

# Development land price

FIG Working Week 5.5.2009 Eilat Israel

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**National Land Survey of Finland**

## Purpose of the presentation

- This paper deals with the price of development land. It shows the five most important factors of the price of that land.
- It shows, how price of development land is determined by housing prices, in spatial as well as temporal terms.
- It illustrates the different roles serviced lots and undeveloped land play
- It emphasizes how understanding the value of development land is essential in intelligent development

1. **Concept of development land**
2. Lot prices follow apartment prices
3. Development land prices follow lot prices
4. A mass database of development land transactions
5. Other factors affecting price of development land
6. Making use of the findings



## Concept of development land

Development land is undeveloped land with development potential. It has locational advantages: e.g. it may lie on the fringe of an existing built-up area or near a high road or railway.

Development land is different from serviced lots and non-urban land. As opposed to serviced lots development land is not yet urban land, it lacks services such as roads, water, sewage, parks etc and it has no building right, no detailed plan and no legal status to be built-upon.

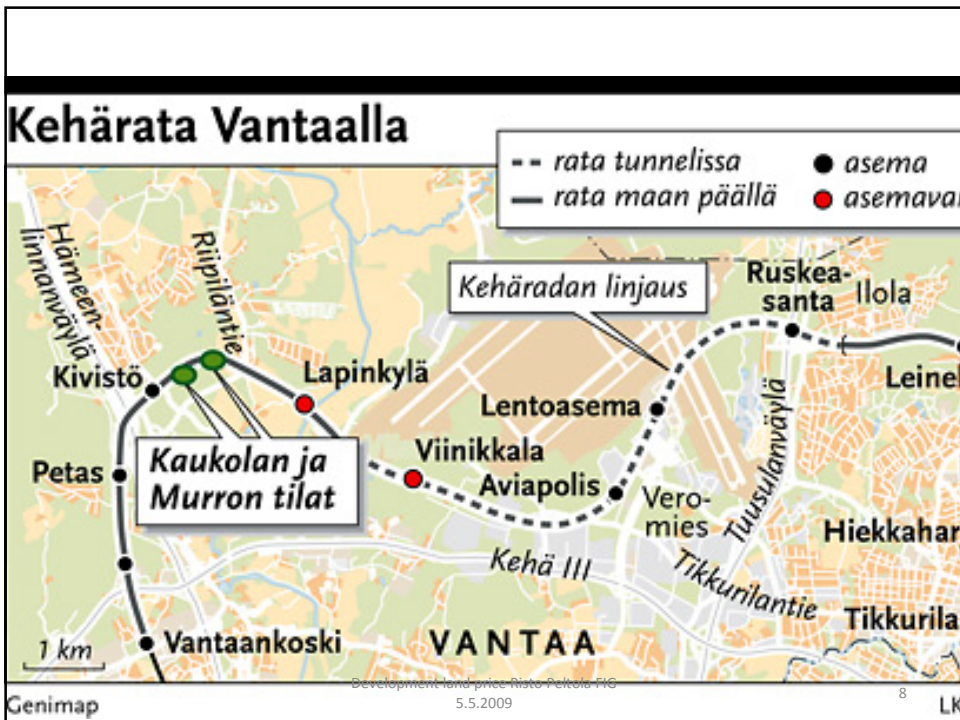
As opposed to non-urban land, development land has a high potential to become urban land in a near future.

