Proleptic Market Analysis of the German Retail Banking Market

Joint Spring Conference 2018 of E-Finance Lab and IBM Deutschland
Frankfurt am Main, 1. Februar 2018

Daniel M. Ringel
with Elham Maleki and Bernd Skiera
Elements of Market Analysis

Market: Demand → Products ← Supply

1. Market Definition
   - Demand: Needs (Topics, Segments)
   - Supply: Firms

2. Importance
   - Topics
   - Firms

3. Similarity
   - Topics
   - Firms (Competition)
   - Market Structure (Topics and Firms)

4. Time
   - Static (point in time)
   - Dynamic (development over time)
Traditional Approaches to Market Analysis

**Object:** Product

**Unit:** Quantity and Price

**Approach:** Cross-price-elasticity of Demand (Franke 2008)

\[
XED = 0 : \text{ no competition} \\
XED > 0 : \text{ Substitutive Products (i.e., Competitors)} \\
XED < 0 : \text{ Complementary Products}
\]

1% Price Increase  ?% Demand Increase

XED > 0 = Competitors

(Substitutes)
More recent Approaches to Market Analysis

Co-Ocurring Products or Firms

Co-Occurrence ≈ Similarity ≈ Competition

Discussion Forums
(Netzer et al. 2012, Lee und Bradlow 2011)

Online Search
(Ringel und Skiera 2016)

News
(Ma, Pant, und Sheng 2011)

10K Reports
(Hoberg and Phillips 2010)
Challenges for Traditional Market Analysis
Hotel Market

*Who are the biggest players?*
Disruptive Firms

Most popular media owner and provider, produces no content

Most valuable firm in retail, has no inventory

Largest provider of accommodation, neither owns nor operates real-estate

The product-centric scope of Traditional Market Analysis is too narrow to capture such non-producing firms
New Idea
Proleptic Market Analysis

Consumers’ attention is a scarce resource that firms must compete for

Falkinger 2008

Consumers’ attention reflects potential market power from which firms might profit
Shocker et al. 1991, Drèze and Zufryden 2003

Attention → Power → Profit

Proleptic Market Analysis

pro·lep’tic (-lēp’tĭk)
Ancient Greek prolēpsis,
from proλambanein: to take beforehand

In anticipation of future market outcomes

Object of Analysis: Product Attention

© 2018 Daniel M. Ringel of UNC Kenan-Flagler Business School
Attention from Organic Search Results

1. How much attention per keyword?

   - real estate credit

   - Real Estate - Credit Suisse
   - Real Estate Credit Investments
   - Goldman Sachs | Direct Private Investing - Credit - Real Estate Credit
   - Real Estate Credit Investments PCC Limited (RECI) Ord NPV Share Price ...
   - REA...
Description of Proleptic Market Analysis
4 Phase Approach

1. Market Definition
   - Keywords
   - Search Engine Data
   - Firms
   - Topics (Topic Modelling)

2. Analysis of Importance
   - Attention Share of
     - Topics
     - Firms (by topic)

3. Analysis of Similarity
   - Similarity of topics
   - Similarity of firms
   - Visualization of market structure (*New method: VTM*)

4. Market Development Analysis
   - Repeat step 1,2,3 overtime

*VTM*: Visualization of Topic Models
Proleptic Market Analysis of the German Retail Banking Market
Empirical Study: Retail Banking Market

Market: Retail Banking
Data sources: Google
Time: December 2015 - March 2017
Country: Germany
Number of Searches: 42,828,990*

Objectives

**Identify**
- market topics and their importance
- firms active in market
- firm importance (potential for power)

**Visualize** competitive market structure for consumers’ attention

**Compare** to traditional market analysis

* Sum of search volumes of market-defining keywords over time
Data Collection

1. **Core Products**
   - Words from Top 10 Retail Bank’s Websites
   - (1st and 2nd level site navigation)
   - 134 Keywords

2. **Expert Check**
   - 12 Managers Retail Banking
   - Keywords: Removed 5, Added 6
   - 135 Keywords

3. **Keyword Expansion**
   - Google Keyword Planner
   - Keywords, Volume: Identified 935, Removed 33 (branded)
   - 902 Keywords

4. **Search Results**
   - Top 30 Google Search Results
   - Firms: Identified 3,579
   - 3,579 Firms

5. **Noise Reduction**
   - Firms occurred more than 5 times
   - Firms: Removed 2,988
   - 591 Firms

**902 Market Defining Keywords**

**591 Firms that attract Consumers’ Attention**
## Topics in Retail Banking

*December 2015*

<table>
<thead>
<tr>
<th>Topic Number</th>
<th>Topic Name*</th>
<th>Number of keywords relevant to the topic</th>
<th>Number of firms assigned to the topic</th>
<th>Total Attention Share of Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Real Estate</td>
<td>495</td>
<td>284</td>
<td>23.21 %</td>
</tr>
<tr>
<td>2</td>
<td>Stock Market</td>
<td>339</td>
<td>177</td>
<td>40.52 %</td>
</tr>
<tr>
<td>3</td>
<td>Credit</td>
<td>287</td>
<td>198</td>
<td>15.54 %</td>
</tr>
<tr>
<td>4</td>
<td>Insurance</td>
<td>258</td>
<td>163</td>
<td>11.46 %</td>
</tr>
<tr>
<td>5</td>
<td>Innovative Credit</td>
<td>41</td>
<td>56</td>
<td>2.20 %</td>
</tr>
<tr>
<td>6</td>
<td>Banking</td>
<td>91</td>
<td>133</td>
<td>4.03 %</td>
</tr>
<tr>
<td>7</td>
<td>Property Saving</td>
<td>12</td>
<td>40</td>
<td>0.35 %</td>
</tr>
<tr>
<td>8</td>
<td>Mobile Payment</td>
<td>8</td>
<td>19</td>
<td>0.09 %</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>1,531</td>
<td>1,070</td>
<td></td>
</tr>
</tbody>
</table>

