The Economics of Healthcare

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Healthcare and Economics

- This is a relatively new topic for the IFS Public Economics lectures.
- This lecture will consider:

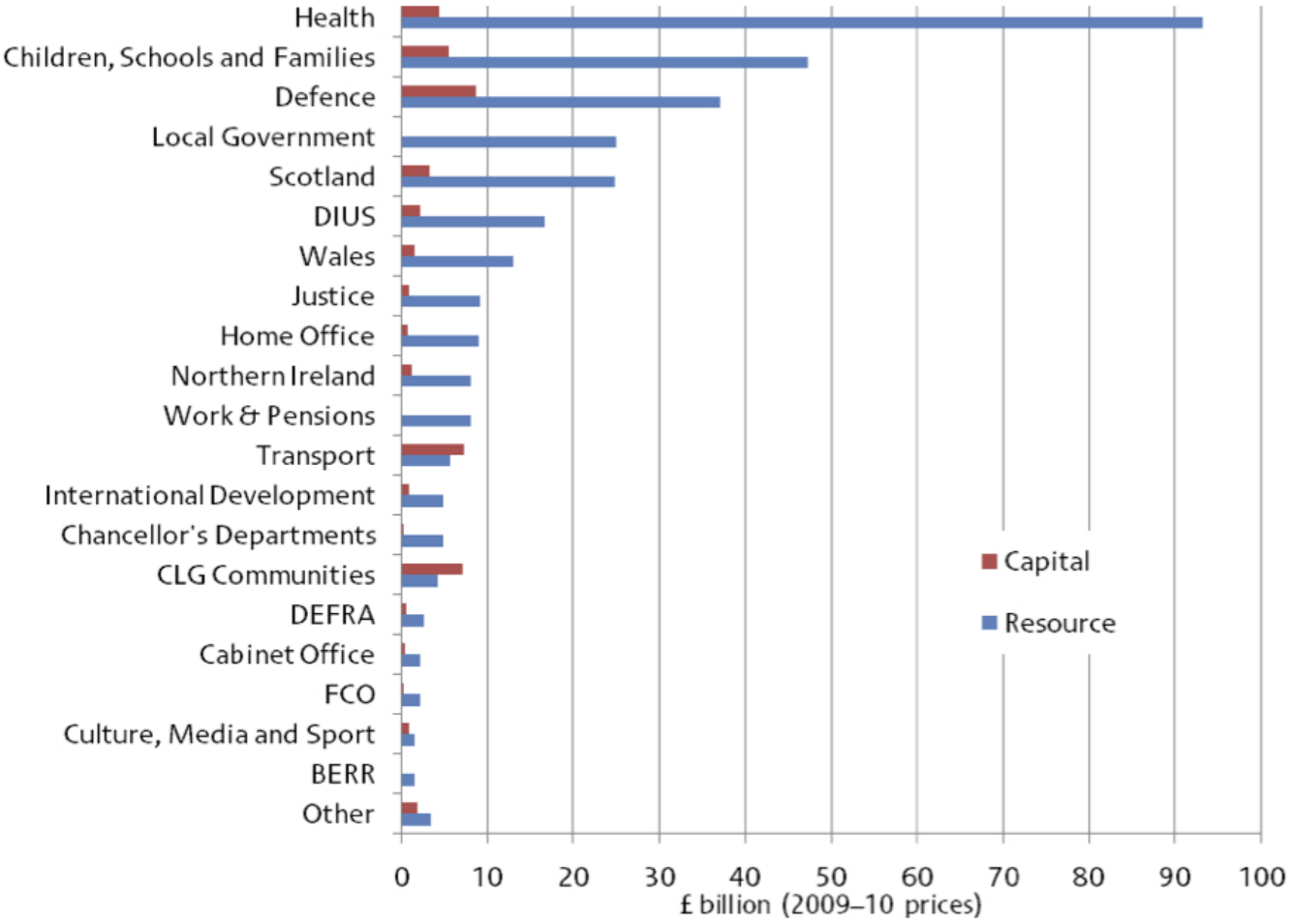
1. Why you as economists should care about healthcare.
2. Major developments in the economics of healthcare since 1990.