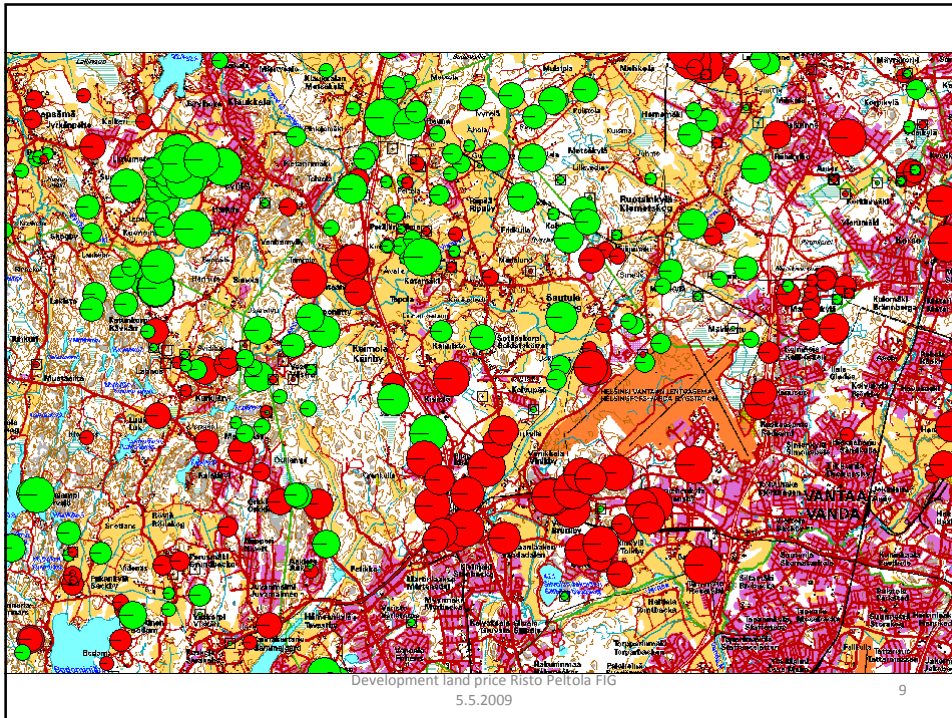
## Why development land value matters?

Development land markets determine, to a large extent,

- what will be the supply of future housing and other development,
- where it is located, and
- how the development is financed.

It's essential to know development land markets: the players in the markets and how the value is determined in the market.





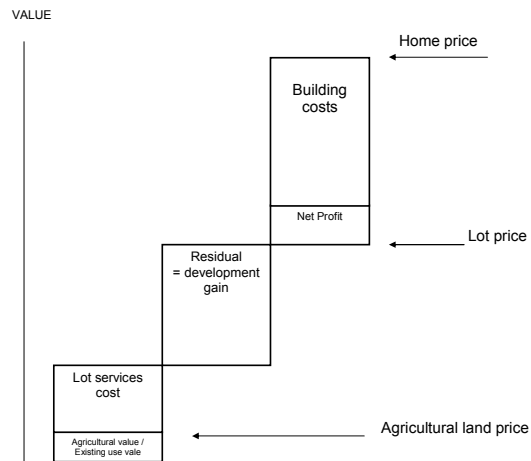
## How development land price is determined?

Land price is a residual = the price of the finished product, e.g. housing, minus costs. (Ricardian principle of derived demand)

Land price is also an observable fact (often but not always).

Finally, development land price is a function of how development profit is shared in the land market

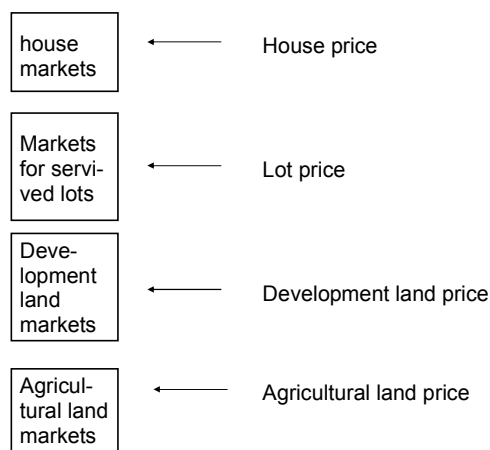
# Development gain as a residual



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11

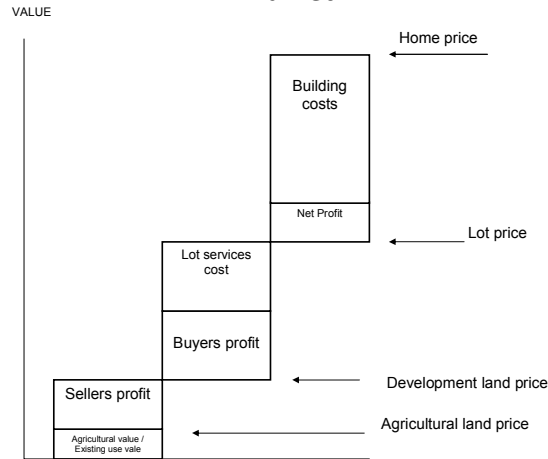
# Housing land market supply chain (Finnish context)



