

# INNOVATION, CITIES AND PRODUCTIVITY

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# OUTLINE

1. **Trends** (*2 very briefly and 1 less briefly*)
2. **Gaps** (*Related to Trend3*)
3. **Policy and Challenges** (*Rel. to Trend 1-3*)

# TREND 1

3.5      6.3

3.5      2.7

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3.5      6.3

3.5      2.7

7.0      9.0

# TREND 1

2010	2050
3.5	6.3
3.5	2.7
7.0	9.0

# TREND 1

	2010	2050
Urban	3.5	6.3
Rural	3.5	2.7
$\Sigma$	7.0	9.0

# TREND 1

	2010	2050	
Urban	3.5	6.3	+80%
Rural	3.5	2.7	- 23%
$\Sigma$	7.0	9.0	

Main growth areas:  
South (Africa) and East (China)

But still a large population  
in rural areas

# TREND 1

	<u>2010</u>	<u>2050</u>	
<u>U</u>	3.5	6.3	+80%
<u>R</u>	3.5	2.7	-23%
<u>Σ</u>	<u>7.0</u>	<u>9.0</u>	

Trend 1 has  
impact on  
*Climat Change*



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Trend 1 has  
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Climat Change  
Econ. Growth

# TREND 1

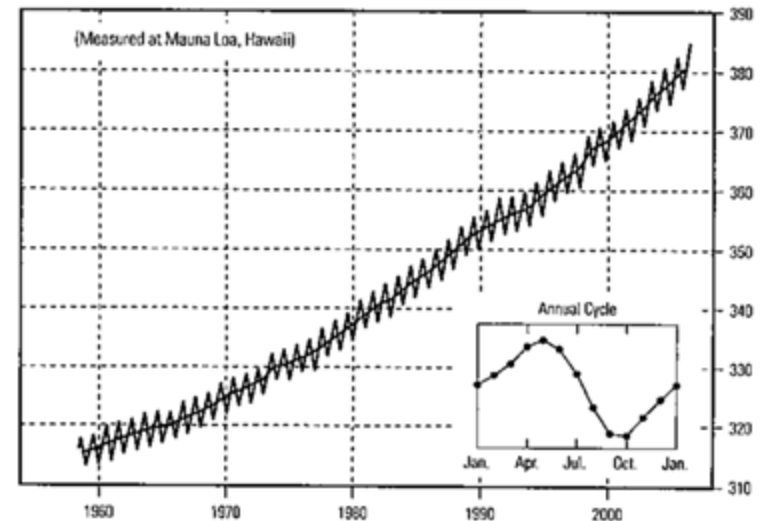
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Trend 1 has  
impact on  
**Climat Change**  
**Econ. Growth**  
*Inequality*

# TREND 2: SOON UNSTOPPABLE

Atmospheric concentrations of carbone dioxide and other greenhouse gases

Year	Ppm	Temp
1770	280	
2012	430	+1
2050	550	+2
2100	>1300	+5



PPM=Particle per million (metric tons)

## TREND 2

Cities account for **50% of population**  
**75%** of total global **energy** demand  
and  
produce **80%** of our **CO2 emissions**  
*driving climate change.*

## TREND 2

2010

2050

3.5

6.3

+80%

3.5

2.7

-23%

Almost 3 billion in cities requires ***drastic changes*** in Transportation,

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Almost 3 billion in cities requires ***drastic changes*** in Transportation, Energy S&D

## TREND 2

2010      2050

3.5      **6.3**      **+80%**

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Almost 3 billion in cities requires ***drastic changes*** in *Transportation, Energy S&D* *Housing*

## TREND 2

2010      2050

3.5      **6.3**      **+80%**

3.5      2.7      -23%

Almost 3 billion in cities requires **drastic changes** in *Transportation, Energy S&D Consumption Housing Production Methods*



## TREND 2: GOOD EXAMPLES

The group of C40 countries working on leadership of climate change and global warming

accounts for **18% of global GDP** and **10% of global carbon emissions**

Large potential for green tech innovations, and good governance

# TREND 3: INNOVATION AND GROWTH, $Y=X + Z$

$Y=$	Lab prod	
$X =$ Innovation <sup>a</sup>	0.21***	0.03***
$Z =$ Other <sup>b</sup>	See below	See below

a) Including physical capital, human capital, size, trade, industry

b) 360 000 USPTO patents, 18 industries, in 11 OECD-countries 1991-2005

## TREND 3: INNOVATION AND GROWTH, $Y=X + \underline{W}+Z$

Average rate of return to R&D in the US over the years from 1958 to 2007 is **22%** and the indirect rate of return to R&D is **37%**. (**W**)

Technological spillover effects have become more important over time  
(Wolff, 2012)

Why?