1. Health is valued very highly

- Estimates for the value of a quality adjusted life year (QALY) range from £20,000 to several hundred thousand pounds
- Politically contentious (to say the least)
- Health is an input or component of human capital
- Important when studying individual or social welfare

2. Healthcare is Expensive

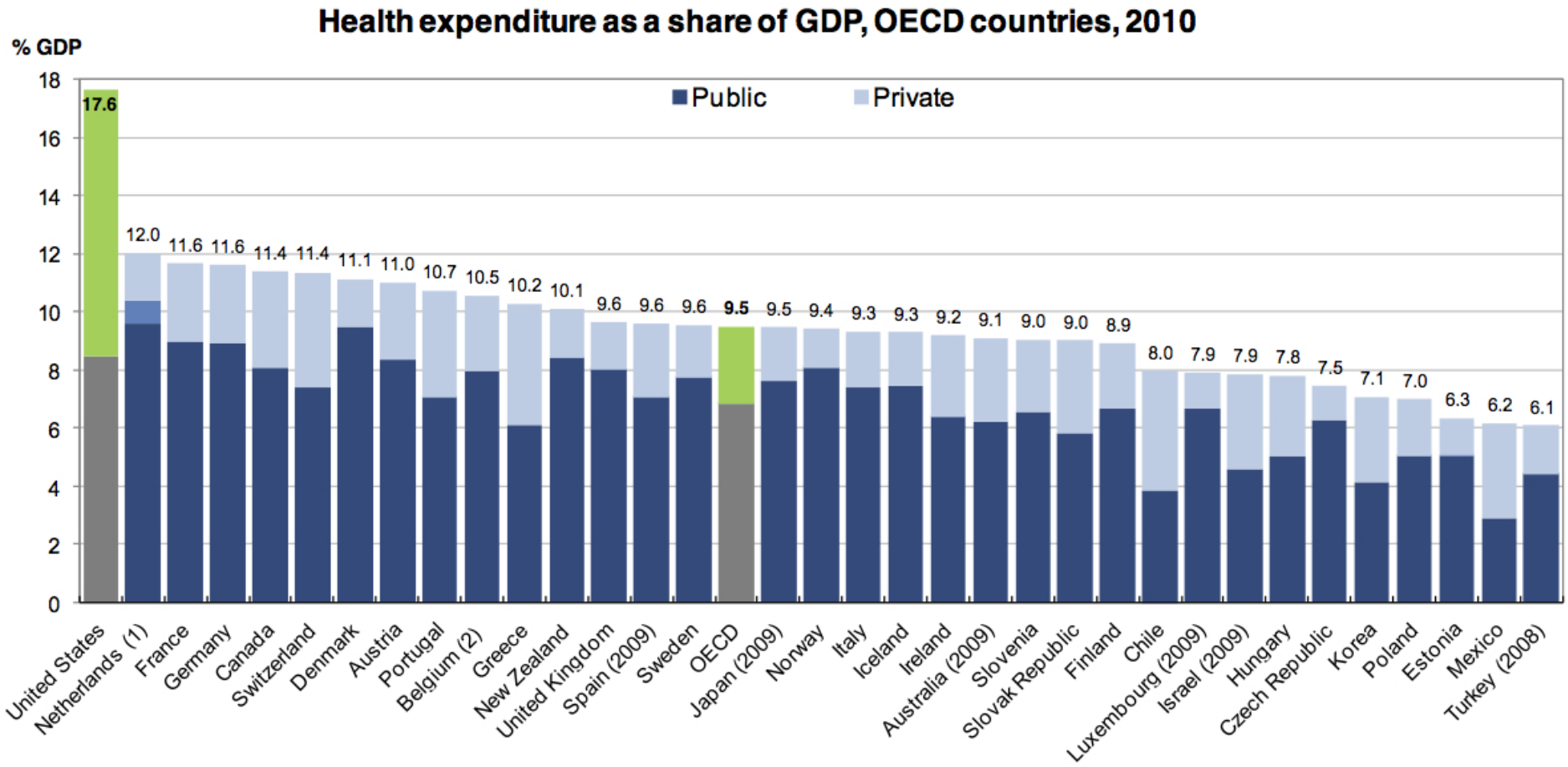
Figure : Departmental expenditure limits for each department, 2008–09