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12

Development land price is  
 1. a residual and  
 2. a function of how development profit is shared in the land market



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### Land price and price increase as a residual

Figure (1) can be stated as a formula:

$$H = C_1 + P_1 + C_2 + P_2 + P_3 + A$$

where

A = house price

C<sub>1</sub> = building costs

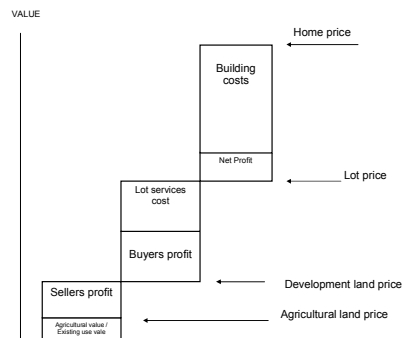
C<sub>2</sub> = lot services costs

P<sub>1</sub> = entrepreneurs profit

P<sub>2</sub> = buyers profit (or land value capture, to be used for providing infrastructure above direct lot services)

P<sub>3</sub> = sellers profit

A = agricultural land price



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## Land price and price increase as a residual

Price formulas for serviced lots and development land are obvious:

$$(2) L_s = H - C_1 - P_1$$

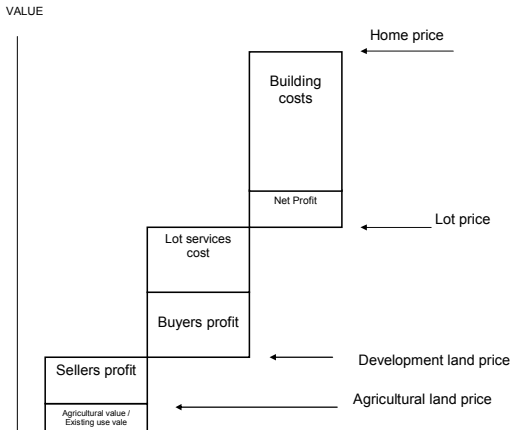
$$(3) L_d = L_s - C_2 - P_2$$

$$(4) L_d = A + P_3$$

where

$L_s$  = price of serviced lot

$L_d$  = price of development land



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15

## four different land value increase measures

The formula (1) helps identify four different land value increase measures:

$$(5) I_1 = P_3 \quad (\text{buyers profit only})$$

$$(6) I_2 = P_2 \quad (\text{sellers profit only})$$

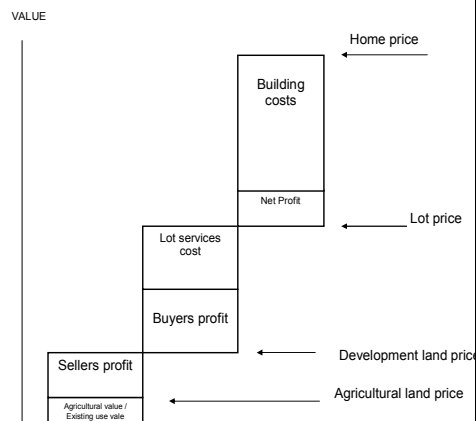
$$(7) I_3 = P_2 + P_3 \quad (\text{sellers and buyers profit, or development gain})$$

$$(8) I_4 = C_2 + P_2 + P_3 = L_s - L_d$$

(the difference of lot price and development land price)

In different practical contexts any of these measures can be used for land value increase.

Of course, it's a source of confusion, too. It is important to avoid this confusion, and to have specific value increase concepts.



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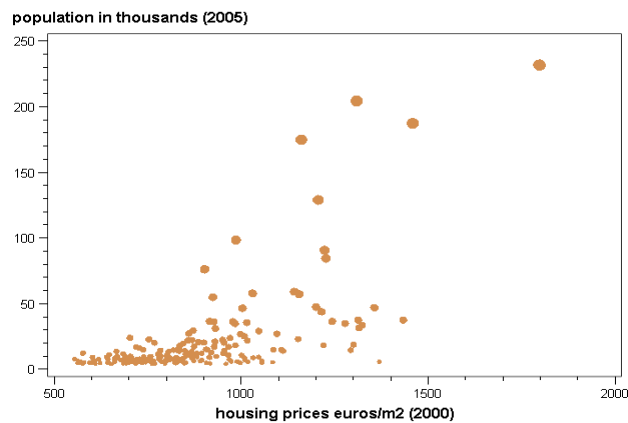
16



