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### Monopoly unveiled: Telecom breakups in the US and Mexico

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### Abstract

This paper examines the decline in market capitalization after a monopoly breakup to assess how financial markets value market power in the telecom sectors of the US (AT&T) and Mexico (AMX). Using univariate structural time series models, we estimate the firm's value without the breakup and compare it to post-divestiture values, revealing a 65% drop for AT&T and 32% for AMX. These findings highlight the sizeable impact of monopoly breakups on market capitalization.

## 1. Introduction

A firm's market power allows it to raise prices above competitive levels. To evaluate an industry's competitive benchmark, common approaches are the rate of return and the price-cost margin. This paper explores how financial markets value market power by adapting Faccio's (2006) methodology for political connections. We estimate a firm's value decline following a monopoly breakup in the telecom sector of the US and Mexico, focusing on AT&T and AMX (formerly Teléfonos de México), respectively. Our study uses univariate structural time series models to project the firm's value without a breakup and compare it to post-breakup values. The results show a significant decline in total value: 65% for AT&T and 32% for AMX, reflecting the market's valuation of monopoly power.

The paper is structured as follows: Section 2 reviews relevant literature and covers the telecommunications sector. Section 4 presents the model and the results, and Section 5 concludes.

## 2. Literature Review and telecom sector in the US and Mexico

Thomadakis (1977) suggests using a firm's value to reflect the market's expectation of sustaining excess profits. The capital market assimilates all information about the firm's future profitability, making market value a reflection of the ex-ante rate of return on investment. Fisher and McGowan (1983) highlight shortcomings in this approach, such as improper capital valuation and inadequate risk adjustment. They propose the price-cost margin as an alternative, though it faces challenges due to scarce marginal cost data (Fisher, 1987). A monopoly breakup may increase competition and stimulate innovation (Miller, 1995), but stock prices might decline in the short term.

It is important to note that there have been only a few notable breakups in history, we identified two attempts by U.S. authorities to break up monopolies, with Standard Oil and AT&T being the most prominent successes. In the case of Mexico, we found only the example of AMX, which we discuss below. For this reason, we limit our focus here to these two major cases.

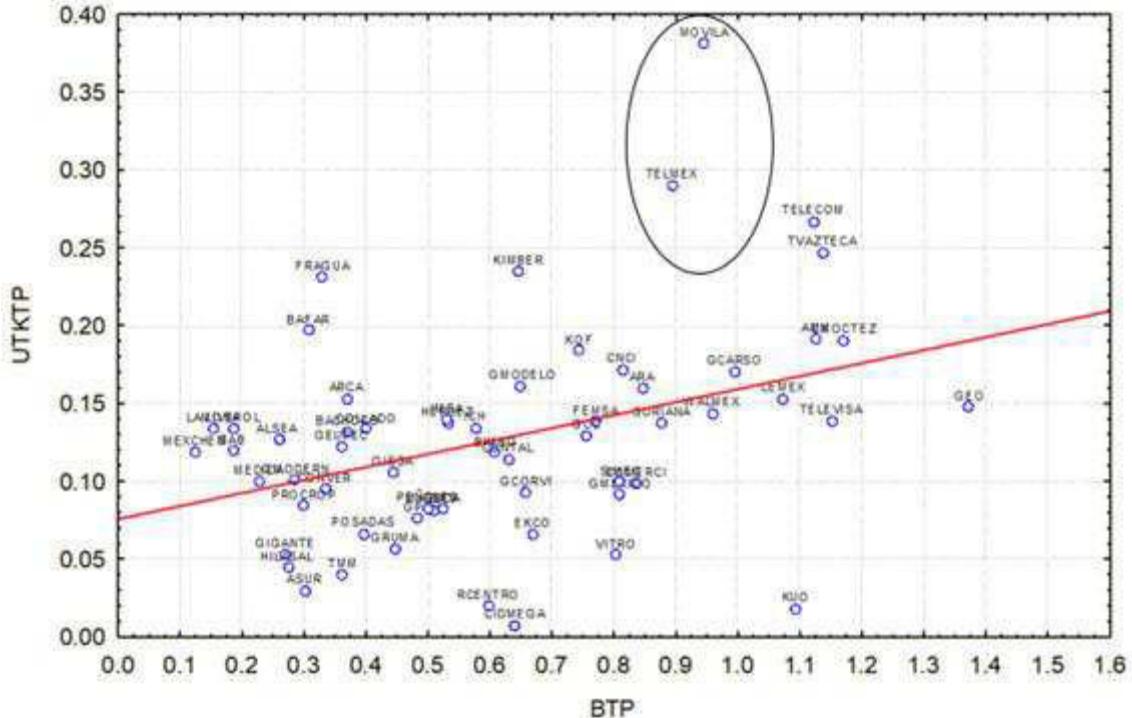
AT&T, founded in the late 1800s, was historically a regulated monopoly. In the 1970s, it faced antitrust lawsuits and, in 1984, was restructured into seven "baby-bells," increasing competition and lowering prices (Temin, 1987). In the 1990s, AT&T transitioned into an internet service provider.

