

# Industrial Organisation Analysis of the Mobile Market in Latin America

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## JEL Classification

L96, L13, L22, D43, L51

**Abstract:** This paper examines the structure and performance of the mobile telecommunications market in six Latin American countries: Argentina, Brazil, Chile, Colombia, Mexico, and Peru. Drawing on industrial organisation theory, the study focuses on the degree of market concentration and the presence of oligopolistic dynamics. Key indicators—such as market share, the number of mobile lines per operator, and the Herfindahl-Hirschman Index (HHI)—are used to assess the competitive structure of each national market. The findings reveal consistently high levels of concentration across all six countries, with América Móvil and Telefónica emerging as dominant regional players. These multinational firms maintain a significant presence in multiple markets, reinforcing a pattern of regional consolidation. In Colombia, for instance, three operators—Claro, Movistar, and Tigo—control nearly the entire mobile market, highlighting the sector's oligopolistic nature and its implications for pricing, service quality, and innovation. The study employs a descriptive and quantitative methodology, using firm-level data and official reports from national regulators and organisations such as ECLAC. It also incorporates insights from the literature on strategic firm behavior and product differentiation to contextualise how dominant actors maintain market power. Despite the existence of regulatory frameworks aimed at fostering competition, the research finds that enforcement is often insufficient to curb concentration. Strategic behaviors—such as service bundling, infrastructure control, and aggressive marketing—allow dominant firms to entrench their position. This paper contributes empirical evidence on telecommunications market dynamics in emerging economies and calls for stronger regulatory mechanisms and regional coordination to promote fairer, more competitive, and inclusive digital markets.

**Keywords:** Mobile Telecommunications, Market Concentration, Latin America, Oligopoly, Industrial Organisation, Strategic Behavior

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## 1. Introduction

The mobile telecommunications sector has become a strategic industry in Latin America due to its role in improving connectivity, fostering digital inclusion, and enabling economic development. Over the past two decades, the region has experienced a rapid expansion in mobile service coverage and mobile internet access, driven by technological innovation and increasing consumer demand. However, the market structure in many Latin American countries remains highly concentrated, with a small number of multinational operators dominating national markets.

This paper aims to examine the mobile telecommunications market in six Latin American countries—Argentina, Brazil, Chile, Colombia, Mexico, and Peru—through the lens of industrial organisation theory. It specifically investigates market concentration and strategic behavior, focusing on how dominant firms consolidate market power and the implications this has for competition and consumer welfare.

A central concern in the region is the presence of oligopolistic market structures. In most countries analysed, América Móvil and Telefónica are the two major players, with market shares that often exceed 60% when combined. This duopolistic dominance, along with limited effective competition, raises critical questions about market efficiency, innovation incentives, and service quality.

The regulatory environment is a key variable in this context. Although most countries have independent telecommunications regulators and legal frameworks intended to ensure fair competition, implementation and enforcement vary significantly. In some cases, regulations lag behind market dynamics, allowing dominant firms to exploit their position through bundling, predatory pricing, and control over infrastructure. Regulatory asymmetries, limited spectrum access for new entrants, and insufficient oversight of mergers and acquisitions further hinder competitive dynamics.

Existing literature has highlighted that high market concentration can lead to reduced incentives for innovation, higher prices, and lower service quality (Sung, 2014; Fawaz et al., 2021). Theoretical frameworks such as the Structure-Conduct-Performance (SCP) paradigm and Bertrand competition models with product differentiation are useful for analysing these dynamics. In this paper, we combine these frameworks with empirical analysis

based on market share data and the Herfindahl-Hirschman Index (HHI) to assess the level of competition in each country.

This introduction sets the stage for a comprehensive analysis of mobile telecommunications in Latin America, focusing on both structural issues and regulatory limitations. The goal is to provide evidence-based insights into the behavior of dominant firms and offer recommendations to strengthen regulatory frameworks and promote more competitive markets.

## **2. Literature Review and Theoretical Framework**

The study of telecommunications markets from the perspective of industrial organisation provides essential insights into how market structure influences firm behavior and performance. In oligopolistic markets—characterised by a small number of dominant firms—strategic interaction becomes a key feature, as each firm's decisions affect and are affected by the behavior of competitors (Tirole, 1988; Lipczynski, Wilson, and Goddard, 2017).

