market structure is often characterized by the number and relative size of the firms (industry concentration), and the ability of firms to enter the industry (barriers to entry). For the former, the expectation is that firms exercise more market power if there is only one, or a few firms, or if a small number of firms are very large relative to the remaining firms. For the latter, in industries with significant long-run entry barriers, prices can remain elevated above competitive levels.

Shepherd (2004) posited that to be genuinely effective, competition needs to have intense, sustained mutual pressure among numerous competitors, with no monopoly or collusion. For a high probability of good results, the practical basis is: 1) at least 5 "reasonably comparable" rivals; that number may vary slightly with the situation, but the need is for "enough" strong rivals; 2) none of those firms must hold a dominant position, with 40% of the market or more; and 3) entry by new competitors must be easy to do.

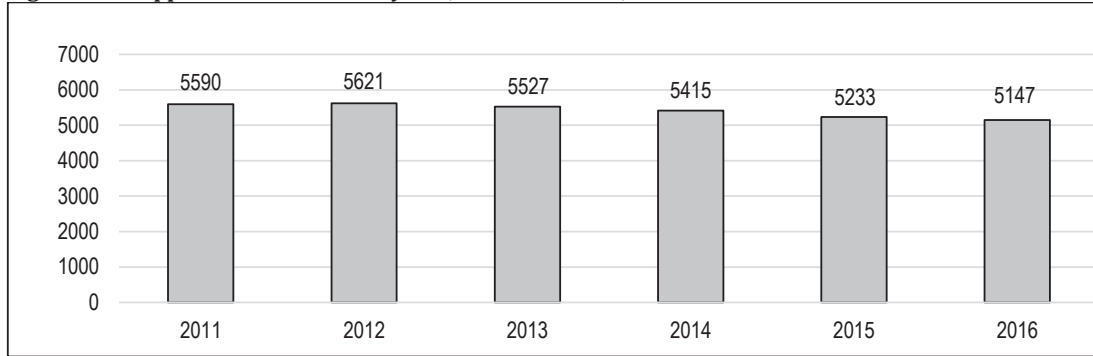
The Philippine telecom industry shows both high industry concentration (duopoly) and significant barriers to entry (regulatory, legal, economic, and possible strategic actions from incumbents).

⁴ Herfindahl-Hirschman Index (HHI), a measure of industry concentration, is the sum of the square of the share of each firm in the market. In the United States, the U.S. Department of Justice considers a market with an HHI of less than 1,500 to be a competitive marketplace, an HHI of 1,500 to 2,500 to be a moderately concentrated marketplace, and an HHI of 2,500 or greater to be a highly concentrated marketplace ("Herfindahl-Hirschman Index - HHI", 2015).

2.1 Industry Concentration

The Philippine telecom market is highly concentrated. Two major telcos, PLDT and Globe, comprise almost 100% of the market, with an industry HHI of 5147, based on revenues as of 2016. This industry concentration has remained over the 5,000 level for the period 2011-2016 (See Figure 1).

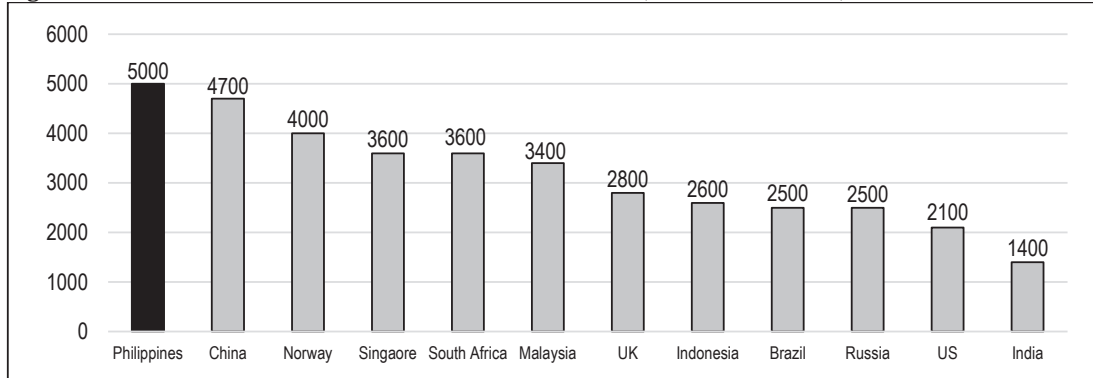
Figure 1. Philippine Telecom Industry HHI, Revenue-Based, 2011 To 2016



Source: PLDT and Globe, 2011-2016

This fairly high level of industry concentration is also seen in the telecom industry in other countries, particularly in the mobile-cellular sub-market. In the following countries, the three largest players have the following market shares: Canada (96%), UK (73.2%), US (81.1%), and Germany (86.7%). However, these concentration levels are not as high as that of the Philippines; furthermore, a fourth wireless operator with greater than 10% market share exists in the UK, US, and Germany (SECOR Consulting, 2010). In fact, the Philippines is one of the more concentrated markets (EY, 2014; See Figure 2).

Figure 2. Selected Countries Mobile-Cellular Sub-Market HHI, Subscriber-Based, 2014



Source: EY, 2014

PLDT dominated the telecom market, for the period 2011 to 2016, for both service revenues (See Table 1 and 2), and subscriber base (See Table 3). At the end of 2016, in terms of service revenue, PLDT's market share was at 59%, below though its five-year average (2011 to 2016) of 64% market share (See Table 2). PLDT dominated all sub-markets in terms of service revenue, for the period 2011 to 2016, except for mobile data & others in 2015 and 2016, and broadband in 2014 (See Table 2). Meanwhile, in terms of subscriber base, PLDT and Globe equally shared the mobile sub-market in 2016, but PLDT had the larger market share in both the broadband and fixed line sub-markets (See Table 3).

Table 1. PLDT and Globe Service Revenue, 2011 Constant Terms⁽¹⁾, in PhP Billion, 2011 to 2016

	Globe						PLDT ⁽²⁾					
	2011	2012	2013	2014	2015	2016	2011	2012	2013	2014	2015	2016
Service Revenue	78	82	88	94	112	117	159	171	173	170	174	165
Mobile	64	66	71	74	90	90	102	113	114	109	109	98
Voice	31	32	32	33	37	33	44	49	50	49	45	36
SMS	28	26	28	28	26	23	44	46	44	39	37	32
Mobile Data & Others	5	8	11	14	27	34	14	17	19	21	26	30
Fixed Line & Broadband	14	15	17	20	22	27	57	58	59	61	65	67
Voice	7	9	10	12	11	14	10	11	12	10	12	15
Broadband	4	4	5	5	8	10	15	15	16	20	23	24
Fixed Data & Others	3	3	3	3	3	4	33	32	31	31	30	29

Source: PLDT and Globe, 2011-2016; Philippine Statistics Authority, n.d.

(1) Nominal values converted to real values at constant 2011 prices, using Wholesale Price Index – all items

(2) PLDT revenues are gross revenues by business segments. Inter-segment transactions are not deducted from these numbers, because this amount is presented as a total number in the company's annual reports, and the amount is not broken down by business segments.

Table 2. PLDT and Globe Service Revenue Market Share, 2011 Constant Terms, in Percent, 2011 to 2016

	Globe						PLDT					
	2011	2012	2013	2014	2015	2016	2011	2012	2013	2014	2015	2016
Service Revenue	33	32	34	36	39	41	67	68	66	64	61	59
Mobile	38	37	38	40	45	48	62	63	62	60	55	52
Mobile Voice	41	40	39	40	45	48	59	60	61	60	55	52
SMS	39	36	39	41	41	41	61	64	61	59	59	59
Mobile Data & Others	25	32	37	40	51	53	75	68	63	60	49	47
Fixed Line & Broadband	20	21	23	25	26	29	80	79	77	75	74	71
Fixed Voice	8	8	7	8	10	11	92	92	93	92	90	89
Broadband	44	44	46	54	48	49	56	56	54	46	52	51
Fixed Data & Others	20	21	23	21	25	29	80	79	77	79	75	71

Source: PLDT and Globe, 2011-2016

Table 3. PLDT and Globe Subscriber Market Share, in Percent, 2011 to 2016

	Globe						PLDT					
	2011	2012	2013	2014	2015	2016	2011	2012	2013	2014	2015	2016
Mobile⁽¹⁾	32	32	35	37	45⁽²⁾	50⁽¹⁾	68	68⁽³⁾	65	61	55	50
Broadband⁽⁴⁾	33	56	59	65	43	43	67	44	41	35	57	57
Wireless	35	76	79	88	49	67	65	24	21	12	51	33
Wireline	25	27	28	27	40	33	75	73	72	73	60	67
Fixed Line⁽⁵⁾	24	26	18	22	33⁽⁶⁾	34	76	74	64	64	67	66

Source: PLDT and Globe, 2011-2016; NTC

Refer to Appendix, Table 12 to 14 for further details

(1) ABS-CBN Convergence has about 1% market share beginning 2014.

(2) From 2015 onwards, subscribers have been restated to reflect the change in the presentation of fully mobile- broadband subscribers to be part of the mobile business; it was reported under broadband previously.

(3) From 2012 onwards, subscribers have been restated to reflect mobile and Home broadband (wireless) subscribers to be part of the mobile business; it was reported under broadband previously.

(4) For Globe, from 2015 onwards, subscribers have been restated to reflect the change in the presentation of fully mobile- broadband subscribers to be part of the mobile business; it was reported under broadband previously. Meanwhile, for PLDT, from 2012 onwards, subscribers have been restated to reflect mobile and Home broadband (wireless) subscribers to be part of the mobile business; it was reported under broadband previously).

(5) Market share does not amount to 100%; Bayantel, ETPI/TTPI and other LECs have the remaining market share.