In 1990, Telmex (AMX) in Mexico was privatized, becoming the sole fixed-line service provider. By 1998, it held a 100% market share in fixed-line telephony, slightly reducing to over 80% by 2010. AMX also dominated the cellular market with a 79.6% share (OECD, 2011). Despite its dominance, AMX's pricing exceeded international benchmarks, causing an average annual loss in consumer welfare of 1.8% of Mexican GDP (OECD, 2012). The Mexican government implemented breakup measures to foster competition (Alcázar & Ramos, 2023), leading to more competitive pricing.

The financial implications of AMX's breakup raise the question of its corporate value loss, reflecting the market's assessment of its monopoly power. Figure 1 shows the Securities Market Line (SML) for the Mexican stock market from 2000 to 2008, highlighting AMX's market power peak. Despite risk considerations, AMX's excess return indicates a valuation

beyond expected risk alone. In 2014, Mexican Congress approved telecommunications reform to increase competition, allowing AT&T (*inter alia*) to enter the market.

**Figure 1:** Securities Market Line for Mexico



Therefore, there is no necessity to calculate an appropriate rate of return or a price-cost margin to discern the cost structure for deducing the present value of monopoly profits as perceived by markets. Subsequently, we proceed to estimate this loss.

### 3. Methodology

We estimate the value of market power through the firm's market value following Faccio (2006).<sup>1</sup> She argues that financial markets value firms higher with political connections; losing these connections drops stock values. We apply this to monopoly breakups, interpreting the firm's value loss as the market's valuation of monopoly power.

We project the firm's value without a breakup to establish a baseline, comparing this with actual post-breakup values. We use a univariate structural time series model to describe market capitalization (stock price times outstanding shares), decomposing it into permanent components (level, slope, cycle, seasonal) and a transitory part. The model uses state-space form (SS) with Kalman Filter and Smoothing (KFS) algorithms for maximum likelihood estimation. The model's output equation is:

$$y_t = \mu_t + \gamma_t + c_t + \varepsilon_t, \quad \varepsilon_t \sim N(0, \sigma_\varepsilon^2), \quad (1)$$

<sup>1</sup> A decline in stock prices might be anticipated. In contrast, the stock market response to mergers is positive for the combined merging entities, suggesting that mergers create shareholder value (see Andrade et al., 2001; Hackbarth and Morellec, 2008).

With state equations:

$$\mu_{t+1} = \mu_t + \beta_t + \xi_t, \quad \xi_t \sim N(0, \sigma_\xi^2), \quad (2)$$

$$\beta_{t+1} = \beta_t + \zeta_t, \quad \zeta_t \sim N(0, \sigma_\zeta^2), \quad (3)$$

where  $y_t$  is the observed variable,  $\mu_t$  is the trend component (it includes level and slope),  $\gamma_t$  is the seasonal component,  $c_t$  is the cycle component (seasonal and cycle components are detailed in online appendix A). Together, the state equations and the output equations form the structural model.

The counterfactual strategy inherently assumes that conditions remained unchanged, offering an estimate of the price trajectory had the breakup not occurred. This approach allows us to examine how the price series would have evolved without the breakup.<sup>2</sup>

Our dataset<sup>3</sup> spans 1971-1992 for AT&T and 2011-2017 for AMX, focusing on 1971-1983 and 2011-July 2015, respectively.<sup>4</sup> The SS model replicates pre-breakup price dynamics to construct a counterfactual scenario, estimating price trajectories without breakups.<sup>5</sup>

### 3.1 Results

Our findings indicate that a random walk with drift and stochastic seasonality accurately captures the time-series dynamics for both AT&T and AMX (see online Appendices B & C for details).<sup>6</sup> The specifications are:

- AT&T:  $p_t = \mu_t + \gamma_t + c_t + \varepsilon_t,$
- AMX:  $p_t = \mu_t + \gamma_t + \varepsilon_t,$

where  $p_t$  is the market cap, either AT&T or AMX. As for the State equations, we set:

$$\bullet \quad \mu_{t+1} = C + \mu_t + \xi_t, \quad (2)$$

where  $C$  is a constant term.

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<sup>2</sup> SS models are estimated using Quasi-Maximum Likelihood and KFS algorithms, see Harvey (1990) for technical details. We use the software R to estimate all models. Particularly, we employ the KFAS toolbox developed by Helske (2017).

