Geo-Arbitrage of Digital Services as a Disruptive Force on Business Models: An Empirical Investigation and Strategic Analysis

Research Proposal: Master Thesis

Course: Technology and Innovation Management

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Topic Description

This thesis conducts an empirical investigation into international price differentiation for digital services (streaming, SaaS, etc.). The centerpiece of this investigation is the creation of a novel "Digital Services Price Index" (DSPI), a standardized metric designed to systematically measure price deviations from Purchasing Power Parity (PPP) across numerous countries and services.

Building on this empirical foundation, the research then advances to a strategic analysis. It frames the consumer practice of geo-arbitrage not as a market anomaly, but as a form of market disruption that challenges the core logic of the business models employed by these firms. Using Transaction Cost Economics (TCE), the thesis will model the strategic conflict between firm-side enforcement and consumer-side circumvention. The ultimate goal is to connect the empirical findings with strategic management theory, exploring the pressures this conflict creates for Business Model Innovation (BMI).

Theoretical Background:

This thesis integrates two distinct but complementary theoretical streams to create a comprehensive analytical framework.

- Economic Foundations of Price Setting: The analysis begins with the classic economic theories that govern international pricing. Purchasing Power Parity (PPP) (Rogoff, 1996) provides a baseline for assessing price fairness across countries, forming the conceptual backbone for our "Digital Services Price Index" (DSPI).
- The firms' strategies of setting different prices in different countries will be understood through the lens of 3rd-degree Price Discrimination (Varian, 1985), which explains the logic of segmenting markets geographically.
- Strategic Framework for Business Model Disruption: To move from observation to analysis, we employ theories from strategic management. We conceptualize a firm's pricing not as an isolated decision but as a core component of its Business Model and Revenue Model (Linde, Frishammar, & Parida, 2023; Marcon, Le Dain, & Frank, 2022).
- The central conflict of this thesis is analyzed using Transaction Cost Economics (TCE) (Williamson, 1981). TCE allows us to model the viability of consumer arbitrage by weighing the consumer's transaction costs (effort, risk) against the firm's enforcement costs, thereby explaining the threshold at which a business model's geographic segmentation begins to fail.

Research Gap:

The current literature presents a clear research gap at the intersection of firm strategy and consumer action. While extensive research exists on the firm's perspective detailing strategic pricing (Forman & Hunt, 2005) and the design of digital business models (Feng et al., 2022) the active, technology-enabled response from consumers is undertheorized. Consumer-driven geo-arbitrage is often overlooked or treated as a niche anomaly rather than what it is: a significant disruptive force that directly challenges the viability of established business models.

Furthermore, the lack of a standardized metric like a Digital Services Price Index (DSPI) makes it difficult to empirically grasp the scale of the price dispersion that fuels this

disruptive behavior. This thesis closes this gap by first creating the empirical tool (the DSPI) and then using it to analyze the strategic conflict between firms and consumers through the lens of TCE and Business Model Innovation.

Research Question:

RQ1 (Price Discrimination & DSPI Focus):
To what extent do digital service providers employ international pricing strategies, and how does a "Digital Services Price Index" (DSPI) reveal the scope of this price differentiation relative to Purchasing Power Parity (PPP)?

RQ2 (Consumer Geo-Arbitrage & TCE Focus):
What are the key drivers and practical hurdles for consumers engaging in geo-arbitrage, and how does a Transaction Cost Economics (TCE) analysis explain the viability of these practices in response to the firms' enforcement strategies?

RQ3 (Theoretical Integration):
How does consumer-driven geo-arbitrage, analyzed as a form of market disruption fundamentally challenge the logic of international market segmentation in digital business models? And what specific pressures does this create for business model innovation?

Key Sources:

1. Varian, H. R. (1985). Price Discrimination and Social Welfare.
2. Williamson, O. E. (1981). The economics of organization: The transaction cost approach.
3. Linde, L., Frishammar, J., & Parida, V. (2023). Revenue Models for Digital Servitization.
4. Chen, H. Q., Chen, Y. J., & Zhou, S. X. (2025). Digital Goods Reselling: Implications on Cannibalization and Price Discrimination.
5. Grover, V., Lim, J., & Ayyagari, R. (2006). The dark side of information and market efficiency in E-markets.
6. Rogoff, K. (1996). The purchasing power parity puzzle.

Data & Analysis:

Data Collection:

International Price & Strategy Data:

- Quantitative price sampling for a diverse portfolio of digital services (Streaming, Gaming, SaaS, Security) across high-, middle-, and low-income countries using VPN-controlled experiments.
- Systematic tracking of firm-side enforcement mechanisms (e.g., payment method checks, address verification, geo-blocking protocols) for each service to document and analyze firm-side transaction costs.

Consumer Transaction Cost Data:
Anonymized online consumer surveys to gather quantitative and qualitative data on the hurdles of geo-arbitrage (e.g., time spent, technical knowledge required, perceived risks, success rates…).

Analysis Method:
For RQ1: The collected price data will be analyzed using statistical methods (ANOVA, regression) to identify pricing patterns. The core output will be the DSPI, which normalizes prices against a PPP benchmark to provide a clear measure of price differentiation.

For RQ2: The survey data will undergo thematic analysis to identify key drivers and hurdles. This data will be integrated with the tracked enforcement mechanisms to build a TCE framework, modeling the interplay between consumer-side and firm-side transaction costs to determine the viability of arbitrage.

For RQ3: A structured synthesis of the empirical findings from RQ1 and RQ2. The analysis will interpret the strategic conflict within the context of Business Model Innovation theory, classifying firm responses and explaining the strategic paradox they face.

Motivation and Experience:

My motivation is to address the practical and economic complexities consumers and companies face in today's global digital economy. This thesis is inspired by a personal interest in consumer economics and fairness, combined with a desire to connect these

real-world phenomena to robust strategic management theories. I am highly motivated to produce actionable insights that inform the strategic challenges faced by companies and the circumvention tactics used by consumers. I possess the necessary technical knowledge of digital services and use of VPNs, a foundational understanding of economic theory, and the capability to automate price collection via scripts for reproducible and scalable empirical research.

Other Info:

- Pilot Study: A pilot study will be conducted on a small set of services to refine the data collection protocol and survey instruments.
- Country Selection: The study will include high-, middle-, and low-income countries to ensure a wide spectrum of PPP and price differentiation is captured.
- True Cost Calculation: The analysis will account for real exchange rates, payment processing fees, and VAT to compute the true cost differences.
- TOS Enforcement: Tracking Terms of Service enforcement is not an afterthought but a core data collection activity for the TCE analysis in RQ2, documenting the firm's side of the strategic conflict.
- Compliance & Rigor: All survey data will be handled in a GDPR-compliant manner. A power analysis will be conducted to ensure the consumer survey is appropriately sized for statistical relevance. The DSPI methodology will include clear rules for normalization and weighting to ensure its validity.