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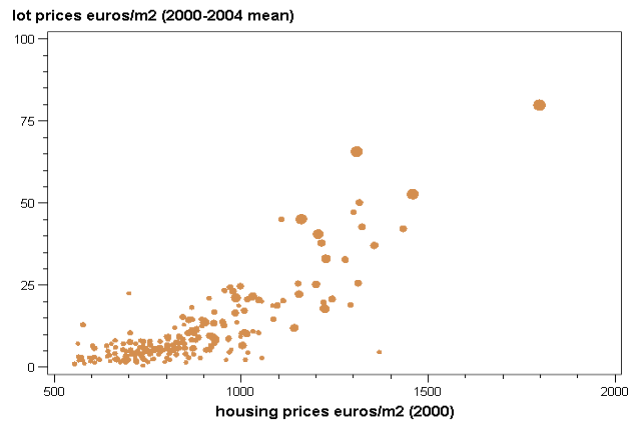
## Population and housing prices

(Finnish communities, Helsinki excluded)

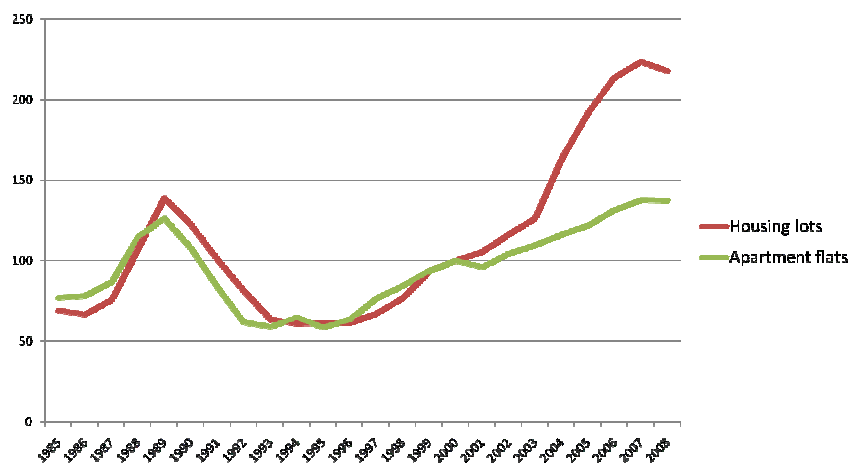


## Lot prices follow apartment prices in space

(Finnish communities, Helsinki excluded, circle size indicates population size)

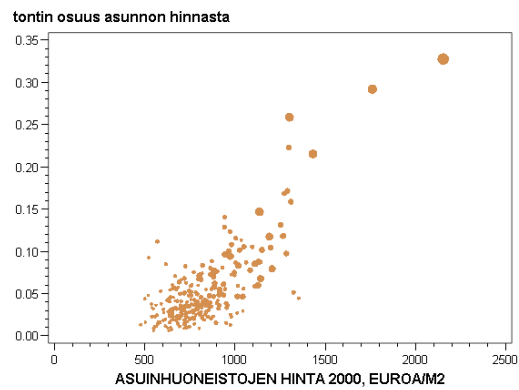


## Lot prices follow apartment prices over time



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## The lot share of house prices in Finland (The circles indicate communities, circle size relates to city size)