(6) Globe acquired majority of Bayantel in 2015, and its fixed line subscribers were added to that of Globe in 2015.

In the mobile sub-market, PLDT had a market share of 52% in terms of service revenue (See Table 2), and 50% in terms of subscribers (See Table 3), as of the end of 2016. PLDT gradually lost market share to Globe over the last five years, driven by its declining market share in the prepaid market, which comprises 96% of the total market. Globe's service revenue market share had historically been greater than its subscriber market share, reflective of higher spending subscribers; but this trend reversed in 2016 with subscriber market share now greater than service revenue market share. PLDT showed the reverse pattern with subscriber market share historically greater than service revenue market share, reflective of a lower spending subscribers; this trend reverse in 2016 with service revenue market share now greater than subscriber market share. Overall mobile density, percentage of mobile subscribers over total Philippine population, increased from 99% in 2011 to 124% in 2016, with subscribers owning multiple SIM cards.

In the broadband sub-market, PLDT had a market share of 51% in terms of service revenue (See Table 2), and 57% in terms of subscribers (See Table 3), as of the end of 2016. Further historical comparison of broadband revenues and subscribers is difficult to undertake, given the 2016 accounting adjustments done by both companies⁵.

In the fixed line sub-market, PLDT dominated the market, albeit at a declining trend, over the period 2011 to 2016; the decline in market share was a significantly much slower than the market share decline in the mobile sub-market. Market share stood at 80% in terms of service revenue⁶ (See Table 2), and 66% in terms of subscriber base (Table 3), as of the end of 2016. PLDT service revenue market share was always greater than its subscriber market share, unlike Globe, reflective of a higher spending subscriber. Unlike mobile density, fixed line density had remained steady at a low level, not surpassing the 4% level over 2011 to 2016 period.

2.2 Barriers to Entry

The telecom industry poses significant barriers to new entrants: regulatory, legal, economic, and possible strategic actions from incumbents that increases entrant's costs. A Congressional franchise and a NTC license to operate, spectrum allocation⁷, and large fixed and sunk capital investments are long-term barriers to entry. Once these hurdles are surmounted, short-term challenges present themselves, such as decentralized local government unit (LGU) regulations for permits and taxes, and possible strategic actions from incumbents (on access, interconnection, product lock-in, etc.) that increase entrant's costs (Hauge & Jamison, 2009). Section 3 on Conduct gives further details on incumbents' behavior. Thus, the Philippines lags behind in terms of contestability, or the freedom of market entry and exit; contestability is important as studies have shown that even the threat of a new entrant improves the quality of service and pricing of current market players (Baumol, 1982).

Regulation is the main lever by which governments can influence competition in the telecom industry, increasing or decreasing the barriers to entry. The NTC, an attached agency of the newly formed Department of Information and Communications Technology (DICT), is the regulatory body in the Philippines. Its jurisdiction covers licensing, pricing, adoption of standards of reliability and interoperability, frequency allocation and assessment, dispute resolution, and consumer protection. As a quasi-judicial body, the NTC's orders and decisions are final, and can only be appealed with the CA and the Supreme Court (SC). However, it operates predominantly as a passive licensing and administrative agency, rather than a pro-active policy formulating and implementing body (Patalinghug & de Llanto, 2005).

⁵ Both companies restated how they accounted for broadband revenues and subscribers, reallocating fully mobile-broadband subscribers to be part of the mobile business. PLDT readjusted subscriber data as far back as 2012, but revenues only as far back as 2014. Meanwhile, Globe readjusted both subscriber and revenue data as far back only as 2015.

⁶ Market share of fixed line only comprises of fixed voice and fixed data & others; broadband is excluded in the computation.

⁷ Radio frequency or spectrum is a scarce natural resource that is granted for telecoms and broadcasting purposes. The operator must first obtain a franchise from the Philippine Congress to engage in a certain type of telecom services, followed by a license to operate from the NTC, called the Certificate of Public Convenience and Necessity (CPCN).

The requirement for a Congressional franchise for a service provider is unique to the Philippines. The cumbersome and protracted process of securing a franchise from Congress, apart from separate licenses and permits to operate from the regulator, various national government agencies, and LGUs, can be seen as a disincentive for new players to invest (Mirandilla-Santos, 2016).

The availability of spectrum may be the current largest single barrier to entry. The PLDT and Globe Php 69.1 billion purchases of SMC's telecom assets leaves less than a quarter of spectrum available for a third entrant; Globe claims this is sufficient to enable a future telecom player (Genio, 2016). This transaction was the subject of legal battle between PLDT and Globe versus the PCC; in mid-October 2017, the Court of Appeals (CA) decided that the acquisition was considered deemed approved by operation of law, and should be recognized by the PCC (Torres-Tupas, 2017).

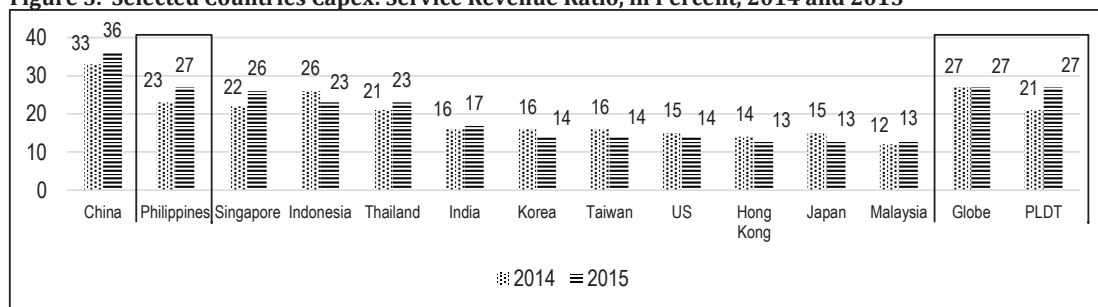
Furthermore, there are other issues in the current regulatory framework that impacts competition overall. One, interconnection agreements of telcos are not made available to the public on the argument that they are trade secrets; and the NTC is not forcing the telcos to do so. Two, the NTC has not enforced unbundled access to network elements since it has not yet established rates, nor the settling procedures; they claim complexity of the process, and assert that they lack the power to compel the telcos to submit the necessary information. Three, cross-subsidization of unprofitable local exchange areas to meet universal service goals is explicitly allowed in the Public Telecommunications Policy Act (Republic Act (RA) No. 7925); whether the benefit of universal service outweighs the anticompetitive impact of cross-subsidies is for debate. Four and last, the NTC is unable to require number portability⁸ in the face of strong opposition from incumbent operators (Habito, 2016a; USAID, 2016).

Economically, telcos require massive capital investments, implying high barriers to entry and exit, especially since a significant portion of the investment incurred is fixed and sunk. It is also characterized by a network of switches, transmission links, and terminal or distribution points that give rise to economies of scale and scope. Furthermore, the sector enjoys network externalities, with the benefits to telcos increasing with the number of users that they are able to reach. Granted all these, perfect competition is unlikely in the sector, but neither is it a natural monopoly. Being multi-product in nature, different portions of the telecom network can be opened to varying degrees of competition (Seráfica, 2001).

Network infrastructure alone for a newcomer can cost as much as USD 2.5 billion, as quoted from Globe CEO Ernest Cu (Waring, 2015). The NTC once estimated the cost to bring 2 Mbps internet connection to the entire country at Php 800 billion (Habito, 2016b). With a constitutional limit of 40% on foreign ownership, this effectively limits the number of companies that can inject fresh new capital, bring in state-of-the-art technology, and compete in the market.

In addition to the large up-front capital costs, large annual capex are required to continually maintain, upgrade, and expand the network infrastructure. Today, Philippine telcos continue to invest in major infrastructure programs to improve the overall broadband service in the country, and this is expected to continue even beyond 2020 (Genio, 2016). Figure 3 shows that capex for 2014 and 2015 amounted to 24% and 27%, respectively, of the telcos' service revenues; in 2016, PLDT and Globe combined spent Php277 billion in capex, or an average of 29% its service revenue.

Figure 3. Selected Countries Capex: Service Revenue Ratio, in Percent, 2014 and 2015



Source: Genio, 2016; PLDT and Globe, 2011-2015

⁸ Ability of consumers to change from one provider to another without changing numbers

Once these long-term barriers are surmounted, the roll out of network encounters issues on permits, clearances, right of way, site acquisition, and broad discretion levels of permitting agencies. On the LGU level, bureaucratic and bribery issues, arbitrary fees for permits, and clearances are reported. On the national level, national government agencies also require telcos to secure clearances for various purposes. Apart from government, exclusive villages and homeowners' associations may give telcos a difficult time to set up in their area (Mirandilla-Santos, 2016).

The DICT has taken steps to address the LGU level constraints⁹. It has drafted an Executive Order (EO), to be signed by President Duterte, mandating that LGUs must approve applications for the construction, installation, and operation of telecom facilities within seven days from when these are requested. An additional two days may be given to the Local Chief Executive to decide whether or not the permit shall be approved. This is a significant reduction from the current average of eight months. In addition, the DICT is working on an initiative to issue a Joint Memorandum Circulars with LGUs to standardize fees, and speed up permit processing (Abellanosa, 2017).

Lastly, incumbent telcos can engage in strategic non-cooperative actions, with past instances showing that they have. On the operations side, this may be in the form of delayed, insufficient or expensive¹⁰ interconnection, unequal access settlements, or dispute on revenue-sharing arrangements (Patalinghug & de Llanto, 2005). On the marketing side, this may be in the form of customer product/contract lock-in, promotions that effectively temporarily drop prices, or further increase in advertising intensity; in terms of advertising, telcos' expenditures are one of the highest (Nielsen, 2016).

3 Conduct

Conduct refers to how players respond to market incentives, and competitive pressures. Key indicators of conduct are relative pricing and product offering, and service quality.