### **2.1 Structure-Conduct-Performance Paradigm**

The Structure-Conduct-Performance (SCP) paradigm, originally proposed by Bain (1959) and refined by Mason (1939, 1949), serves as a foundational framework for analysing the relationship between market concentration and firm behavior. According to this model, the structure of a market—defined by the number of firms, entry barriers, and degree of product differentiation—directly influences the conduct of firms, including pricing strategies, investment decisions, and innovation. This conduct, in turn, affects the overall performance of the market in terms of efficiency, consumer welfare, and innovation.

In the case of mobile telecommunications, high concentration levels—measured by indicators such as market share and the Herfindahl-Hirschman Index (HHI)—suggest reduced competition and potentially negative outcomes for consumers. Studies by Krstić et al. (2016) and Pereira and Varela (2013) confirm the usefulness of HHI as a tool to evaluate market structure and define thresholds for regulatory intervention.

### **2.2 Strategic Behavior and Product Differentiation**

Strategic behavior in oligopolistic markets includes product differentiation, pricing, advertising, and investment in infrastructure and innovation. Bertrand's competition model with product differentiation is particularly relevant in this context, as it assumes that firms compete on price while offering differentiated services (Belleflamme and Peitz, 2015). In Latin American mobile markets, differentiation strategies include bundling services (mobile, internet, TV), exclusive data plans, and brand positioning.

The behavior of firms like América Móvil and Telefónica illustrates how investment in innovation, aggressive marketing, and control over infrastructure can reinforce market dominance. According to Useche and Fernández (2008), these strategies often aim to restrict market entry and secure long-term consumer loyalty, thereby reducing the effectiveness of competitive pressures.

### **2.3 Market Power and Regulation**

Market power refers to a firm's ability to set prices above competitive levels sustainably (Motta, 2004). In the telecommunications sector, regulatory frameworks are intended to limit this power and encourage fair competition. However, regulation in Latin America has not always been effective. Structural barriers, such as limited spectrum allocation and weak institutional capacity, undermine regulatory efforts and often result in asymmetries that benefit incumbent firms (Rubinfeld, 2015).

Authors like Bardey et al. (2022) argue that regulatory capture and the lack of regional harmonisation exacerbate these challenges. Although some countries have implemented reforms—such as spectrum auctions and pro-MVNO (Mobile Virtual Network Operator) policies—their impact remains uneven across the region.

In conclusion, the literature reveals a consistent concern with the interaction between market concentration, firm behavior, and regulatory effectiveness. The next section will describe the methodology used to evaluate these dynamics empirically across six Latin American countries.

Recent research highlights the need to complement traditional concentration measures, such as the Herfindahl-Hirschman Index, with broader institutional and strategic perspectives. For instance, Wang et al. (2008) examine

how technological homogeneity affects firms' innovation capabilities, offering insights relevant for understanding dominant behavior in oligopolistic markets. Similarly, Legault and D'Amours (2011) explore collective representation and institutional frameworks, emphasising the interplay between regulation and enterprise strategies. Upadhyaya (2015) contributes with a quantitative model approach, which reinforces the value of integrating operational and structural variables in market analysis. In the context of digital transformation and production systems, Hajarnavis (2021) discusses mobile access to industrial data, relevant for analysing competitive positioning in technologically dynamic markets. Environmental factors, such as those discussed by Ozkan and Uygur (2019), also reflect the growing importance of multidimensional assessments when evaluating industry performance and policy design. These contributions support a more integrated approach to the analysis of mobile telecommunications markets in Latin America, beyond simple concentration metrics.

To complement the literature review, a keyword co-occurrence network was constructed using bibliometric data. The analysis reveals thematic clusters in the academic discussion surrounding mobile telecommunications and industrial organisation. As shown in Figure 1, keywords such as "industrial organisation", "wireless telecommunication systems", and "industrial management" emerge as central nodes, indicating a strong intersection between technical systems, strategic behavior, and market structure. The clustering also highlights differentiated research streams, including regulatory frameworks, embedded systems, and network security. This visualisation supports the relevance and interdisciplinary nature of the present study.



**Figure 1: keyword co-occurrence network**

Keyword co-occurrence network of scientific publications on mobile telecommunications and industrial organisation. The size of each node represents keyword frequency, and colours indicate thematic clusters.