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21

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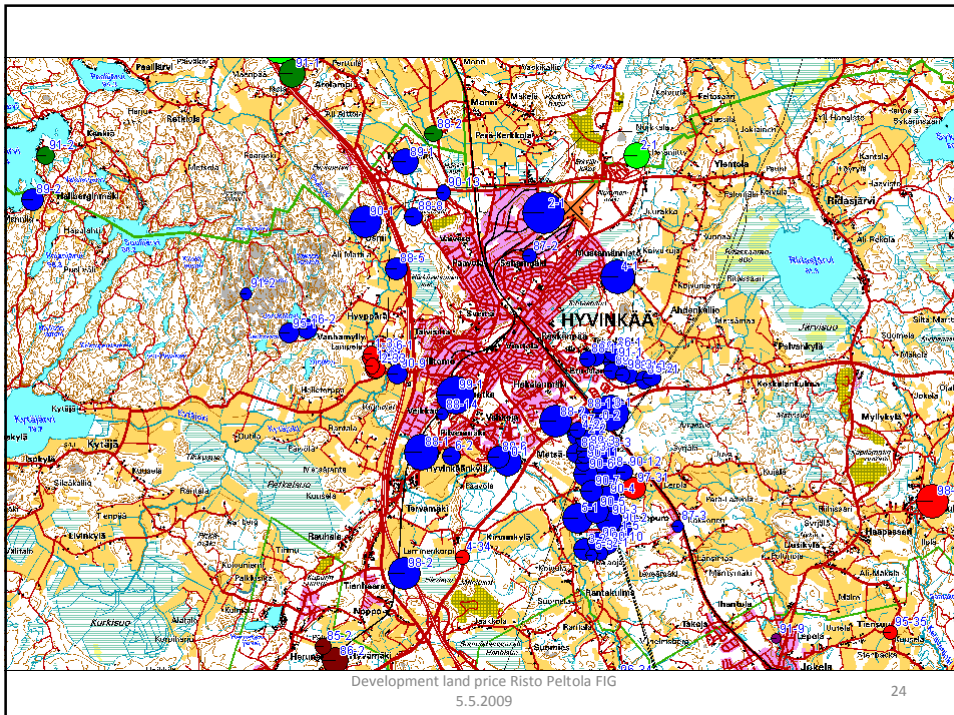
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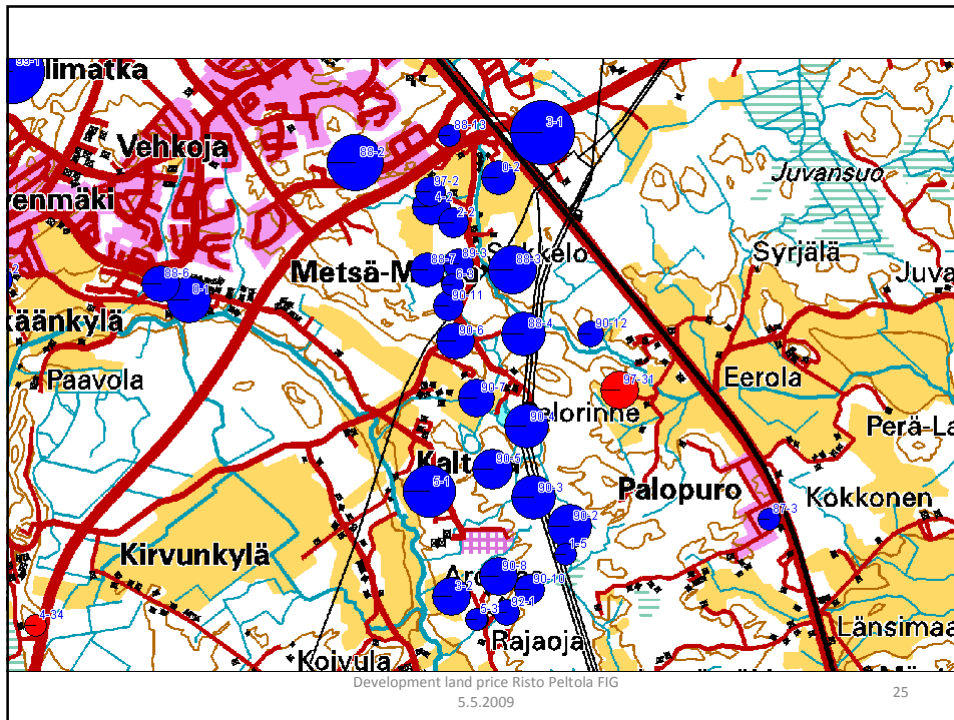
## The volume of land bought by Finnish local governments in 1985-2007

10533 sales  
128262 ha  
(0,4 % of land area)