The market structure strongly influences the conduct of market players. Given the telecom industry's duopoly, PLDT's and Globe's conduct involve strategic considerations; each firm must consider how their actions affect their rivals, and how they are likely to react. As such, it is typical to see both companies mirror each other in terms of their actions.

The telcos employ price discrimination, as evidenced by their complex buffet pricing and bundled products. Prices, reflected by average revenue per user (ARPU), have dropped over the years by as much as 8% per annum for the period 2011-2016 for some mobile-cellular brands, to one of the lowest ARPU levels in the world (GSMA, 2014; Statista, n.d.). Despite these, prices as a percentage of gross national income (GNI)¹¹ per capita for information and communication technologies (ICT) services are at best on par, or above regional averages, depending on the particular ICT service¹². These higher prices effectively serve as a barrier to usage (ITU, 2016). Churn also remains elevated, at one of the highest level in the world (GSMA, 2104), challenging telcos to compete as well on customer retention, and innovation (on tariff structure, product and services). Meanwhile, in terms of service quality, the Philippines ranks low in connection speed (Akamai, 2017; OpenSignal, 2017).

Competitive conduct can quickly change if the number of incumbents increase, as shown by a study of Bresnahan & Reiss (1991). Using data on geographically isolated monopolies, duopolies, and oligopolies, they study the relationship between the number of firms in a market, market size, and competition. They find out that in markets with five or fewer incumbents, almost all variation in competitive conduct occurs with the entry of the second or third firm. The Philippines, however,

⁹ The EO and DICT plans were presented in the Philippine Telecom Summit held on March 2017.

¹⁰ Wholesale pricing and access charges are not regulated by the NTC (Mirandilla-Santos, 2016).

¹¹ GNI = Gross domestic product + factor incomes earned by foreign residents – income earned in the domestic economy by non-residents.

¹² Philippine mobile-cellular services cost 3.4% of GNI per capita, in-line with the Asia-Pacific regional average; fixed-broadband services cost 7.5% of GNI per capita, higher than half of the countries in the region that offer prices below 5% of GNI per capita; prepaid handset-based mobile-broadband plans cost 1.5% of GNI per capita, similar to the majority of countries in the region that price less than 5% of GNI per capita; and postpaid computer-based mobile-broadband plans cost 6.7% of GNI per capita, 4.5x higher than the prepaid handset option (ITU, 2016).

over the last decade has been on a path of consolidation, increasing industry concentration through a series of mergers and acquisitions (M&A).

3.1 Pricing and Product Offering

PLDT's and Globe's pricing and product offerings are directionally similar, despite the many, and at times complex buffet pricing and bundled products they offer (See Tables 4 to 7). Despite the competitive pricing, which has resulted in declining ARPUs over the years of as much as 8% per annum for some brands, telecom prices in the Philippines remains moderately high, serving as a barrier to usage. As per Tirole (1993), the observation of a market price speaks little about the competitiveness of the corresponding industry, unless one can observe prices in industries with similar cost structures (for instance, different geographical markets); or can observe temporal pattern of the industry price; or can accurately measure firm's marginal costs.

Offering several different plans and options allows the telcos to practice price discrimination, charging different prices to different customers. In particular, telcos practice second-degree price discrimination, charging different prices per unit for different quantities of the same service. Price discrimination is a means of capturing consumer surplus, and transferring it to the telcos. By offering different plans and options, the customers choose the plan that best matches their need, effectively sorting themselves into groups which are relatively homogeneous in terms of demand (Rubinfeld & Pindyck, 2013).

Telcos' offerings are nearly identical, both on landline and broadband (See Tables 4 and 5), and mobile (See Tables 6 and 7). Telcos have to continually come up with new tariff plans to attract more customers, and maintain client base (Cayanan & Suan, 2014), particularly in the mobile-cellular sub-segment. A key area is flexibility, and both telcos focus on customization¹³. Mobile users favor prepaid bundles (96% of total mobile subscribers) over postpaid contract plans; Tables 6 and 7 show the many prepaid offering of just two of the brands in the market. Multiple SIM ownership is common, and users regularly swap SIMs (or even own dual-SIM handsets) in order to take advantage of the best deals and promotions regularly refreshed by the operators (GSMA, 2014).

Table 4. PLDT and Globe Postpaid Home Wireless Landline

		PLDT	Globe
Monthly Service Fee (PhP)		600	450
Local calls (to all networks)		Unlimited	Unlimited
National long distance calls (PhP/minute)	To same network	1.00	Unlimited
	To other network	5.10	7.50
International long distance (USD/minute)		0.40	0.40
Calls to mobile (PhP/minute)	To same network	6.50	6.50
	To other networks	6.50	7.50
SMS (PhP/SMS)	Free	120 SMS	n.a.
	Domestic	1.00	1.00
	International	5.00	n.a.
Lock-up period (months)		12	12
One-time charge (PhP)		100 Sim activation	1,000 handset

Source: PLDT and Globe websites, as of June 2017

¹³ Bundles can be designed to suit the consumers' budget, lifestyle and needs. Type, number of call minutes and text, data allowance, and duration of the bundle (day/s), month/s)) are parameters that can be changed.

Table 5. PLDT and Globe Postpaid Home Fixed Line plus DSL

	PLDT	Globe
	Speedster Plan 1299	Broadband Plan 1299
Maximum speed (Mbps)	10	10
Monthly volume allowance (GB)	100	50 (LTE) /100 (DSL)
Others	n.a.	Free HOOQ, Netflix, NBA content for 6 months + Free WiFi router
Phone	Landline	FREE Landline with Unlimited Calls to Globe/TM
One-time fee (PhP)	2,300 (monthly terms available)	2,200 for phone activation and DSL installation (monthly terms available)

Source: PLDT and Globe websites, as of June 2017

Table 6. TM Prepaid Offers

Type	Price (PhP)	Description
Call		
Unlitawag	15/1 day	Unlimited calls to TM/Globe
Text		
Sulitxt5	5/1 day	25 texts to TM/Globe
Txt5	5/1 day	Add to Unlitawag15, unlimited text to TM/Globe
Txt10	10/2 days	Add to Unlitawag15, unlimited text to TM/Globe
UnliAllNet10	10/1 day	Unlimited texts to all network
Dagdagtxt	5/1 day	Add to Unlitawag15, 100 all net texts
AstigTxt30	30/5 days	Unlimited texts to TM/Globe
Combo		
AllIn20	20/2 days	Unlimited calls to TM/Globe + Unlimited texts to all networks + Free 100 MB of Facebook
ComboAll10	10/1 day	Unlimited call to TM/Globe + Unlimited text to TM/Globe + 50 all net texts
ComboAll 15	15/2 days	Unlimited call to TM/Globe + Unlimited text to TM/Globe + 50 all net texts
ComboAll 20	20/3 days	Unlimited call to TM/Globe + Unlimited text to TM/Globe + 50 all net texts
Combo 15	15/2 days	120-minute calls to TM/Globe + Unlimited all-net texts
Combo 20	20/3 days	120-minute calls to TM/Globe + Unlimited all-net texts
Mobile Internet		
Net 2	2 for each product/1 day	musical.ly, You Tube, Clash of Clans, Google, Twitter, Instagram, WeChat
Net 5	5 or each product/2 days	musical.ly, You Tube, Clash of Clans, Google
GoSurf 10	10/1 day	40 MB allocation
GoSurf 15	15/2 days	40 MB allocation + 30 MB musical.ly
GoSurf 50	50/3 days	1 GB allocation + 300 MB for app of choice
GoSurf 299	299/30 days	1.5 GB allocation + 1 GB for app of choice
GoSurf 599	599/30 days	4 GB allocation + 1 GB for app of choice
GoSurf 999	999/30 days	8 GB allocation + 1 GB for app of choice
SuperSurf50	20/1 day	Unlimited mobile internet
SuperSurf200	200/5 days	Unlimited mobile internet

Source: TM website, as of June 2017

Table 7. TNT Prepaid Offers

Type	Price (PhP)	Description
<u>Call and text</u>		
Gaan Text 10	10/1 day	Unlimited text to all
Gaan Text 20	20/2 days	Unlimited text to all
UAT30	30/5 days	Unlimited text to all
UA300	300/30 days	Unlimited text to all + 300 minutes of calls to TNT/Smart/Sun
UTP150	150/30 days	Unlimited text + 150 minutes of calls to TNT/Smart/Sun + 150 texts to other networks
<u>Call, text and data</u>		
AM 15	15/1 day	Unlimited text to all + 60 minutes of calls to TNT/Smart/Sun + 100MB Facebook, Twitter, Viber, Clash of Clans, and Dubsplash
Super Combo 20	20/2 days	Unlimited text to TNT/Smart/Sun + Unlimited call to TNT/Smart/Sun + 50MB of Tropa Apps
Super Combo 30	30/3 days	Unlimited text to all + 100 minutes of calls to TNT/Smart/Sun + 100MB of Tropa Apps
UnliTalk & Text 20	20/1 days	Unlimited text to all + Unlimited call to TNT/Smart/Sun + 100MB of Tropa Apps
UnliTalk & Text 100	100/7 days	Unlimited text to all + Unlimited call to TNT/Smart/Sun + 100MB of Tropa Apps
UnliText Extra 20	30/3 days	Unlimited text + 20 minutes of calls to TNT/Smart/Sun + 50 texts to all
UA60	60/7 days	Unlimited text to all + 150 minutes of calls to TNT/Smart/Sun + 150MB of Tropa Apps
<u>Tropa Apps</u>		
Clash of Clans 10, Facebook 10, Twitter 10, Viber 10, Wattpad 10, We Chat 10, Mobile Legends 10, Instagram 10	10/3 days	Access to selected Apps
Class of Clans 99, Facebook 99, YouTube99	99/30 days	1.5 GB access to chosen Apps
YouTube 10	10/3 days	100 MB of access
<u>Internet Access</u>		
All Day 20	20/1 days	Access to sites and apps except video streaming and downloading
SurfMax 299	299/7 days	Access to all sites, apps, and downloads up to 800 MB per day
All Day 30	30/2 days	All day access to sites and apps except video streaming and downloading,
GaanSurf 10	10/1 day	50MB of internet access + 100MB of YouTube, Mobile Legends, and Facebook
GaanSurf 15	15/2 days	100MB of internet access + 100MB of YouTube, Mobile Legends, and Facebook,
GaanSurf 20	20/3 days	200MB of internet access + 100MB of YouTube, Mobile Legends, and Facebook
GaanSurf 30	30/5 days	300MB of internet access + 200MB of YouTube, Mobile Legends, and Facebook

