THE HOT LANE IN ISRAEL: SMALL STEP TO THE SYSTEM, GIANT LEAP TOWARDS ROAD PRICING?

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CONTENT

• The logic(s) behind HOT lanes: a policy perspective (Galit)
• The “fast lane” to Tel-Aviv: zoom in (Hillel)
• HOT lane as part of transport policy tool box: zoom out (Yoram)
THE LOGIC(S) BEHIND HOT LANES

Utilizing underused bus lanes

Introducing pricing mechanism and adding “carrots” to soften opposition

The engineers approach

The economists approach

OECD ROUNDTABLE SEPTEMBER 2020
THE LOGIC(S) BEHIND HOT LANES: POLICY TARGETS

Utilizing underused bus lanes

Introducing pricing mechanism and adding “carrots” to soften opposition

Policy aiming at promoting public transport and HOV while utilizing capacity

Policy aiming at optimizing road usage and reducing congestion

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THE LOGIC(S) BEHIND HOT LANES: EQUITY ASPECTS

Utilizing underused bus lanes

Introducing pricing mechanism and adding “carrots” to soften opposition

Paying cars support the non-paying cars

It is not just for the affluents, others can also enjoy the lane

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DOES IT MATTER?

• **NO!**
  - HOT is HOT, it works, does not matter how we got there
  - Both are *Pareto* solutions
  - The two do not contradict each other
  - Each actors may frame it according to its internets

• **YES!**
  - Framing may affect public support
  - In existing infrastructure, the previous usage matters.
  - Pricing structure may differ when maximizing capacity or optimizing road use
  - Evaluation of HOT performances: increased capacity or travel time savings?
IMPLICATIONS

• Policy naming and policy framing
  • Although warmly adopted by road pricing scholarship, the engineers framing enjoys more public acceptability
  • Road pricing may be introduced as a supportive policy, not only as the main one
  • Status quo effect: pricing mechanism are used and users get used to the idea
## THE ISRAELI CASE: UNIQUE ASPECTS

<table>
<thead>
<tr>
<th>New construction</th>
<th>The plan for HOT to Jerusalem cancelled partly because it was not additional new lane</th>
<th>Decreased public opposition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced capacity at the bottleneck</td>
<td>Urged complementary policy tools to attract various types of users</td>
<td>Court filling when operated, but was dismissed</td>
</tr>
<tr>
<td>Legislative process was needed to approve the tolls</td>
<td>Naming: “the fast lane”</td>
<td>Framed the lane as a toll lane</td>
</tr>
<tr>
<td>B.O.T initiative</td>
<td>Exposes the true costs of HOT</td>
<td>Increased suspicions about the logic behind the tolls</td>
</tr>
</tbody>
</table>
DETAILED EXAMINATION OF THE ISRAELI HOT

- Operating since January 2011
- 13 KM long
- One direction- towards Tel-Aviv
- Dynamic tolls
- B.O.T initiative
THE FAST LANE
# Alternative Usage Options for the Hot Lane Facilities and Services

<table>
<thead>
<tr>
<th>Usage option</th>
<th>Pay</th>
<th>Park</th>
<th>Relevant dynamic Information</th>
<th>Average workday Count (2019)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive alone</td>
<td>Yes</td>
<td>No</td>
<td>Price (travel time information³)</td>
<td>5,117 (S.D. 783)</td>
</tr>
<tr>
<td>Park and use free shuttle</td>
<td>No</td>
<td>Yes</td>
<td>Parking space availability</td>
<td>1,761 (S.D. 329)⁴</td>
</tr>
<tr>
<td>Park and carpool</td>
<td>No</td>
<td>Yes</td>
<td>Occupancy threshold; Parking space availability</td>
<td>Included above and below</td>
</tr>
<tr>
<td>Carpool from origin to destination</td>
<td>No</td>
<td>Yes</td>
<td>Occupancy threshold</td>
<td>724 (S.D. 123)⁵</td>
</tr>
<tr>
<td>Bus from origin to destination</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>1,340 (S.D. 128) busses and shuttles</td>
</tr>
<tr>
<td>Bus and shuttle</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Included above</td>
</tr>
<tr>
<td>Authorized vehicle (security, disabled)</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>146 (S.D. 21)</td>
</tr>
</tbody>
</table>
HOT AND SHUTTLE USERS CHARACTERISTICS

- Most HOT paying users are occasional: 56% once, 30% two to five times
- Most shuttle users are commuters: 84% workers, 73% arrival is 6:30-9:30; 59% activities of >8 hours.
- 72% do not have reserved parking at their destination
- Most (56%) used private car before the shuttle service was in operation

