

INNOVATION, CITIES AND PRODUCTIVITY

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OUTLINE

1. Trends
2. Gaps
3. Policy and Challenges

TREND 1

3.5 6.3

3.5 2.7

TREND 1

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
Σ	7.0	9.0

TREND 1

	2010	2050	
Urban	3.5	6.3	+80%
Rural	3.5	2.7	- 23%
Σ	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
impact on
Climat Change
Econ. Growth

TREND 1

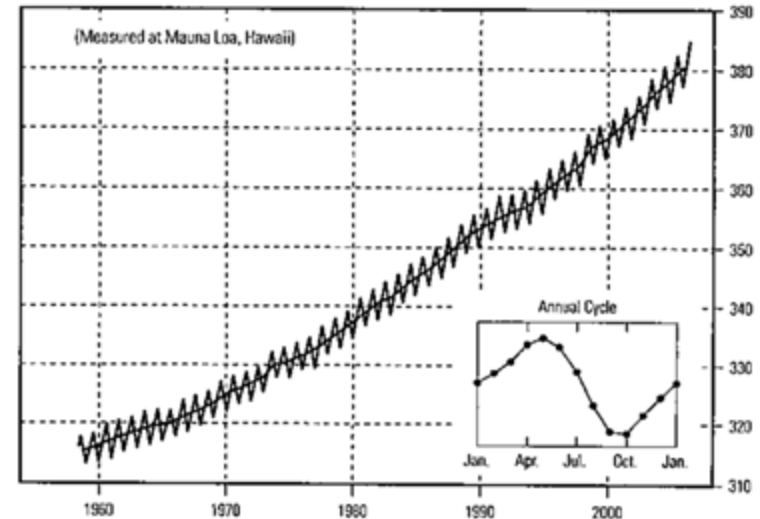
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Trend 1 has
impact on
Climat Change
Econ. Growth
Inequality

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,

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

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	Lab prod growth
$X = \text{Innovation}^a$	0.21***	0.03***
$Z = \text{Other}^b$	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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IT? Decreases the importance of proximity for spilloves