Source: TNT website, as of June 2017

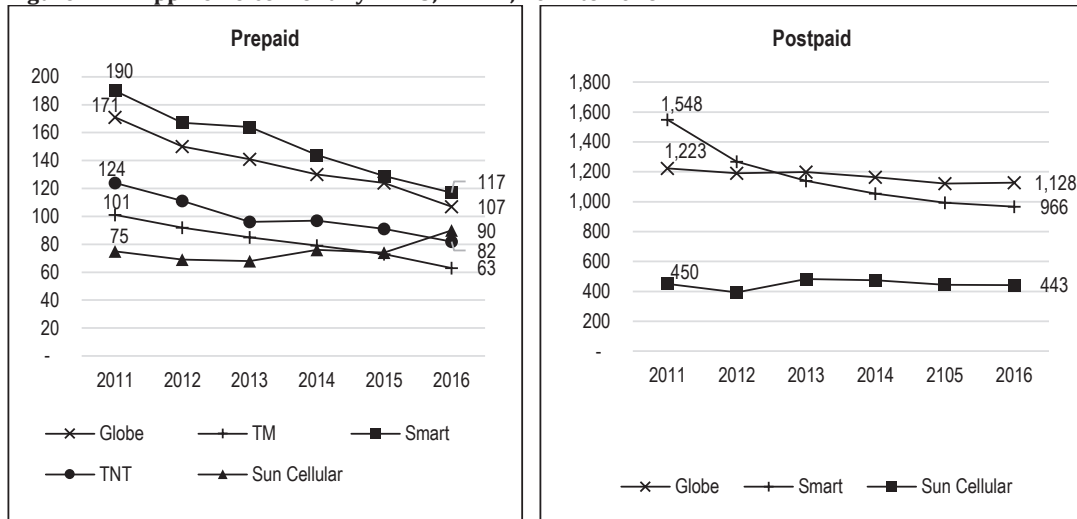
The resulting pricing behavior of telcos are complex due to their bundling of products, product strategies (e.g., entry discounts, device inclusion), and product differentiation (in terms of service, quality, duration, usage, and bandwidth). Mobile ARPUs¹⁴ have been declining to one of the lowest

¹⁴ ARPU is the outcome of price and product mix. It offers the closest metric to actual observed price. It harmonizes the various prices and product offering.

levels in the world (GSMA, 2014) (See Figure 4). Though monthly postpaid ARPU in 2015 is comparable to the range of ARPUs in developed country, postpaid comprises only 4% of the market as of end 2016; prepaid monthly ARPUs is less than USD3 (See Figure 5).

Benchmarking prices among selected Asia-Pacific countries show that the Philippines has one of the highest prices across all telecom services (See Figure 6), despite the declining ARPUs in mobile services. In all telecom services, except mobile-broadband prepaid handset-based, the Philippines has consistently the highest price as a percent of GNI per capita. Note that all the Asia-Pacific countries, except for Australia, Japan and New Zealand, are classified as developing countries (ITU, 2016)¹⁵. Narrowing the benchmarking of prices to just the neighboring ASEAN countries (Indonesia, Malaysia, Thailand and Vietnam, ex-Singapore), the Philippines' prices are still the highest as a percent of GNI per capita except for fixed broadband.

Figure 4. Philippine Telco Monthly ARPU, in PhP, 2011 to 2016

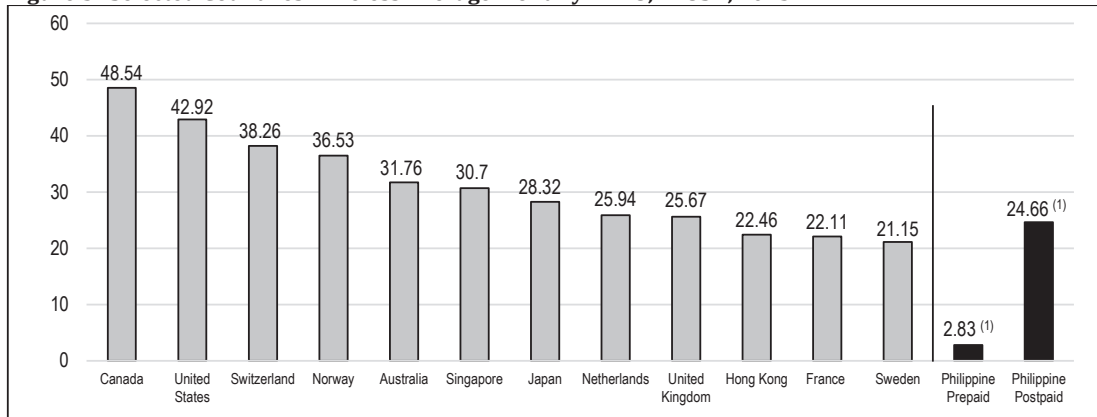


Source: PLDT and Globe, 2011-2016

- (1) Smart, TNT and Sun Cellular are PLDT brands, while Globe and TM are Globe brands.
- (2) PLDT computes gross monthly ARPU by dividing gross mobile-cellular service revenues for the month, gross of discounts, allocated content provider costs, and interconnection income, but excluding inbound roaming revenues, by the average number of subscribers in the month. Meanwhile, Globe computes ARPU by dividing recurring gross service revenues (gross of interconnect expenses) segment, by the average number of the segment's subscribers, and then dividing the quotient by the number of months in the period.
- (3) Globe's 2015 and 2016 subscribers have been restated to reflect the change in the presentation of fully mobile-broadband subscribers to be part of the mobile business; it was reported under broadband previously. 2015 and 2016 ARPUs have been restated as well to reflect the said changes.

¹⁵ ITU follows the country classification of the United Nations (UN). It acknowledges that "... the definition of developing countries used in UN data includes a number of high-income economies, including some at the very top of the global income distribution ..." (ITU, 2015, p. 12); and that "... the developing countries category includes countries at very different levels of both economic and ICT development" (ITU, 2015, p. 57).

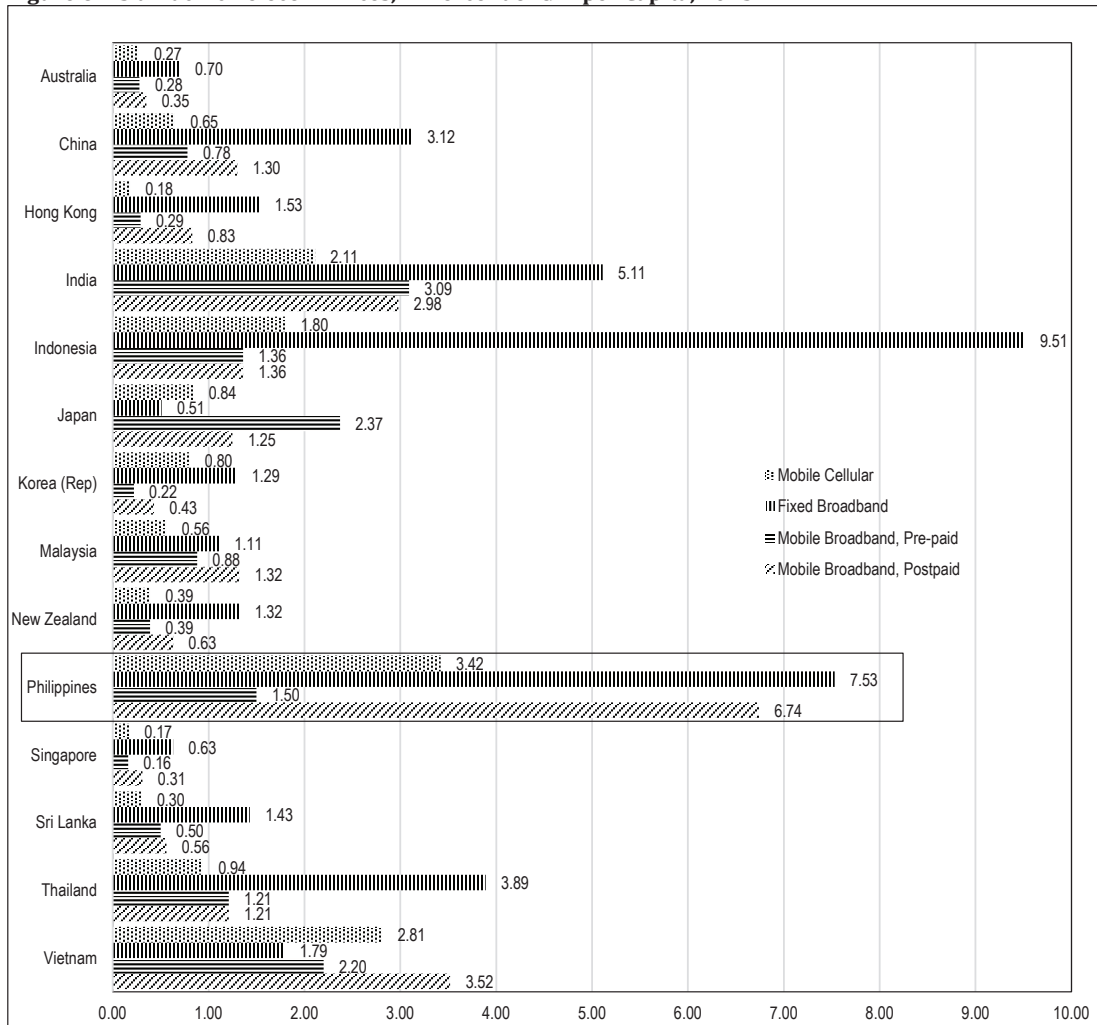
Figure 5. Selected Countries Wireless Average Monthly ARPU, in USD, 2015



Source: Statista, n.d.

