

# The effect of IPR on innovation

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# The basic tradeoff

## Static tradeoff:

- Ex-ante: promising monopoly rights increases incentives to invest
- Ex-post: monopoly is costly
- Drugs are the classic example

## Dynamic tradeoff:

- Dynamically, patents are not only costly because of prices for consumers of current products, also costly because it can hurt future innovation
- Sometimes pointed out that there is a positive effect: disclosure can facilitate follow on innovations

Empirically hard to establish

- IPR relatively uniform across the world
- Need to establish causality

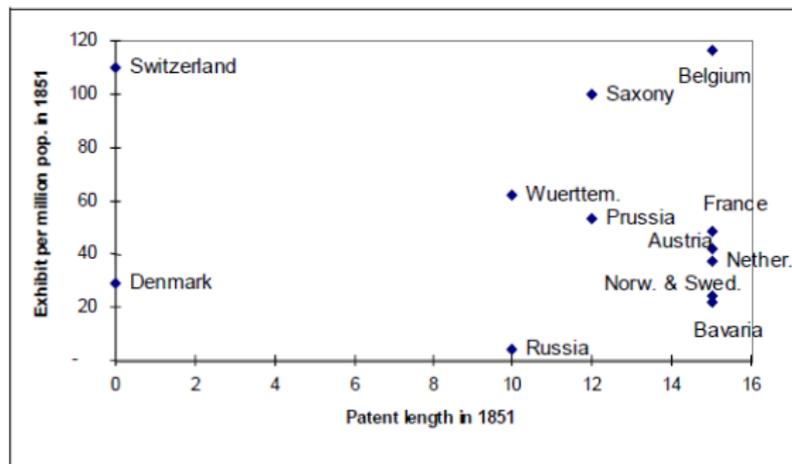
Three approaches

- 1 historical evidence
- 2 natural experiments
- 3 laboratory experiments

## evidence from world fairs

Moser 2003 uses data from two World Fairs: Crystal Palace Exhibition London (1851) and Philadelphia (1876)

FIGURE 1 – PATENT LENGTHS AND EXHIBITS PER MILLION PERSONS IN 1851



# evidence from world fairs

TABLE 4 – NEGATIVE BINOMIAL REGRESSIONS OF EXHIBITS ON COUNTRY CHARACTERISTICS

	Total Exhibits				"Award" Exhibits	
	[1]	[2]	[3]	[4]	[5]	[6]
No Patent Laws	-1.78*** (0.56)	-0.23 (0.41)	-1.28 (0.44)	-0.43 (0.34)	-1.86*** (0.99)	0.20 (0.86)
Short Patent Grants	-1.34*** (0.63)	0.16 (0.45)	-0.84 (0.50)	-0.28 (0.48)		
Population (in log form)		0.98*** (0.16)		0.73*** (0.14)		1.06*** (0.25)
GDP Per Capita				-0.36 (0.32)		0.01 (1.03)
Host Country			2.36*** (0.80)	2.04*** (0.61)		1.09 (1.12)
Crystal Palace				-0.48 (0.41)		
Constant	6.97*** (0.26)	-2.33*** (1.45)	6.47*** (0.21)	0.75 (1.47)	6.03*** (0.41)	-4.17 (2.72)
$\alpha$	0.98	0.41	0.60	0.25	1.65	0.45
LR test	8.36***	30.92***	21.36***	42.83***	2.15	21.33***
Log-Likelihood	-164.20	-152.92	-157.70	-146.96	-79.56	-69.98

## evidence from assignment of judges

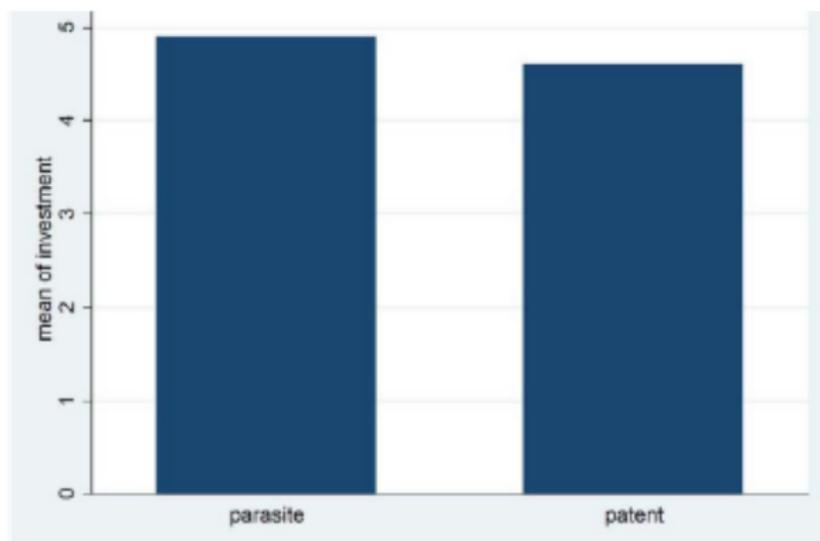
Galasso and Schankerman 2013:

- judges in U.S. Court of Appeal for the Federal Circuit randomly assigned to cases
- Differ in how pro-patent they are
- Use this as a random effect on patent invalidation that is not linked to the patent quality itself
- Patent invalidation leads to about a 50 percent increase in subsequent citations to the focal patent
- Varies across technology groups
- Similar effect in Williams 2013 using the human genome

## Experimental evidence

Benoit, Galbiati and Henry 2012: compare in the lab investment rates in settings with and without protection

Figure 1: Comparing investment levels



## Summary

- Clear negative effect of IP on future improvements of products
- Not yet possible to conclude on the overall welfare effect

Raises question:

**If we decrease IP or get rid of it, how would innovators collect returns?**

## Received wisdom wrong

CIS survey, Arundel 2001

only 11% of managers judge patents as the most effective way to protect innovations!

consistent with lots of evidence: Levin et al (1987), Cohen et al (2000)...

Other sources of profits:

- first mover advantage (Ruiz Aliseda and Zemsky 2009)
- use of complexity of product design (Henry and Ruiz Aliseda 2013)
- strategic incentives of investors to delay (Henry and Ponce 2011)
- incentives not to be too aggressive

## Sealed crustless sandwich

### **A sealed crustless sandwich comprising :**

a first bread layer having a first perimeter surface coplanar to a contact surface

at least one filling of an edible food juxtaposed to said contact surface

a second bread layer juxtaposed to said at least one filling opposite of said first bread layer, wherein said second bread layer includes a second perimeter surface similar to said first perimeter surface....

# Conclude

- Patent protection has become excessive:
  - quantity and quality of patents being issued
  - areas that are patentable constantly expanding
- Need not live with the pre conceived idea that in the absence of patents, the world would crumble
- Not advocating removal but large reform of the design of the system