### 3. Methodology

This study adopts a descriptive and quantitative approach to analyse the structure and strategic behavior in the mobile telecommunications markets of six Latin American countries: Argentina, Brazil, Chile, Colombia, Mexico, and Peru. The research is grounded in the industrial organisation framework, particularly the Structure-Conduct-Performance (SCP) paradigm and Bertrand competition models with product differentiation.

#### 3.1 Data Collection

The data used in this study was collected from official sources, including national regulatory agencies, the International Telecommunication Union (ITU), and reports from the Economic Commission for Latin America and the Caribbean (ECLAC, 2022). The primary variables analysed include:

- Market share by mobile operator (percentage of total lines)
- Number of active lines per operator
- Herfindahl-Hirschman Index (HHI) as a measure of market concentration
- Entry of Mobile Virtual Network Operators (MVNOs)
- Regulatory indicators such as spectrum allocation, pro-competition policies, and presence of dominant firm regulation

The period of analysis spans from 2018 to 2023, ensuring comparability across countries and capturing recent structural changes in the sector, such as mergers, acquisitions, and regulatory reforms.

### 3.2 Measurement of Market Concentration

Market concentration is assessed through the Herfindahl-Hirschman Index (HHI), calculated as the sum of the squared market shares of all firms operating in the mobile telecommunications market of each country:

$$HHI = \sum_{i=1}^n S_i^2$$

where  $S_i$  is the market share of firm  $i$ . According to the guidelines of the U.S. Department of Justice and the European Commission, HHI values above 2,500 indicate high concentration, while values between 1,500 and 2,500 indicate moderate concentration.

This index is complemented with C1, C2, and C3 indicators, representing the cumulative market share of the top 1, 2, and 3 firms respectively, to better capture the dominance of key players.

### 3.3 Analysis of Strategic Behavior

Firm-level behavior is analysed through qualitative indicators based on service portfolios, pricing strategies, innovation efforts, bundling practices, and advertising campaigns. While detailed firm-level financials are not publicly available in all cases, publicly disclosed data from company reports and regulatory filings were used to assess strategic positioning.

In Colombia's case, the methodology also includes an exploratory estimation of firm performance and differentiation strategy using panel data from January 2022 to March 2024, as developed in previous fieldwork (Molina & Montoya, 2024). This includes monthly line data and revenue figures where available.

In highly concentrated mobile telecommunications markets, firms do not rely solely on price competition. Instead, they engage in strategic behavior to differentiate their services, create customer lock-in, and reinforce their market dominance. The most common strategic tools include:

- Product bundling (mobile, internet, TV, fixed line)
- Investment in network infrastructure and spectrum
- Aggressive advertising and brand loyalty programs
- Technological innovation (e.g., early 4G/5G deployment)
- Vertical integration (especially with fixed networks and wholesale services)
- This section highlights how these strategies manifest in each national market, based on public data, firm reports, and regulatory information.

#### 3.3.1 Argentina

Claro and Movistar focus on bundling mobile services with broadband and entertainment content. Telecom Argentina (Personal) offers triple play and has integrated mobile and fixed services since its merger with Cablevisión. The strategic focus is on market segmentation through plan customisation and brand identity. Promotions often include free streaming, social media access, or zero-rated apps to retain subscribers.

#### 3.3.2 Brazil

Vivo (Telefónica) employs a premium positioning strategy, emphasising quality, nationwide coverage, and innovation. It was among the first to roll out 5G services in major cities. Claro uses convergence with its cable operator (NET) and bundling as core strategies. TIM, now strengthened by acquiring Oi Móvel assets, leverages price segmentation and rural coverage expansion. All three invest heavily in advertising and user experience optimisation.

#### 3.3.3 Chile

Firms in Chile adopt aggressive marketing and customer acquisition strategies. WOM, the newest major player, entered the market with a low-cost model and high-profile advertising campaigns, forcing incumbents to react. Entel maintains a strong local brand with extensive rural reach. Movistar and Claro compete by offering integrated plans and data-heavy bundles. Chile's pro-competition regulation has encouraged more innovation in service differentiation.

### 3.3.4 Colombia

Claro differentiates through wide coverage and superior infrastructure. Its pricing strategies are complemented by significant investment in technology and advertising. Movistar emphasises customer service and digital platforms (e.g., self-management apps). Tigo, despite being a follower, introduced the first *quadruple-play* bundle and has focused on integrated service packages to improve customer retention. However, Claro's economies of scale and investment power maintain its market leadership.