(1) Based on the highest ARPU for the year, converted to USD using 2015 average PhP: USD exchange rate = 45.50:1 (BSP, 2017).

Figure 6. Asia-Pacific Telecom Prices, in Percent of GNI per Capita, 2015



Source: ITU, 2016

All four telecom sub-baskets showed improvement in price as a percentage of GNI per capita in 2015 versus 2014 (See Table 8). The price improvement was not enough though for the Philippines to move up a quartile: (1) mobile-cellular services cost 3.4% of GNI per capita, in-line with the Asia-Pacific regional average; (2) fixed-broadband services cost 7.5% of GNI per capita, higher than half of the countries in the region that offer prices below 5% of GNI per capita; (3) prepaid handset-based mobile-broadband plans cost 1.5% of GNI per capita, similar to the majority of countries in the region that price less than 5% of GNI per capita; and (4) postpaid computer-based mobile-broadband plans cost 6.7% of GNI per capita, 4.5x higher than the prepaid handset option¹⁶ (ITU, 2015; ITU, 2016).

Table 8. Philippine Telecom Services, 2014 to 2015

	Mobile-cellular		Fixed-broadband		Prepaid handset-based mobile-broadband		Postpaid computer-based mobile-broadband	
	2014	2015	2014	2015	2014	2015	2014	2015
Global rank (out of a total of)	115 (182)	121 (193)	122 (181)	126 (190)	87 (167)	88 (184)	117 (162)	131 (184)
Quartile	3 rd	3 rd	3 rd	3 rd	2 nd	2 nd	3 rd	3 rd
Price, % of GNI per capita	3.8	3.4	8.3	7.5	2.5	1.5	8.3	6.7

Source: ITU, 2015; ITU, 2016

The price of the service (and of the device) remains a critical determinant of whether people make use of telecom services (ITU, 2016). Except for mobile-cellular services, access and usage in the Philippines remain depressed compared to other Asia-Pacific countries, and globally (See Table 9). Broadband adoption for 4 Mbps, the lowest speed measured, is only at 39%, and adoption level lowers as speed offering increases (See Figure 7). Narrowing the benchmarking to just the neighboring ASEAN countries (Indonesia, Malaysia, Thailand and Vietnam, ex-Singapore), the Philippines continues to show lower numbers for access and usage, except for international internet bandwidth where it is higher than Indonesia, Malaysia (just in 2015), and Vietnam (See Table 9); and lower broadband adoption, except for speeds above 15 Mbps where is it higher than Indonesia (See Figure 7). The barrier to usage has a direct economic impact, as well as an indirect economic impact through spill-over effects over the rest of the economy. In the case of mobile-broadband, adoption can contribute an annual 0.61% of GDP (ITU, 2012).

Table 9. Asia-Pacific Access and Usage Indicators, 2015

Country	Fixed telephone subs/100 inhabitants ⁽¹⁾		Mobile-cellular subs/100 inhabitants ⁽²⁾		International Internet bandwidth bit/s/internet user ⁽³⁾		Fixed broadband subs/100 inhabitants ⁽⁴⁾		Active mobile broadband subs/100 inhabitants ⁽⁵⁾	
	2014	2015	2014	2015	2014	2015	2014	2015	2014	2015
Australia	38.9	38.0	131.2	132.8	75,569	81,564	27.7	27.9	112.2	112.9
China	17.9	16.5	92.3	93.2	5,141	6,530	14.4	18.6	41.8	56.0
Hong Kong	60.9	59.2	233.6	228.8	3,487,142	4,155,651	31.4	31.9	104.5	107.0
India	2.1	2.0	74.5	78.8	4,982	5,725	1.2	1.3	5.5	9.47
Indonesia	10.4	8.8	128.8	132.3	6,225	6,584	1.2	1.1	34.7	42.0
Japan	50.1	50.2	120.2	125.1	49,150	62,618	29.8	30.5	121.4	126.4
Korea (Rep)	59.5	58.1	115.7	118.5	43,358	46,764	38.8	40.2	108.6	109.7
Malaysia	14.6	14.3	148.8	143.9	29,932	34,119	10.1	9.0	58.3	89.9
New Zealand	40.6	40.2	112.1	121.8	95,081	108,506	31.0	31.5	92.7	114.2
Philippines	3.1	3.0	111.2	118.1	27,688	37,409	2.9	3.4	28.5	36.7
Singapore	36.2	36.0	146.9	146.1	677,144	737,006	26.7	26.5	141.7	142.2
Sri Lanka	12.6	12.0	103.2	112.8	12,651	13,886	2.6	3.1	13.0	15.8

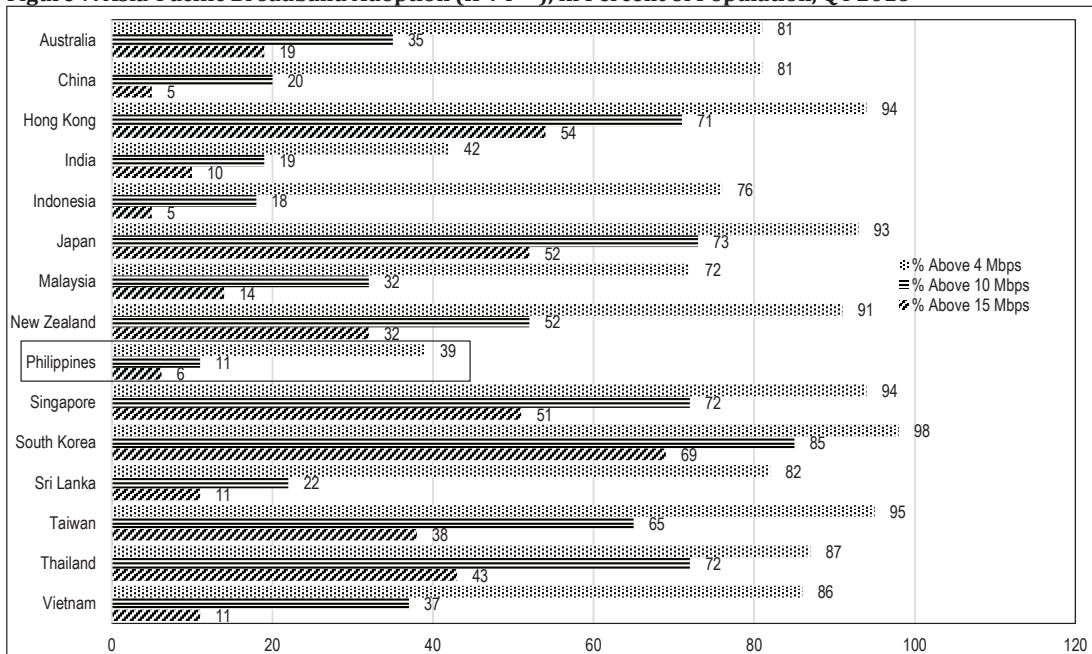
¹⁶ In developing countries, fixed-broadband costs on average twice as much as mobile-broadband.

	Fixed telephone subs/100 inhabitants ⁽¹⁾		Mobile-cellular subs/100 inhabitants ⁽²⁾		International Internet bandwidth bit/s/ internet user ⁽³⁾		Fixed broadband subs/100 inhabitants ⁽⁴⁾		Active mobile broadband subs/100 inhabitants ⁽⁵⁾	
Thailand	8.5	7.9	144.4	125.8	54,788	64,907	8.1	9.2	79.9	75.3
Vietnam	6.0	6.3	147.1	130.6	20,749	24,373	6.5	8.1	31.0	39.0

Source: ITU, 2016

- (1) Fixed-telephone subscriptions refers to the sum of active analogue fixed-telephone lines, voice-over-IP (VoIP) subscriptions, fixed wireless local loop (WLL) subscriptions, ISDN voice-channel equivalents, and fixed public payphones.
- (2) Mobile-cellular telephone subscriptions refers to the number of subscriptions to a public mobile-telephone service providing access to the public switched telephone network (PSTN) using cellular technology. It includes both the postpaid subscriptions, and active prepaid accounts (i.e. that have been active during the past three months). It includes all mobile-cellular subscriptions that offer voice communications. It excludes subscriptions via data cards, or USB modems, subscriptions to public mobile data services, private trunked mobile radio, telepoint, radio paging, and telemetry services.
- (3) International Internet bandwidth refers to the total used capacity of international Internet bandwidth, in megabits per second (Mbit/s) – the average (over a 12-month period) traffic load of international fiber-optic cables, and radio links for carrying Internet traffic. International Internet bandwidth (bit/s) per Internet user is calculated by converting to bits per second, and dividing by the total number of Internet users.
- (4) Fixed-broadband subscriptions refers to fixed subscriptions for high-speed access to the public Internet (a TCP/IP connection), at downstream speeds equal to or greater than 256 kbit/s, irrespective of the method of payment. It includes cable modem, DSL, fiber-to-the-home/building, other fixed-broadband subscriptions, satellite broadband, and terrestrial fixed wireless broadband. It includes fixed WiMAX and any other fixed wireless technologies, and both residential subscriptions, and subscriptions for organizations. It excludes subscriptions that have access to data communications (including the Internet) via mobile-cellular networks.
- (5) Active mobile-broadband subscriptions refers to the sum of standard mobile-broadband subscriptions, and dedicated mobile-broadband subscriptions. The subscriptions can be used through handset-based, or computer-based (USB/dongles) devices. It covers actual subscribers, not potential subscribers, even though the latter may have broadband-enabled handsets.