Source: HM Treasury, Public Expenditure Outturn Update, July 2009

(http://www.hm-treasury.gov.uk/d/press_66_09.pdf).

2. Healthcare is Expensive



Source: OECD Health Data (2012) - How does the United States Compare

http://www.oecd.org/unitedstates/BriefingNoteUSA2012.pdf

3. It's complicated!

Factors that improve market efficiency

1. A large number of buyers and sellers

3. It's complicated!

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Features of healthcare policy since 1990

1. Purchaser-provider split
2. Competition over price vs quality
3. Patient choice
4. New entrants

Purhaser/Provider Split

- Reforms in 1991 created an "internal market" within the NHS
- The market was created by separating the roles of financing and supplying (secondary) healthcare services
- **Providers** - provide healthcare (supply)
- **Purchasers/Commissioners** - (demand)

Providers

- Hospitals or groups of hospitals are known as Acute Trusts - supply secondary healthcare
- Most are now "Foundation Trusts" - more autonomy

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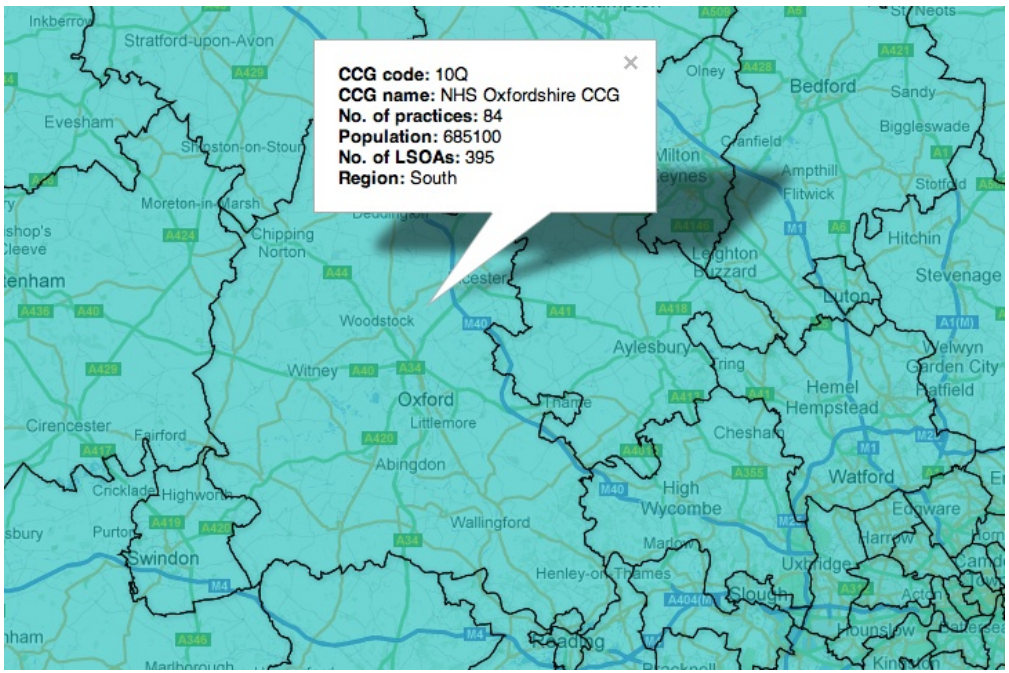
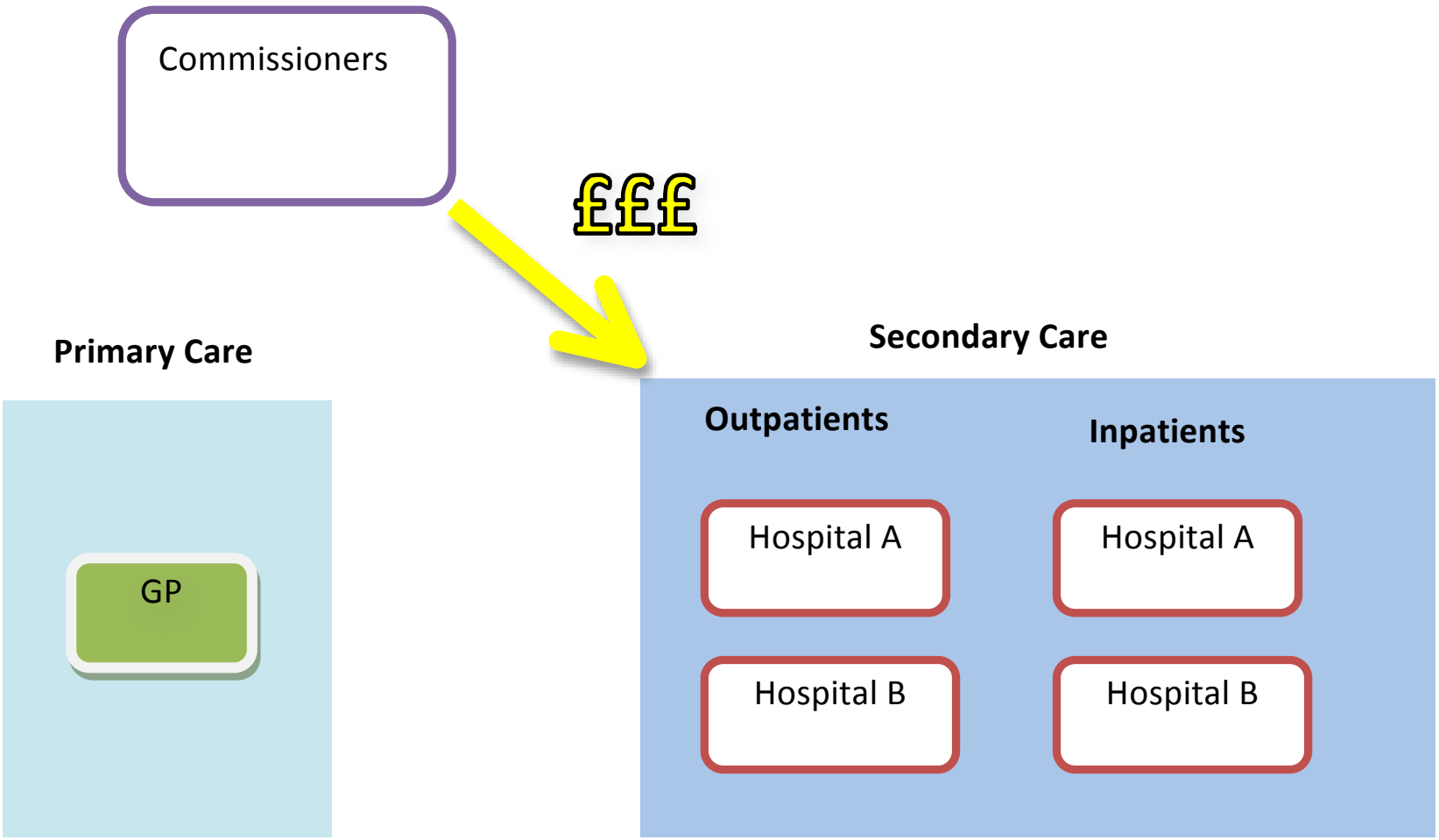
Commissioners

- Allocated money from general taxation to purchase healthcare for their population
- Names change regularly: District Health Authority & GP Fundholders $\Longrightarrow$Primary Care Trusts (PCTs) $\Longrightarrow$Enlarged PCTs $\Longrightarrow$Clinical Commissioning Groups (CCGs) $\Longrightarrow$?