- Sources: Matat, 2016, based on data for July 1st, 2014 to June 30th, 2015; Katoshevski-Cavari et al. (2018), based on a survey of 530 shuttle users.
PARKING LOT (2000) AND SHUTTLES
B.O.T: COSTS AND REVENUES STRUCTURE

**Costs**
- Payment for the concession (182 million NIS)
- Construction
- Maintenance
- Operating free shuttles
- Percentage from revenues above agreed threshold

**Revenues**
- 10 NIS for every parked car during the morning peak
- Tolls that are collected from low occupancy cars
- Compensation for vehicles that were exempted from tolls (HOV and authorized vehicles), except for the first 120 vehicles
- Compensation if revenues below agreed threshold
TRAFFIC VOLUME AT THE EAST ENTRANCE TO THE HOT LANE, AND ON ROAD NUMBER 1

(average of values within the inter-quartile range for workdays during June and July 2011)
TRAVEL TIME IN THE HOT AND GP LANES BY TIME OF DAY

(average of values within the inter-quartile range for workdays during June and July 2011)
TOLLS IN THE HOT LANE BY TIME OF DAY
(average of values within the inter-quartile range for workdays during June and July 2011)
FAST LANES: THE NEXT STEP

- Through the CBD (along Ayalon highway)
- Two-directions
- 11 gates per direction
- 2-4 toll sections per direction
- Two parking lots (7K+3K parking spots)
- Additional capacity
- Predetermined toll profile, by time of day
- Operator incentive based on utilization
Zooming out
Tel-Aviv Metropolitan Area

- Population: 4 Million
- 44% of the population in Israel
- 50% of the employment in Israel
- Population growth rate 2% in the last decade
- Estimated population in 2040: 5.4 Million
CONGESTION IN TEL-AVIV

- According to TomTom, Tel-Aviv is the 21st most congested cities in the world, out of 416 cities that were evaluated in 57 countries.
- Travel time during peak time is 90% longer than off peak.
- Developed cities with metro systems are at lower ranking.

### Extra travel time during peak hour for a 30-minute trip

<table>
<thead>
<tr>
<th>City and congestion rank</th>
<th>Morning extra time</th>
<th>Evening extra time</th>
<th>Number of metro lines</th>
<th>Share of public transport out of motorized trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tel Aviv 21</td>
<td>28 min</td>
<td>27 min</td>
<td>0</td>
<td>105</td>
</tr>
<tr>
<td>Lisbon 81</td>
<td>20 min</td>
<td>23 min</td>
<td>4</td>
<td>41%</td>
</tr>
<tr>
<td>Berlin 94</td>
<td>15 min</td>
<td>18 min</td>
<td>10</td>
<td>46%</td>
</tr>
<tr>
<td>Madrid 243</td>
<td>17 min</td>
<td>14 min</td>
<td>13</td>
<td>41%</td>
</tr>
</tbody>
</table>
What time was rush hour in Tel Aviv?

<table>
<thead>
<tr>
<th>Time</th>
<th>Sun</th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
<th>Sat</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:00 AM</td>
<td>4%</td>
<td>5%</td>
<td>6%</td>
<td>5%</td>
<td>6%</td>
<td>12%</td>
<td>9%</td>
</tr>
<tr>
<td>02:00 AM</td>
<td>0%</td>
<td>1%</td>
<td>2%</td>
<td>1%</td>
<td>2%</td>
<td>6%</td>
<td>4%</td>
</tr>
<tr>
<td>04:00 AM</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>06:00 AM</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>0%</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>08:00 AM</td>
<td>70%</td>
<td>72%</td>
<td>67%</td>
<td>67%</td>
<td>62%</td>
<td>12%</td>
<td>0%</td>
</tr>
<tr>
<td>10:00 AM</td>
<td>69%</td>
<td>79%</td>
<td>73%</td>
<td>72%</td>
<td>65%</td>
<td>25%</td>
<td>5%</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>43%</td>
<td>53%</td>
<td>50%</td>
<td>49%</td>
<td>45%</td>
<td>29%</td>
<td>9%</td>
</tr>
<tr>
<td>02:00 PM</td>
<td>33%</td>
<td>40%</td>
<td>40%</td>
<td>40%</td>
<td>41%</td>
<td>50%</td>
<td>14%</td>
</tr>
<tr>
<td>04:00 PM</td>
<td>36%</td>
<td>41%</td>
<td>43%</td>
<td>45%</td>
<td>45%</td>
<td>46%</td>
<td>14%</td>
</tr>
<tr>
<td>06:00 PM</td>
<td>39%</td>
<td>46%</td>
<td>47%</td>
<td>50%</td>
<td>52%</td>
<td>33%</td>
<td>12%</td>
</tr>
<tr>
<td>08:00 PM</td>
<td>62%</td>
<td>72%</td>
<td>73%</td>
<td>77%</td>
<td>81%</td>
<td>25%</td>
<td>12%</td>
</tr>
<tr>
<td>10:00 PM</td>
<td>76%</td>
<td>88%</td>
<td>91%</td>
<td>94%</td>
<td>99%</td>
<td>18%</td>
<td>14%</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>88%</td>
<td>77%</td>
<td>81%</td>
<td>83%</td>
<td>88%</td>
<td>15%</td>
<td>16%</td>
</tr>
<tr>
<td>02:00 PM</td>
<td>45%</td>
<td>55%</td>
<td>56%</td>
<td>57%</td>
<td>56%</td>
<td>15%</td>
<td>22%</td>
</tr>
<tr>
<td>04:00 PM</td>
<td>25%</td>
<td>34%</td>
<td>36%</td>
<td>37%</td>
<td>41%</td>
<td>9%</td>
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<td>11%</td>
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<td>13%</td>
<td>10%</td>
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Tel-Aviv Metropolitan Area