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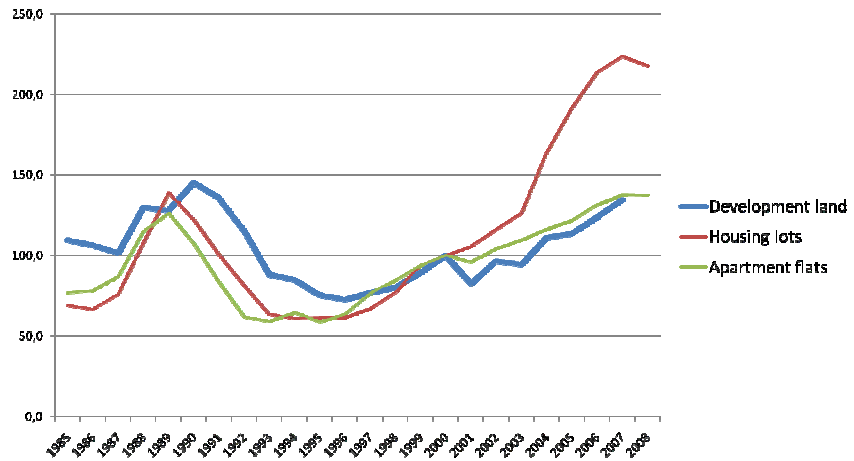
23





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## Development land prices follow apartment prices over time

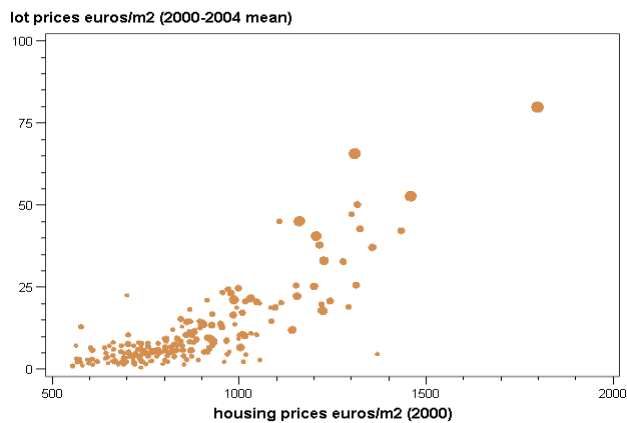


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27

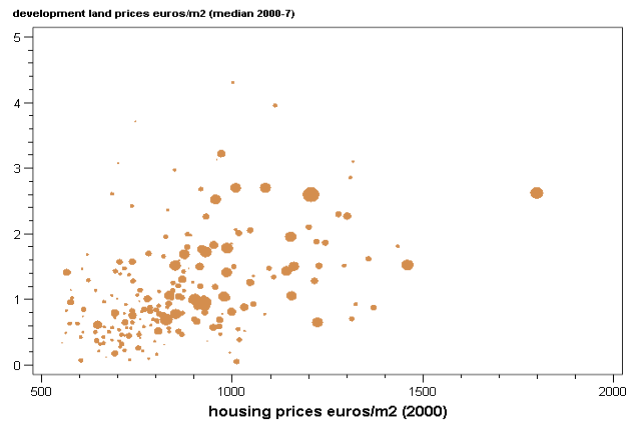
## Housing lot and housing prices

(Finnish communities, Helsinki excluded, circle size indicates population size)



## Development land and housing prices

(circle size indicates number of land sales)



## Ratio of development land and housing lot prices (%)

### Median

(circle size indicates number of land sales)



## Ratio of development land and housing lot prices (%)

### Upper quartile (Q3)

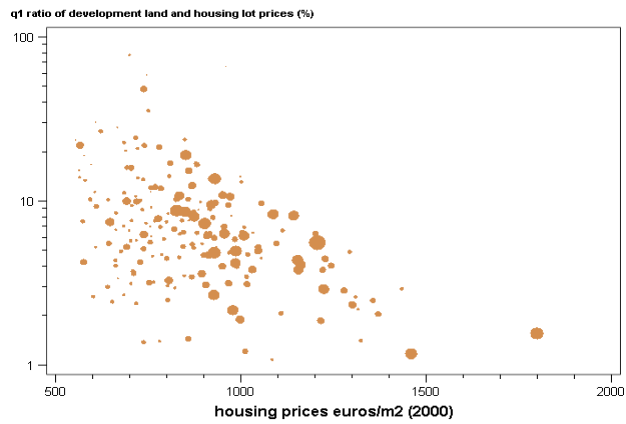
(circle size indicates number of land sales)