Stylised structure of the NHS



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Price vs Quality Competition

- In most markets consumers observe price and quality, and firms compete on both
- In healthcare, quality may be poorly observed
- When costs are constant in quantity, but increasing in quality, the equilibrium quality is given by the Dorfman-Steiner condition (Gaynor, 2006):

$$Quality = \frac{p}{d} \cdot \frac{\varepsilon_z}{\varepsilon_p}$$

- where p is the price paid to the hospital, d is the marginal cost of quality, ε_p and ε_z are the elasticities of demand with respect to price and quality

Dorfman-Steiner Implications

$$Quality = \frac{p}{d} \cdot \frac{\varepsilon_z}{\varepsilon_p}$$

Implications

- The amount spent on quality relative to sales should increase if ε_z increases relative to ε_p
- A rise in competition should lead to $\Uparrow\varepsilon_p$ and $\Downarrow p$. Unless $\Uparrow\varepsilon_z$ quality will fall
- If consumers have better information about price than quality, it is likely that quality will fall
- When prices are regulated and fixed, firms compete for consumers on non-price dimensions. If price is set above MC at some baseline quality, firms will increase quality to try and gain market share
- Equilibrium quality is then increasing in the number of firms in the market, and in the regulated price

Competition in the Internal market

- Under the internal market (1991-1997), purchasers could negotiate with providers on the basis of price and quality
  - **Price** - lower prices meant that purchasers could afford to buy more elective care
  - **Quality** - measures of hospital quality were not publically available. Information was instead based on word of mouth and local reputation
- Purchasers therefore had a much stronger incentive to negotiate on prices than on quality
- Providers were not allowed to carry forward surpluses or deficits to future years

Hospital quality and the internal market

- Propper et al. (2008) consider the impact of the internal market on hospital quality
- Quality outcomes: waiting lists, 30 day mortality rate from Acute Myocardial Infaction (AMI) or heart attacks (emergency)
- Effects are identified by exploiting geographical differences in potential competition between hospitals (difference in difference)

$$m_{jt} = \alpha + \beta[I(PolicyOn)_t \times Comp_j] + \gamma_t + \mu_j + \delta X_{jt} + \varepsilon_{mj}$$

- where m_{jt} is hospital level quality (e.g, death rates); $I(PolicyOn)_t$ is an indicator for the internal market period; $Comp_j$ is a measure of the extent of competition; γ_t and μ_j are time and hospital dummies; X_{jt} are time varying hospital characteristics; and ε_{mj} is the error term. Coefficient of interest $= \beta$
- Data from 1991 to 1999. Competition possible 1992-1997

Hospital quality and the internal market - results

- **Hospital quality**
  - Waiting lists fell (observable to purchasers)
  - Death rates from heart attacks increased (not published until 1999)
  - Trusts could not save or borrow - any deficits had to be met through cost savings
- **Strategic planning**
  - Most contracts between purchasers and hospitals were very short term (<1 year), making long-term strategic planning difficult
- **Knowledge exchange**
  - British Medical Association expressed concerns that competition limited the diffusion of knowledge about medical breakthroughs.