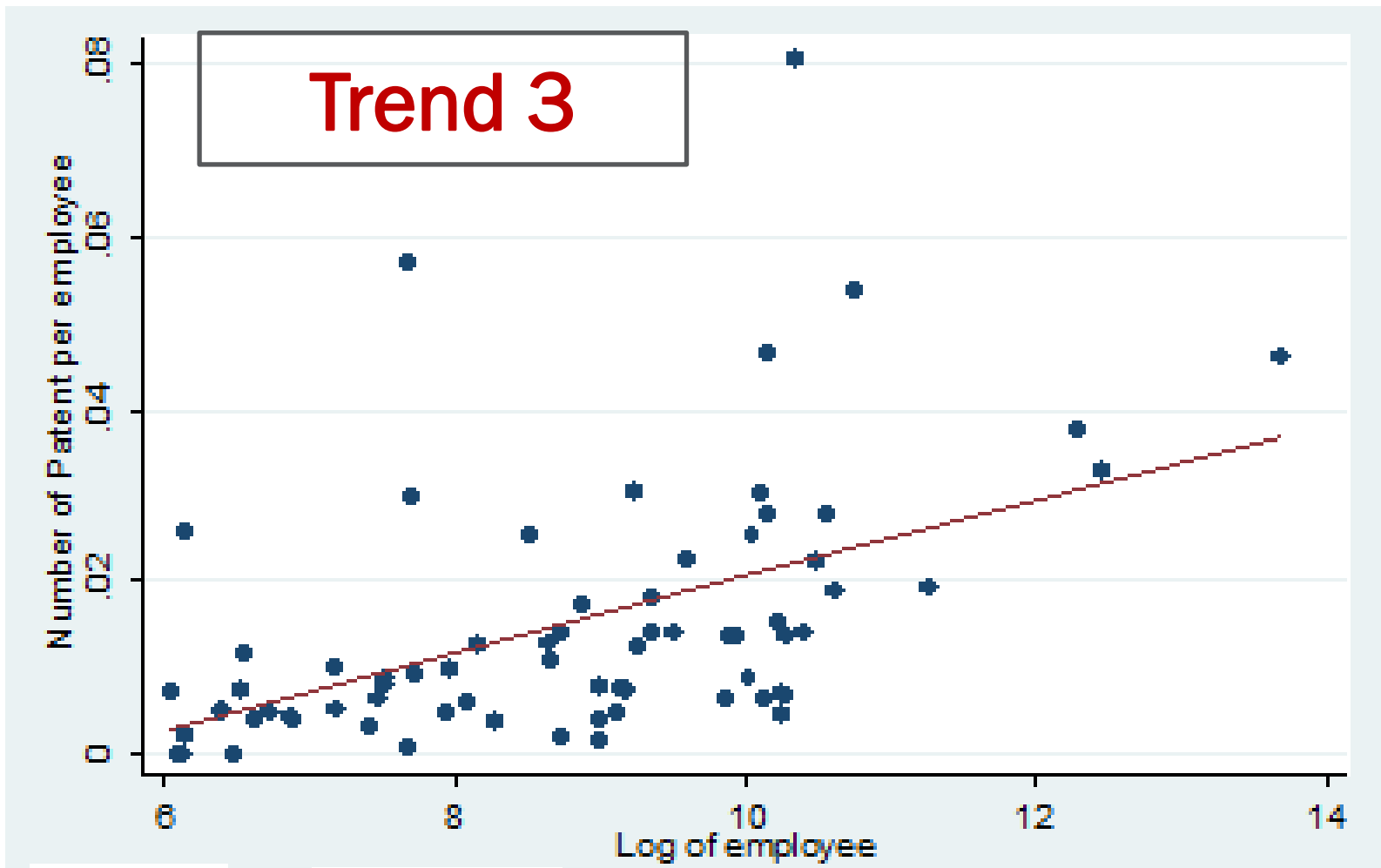
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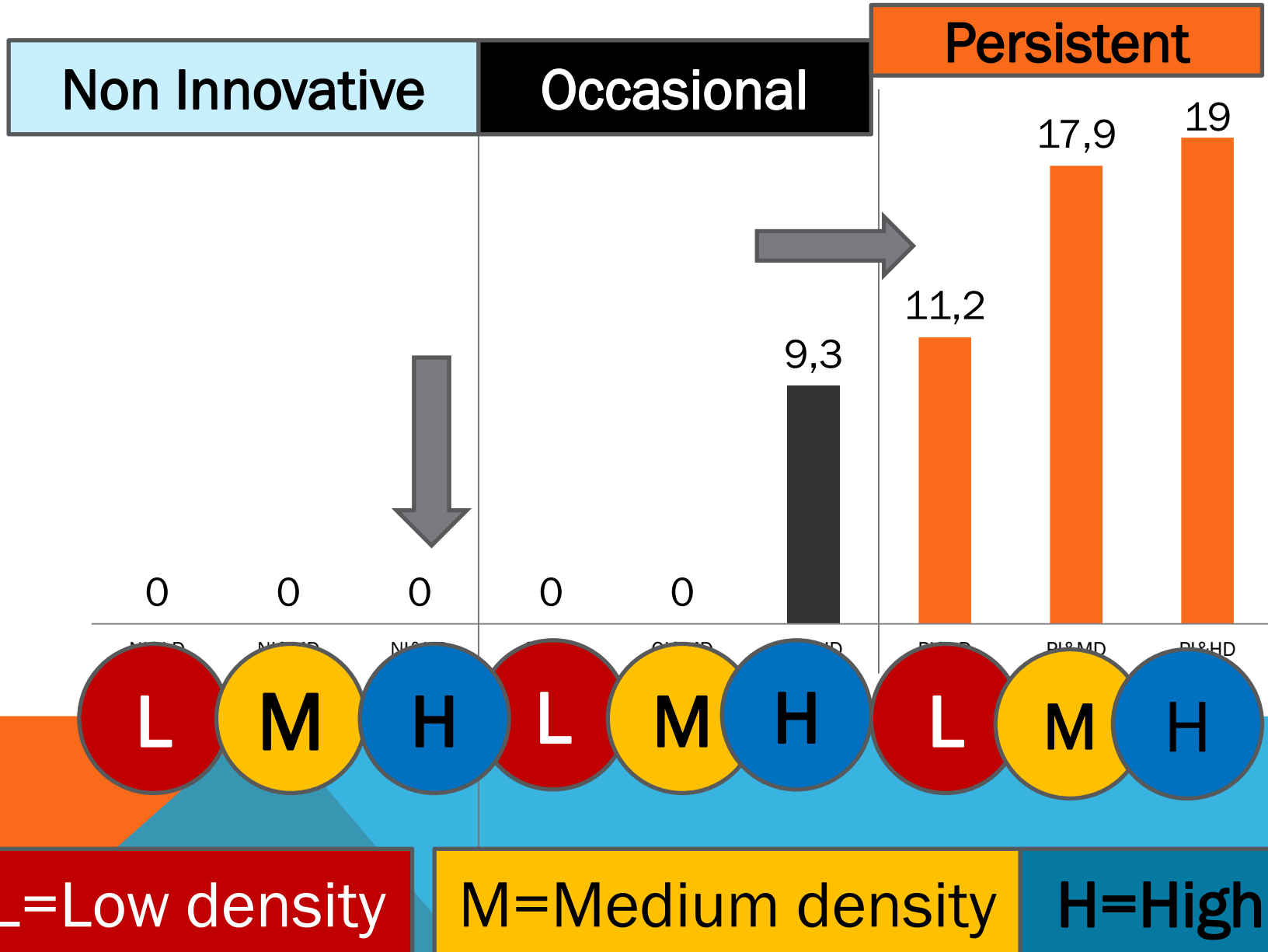
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Face-to face? Increases the importance of proximity for spillovers?



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**