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Face-to face? Increases the importance of proximity for spillovers?

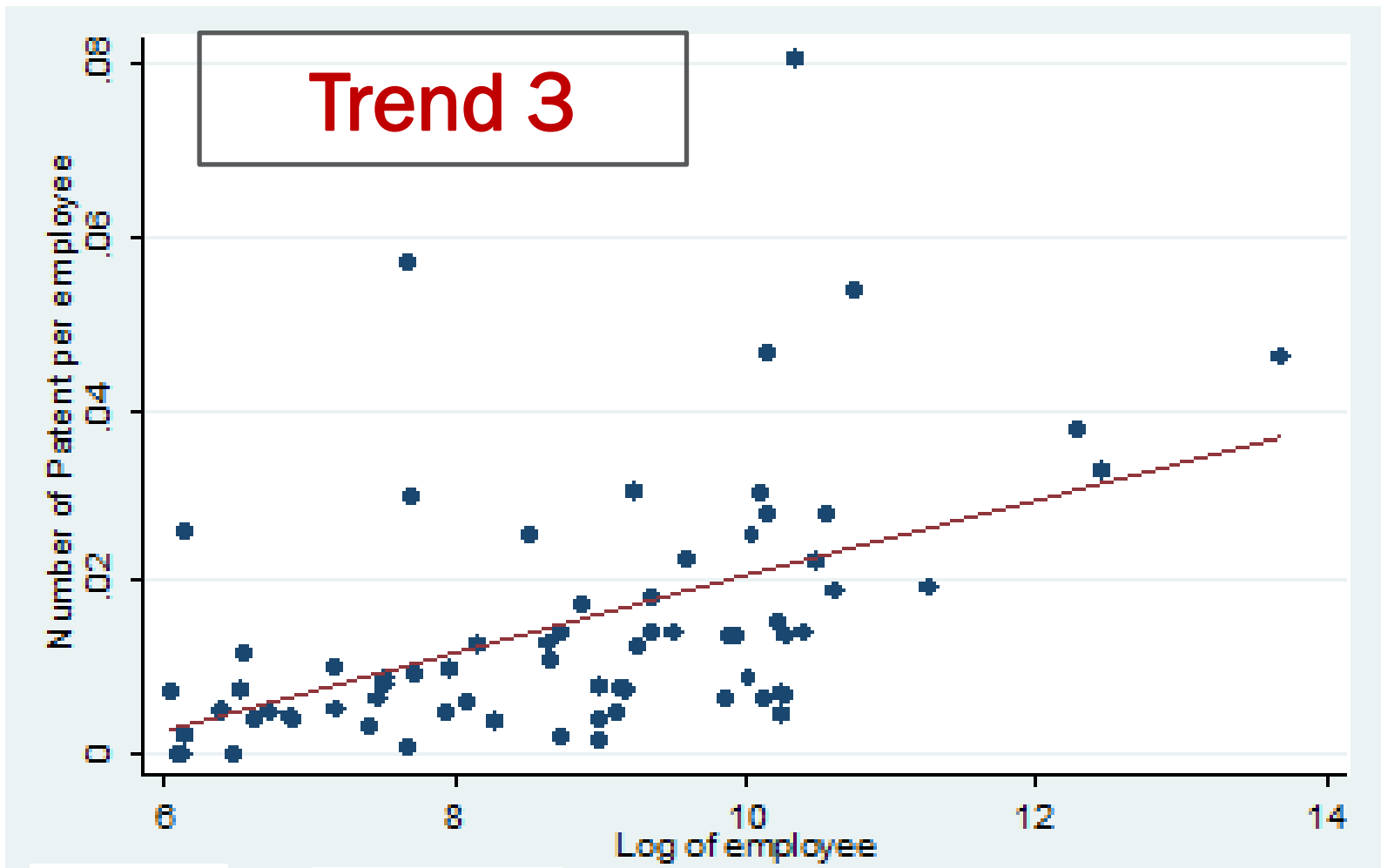
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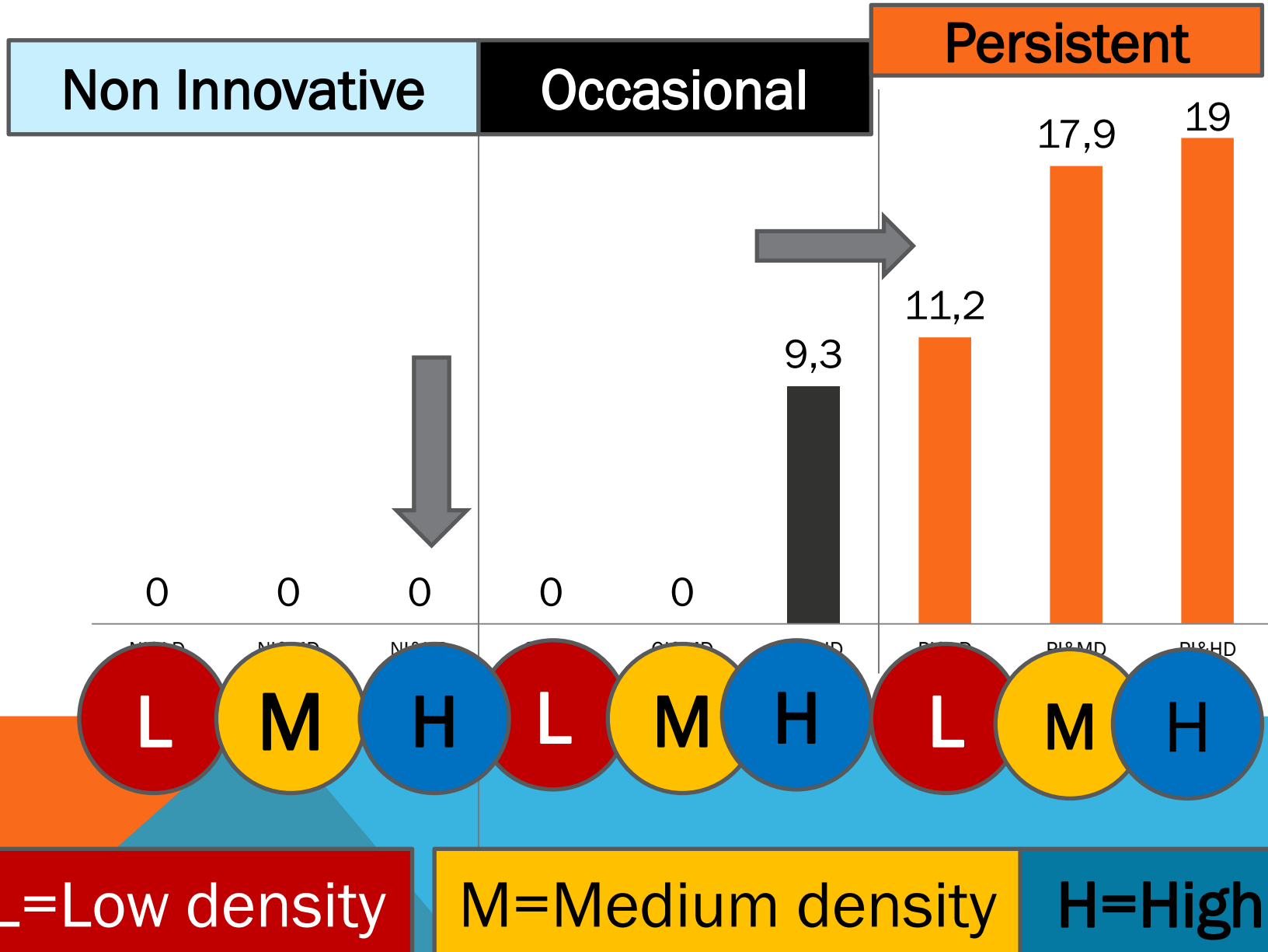
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Face-to face? Increases the importance of proximity for spillovers?