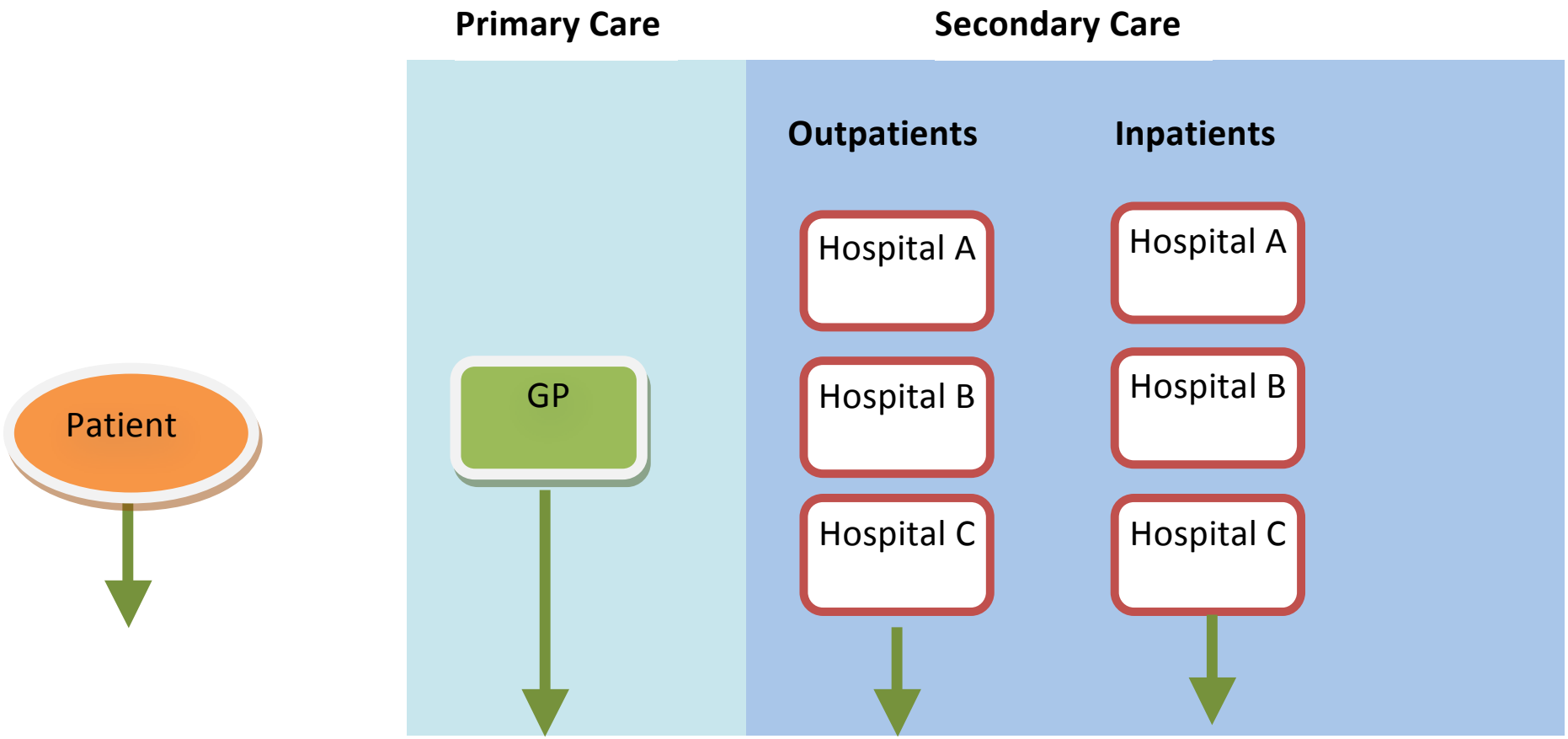
Lessons

- Competition on the basis of price has an ambiguous effect on quality
- Quality measures should be publically available
- Some regulation is needed to ensure that best practices are followed

Why Choice?

- First introduced in 2006
- Motivations for giving patients choice:
  - Patients intrinsically value the option to choose
  - Choice provides a quasi-market mechanism for directing resources towards higher quality healthcare providers
- Requirements for choice to increase quality (Burgess et al., 2005):
  - Financial consequences for providers of declines in patient numbers
  - Spare capacity in the system

What choice?