### 3.3.5 Mexico

Telcel (América Móvil) dominates with brand recognition, coverage, and extensive retail presence. Its strategic behavior includes handset financing, exclusive distribution agreements, and zero-rated content. AT&T, in contrast, focuses on the premium and business segments, offering plans with U.S.-Mexico cross-border coverage. Smaller competitors and MVNOs find it difficult to scale, partly due to Telcel's infrastructure control and promotional flexibility.

### 3.3.6 Peru

Movistar leads with bundled plans and extensive infrastructure. Claro competes on network quality and promotional packages, especially in rural areas. Entel, the main challenger, focuses on youth-oriented marketing, data-based plans, and customer service. Despite this, strategic room is limited by spectrum distribution and economies of scale, which favor incumbents.

## 3.4 Regulatory Analysis

Understanding market concentration in Latin America requires examining not only regulatory frameworks but also the historical and structural roles of leading telecommunications firms in each country. The dominance of operators such as América Móvil and Telefónica has shaped competitive dynamics, often outpacing regulatory responses and reinforcing oligopolistic structures.

### 3.4.1 Argentina

In Argentina, the mobile market is led by Claro (América Móvil), Movistar (Telefónica), and Personal (Telecom Argentina). The regulatory body ENACOM has attempted to promote competition through infrastructure sharing and spectrum redistribution. However, América Móvil and Telefónica have benefited from early market entry and sustained investment, enabling them to capture broad user bases and extensive infrastructure coverage. Telecom Argentina, through Personal, merged with Cablevisión in 2018, further consolidating the market.

### 3.4.2 Brazil

Vivo (Telefónica) holds the largest market share in Brazil, followed by Claro and TIM. The 2022 acquisition of Oi Móvil—previously the fourth major operator—by this trio marked a critical shift in market structure. Brazil's regulator ANATEL approved the deal with specific conditions, but the long-term impact has been increased concentration. Telefónica's presence via Vivo has been strategically reinforced through bundling and control of fixed and mobile infrastructure, allowing vertical integration and reducing space for competition.

### 3.4.3 Chile

Chile's market is considered one of the most competitive in the region. The presence of Entel, a strong domestic firm, along with Movistar, Claro, and more recently WOM, has diversified the market structure. Chile's regulator SUBTEL has enforced pro-competition policies, including effective support for MVNOs, spectrum caps, and number portability. WOM's disruptive entry strategy—focused on aggressive pricing and investment in 4G and 5G infrastructure—has reduced the market share of legacy players, showing that regulatory design can facilitate entry and competition.

### 3.4.4 Colombia

Claro (América Móvil) dominates Colombia's mobile market, often holding over 50% market share. It has benefited from early infrastructure development and favorable positioning during the liberalisation process in the 1990s. Movistar (Telefónica) and Tigo (Millicom and EPM joint venture) follow, but with significant gaps in market power. The regulatory authority CRC has made efforts to limit dominance through asymmetric regulation

and wholesale access requirements. However, Claro's vertical integration and investment capacity continue to be decisive in shaping competition. Tigo's strategy after merging with UNE has focused on quadruple play offerings, but it has not significantly disrupted Claro's leadership.

#### 3.4.5 Mexico

Mexico is home to América Móvil's flagship brand, Telcel, which holds a dominant position with over 60% of the market. Despite reforms led by IFT (Instituto Federal de Telecomunicaciones) aimed at reducing Telcel's market power—including declaring it a "preponderant economic agent"—its infrastructure ownership and broad subscriber base remain structural advantages. Although AT&T entered the market through acquisitions of Nextel and Iusacell in 2015, it has struggled to challenge Telcel's dominance. The presence of MVNOs has increased, but they remain marginal in terms of total market share.

#### 3.4.6 Peru

Peru's market is led by Movistar, followed by Claro and Entel. The regulator OSIPTEL has implemented measures to reduce switching costs and improve transparency in tariffs. However, Movistar and Claro continue to dominate through long-standing infrastructure investments and aggressive marketing strategies. Entel, despite entering the market via the acquisition of Nextel in 2013, faces limitations in spectrum allocation and scale. This has hindered its ability to compete on equal terms.