Population density and innovativeness (number of patent application per employee) in 72 functional labour market regions in Sweden 1997-2008. The correlation ( $R^2$ ) is 0.20

# TREND 4: PRODUCTIVITY, INNOVATION AND DENSITY



# GAP 1: URBAN AND RURAL

Trend 3: Growing role of knowledge, innovation and spillovers increases the income gap between city-population (firms and employees) and others

*- And the larger opportunities attract people and firms to the cities*



# **GAP 2: WINNERS AND LOOSERS IN THE THE CITIES**

Plato 427-347 b.c.

Cities are always characterised by a larger gap between rich and poor people than other places due to its own inter-dynamics

Contemporary world:

Differences in education, knowledge, employability, innovativeness, integration, networks , markets share, monopoly position etc. are continuously selecting winners from losers

# POLICY CONCLUSIONS AND CHALLENGES

## 1.Global warming

### Physical infrastructure for green cities

C40 group of countries working on a leadership of climate change and global warming account for 18% of global GDP and 10% of global emissions

*-and attracts skilled workers!*

# POLICY CONCLUSIONS AND CHALLENGES

## 2. Innovation

and almost 3 billion more living in cities

Infrastructure for creating and diffusing knowledge in milieus with many face-to face contacts and close connections between firms and people.

# POLICY CONCLUSIONS AND CHALLENGES

## 3. Inequality

and almost 3 billion more living in the cities

The invisible hand is not *the* solution.

Policy interventions have strategic role  
(education, skills, employability ).

**THANK YOU VERY MUCH  
FOR THE ATTENTION**