<sup>3</sup> Data for AT&T was obtained at <https://investors.att.com/stock-information/historical-stock-information/historical-quote/att-corp> ("Stock Information," Quote, AT&T Corp, April first, 2023). As for AMX data was obtained at <https://es.finance.yahoo.com/quote/AMX/history?p=AMX&guccounter=1> (América Móvil, S.A.B. de C.V. (AMX), April first, 2023).

<sup>4</sup> Original data was daily, but substantial missing observations led us to compute monthly averages instead. This reduces variability, but daily fluctuations are irrelevant to the breakup's value loss.

<sup>5</sup> The estimates are unlikely to be distorted by the timing of a bear market. In Mexico, the IPC's average annual compounded growth declined only slightly—from 4.4% (July 2007-July 2015) to 4.0% (August 2015-August 2018)—while in the United States the S&P 500 rose from 4.2% (1971-1983) to 15.0% (1984-1989), a clear bull-market phase. Growth rates were computed as  $(P_t/P_0)^{1/N} - 1$ , where  $P_0$  and  $P_t$  are the initial and final index levels, and  $N$  is the number of years in the interval. See the online appendix: [https://www.dropbox.com/scl/fi/s9rtjc2ty7d8kxudu1f4h/HRV\\_suppMat\\_EB.pdf?rlkey=i1bcay1yp4ldowyx2m6oukk8k&dl=0](https://www.dropbox.com/scl/fi/s9rtjc2ty7d8kxudu1f4h/HRV_suppMat_EB.pdf?rlkey=i1bcay1yp4ldowyx2m6oukk8k&dl=0).

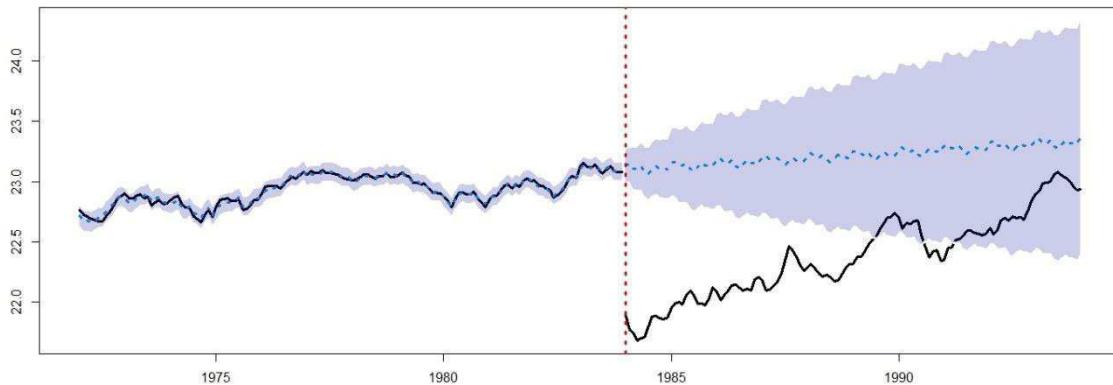
<sup>6</sup> The data set is not long enough to encompass a reasonable number of cycles for Mexico.

### 3.2 Counterfactual building

After estimating the structural models, we use the results to construct the counterfactual behavior of market capitalization prices. The forecasted periods are January 1984 to June 1989 for AT&T and July 2015 to November 2016 for AMX. These subsamples start with the judicial monopoly breakup decision and end when the counterfactual becomes statistically indistinguishable from the observed market capitalization.<sup>7</sup> Figures (2) and (3) show the outcomes of the AT&T and AMX breakups, respectively, depicting the evolution of each company's market capitalization before and after the event, alongside the counterfactual derived from the pre-breakup period.

Monopoly breakups often create uncertainty, leading many investors to reduce their stock holdings or exit the market. Share prices dropped noticeably, with a 1-year average decrease<sup>8</sup> of 74% for AT&T and 32% for AMX. However, recovery for both firms takes time as they navigate innovative strategies in a more competitive environment post-breakup. Figure 2 shows that AT&T's stock price enters the confidence interval five years after the breakup. Consequently, the market capitalization loss is estimated as the present value of these five years, amounting to 65%, as presented in Table 3.

**Figure 2:** AT&T Market Cap (in logs). Observed vs counterfactual.



**Table 3.** AT&T Loss of Value after Break up

	<i>Loss of Value (millions of USD)*</i>	<i>% Loss of Value*</i>
1-yr Average after breakup	-7,900,718,045.98	-72.9%
2-Yr Average from after breakup	-7,678,369,840.63	-70.9%
3-yr Average after breakup	-7,573,666,849.27	-69.9%
<b>5-yr-Average after breakup</b>	<b>-7,048,522,354.60</b>	<b>-65.0%</b>