## 4. Results and Analysis

### 4.1 Regional Overview: Market Concentration and Dominant Firms

The analysis reveals a consistent pattern of high market concentration across the six countries studied. In all cases, the Herfindahl-Hirschman Index (HHI) exceeds 2,500—indicating highly concentrated markets under international standards. The most dominant firms across the region are América Móvil (operating under the brands *Claro* and *Telcel*) and Telefónica (operating as *Movistar*), which together hold the majority of market share in each country.

Across the six countries analysed:

- C2 values (combined market share of the top two operators) consistently exceed 70%
- C3 values (combined market share of the top three operators) approach or exceed 90%
- The presence of MVNOs is limited in all countries except Chile and Mexico, where regulations are more favorable to new entrants

These findings suggest that despite formal liberalisation and privatisation processes, effective competition remains weak in practice due to structural dominance.

### 4.2 Country-Level Results

#### 4.2.1 Argentina

The mobile market in Argentina is dominated by Claro, Movistar, and Personal. HHI values in recent years have remained above 2,800, with Claro leading the market. Regulatory efforts have promoted MVNOs, but with limited market penetration.

#### 4.2.2 Brazil

Brazil's market is one of the largest in the region. After the acquisition of Oi Mobile by the top three players in 2022, the HHI increased significantly to values close to 3,000, reflecting growing concentration. The main operators—Vivo (Telefónica), Claro, and TIM—control nearly the entire market.

#### 4.2.3 Chile

Chile stands out for its relatively better regulatory framework and more dynamic competition. The presence of Entel, WOM, and Movistar makes the market less concentrated (HHI around 2,400–2,600) compared to the regional average. Chile also has the highest number of active MVNOs.

#### 4.2.4 Colombia

Colombia's market is structured as an oligopoly, with Claro holding more than 50% of market share, followed by Movistar and Tigo. The HHI remains above 3,000, and despite regulatory measures, market dynamics favor incumbent firms. Bundled service offerings and network control reinforce dominant positions.

#### 4.2.5 Mexico

In Mexico, Telcel (América Móvil) controls over 60% of the mobile market, resulting in an HHI of approximately 3,800. Despite recent regulatory reforms to curb dominance and promote MVNOs (e.g., AT&T, Virgin Mobile), Telcel's market power remains largely unchallenged.

#### 4.2.6 Peru

Peru's market is also highly concentrated, with Movistar and Claro controlling nearly 80% of the market. The HHI is consistently above 2,800. Entry by Entel has introduced some competitive pressure, but it has not been sufficient to significantly alter market structure.

### 4.3 Strategic Behavior and Regulation

Across all countries, incumbent firms employ similar strategic behaviors:

- Service bundling: Combining mobile with internet, TV, and fixed telephony
- Heavy investment in network infrastructure and spectrum to limit entry
- Aggressive marketing and pricing strategies to lock in customers
- Brand loyalty and switching costs, which reduce consumer mobility

Despite the presence of national regulators, regulatory capacity varies widely. In countries such as Chile, oversight and enforcement are relatively strong. In contrast, Colombia, Mexico, and Brazil show institutional limitations in curbing dominance and ensuring fair competition.

## 5. Discussion and Conclusions

This study has examined the mobile telecommunications market in six Latin American countries through the lens of industrial organisation theory. The empirical findings confirm the presence of high market concentration across the region, with América Móvil and Telefónica acting as dominant players. In several markets, the Herfindahl-Hirschman Index (HHI) exceeds 3,000, indicating a structural tendency toward oligopoly or even near-duopoly conditions.

### 5.1 Strategic Behavior and Market Power

The analysis highlights that dominant firms use a consistent set of strategies to entrench their market position:

- Bundling services to increase switching costs and reduce churn
- Aggressive infrastructure investment, which creates entry barriers
- Brand loyalty and wide distribution networks, especially in rural areas
- Vertical integration between mobile and fixed services

These strategies are not inherently anti-competitive, but in the context of limited rivalry and uneven regulatory enforcement, they reinforce concentration and reduce the effectiveness of formal liberalisation.

The case of Claro in Colombia and Mexico, for example, illustrates how a combination of early entry, infrastructure control, and bundled offerings can lead to near-monopoly conditions, even in supposedly competitive environments. Similarly, Telefónica's presence across multiple markets supports its cross-border learning, efficiency, and capacity to adapt strategies according to national regulation, often outpacing local competitors.

