Team M! Hebrew University of Jerusalem

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MARKET SIZE

Gross return on investment$^1$

$$[[8*1.028+92*1.028*0.9975]-92+10]/18-1 = 14.2\%$$

Interest rates$^2$

![Graph showing interest rates]  
- Fixed - Indexed: 4.8%  
- Fixed: 4.0%  
- Variable: 1.9%  
- Variable - Indexed: 1.1%

New Mortgages$^3$

<table>
<thead>
<tr>
<th>Year</th>
<th>Billions of ILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>59</td>
</tr>
<tr>
<td>2017</td>
<td>53</td>
</tr>
</tbody>
</table>

Average Mortgage$^4$

<table>
<thead>
<tr>
<th>Year</th>
<th>Thousands of ILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>578</td>
</tr>
<tr>
<td>2016</td>
<td>663</td>
</tr>
<tr>
<td>2017</td>
<td>661</td>
</tr>
</tbody>
</table>

Overall Mortgages$^5$

<table>
<thead>
<tr>
<th>Year</th>
<th>Billions of ILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>289</td>
</tr>
<tr>
<td>2016</td>
<td>305</td>
</tr>
<tr>
<td>2017</td>
<td>321</td>
</tr>
</tbody>
</table>

Overdue Mortgages$^6$

<table>
<thead>
<tr>
<th>Year</th>
<th>(+90 days) Billions of ILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>2.1</td>
</tr>
<tr>
<td>2016</td>
<td>2</td>
</tr>
<tr>
<td>2017</td>
<td>2.3</td>
</tr>
</tbody>
</table>

**Gross return on investment:** $14.2\%$

**Interest rates:**
- Fixed - Indexed: 4.8\%
- Fixed: 4.0\%
- Variable: 1.9\%
- Variable - Indexed: 1.1\%

**New Mortgages**
- 2016: 59 billions of ILS
- 2017: 53 billions of ILS

**Average Mortgage**
- 2015: 578 thousands of ILS
- 2016: 663 thousands of ILS
- 2017: 661 thousands of ILS

**Overall Mortgages**
- 2015: 289 billions of ILS
- 2016: 305 billions of ILS
- 2017: 321 billions of ILS

**Overdue Mortgages**
- 2015: 2.1 (+90 days)
- 2016: 2 (+90 days)
- 2017: 2.3 (+90 days)
Each bank focuses on a different target market (B2B/B2C) 11

People don’t necessarily take mortgages from the bank that provides their checking account 12
# TRENDS & POINTS TO CONSIDER

<table>
<thead>
<tr>
<th>According to our analysis the major factor in profit for providing mortgages is the leverage level and Operating costs&lt;sup&gt;13&lt;/sup&gt;</th>
<th>New regulations will encourage new players to provide financial services such as selling mortgages&lt;sup&gt;14&lt;/sup&gt;</th>
<th>In 2018 the average mortgage rate (2.85%) is expected to increase, due to the predictable rate increase by Bank of Israel&lt;sup&gt;15&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing market prices stagnate This trend may lead to increased risk in the mortgage market&lt;sup&gt;16&lt;/sup&gt; New mortgages are expected to rise after housing prices will decrease</td>
<td>In light of Basel III committee, banks will need to keep decreasing their leverage level&lt;sup&gt;17&lt;/sup&gt; Therefore, profitability is expected to decrease</td>
<td>Between 2016 -2017 LTV ratio dropped, which indicates risks concerns by the banks and new regulations&lt;sup&gt;18&lt;/sup&gt;</td>
</tr>
</tbody>
</table>
Annotation

1. Gross Return on Mortgage – Is the gross return per year. 2.8% (the average interest in 2018) time 8 (return for the loan of bank - 8% of the mortgage) + 2.8% return for the loan of Bank of Israel times 92 (92% of the mortgage) times 0.9975 (the finance cost for the bank – 0.25% interest rate) minus 92 (the value of the Bank of Israel loan) plus 10 (the ratio of minimum capital against the value of the asset). The sum is divided by 18 (the bank’s capital against the loan). Ratio is calculated according to Basel III committee; Team M estimation.
2. Interest Rate – The diagram shows the differentiation for the average interest rates for the private households in different years; Bank of Israel.
3. New mortgages has decreased due to decrease of investors in housing markets and households who wait for decrease in housing prices; Central Bureau of Statistics.
4. The Average Mortgage- The diagram shows the differentiation of the mortgage in different years (thousands of ILS); Globes.
5. Mortgage Market Size - The Diagram shows the differentiation of the mortgage market size in different years (Billions of ILS); Globes.
6. Overdue Debt – Total sum of mortgages that have payment overdue of 90 days or more; Globes.
7. Main players – Shows the mortgage for private households (B2C) and business (B2B) for each of the big 4 banks in Israel; The Banks’ Financial reports (P L D M).
8. Return – Net return without tax payments (37.5%).
9. B2B/B2C Leverage - is based on the ratio of the total bank’s capital to the bank’s risks components. Doesn’t include the ratio for minimum capital (around 10%); The Banks’ Financial reports (P L D M).
10. 4 main players market share – is divided for business sector (the office icon) and private sector (the house icon). The market is divided for 4 main players and the rest of the market.
11. Banks' Customers - Each bank focuses on different type of customer (according to finance rate, bank’s clients, high/low interests); The Banks’ representatives.
12. Correlation – Borrowers don’t necessarily take their mortgage through the bank where they have their other accounts; According to the leader of B2C mortgage (Mizrahi) and the banks’ leader (Leumi).
13. Operating costs – Analysis of the banks financial reports shows almost the same gross return (depends also on leverage). Therefore the operating costs is the major factor for the net return.
14. New regulations from Bank of Israel for providing financial services and establishing new banks will motivate new players; Bank of Israel, June 2018.
15. Interest Rate – Today’s interest rate is lower than the average rate at 2017, mainly because of intervention from the inspector of antitrust. The difference between U.S and Israel interest rate will likely decrease by raising the Israeli interest rate; Calcalist.
16. Housing market – Stagnation might cause a decrease in housing prices which increases the LTV ratio for existing mortgages thus increasing risk. Central Bureau of Statistics.
17. Leverage Trend – Continues to decline considering Basel III committee, therefore expectations for decline in profitability of the banks. Basel III committee.
18. LTV Ratio – The LTV is the ratio between the mortgage to the asset’s value. Ratio’s decline expresses increase in assets value or lower household leverage or both; Taub Center.