Total Cost of Ownership Analysis for Passenger Cars in Turkey

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Knowledge for Tomorrow
AGENDA

- A brief introduction to the Turkish market
  - Vehicle stock over years
  - Taxes on vehicles and fuels
- Total Cost of Ownership methodology
- Results
Model Basis and Objectives

➢ Why TCO for Turkey?
  - One of the highest fuel prices in the world
  - Divergent taxation system
  - Over 40% LPG share in the stock
  - A rapid growth in the Turkish vehicle sector

➢ Expected Outcomes & Aim
  - Calculation of Total Cost per km for today and the future
  - Possible road maps to alternative vehicles in Turkey
  - Important policy recommendations to authorities
Shares of Powertrains in Stock over Years

- Over the last few years, LPG became even more popular
- Diesel vehicles seem to surpass gasoline vehicles soon

* By 2014 May

Sales over Years by Engine Displacement and Vehicle Class

- Vehicles with small sized engines, dominating the market by far
- B and C class vehicles hold the majority in the market

Taxes on passenger cars & fuels

- **Engine Size**
  - **1600 cm³ ≤**
    - 45% SCT
    - 18% VAT
    - **Total Tax Ratio 71%**
  - **1600 cm³ – 2000 cm³**
    - 90% SCT
    - 18% VAT
    - **Total Tax Ratio 124%**
  - **≥ 2000 cm³**
    - 145% SCT
    - 18% VAT
    - **Total Tax Ratio 189%**

SCT: Special Consumption Tax
VAT: Value Added Tax

- **Value Added Tax**
- **Special Consumption tax**
- **Price before tax**

<table>
<thead>
<tr>
<th></th>
<th>TRY</th>
<th>Gasoline</th>
<th>Diesel</th>
<th>LPG</th>
</tr>
</thead>
<tbody>
<tr>
<td>15%</td>
<td>39%</td>
<td>47%</td>
<td>50%</td>
<td></td>
</tr>
<tr>
<td>46%</td>
<td>38%</td>
<td>35%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15%</td>
<td>15%</td>
<td>15%</td>
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</tr>
</tbody>
</table>

1 € = 2,79 TRY
TCO Methodology

**TOTAL COST OF OWNERSHIP**

at 4 cases

- 16 years ownership
- 13000 km/a mileage
- No resale

- 16 years ownership
- 8000 km/a mileage
- No resale

- 4 years ownership
- 13000 km/a mileage
- 44% resale*

- 4 years ownership
- 8000 km/a mileage
- 48% resale*

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* Redelbach & Propfe

** i=8% (interest rate)
An Example of Representative Vehicle Determination by Gasoline Class C

<table>
<thead>
<tr>
<th>Model</th>
<th>Price (TRY\textsubscript{2014})</th>
<th>Average Fuel Consumption* (l/100km)</th>
<th>Engine (cm\textsuperscript{3})</th>
<th>Peak Power (kw)</th>
</tr>
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<tbody>
<tr>
<td>Civic 1.6 Manuel</td>
<td>60.835</td>
<td>6,7</td>
<td>1598</td>
<td>92</td>
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<tr>
<td>Civic 1.6 Automatic</td>
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<td>Fluence Sedan 1.6</td>
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<td>Corolla 1.4</td>
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<td>Corolla 1.6</td>
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<tr>
<td>A3 1.4 TFSI S</td>
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<td>90</td>
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<tr>
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<td>1598</td>
<td>90</td>
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<td>C4 1.4 Vti</td>
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<td>6,1</td>
<td>1397</td>
<td>70</td>
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<tr>
<td>Duster 1.6</td>
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<td>Qashqai 1.2</td>
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<tr>
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<tr>
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<td>308 1.6 THP</td>
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<td>Jetta 1.4</td>
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<td>6,2</td>
<td>1390</td>
<td>90</td>
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</tbody>
</table>

Representative (Median) 60.000 6,8 1598 92

1 € = 2,79 TRY

*NEDC

Retrieved from: Catalogs of each model were downloaded from brand’s websites separately.
<table>
<thead>
<tr>
<th></th>
<th>Class A</th>
<th>Class B</th>
<th>Class C</th>
<th>Class D</th>
<th>Class E</th>
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<tbody>
<tr>
<td><strong>Gasoline</strong></td>
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<tr>
<td>Engine (cm³)</td>
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<td>1598</td>
<td>1598</td>
<td>1968</td>
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<td>Average Consumption* (l/100km)</td>
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<td>5,5</td>
<td>6,8</td>
<td>6,4</td>
<td>6,6</td>
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<td>Sales Price (TRY₃₀₁₄)</td>
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<td>40.910</td>
<td>60.000</td>
<td>84.000</td>
<td>230.000</td>
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<tr>
<td><strong>Diesel</strong></td>
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<tr>
<td>Engine (cm³)</td>
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<td></td>
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<tr>
<td>Average Consumption* (l/100km)</td>
<td>4,3</td>
<td>4,5</td>
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</tbody>
</table>

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*NEDC
Model Outputs: Costs per km for Class C (16 years)

- **Gasoline**: 16,000 TRY per km
- **LPG**: 14,000 TRY per km
- **Diesel**: 1,000 TRY per km

 Shares of Costs for Gasoline Vehicle:
- **Maintenance**: 29%
- **Insurance**: 12%
- **Compulsory Motor Insurance**: 10%
- **Motor Vehicle Tax**: 4%
- **VAT of Fuel**: 5%
- **SCT of Fuel**: 14%
- **Fuel cost before tax**: 13%
- **LPG kit cost**: 7%
- **1 € = 2,79 TRY**
Model Outputs: Costs per km for Class C (4 years)

13000 km/a

- Shares of Costs for Gasoline Vehicle (Before Resale):
  - Maintenance cost: 3%
  - Vehicle Insurance: 3%
  - Compulsory Motor Insurance: 3%
  - Motor Vehicle Tax: 3%
  - SCT of Fuel: 3%
  - VAT of Vehicle: 32%
  - Montion Insurance: 3%
  - Vehicle before tax price: 3%
  - Total Cost After Resale: 42%

8000 km/a

- Shares of Costs for Gasoline Vehicle (Before Resale):
  - Maintenance cost: 3%
  - Vehicle Insurance: 3%
  - Compulsory Motor Insurance: 3%
  - Motor Vehicle Tax: 3%
  - SCT of Fuel: 3%
  - VAT of Vehicle: 32%
  - Montion Insurance: 3%
  - Vehicle before tax price: 3%
  - Total Cost After Resale: 45%
Pay-back mileages for LPG and Diesel (Class C - 16 years)

- LPG becomes advantageous over Gasoline after 5,000 annual km
- Diesel becomes advantageous over LPG after 14,000 annual km

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