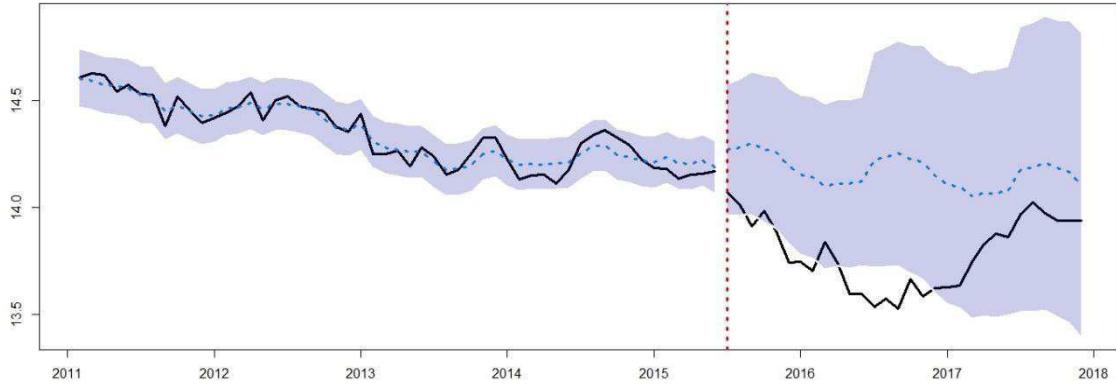
\* The difference between forecasted and actual stock price times the number of shares in circulation

<sup>7</sup> For AMX, the counterfactual diverges briefly (July-15, August-15, October-15). These months are included. For AT&T, it diverges significantly later (August-90 – March-91) and is omitted. Stricter subsample definitions do not affect our results.

<sup>8</sup> Average Market Cap of previous year over the one of the post breakup.

For the AMX case, Figure 3 shows its stock price enters the confidence interval after two years. The present value of the market cap loss is nearly 32% of the company's value (assuming an unlevered position), as shown in Table 4.

**Figure 3:** AMX Market Cap (in logs). Observed vs counterfactual.



We contend that the loss of value (assuming an unlevered company) signifies how financial markets assessed the extraordinary rents from the monopolist position. Conventional theory posits that competitive markets enhance efficiency and stimulate innovation, implying a monopoly breakup could lead to a recovery in financial markets (Miller, 1995). The duration of this process is uncertain. However, as mentioned, we posit it occurs when the firm realigns with the stochastic process's trajectory (within the confidence interval).

**Table 4.** AMX Loss of Value after Break up

	<i>Loss of Value</i> (millions of USD)*	<i>% Loss of Value*</i>
1-yr Average after breakup	-447,295.72	-29.29%
2-Yr Average from after breakup	-485,531.21	-31.80%
3-yr Average after breakup	-441,970.10	-28.95%

\* The difference between forecasted and actual stock price times the number of shares in circulation.

A notable aspect is the disparity in value loss: AT&T experienced a 65% loss, while AMX's loss was 32%. The recovery speed for AMX is also half the time for AT&T. Mexico's weak democracy and rule of law add complexity: The country ranks 89th out of 132 in the Democracy Index by the Economist Intelligence Unit and 113th out of 134 in the World Justice Project's Rule of Law Index. Acemoglu and Robinson's "Why Nations Fail" (2012) highlights weak institutions. Consequently, the breakups' impacts varied.

Despite this, competition in Mexico's telecommunications sector increased. Alcazar and Ramos (2023) show that asymmetric regulations promote competition by facilitating sector entry. These regulations also enhanced the quality of services offered by AMX, resulting in a net gain in transferred lines and an increase in postpaid lines.

In summary, the market cap loss reflects how financial markets value market power. This does not represent actual monopoly profits but shows how financial markets assess those profits through fundamental analysis.

#### 4. Final Remarks

This paper estimates the value loss in the U.S. and Mexican contexts to assess the economic repercussions of a monopoly breakup in the telecommunications industry. We estimated the counterfactual market capitalization for two periods: January 1984 to June 1989 for AT&T and July 2015 to November 2016 for AMX. These periods align with the dates of judicial breakup decisions and the points where the counterfactual becomes statistically indistinguishable from observed market capitalization. We then compared these projections to actual market observations. This suggests that the market views these reductions as reflective of the present value of monopoly rents. The results further show a stark contrast: AT&T experienced a 70% reduction in value, while AMX faced a 30% reduction.

These findings highlight significant differences in market reactions to monopoly breakups, influenced by market conditions, institutional frameworks, and regulatory environments. This paper enhances our understanding of how financial markets evaluate market power, emphasizing the complexity of market dynamics and providing a foundation for further research into market responses to monopoly breakups in the telecommunications sector.

Future research may build on this framework using multivariate or panel state-space models, integrating macro-financial variables and synthetic control methods. Comparative studies across sectors and institutional settings could further illuminate how markets internalize the dismantling of dominant firms.

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