Figure 7. Asia-Pacific Broadband Adoption (IPv4 ⁽¹⁾), in Percent of Population, Q4 2016



Source: Akamai¹⁷, 2016; covers 148 countries

- (1) Internet Protocol version 4 (IPv4) is the fourth version of the [Internet Protocol](#) (IP)

¹⁷ Akamai is a content delivery network and cloud services provider headquartered in Massachusetts, USA. Since 2008, they have come up quarterly with a “State of the Internet” report that shares informed view into online connectivity, cyber security trends, and metrics, including internet connection speeds, broadband adoption, mobile usage, outages, cyberattacks, and web security threats.

3.2 Service Quality

Among the Asia-Pacific countries, the Philippines ranks poorly in terms of internet connection speed, and at best, on average in terms of mobile connection speed, but still below global averages. Both telcos have comparable mobile network performance.

In terms of average internet interconnection speed, the Philippines has shown an increase year on year (YoY) and quarter on quarter (QoQ), at the end of the first quarter of 2017 (Akamai, 2017) (See Table 10). Despite this, the Philippines ranks the lowest among the 15 countries surveyed in Asia-Pacific, and is in the third quartile globally for average internet interconnection speed. The Philippines' average speed is only 17% that of the highest average speed – South Korea (See Table 10).

Table 10. Asia-Pacific Average Connection Speed (IPv4), Q1 2017

Global Rank	Country	Q1 2017 Avg Mbps	QoQ Chg (%)	YoY Chg (%)
1	South Korea	28.6	9.3	-1.7
4	Hong Kong	21.9	-0.2	10
7	Singapore	20.3	0.8	23
8	Japan	20.2	3.1	11
16	Taiwan	16.9	7.9	14
21	Thailand	16.0	20	49
27	New Zealand	14.7	14	40
50	Australia	11.1	9.6	26
58	Vietnam	9.5	15	89
62	Malaysia	8.9	9.1	40
68	Sri Lanka	8.5	17	58
74	China	7.6	20	78
77	Indonesia	7.2	6.7	59
89	India	6.5	17	87
100	Philippines	5.5	20	57

Source: Akamai, 2017; covers 148 countries

Meanwhile, average page load time¹⁸ provides insight into performance across devices and networks. Of the 74 countries reviewed globally, the Philippines falls slightly below the mid-range for broadband, and slightly above the mid-range for mobile, in terms of average page load time. It however falls below its neighboring ASEAN countries (Indonesia, Malaysia, Thailand and Vietnam, ex-Singapore) for all three measures (See Table 11).

Table 11. Asia-Pacific Average Page Load Times Based on Real User Monitoring, Q4 2016

Country	Avg. Page Load Time Broadband (millisecond)	Avg. Page Load Time Mobile (millisecond)	Mobile Penalty ¹⁹
Australia	3535	4648	1.3x
China	2696	2311	0.9x
Hong Kong	2265	3534	1.6x
India	3848	5018	1.3x

¹⁸ This measurement does not just reflect broadband network speeds. It is also influenced by factors such as average page weight, page composition, and the Akamai customer content consumed by users within these countries.

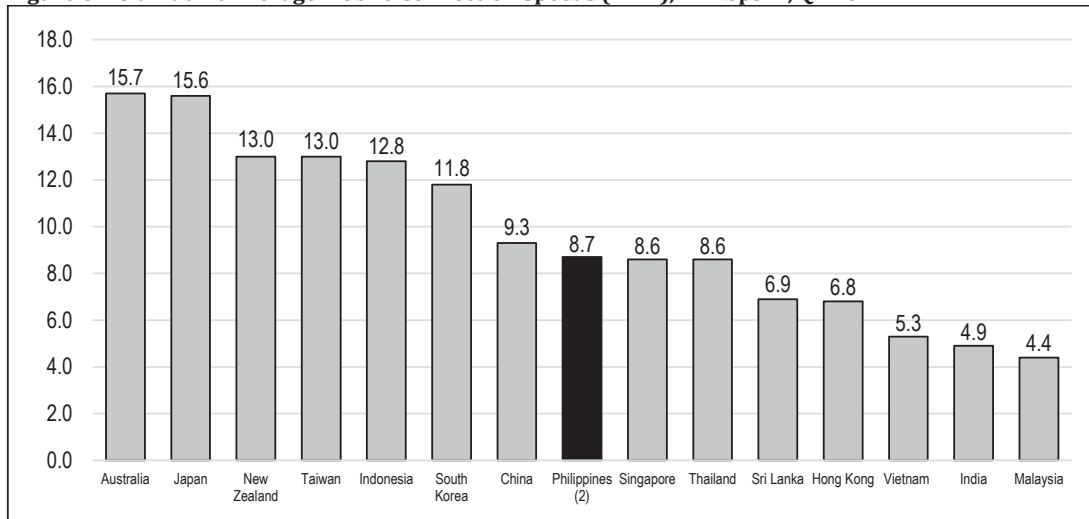
¹⁹ Mobile penalty is the ratio of average page load times on mobile connections versus average load times on broadband connections. This ratio should not be taken as a pure comparison of mobile versus broadband network speeds, as these speeds are just one factor in the overall user experience. Mobile penalty lower than 1.0x means that average page load times is faster on mobile connections than on broadband connections.

Country	Avg. Page Load Time Broadband (millisecond)	Avg. Page Load Time Mobile (millisecond)	Mobile Penalty ¹⁹
Indonesia	3606	4892	1.4x
Japan	2133	2975	1.4x
Malaysia	3250	3386	1.0x
New Zealand	2064	4704	2.3x
Philippines	3925	6747	1.7x
Singapore	2133	2764	1.3x
South Korea	1898	2725	1.4x
Sri Lanka	2740	3044	1.1x
Taiwan	2236	3182	1.4x
Thailand	2361	1555	0.7x
Vietnam	2533	3758	1.5x
Ranges	1.4 seconds (Israel) to 6.7 seconds (Venezuela)	0.6 seconds (Saudi Arabia) to 9.0 seconds (Nigeria)	0.4x (Saudi Arabia) to 2.3x (New Zealand)

Source: Akamai, 2016; covers 74 countries

In terms of average mobile connection speed, the Philippines ranks in the mid-range in Asia-Pacific, and offers faster connection speed than all its neighboring ASEAN countries except Indonesia (See Figure 8). But this is still below the global mid-range with the Philippines' average speed only 33% that of the highest average speed – United Kingdom.

Figure 8. Asia-Pacific Average Mobile Connection Speeds (IPv4), in Mbps⁽¹⁾, Q1 2017



Source: Akamai, 2017; covers 62 countries

Note: Range is from 26.0 (UK) to 2.8 (Venezuela)

(1) Source data in this section encompasses usage from smartphones, tablets, computers, and other devices that connect to the internet through mobile network providers.

(2) Fewer than 25,000 unique Ipv4 addresses classified as mobile observed

Direct comparison of mobile network metrics show that Globe and PLDT/Smart have very similar performance (See Figure 9), particularly in terms of download speed (3G and overall), and latency²⁰ (4G). PLDT/Smart only shows better performance than Globe in latency (3G). Meanwhile in 4G,

²⁰ Latency is the delay data experiences as it makes a round trip through the network. A lower score in this metric is a sign of a more responsive network.

PLDT/Smart surpasses Globe in terms of LTE speed tests, but Globe is ahead of PLDT/Smart in terms of LTE availability. Nevertheless, LTE access currently is far from widespread in the Philippines, and LTE connection speeds for both telcos are relatively slow compared to the worldwide average of 17.4 Mbps.

Figure 9. Philippine Mobile Network Comparison, 2017



Source: OpenSignal²¹

4 Performance

Performance refers to the outcomes resulting from the current market structure, and conduct of industry players. Key indicators of financial performance include revenue growth, EBITDA margins, return on equity (ROE), and return on assets (ROA) over time. Economists compute also for market power as a gauge of market performance.

Overall, the Philippine telecom market grew over the period 2011 to 2016, with EBITDA margins, and return ratios having been healthy. Indication also point to telcos having market power.

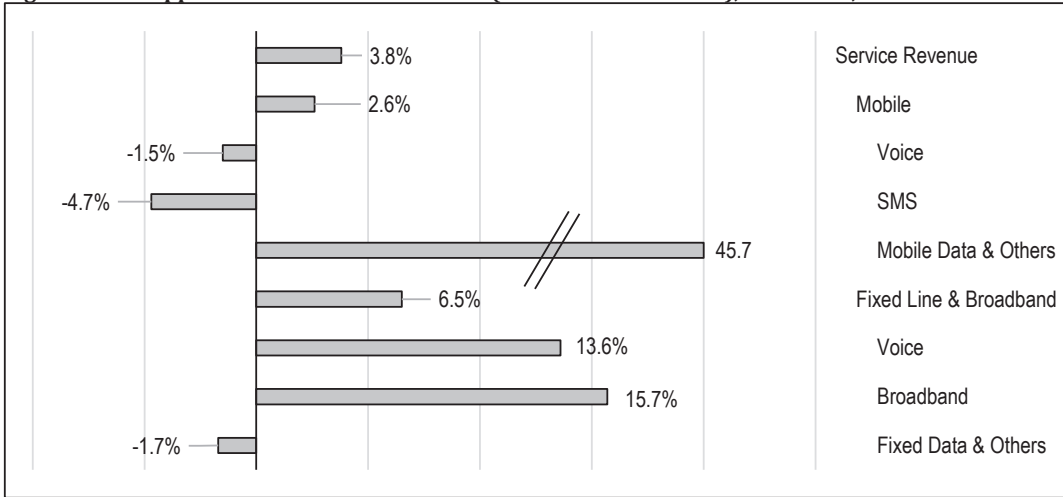
4.1 Financial Performance

Philippine telecom revenues have increased from PhP 237 to PhP 282 billion²², in constant 2011 prices, for the period 2011 to 2016, representing a 3.8% compound annual growth rate (CAGR). Revenue growth has been driven by mobile data & others, and broadband (See Figure 10).