* Topic names are suggested based on relevant keywords to each topic
Competitive Market Structure Map for Attention Retail Banking Market December 2015

December 2015
995 Keywords
591 Firms

Legend
Bubbles represent firms
Bubble size represents attention share
Bubble color represents topics
Closer bubbles compete more strongly for attention

<table>
<thead>
<tr>
<th>Topic Name</th>
<th>Number of Firms</th>
<th>Attention Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real Estate</td>
<td>284</td>
<td>23.21 %</td>
</tr>
<tr>
<td>Stock Market</td>
<td>177</td>
<td>40.52 %</td>
</tr>
<tr>
<td>Credit</td>
<td>198</td>
<td>15.54 %</td>
</tr>
<tr>
<td>Insurance</td>
<td>163</td>
<td>11.46 %</td>
</tr>
<tr>
<td>Innovative Credit</td>
<td>56</td>
<td>2.20 %</td>
</tr>
<tr>
<td>Banking</td>
<td>133</td>
<td>4.03 %</td>
</tr>
<tr>
<td>Property Saving</td>
<td>40</td>
<td>0.35 %</td>
</tr>
<tr>
<td>Mobile Payment</td>
<td>19</td>
<td>0.09 %</td>
</tr>
</tbody>
</table>
Zoom-In: Topic “Banking”

December 2015

91 Keywords
133 Firms

Legend
Bubbles represent firms
Bubble size represents attention share
Bubble color represents topics
Closer bubbles compete more strongly for attention
Zoom-In: Topic “Real Estate”

December 2015
495 Keywords
284 Firms

Legend
Bubbles represent firms
Bubble size represents attention share
Bubble color represents topics
Closer bubbles compete more strongly for attention
Zoom-In: Topic “Stock Market”

December 2015
339 Keywords
177 Firms

Legend
Bubbles represent firms
Bubble size represents attention share
Bubble color represents topics
Closer bubbles compete more strongly for attention
Development of Attention across Topics over Time

- Real Estate
- Stock Exchange
- Credit
- Insurance
- Innovative Credit
- Banking
- Property Saving
- Mobile Payment
Comparison Scope of Analysis: Traditional vs. Proleptic Market Analysis

December 2015

26.73% of firms are producers—yet, they only attract 13.98% of consumers’ attention in their market

Classification by industry experts (from retail banking)
Comparison Attention Split by Topic: Producers vs. Non-Producing Firms

December 2015

Attention Share

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Topic

Real Estate Stock Market Credit Insurance Innovative Credit Banking Property Saving Mobile Payment

Non-Producing Firms
Producers

© 2018 Daniel M. Ringel of UNC Kenan-Flagler Business School
Comparison Market Map: Traditional vs. Proleptic Market Analysis

December 2015
158 Producers
433 Non-Producing Firms

Legend
Bubbles represent firms
Bubble color represents firm type: Producer Non-Producing Firms
Closer bubbles compete more strongly for attention

<table>
<thead>
<tr>
<th>Topic Name</th>
<th>Share Producers</th>
<th>Attention Share Producers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real Estate</td>
<td>28.87%</td>
<td>14.41%</td>
</tr>
<tr>
<td>Stock Market</td>
<td>15.25%</td>
<td>2.32%</td>
</tr>
<tr>
<td>Credit</td>
<td>31.31%</td>
<td>21.52%</td>
</tr>
<tr>
<td>Insurance</td>
<td>29.45%</td>
<td>28.59%</td>
</tr>
<tr>
<td>Innovative Credit</td>
<td>8.93%</td>
<td>12.84%</td>
</tr>
<tr>
<td>Banking</td>
<td>58.65%</td>
<td>55.94%</td>
</tr>
<tr>
<td>Property Saving</td>
<td>50.00%</td>
<td>37.09%</td>
</tr>
<tr>
<td>Mobile Payment</td>
<td>36.84%</td>
<td>46.58%</td>
</tr>
<tr>
<td><strong>Total Market</strong></td>
<td><strong>26.73%</strong></td>
<td><strong>13.98%</strong></td>
</tr>
</tbody>
</table>
Concluding Remarks
## Take-Aways

<table>
<thead>
<tr>
<th><strong>Markets</strong></th>
<th>Markets are shaped by both producers and non-producing firms</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Attention</strong></td>
<td>Attention is an alternative currency for studying markets - from consumers’ perspectives</td>
</tr>
<tr>
<td><strong>Online Search</strong></td>
<td>Online Search enables us to empirically analyze many different markets through attention</td>
</tr>
<tr>
<td><strong>Producers</strong></td>
<td>Producers must define their markets broader to discover, evaluate and monitor potential threats and opportunities</td>
</tr>
<tr>
<td><strong>Regulators</strong></td>
<td>Regulators must analyze markets broadly to identify shifts in market power that may compromise fair competition</td>
</tr>
</tbody>
</table>
Thank you for YOUR — Attention