Patients decide not to visit the doctor

Patients receive treatment within primary care

Patients receive outpatient treatment or discharged without treatment

Patients are admitted to hospital and discharged after treatment

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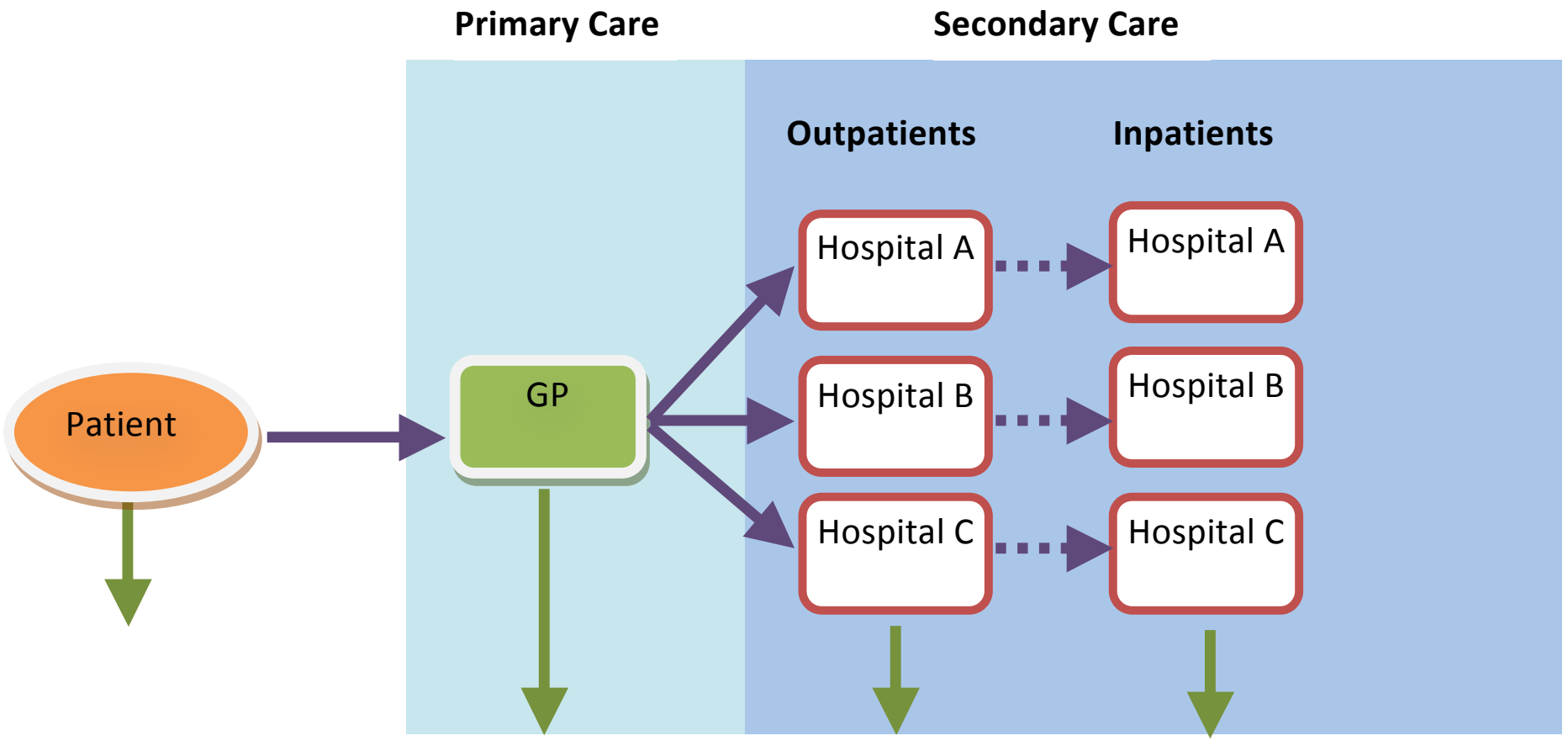
What choice?