- Population: 4 Million
- 44% of the population in Israel
- 50% of the employment in Israel
- Population growth rate 2% in the last decade
- Estimated population in 2040: 5.4 Million

- The population growth rate in Israel is the largest in the developed world – 10 times more than OECD average
- 4 million population today to 5.4 M in 2040
Congestion Pricing and Mass Transit

Congestion pricing is an important demand management tool however it does not increase the capacity of the transportation system and can not replace mass transit in the long-term.

The more efficient the public transportation system, the more effective the implementation of the congestion pricing will be.

Mass transit will reduce congestion; however its main purpose is to provide mobility, accessibility and high-quality service to the residents in a balanced transportation system.

Few large cities have congestion pricing, and they all have highly developed metro systems.

Singapore, the first city to implement congestion pricing, has built 90 Km of metro lines in the past decade.

<table>
<thead>
<tr>
<th>City</th>
<th>Starting year congestion pricing</th>
<th>Total metro track length in Km</th>
<th>Additional metro lines being planned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singapore</td>
<td>1975</td>
<td>200</td>
<td>6</td>
</tr>
<tr>
<td>London</td>
<td>2003</td>
<td>402</td>
<td>5</td>
</tr>
<tr>
<td>Stockholm</td>
<td>2007</td>
<td>106</td>
<td>4</td>
</tr>
<tr>
<td>Milan</td>
<td>2008</td>
<td>97</td>
<td>5</td>
</tr>
</tbody>
</table>
Congestion Pricing and Metro

Singapore

Population-5.8 million

• Doubled its metro system in the past decade from 100 Km to 190 Km with an investment of 25 billion dollars
• Currently Planning 6 additional metro lines

Tel Aviv

Population- 5.4 million (Est. 2040)

Metro investment: 40 billion dollars for 140 Km of metro lines
Table 1: Tel Aviv in comparison to selected cities in Europe

<table>
<thead>
<tr>
<th>City</th>
<th>Population (mil.)</th>
<th>No. of metro lines</th>
<th>% travel by PT (of motorized journeys)</th>
</tr>
</thead>
<tbody>
<tr>
<td>London</td>
<td>8.3</td>
<td>11</td>
<td>47%</td>
</tr>
<tr>
<td>Madrid</td>
<td>6.5</td>
<td>13</td>
<td>41%</td>
</tr>
<tr>
<td>Berlin</td>
<td>3.4</td>
<td>10</td>
<td>46%</td>
</tr>
<tr>
<td>Barcelona</td>
<td>3.2</td>
<td>11</td>
<td>50%</td>
</tr>
<tr>
<td>Rome</td>
<td>2.9</td>
<td>3</td>
<td>30%</td>
</tr>
<tr>
<td>Lisbon</td>
<td>2.8</td>
<td>4</td>
<td>41%</td>
</tr>
<tr>
<td>Tel Aviv 2018</td>
<td>4</td>
<td>0</td>
<td>10%</td>
</tr>
<tr>
<td>Tel Aviv 2040</td>
<td>5.4</td>
<td>3</td>
<td>40%</td>
</tr>
</tbody>
</table>
Continue development of metro systems

- In Europe, 100% of European urban areas between 3 and 6 million inhabitants encompass a MRT system;
- In America, 70% of American metropolitan areas between 3 and 6 million inhabitants encompass a MRT system;
- Only large car designed areas from the United States of America do not have an MRT system.
A suite of tools
DISCUSSION POINTS

BOT
appropriate path? (expose real costs, encourages innovations, raises public suspensions with regards to tolls policy)

Capacity utilization
when it is good enough?

Profitable?
How much it cost (the info is out there, we don’t have it)? How much it should cost?