²¹ OpenSignal is a UK company that specializes in wireless coverage mapping. The company crowdsources data on carrier signal quality from users who have its consumer mobile application installed.

²² Combined service revenue of PLDT and Globe

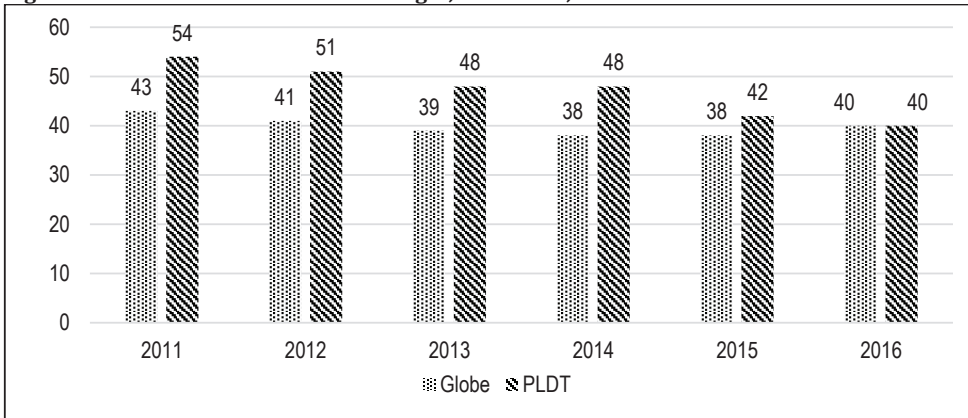
Figure 10. Philippine Telcom Revenue Growth (2011 Constant Terms), in Percent, 2011 to 2016



Source: PLDT and Globe, 2011-2016

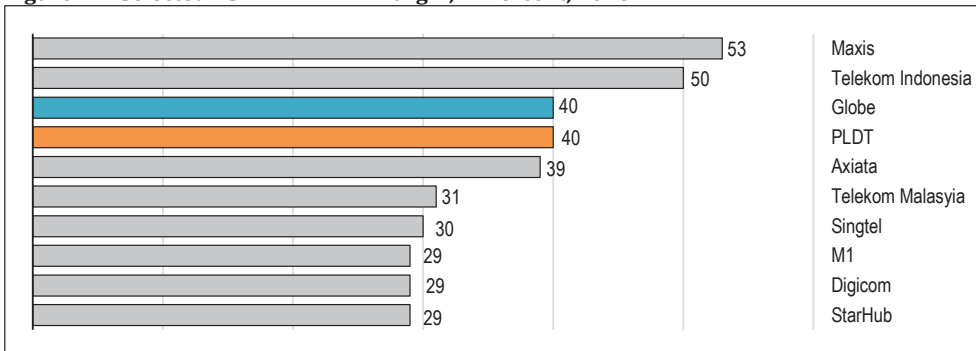
Globe’s and PLDT’s EBITDA margins averaged 40% and 47%, respectively, for the period 2011 to 2016 (See Figure 11). Compared to other regional telcos, for fiscal year 2016, only Maxis and Telekom Indonesia had EBITDA margins larger than that of Globe and PLDT, and both Globe and PLDT had EBITDA margins higher than the regional average of 37% (See Figure 12).

Figure 11. PLDT and Globe EBITDA Margin, in Percent, 2011 to 2016



Source: Eikon Thompson Reuter, 2017

Figure 12. Selected ASEAN EBITDA Margin, in Percent, 2016



Source: Eikon Thompson Reuters, 2017

ROEs and ROAs showed greater variability than EBITDA margins, for the period 2011 to 2016 (See Figure 13). For fiscal year 2016, both PLDT and Globe reflected ROEs higher than the Philippine market average ROE of 14.9% (“Return on Equity (ROE) of stocks from – Philippines”, n.d.); but only Globe reflected ROE higher than global telecom market average ROE of 20.3% (“Return on Equity of Telecommunications stocks”, n.d.). Regional average ROE, for fiscal year 2016, was at 24%²³, while ROA was at 9%. Philippine telcos were below these regional averages, except for Globe, which was slightly above regional average ROE (See Figure 14).

Figure 13. PLDT and Globe Return Ratios, in Percent, 2011 to 2016

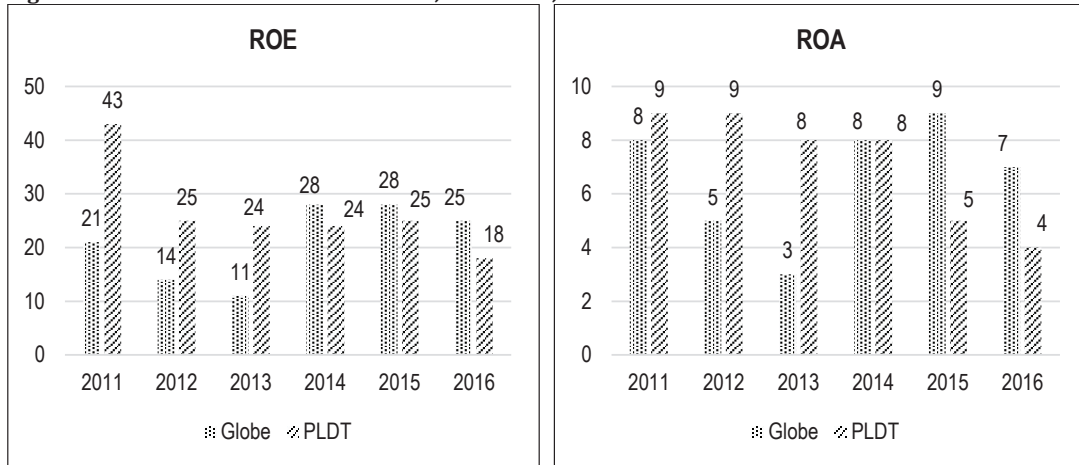
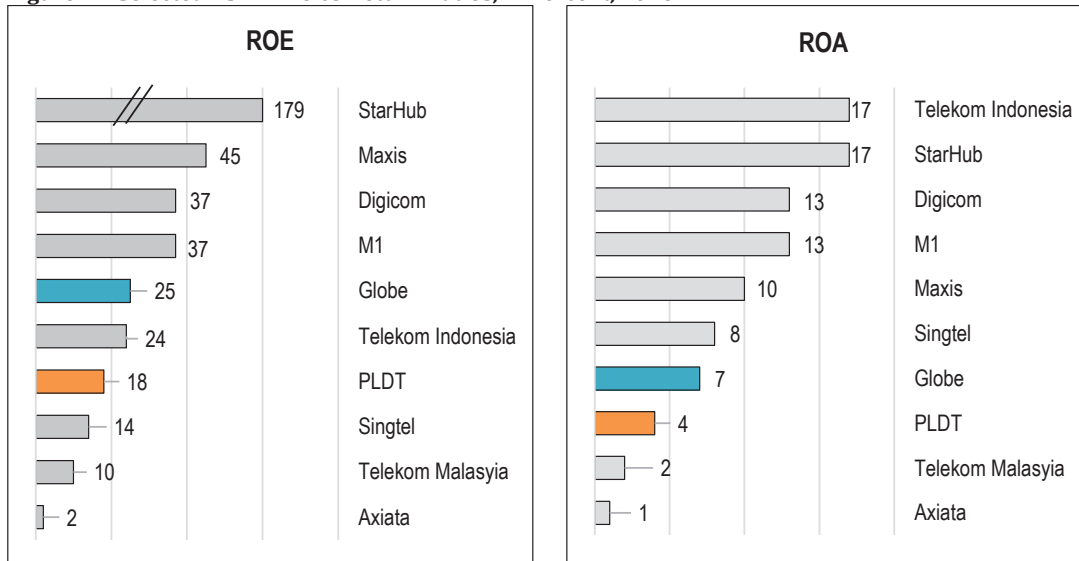


Figure 14. Selected ASEAN Telco Return Ratios, in Percent, 2016



Source: Eikon Thomson Reuters, 2017

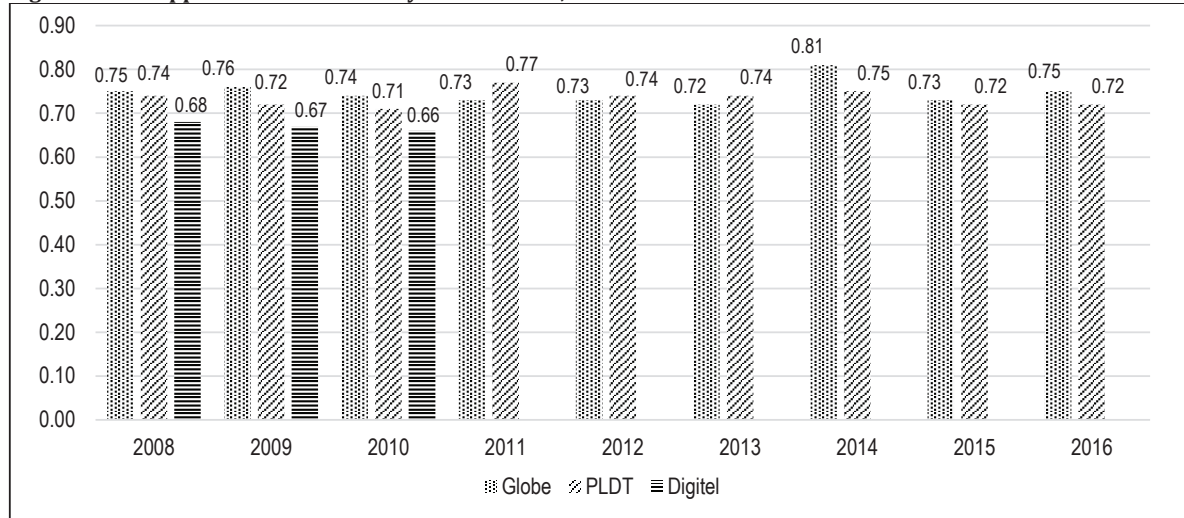
4.2 Market Performance

Many economist also measure market power using the Lerner index, which is the percentage markup of price over marginal cost. Because marginal cost measures are rarely available, many SCP researchers use the price-average variable cost (AVC), which is typically calculated as revenue minus