## Ratio of development land and housing lot prices (%)

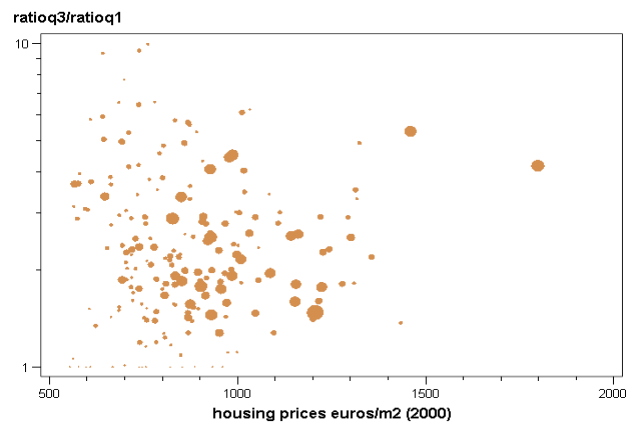
### Lower quartile (Q1)

(circle size indicates number of land sales)





Interquartile range of  
ratio of development land and housing lot prices  
(Q3/Q1)



The price ratio between  
development land and housing  
lots in Helsinki MA.

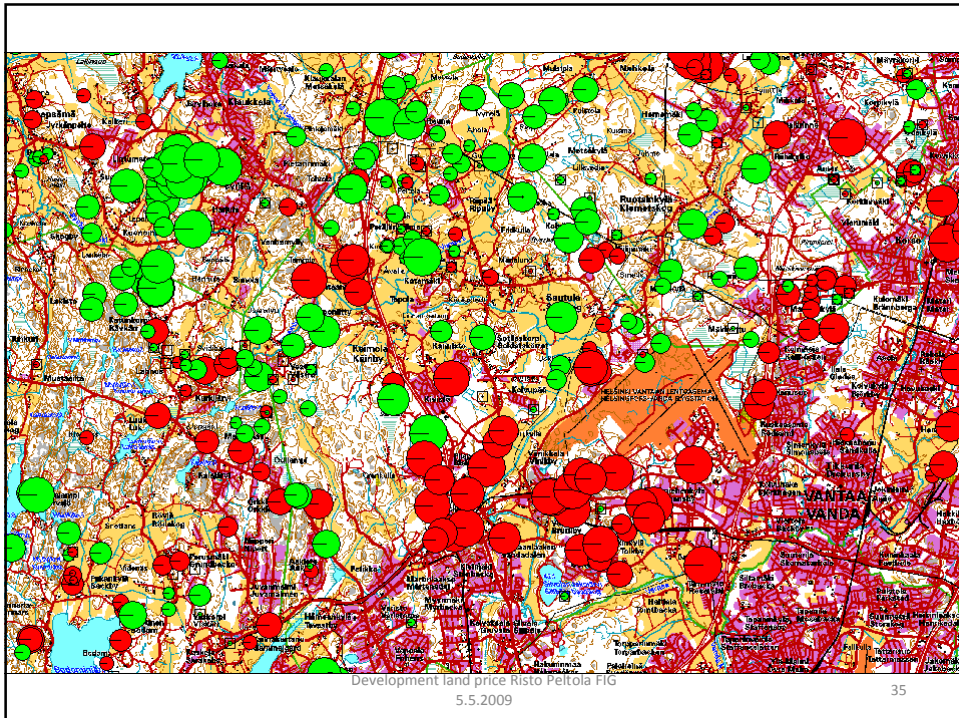
Lot price is estimated in development land  
sale location and time.

Median prices

Large red = 30 % or more

No circle = 5 %

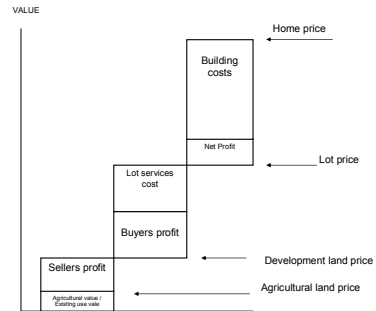
Large green = 1 % or less



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## Other factors affecting price of development land