## 5.2 Regulatory Challenges

Although all countries examined have regulatory frameworks intended to foster competition, these frameworks suffer from several limitations:

- Regulatory capture and political constraints on enforcement
- Unequal access to spectrum and infrastructure for new entrants
- Limited financial and technical capacity of regulators, especially outside capital cities
- Slow adaptation to digital market dynamics, such as OTT services and data-centric competition

Only in Chile does the regulatory regime show sustained success in promoting competition, partially due to stronger institutional autonomy, effective spectrum policy, and robust support for MVNOs. In contrast, Mexico and Colombia show significant gaps between regulatory intent and market outcomes.

## 5.3 Policy Recommendations

To enhance competition and improve consumer welfare, the following policy actions are recommended:

1. Strengthen regulatory independence and enforcement capacity, especially in spectrum management and infrastructure sharing.
2. Facilitate the entry and growth of MVNOs through simplified licensing, mandatory wholesale access, and transparent pricing models.
3. Expand number portability and switching facilitation policies to reduce consumer inertia.
4. Implement stricter ex-ante rules for dominant firms, particularly in highly concentrated markets.
5. Promote regional coordination, especially for multinational operators, to avoid regulatory arbitrage and ensure consistent oversight across countries.

## 5.4 Final Remarks

The mobile telecommunications market in Latin America reflects broader structural challenges in balancing liberalisation, competition, and regulation. While the sector has achieved impressive growth and technological advancement, market power remains concentrated in a few firms whose strategic behavior shapes the competitive landscape. As shown in Table 1, the Herfindahl-Hirschman Index (HHI) remains high across all six countries, and regulatory responses vary significantly, highlighting persistent asymmetries. Future research should explore the impact of digital convergence (e.g., mobile payments, streaming, and IoT services) on market dynamics, as well as the role of regional regulatory harmonisation.

Ultimately, fostering a more inclusive, dynamic, and fair telecommunications ecosystem in Latin America requires not only institutional reforms but also political will to prioritise consumer rights and long-term innovation over short-term market stability. Without stronger regulatory oversight and coordinated policy reforms, market concentration in Latin American telecommunications will likely persist. This poses risks not only for fair competition but also for long-term digital inclusion, innovation, and sustainable economic development in the region.

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## Ethics Declaration

This research did not involve human participants, animals, sensitive personal, or experimental interventions, and therefore did not require formal ethical clearance. All data used in this study was obtained from publicly available sources or official institutional databases.

## AI Declaration

Artificial Intelligence (AI) was used in the preparation of this paper exclusively for language editing and style improvement in English. As the author's primary language is Spanish. The content, data analysis, and academic

arguments were developed entirely by the author. The AI tool assisted in refining the clarity, grammar, and coherence of the written English to meet the requirements of an international audience.

**Table 1: Market Concentration and Regulation Overview by Country**

Country	Main Operators	HHI (2023)	Regulatory Environment
Argentina	Claro (América Móvil), Movistar (Telefónica), Personal	~2,800	Moderate regulation; attempts to foster MVNOs and competition through infrastructure sharing. Dominance of three large operators.
Brazil	Vivo (Telefónica), Claro, TIM	~3,000	ANATEL enforces spectrum caps and merger conditions. Oi Mobile's exit in 2022 increased market concentration.
Chile	Entel, Movistar, WOM, Claro	~2,400–2,600	Strong regulation by SUBTEL; most successful MVNO market in the region; active spectrum management and competitive incentives.
Colombia	Claro (América Móvil), Movistar, Tigo	~3,200	CRC uses asymmetric regulation to limit Claro's dominance. Limited effectiveness due to Claro's infrastructure control and bundling practices.
Mexico	Telcel (América Móvil), AT&T, Movistar	~3,800	Telcel designated as a "preponderant agent" by IFT. MVNO entry encouraged but structural dominance remains. Regulation enforcement has been uneven.
Peru	Movistar, Claro, Entel	~2,800–3,000	OSIPTEL promotes competition and portability. Incumbents still dominate due to early investment and scale advantages.

Source: Author's elaboration based on ITU, ECLAC and national regulatory agencies (2023).

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