²³ Excluding StarHub given its very large, outlier ROE

payroll minus material cost divided by revenue (Perloff et al., 2007). The extent to which a firm can benefit from the industry's monopolistic or oligopolistic condition is dependent as well on the flexibility of its demand curve. The Lerner index is between 0 and 1; the closer it is to 0, the closer it is to perfect competition; the closer it is to 1, the higher market power the seller has, and hence the closer it is to a monopoly. PLDT's and Globe's Lerner index are at the 0.7 level (See Figure 15). It has remained at this level, even with the presence of Digitel until 2010.

Figure 15. Philippine Telecom Industry Lerner Index, 2008 to 2016



Source: PLDT and Globe, 2011-2016; Digitel, 2010

Ideally, in the presence of longer time series data, the appropriate performance analysis for capital-intensive network industries, like telecoms, is to compute for its real internal rates of return (IRR)²⁴. Once IRR is computed, it should be compared to the real market opportunity cost, and/or the real IRR of other capital intensive industries over the same period. Only when the firm's IRR are in excess of the market opportunity cost or other industry IRRs can it be concluded that market power is being exercised.

5 Conclusion

For the period 2011 to 2016, several significant changes occurred in the Philippine telecom industry. Mobile density increased over the five year period from 99% to 124%, aided by: (1) sustained annual capital expenditure (capex) of the telecom companies (telcos) of over 20% of service revenue for the period 2014 to 2015; and (2) innovative buffet pricing and product bundles to attract and retain customers. Though telecom prices decreased and quality improved, compared to other countries, prices remain moderately high, serving as a barrier to usage, and quality was still relatively poorer. Regulators, who can influence these prices and quality, and overall industry competition, were passive and behaved administratively, and were not pro-active policy formulators and implementers (Patalinghug & de Llanto, 2005).

This paper aimed to assess this condition existing in the Philippine telecom industry using the Structure-Conduct-Performance (SCP) framework. The SCP framework suggests that the industry's performance, the success of an industry in producing benefits for consumers, depends on the conduct, behavior of sellers and buyers, which depends on the structure of the market.

In terms of structure, the telecom market is highly concentrated, with significant barriers to entry. It is a duopoly, with an industry HHI of 5147, as of 2016. Entry barriers are high, lowering market

²⁴ Real IRR is computed by using annual real cash flow of the firm, which is nominal EBITDA minus annual capex and other cash investment, deflated to convert it to real terms.

contestability, or the threat of a new entrant challenging the incumbents. Barriers to entry are substantial: a Congressional franchise and a NTC license to operate; spectrum allocation; large initial fixed and sunk capital investments (as much as USD 2.5 billion), and on-going capex (close to 30% capex to service revenue ratio); decentralized LGU regulation for permits and taxes; and possible strategic non-cooperative behavior from incumbents (on access, interconnection, product lock-in, etc.). More thoughtful regulations (with respect to franchises, licenses, spectrum allocation, and taxes) and more active regulators can partially lower the entry barriers of this naturally high capital intensive industry; as well as enforce increasing service quality demands on telcos.

This market structure strongly influences the conduct of the incumbents. The Philippine telecom industry employs second-degree price discrimination, as evidenced by its complex buffet and bundled pricing and products. Given the duopoly, PLDT and Globe's actions echo each other, in terms of product and pricing, service quality, customer retention activities, and innovations (on tariff structure and products). Their actions involve strategic deliberations, as they consider how their actions affect their rivals, and how they are likely to react. Economists have shown that competitive conduct would quickly change with an entry of a third firm. However, over the last decade, the Philippine telecom market has been on a path of consolidation, increasing industry concentration through a series of M&A.

Industry ARPU has been declining to one of the lowest level in the world, while churn is one of the highest in the world. Despite this, prices are at best on par, or higher than regional average, while service quality (interconnection speeds) is lower.

Lastly, both the market structure and conduct of incumbents impact the market performance. Philippine telecom market has grown 3.8% CAGR, in 2011 constant terms, for the period 2011 to 2016. Industry EBITDA margins, ROE, and ROAs have been healthy. Market power is also exercised by the incumbents, with a Lerner index at the 0.7 level.

Extending this study, further research can be done on the relationship of the Philippine telecom industry's SCP, or portions of it, to the country's more expensive (See Figure 6) and poorer access (See Table 9) and quality services (See Tables 10 and 11), vis-à-vis other countries. How is it that despite the high telecom prices as a percentage of GNI per capita (See Figure 6), there is declining (See Figure 4) and lower comparable ARPUs (See Figure 5)? Is the pricing the cause or the outcome of low usage (See Table 9 and Figure 6); or even slow interconnection speed (See Table 10), average page load time (See Table 11), and average mobile connection speed (See Figure 8)?

In summary, the Philippine telecom industry is highly concentrated with low market contestability. The incumbents commonly parallel each other's strategic actions and foil each other from exercising excessive market power (of raising prices or reducing service quantity/quality).

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Appendix

Table 12. Philippine Mobile Subscriber Base, in Thousands, 2011 to 2016

	2011	2012	2013	2014	2015	2016
Globe	30,040	33,119	38,475	44,041	56,183 ⁽¹⁾	62,800 ⁽¹⁾
PLDT ⁽²⁾	63,697	71,798	72,063	72,511	68,612	62,763
ABS CBN Convergence, Inc.			52 ⁽³⁾	1,700 ⁽⁴⁾	493 ⁽⁵⁾	904 ⁽⁵⁾
Total Subscribers	93,737	104,917	110,590	118,252	125,288	126,467
Population, in million ⁽⁶⁾	95	96	98	99	101	102
Mobile Density, in %	99	109	113	119	124	124
Market Share, in %	100	100	100	100	100	100
Globe	32	32	35	37	45	50
PLDT	68	68	65	61	55	50
ABS-CBN Convergence, Inc.			0	1	0	1

Source: PLDT and Globe, 2011-2016

- (1) From 2015 onwards, subscribers have been restated to reflect the change in the presentation of fully mobile- broadband subscribers to be part of the mobile business; it was reported under broadband previously.
- (2) From 2012 onwards, subscribers have been restated to reflect mobile and Home broadband (wireless) subscribers to be part of the mobile business; it was reported under broadband previously.
- (3) National Telecommunications Commission (NTC)
- (4) Somosot, 2016
- (5) Delavin, 2017
- (6) "Population, total", n.d.; 2016 is an estimate based on the average of prior population growth rates.

Table 13. Philippine Broadband Subscriber Base, in Thousands, 2011 to 2016

	Globe ⁽¹⁾						PLDT ⁽²⁾					
	2011	2012	2013	2014	2015	2016	2011	2012	2013	2014	2015	2016
Broadband	1,411	1,672	2,032	2,778	1,069	1,131	2,931	1,331	1,415	1,481	1,415	1,515
Wireless	1,122	1,331	1,654	2,351	421	520	2,068	427	436	332	436	259
Wireline	289	341	378	427	647	611	862	904	979	1,149	979	1,256
Market Share, in %	33	56	59	65	43	43	67	44	41	35	57	57
Wireless	35	76	79	88	49	67	65	24	21	12	51	33
Wireline	25	27	28	27	40	33	75	73	72	73	60	67

Source: PLDT and Globe, 2011-2016

- (1) From 2015 onwards, subscribers have been restated to reflect the change in the presentation of fully mobile- broadband subscribers to be part of the mobile business; it was reported under broadband previously.
- (2) From 2012 onwards, subscribers have been restated to reflect mobile and Home broadband (wireless) subscribers to be part of the mobile business; it was reported under broadband previously.

Table 14. Philippine Fixed Line Subscriber Base, in Thousands, 2011 to 2016

	2011	2012	2013	2014	2015	2016
Globe	672	711	595	762	1,136 ⁽¹⁾	1,238
PLDT	2,166	2,064	2,069	2,208	2,303	2,438
Bayantel, ETPI/TTPI and other LECs ⁽²⁾			565	504	18	18
Total Subscribers	2,838	2,775	3,229	3,475	3,458	3,695
Population, in million ⁽³⁾	95	96	98	99	101	102
Fixed Line Density, in %	3.0	2.9	3.3	3.5	3.4	3.6
Market Share, in %	100	100	100	100	100	100
Globe	24	26	18	22	33	34
PLDT	76	74	64	64	67	66
Bayantel, ETPI/TTPI and other LECs			17	15	1	0

Source: PLDT and Globe, 2011-2016

(1) Globe acquired majority of Bayantel in 2015, and its fixed line subscribers were added to that of Globe in 2015.

(2) From NTC, 2016 assumes the same 2015 subscribers

(3) "Population, total", n.d.; 2016 is an estimate based on the average of prior population growth rates.