### Impact of 5 most important factors on development land price



local housing price level	expensive housing 65 % over medium	medium price housing	inexpensive housing 40 % under medium
distance to built-up-area (max 2 km)	-0,21	-0,30	-0,39
log (price estimate for housing lot )	0,81	0,61	
log (house price index), lagged 12 months	1,05	0,70	0,35
log (land area)	-0,13	-0,20	-0,28
dummy for probabibility of development (master plan)		0,31	

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37

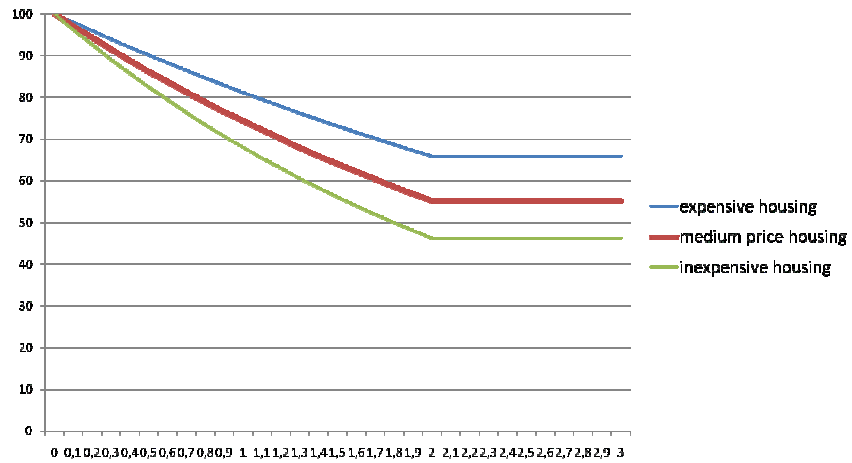
## Impact of 5 most important price factors on development land price

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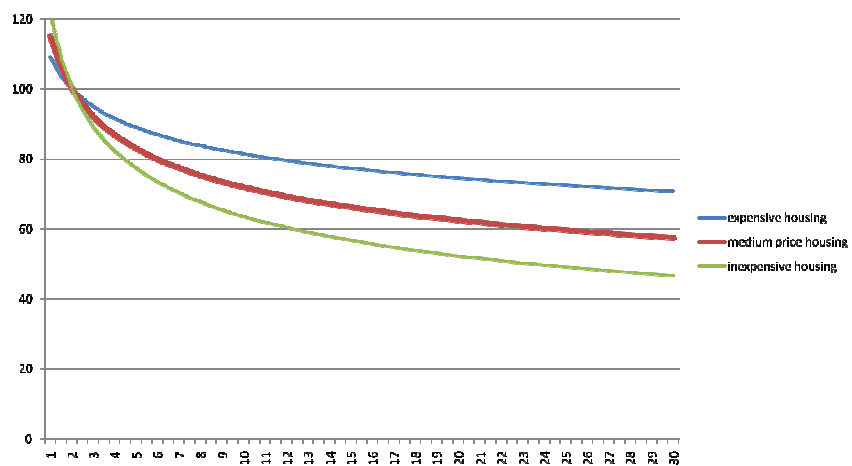
38

**The impact of distance to built-up-area  
with existing infrastructure to development land prices  
distance to built-up-area = proxy for production costs**



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**Impact of land area (hectares) on development land price**



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## Better land markets

- Price models increase transparency in a market that has traditionally been thin and untransparent
- Price negotiations will more often end in a sale
- Price models increase better valuations in compulsory purchase
- Price models increase an effective and equitable way to capture land value (without public ownership)

As a result

- It's easier to supply land for development
- It's easier to finance the development

# Further research is needed

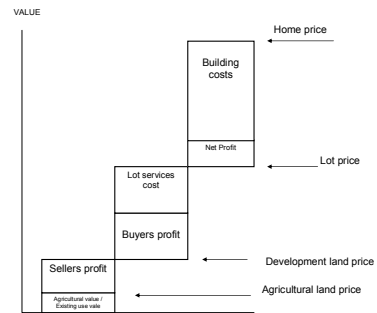
The components of house prices should be

- defined
- measured
- modelled

Especially development costs need standard definitions for measurement purposes...

... In order to find an effective, equitable and transparent division of costs and profits of development

$$H = C_1 + P_1 + C_2 + P_2 + P_3 + A$$



- Thank you for your attention!