Explaining Spatial Variation in Real Estate Development Activity in Turkey

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Outline

• Motivation
• Aims & Objectives
• Research design: Data & Method
• Preliminary findings
Motivation

• To explore the relationship between economic growth and construction in an emerging real estate market context

• To explore intra-regional differences within the national study area
  ▫ to understand central and local policies on fostering construction growth
  ▫ to determine the potentials / limitations of different areas that attracted / discouraged sector investments
  ▫ to understand the role of planning at local and national level
Aims & Objectives

• To set out the initial analysis conducted as part of a newly started research study
Aims & Objectives

• The paper has four objectives:

1. To understand the causal relationships between construction sector and economic growth at the aggregate level;

2. To explore whether the relationship between the levels of activity in the construction sector and underlying economic fundamentals in different regions;

3. To consider the potential reasons for uneven construction development;

4. To identify areas where further secondary data analysis and qualitative investigations might enhance both our understanding of the relationship between the construction and the economy and our understanding of the role of planning (broadly defined) policies in deriving and/or constraining development activity in different regions.
A pluralist research approach is required if we are to fully understand the relationship between the state and market outcomes (Adams & Watkins, 2014)

- In this study, we have begun to develop a framework that helps identify the market and policy influences on development activity.

- Our research design employs quantitative methods to develop an overview of the causal relations between the economy and construction activity and allows us to begin to identify where activity deviates from market fundamentals.

- We will also explore the extent to which these qualitative factors might be accommodated in structural equation models.
Research Design, Data and Methods

Data
The data is driven from two sources.

1. The first set is driven from TUIK (Turkish Statistical Institute) in NUTS-3 province level; it includes construction permit rates that covers 2002-2013 period.

2. Index values that driven from a research entitled “The socio-economic development levels of provinces” that developed by the Ministry of Development in 2013 and State Planning Organization in 2003.
Method: Exploratory analyses
Exploratory analyses were developed in two steps.

1. OLS regression at the aggregate level in order to reflect the causal relation between construction growth and socio-economic development level.

2. A straightforward Moran-I statistics for testing spatial autocorrelation in the regression residuals in order to reflect whether the uneven growth was the case in aggregate level.
Research Design, Data and Methods

Preliminary findings

- Four different regressions were estimated
- Equation estimations show that there is a positive and a linear relationship between construction growth and socioeconomic development level.

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Constant</td>
<td>$\beta$</td>
<td>Constant</td>
<td>$\beta$</td>
</tr>
<tr>
<td>Coefficient</td>
<td>510.3877</td>
<td>600.028</td>
<td>439.9318</td>
</tr>
<tr>
<td>Std.Error</td>
<td>56.8257</td>
<td>57.1816</td>
<td>51.6656</td>
</tr>
<tr>
<td>Prob(t-st.)</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.58</td>
<td>0.56</td>
<td>0.66</td>
</tr>
<tr>
<td>Adj. $R^2$</td>
<td>0.57</td>
<td>0.55</td>
<td>0.66</td>
</tr>
<tr>
<td>F-statistic</td>
<td>110.111</td>
<td>101.811</td>
<td>157.793</td>
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<tr>
<td>Prob(F-st)</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>Log likelihood</td>
<td>-619.136</td>
<td>-611.425</td>
<td>-678.652</td>
</tr>
<tr>
<td>Akaike Info Criterion</td>
<td>1242.27</td>
<td>1226.85</td>
<td>1361.3</td>
</tr>
<tr>
<td>Schwarz Criterion</td>
<td>1247.06</td>
<td>1231.64</td>
<td>1366.09</td>
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Preliminary findings

- Moran-I values point to positive spatial autocorrelation and the null hypothesis of spatial randomness was rejected.

<table>
<thead>
<tr>
<th></th>
<th>z-value</th>
<th>Std. d</th>
<th>Mean</th>
<th>I</th>
<th>E[I]</th>
<th>Pseudo-p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Construction Permit (2003)</td>
<td>5.0426</td>
<td>0.0694</td>
<td>-0.0098</td>
<td>0.3402</td>
<td>-0.0125</td>
<td>0.001</td>
</tr>
<tr>
<td>Housing construction permit (2003)</td>
<td>5.1166</td>
<td>0.0672</td>
<td>-0.0144</td>
<td>0.3296</td>
<td>-0.0125</td>
<td>0.001</td>
</tr>
<tr>
<td>Total Construction Permit (2013)</td>
<td>4.1146</td>
<td>0.0677</td>
<td>-0.0126</td>
<td>0.2662</td>
<td>-0.0125</td>
<td>0.001</td>
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<tr>
<td>Housing construction permit (2013)</td>
<td>4.1127</td>
<td>0.0657</td>
<td>-0.0129</td>
<td>0.2573</td>
<td>-0.0125</td>
<td>0.001</td>
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</table>
LH

*(Outlier: a low value is surrounded by high values)*
The provinces that have relatively lower socio-economic development level. However, the construction growth is well explained by economic growth.

HH

*(Cluster of high values)*
The provinces where the construction growth is well explained by other factors rather than economic growth.

LL

*(Cluster of low values)*
The provinces where the construction growth is well explained by economic growth rather than other factors.

HL

*(Outlier: a high value is surrounded by low values)*
The provinces that have relatively higher socio-economic development level. However, the construction growth is well explained by other factors rather than economic growth.
The role of planning in construction sector growth

The major factors that have an impact on construction growth apart from the socio-economic development levels

The potential reasons behind positive / negative causality between economic growth and construction growth

Are they provinces that basically stimulate the demand creating factors?

The potential reasons behind positive / negative causality between economic growth and construction growth

Are they provinces that basically stimulate the supply creating factors?
How to use those clusters in further study?

• Geographically dispersed 2 sub-clusters in HH quadrant will be investigated by secondary data.

• The big-scale public investments, government incentives, centrally planned-supported private sector investments and these impacts on construction growth in these areas will be investigated.

• The role of central and local policies will be discussed and reflect which is more superior in creating such an uneven development.

• The role of planning will be examined to the extent of the central or local governments planning policies, and which directed the construction growth more likely.
How to use those clusters in further study?

- The cluster at the LL quadrant has changed its geographical location.

- How much affected the power of economic development on construction growth; positive expectations of its sustainability on construction growth.
How to use those clusters in further study?

• The HL quadrant reflects the polarized provinces in housing construction growth.

• The major factors stimulating the dense growth will be investigated in line with central and local planning policies and practices. The capacity creating potential of these provinces via planning regulations will be discussed.

• It will be discussed whether these provinces are local housing bubbles or they are candidate of creating local bubbles.

• The market actors and their role in directing planning policies and planning applications will be examined particular to those provinces.
Acknowledgements

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