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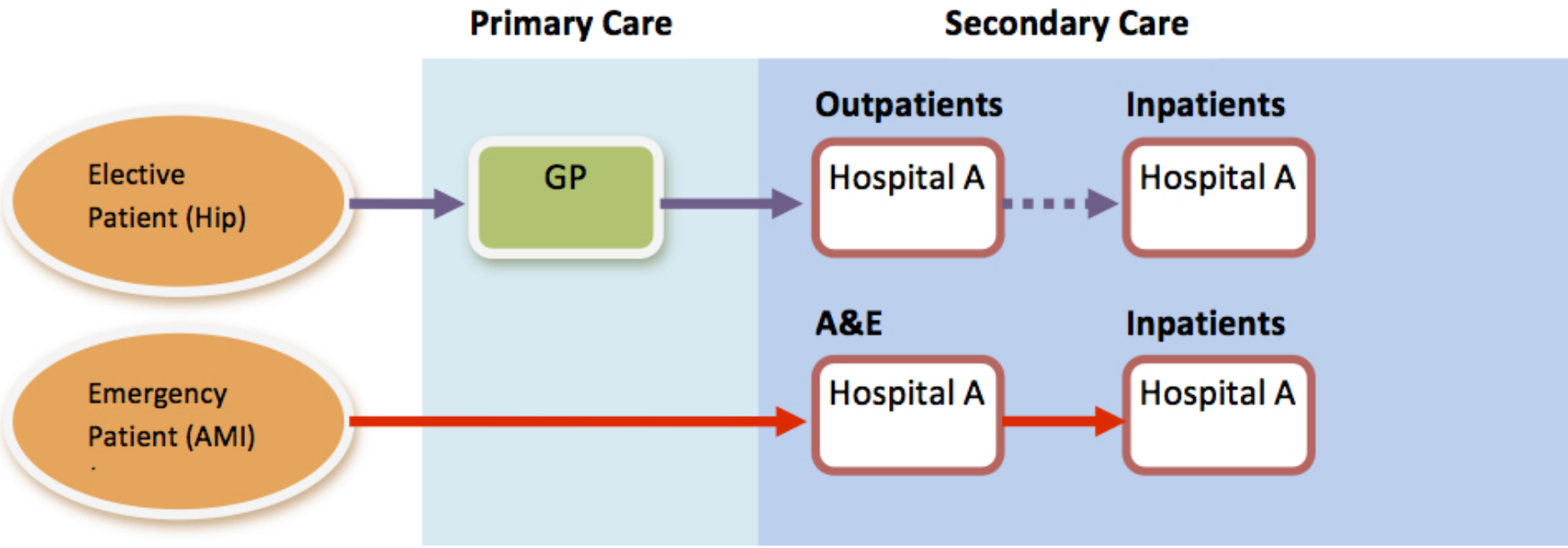
Institutional Setting

- **Money follows patients** - Hospitals paid per patient and procedure ("Payments by Results")
- **Competition on the basis of quality** - payments to hospital fixed by procedure group
- **Greater Hospital Autonomy** - NHS hospitals could apply to become Foundation Trusts - giving greater fiscal, clinical and managerial autonomy. This included the ability to borrow and reinvest surpluses across years.

Impact of Choice

- The choice policy was introduced nationwide, providing no natural control group
- Attempts to identify the impact of choice have used variation in potential competition between hospitals
- Principal measure of quality = 30 day mortality rate from heart attacks
- Cooper et al. (2011) - Higher competition (number/concentration of providers) associated with a faster decrease in 30 day mortality rate for heart attacks after 2006
- Gaynor et al. (2010) - **"Death by Market Power"**- NHS reforms resulted in significant improvements in mortality and reductions in length-of-stay without changes in total expenditure or increases in expenditure per patient

Figure : Patient choice and measurement of hospital quality



Unanswered Questions

1. Are all patients offered a choice?
2. What are the relative roles of GPs and patients in making choices?
3. Through what mechanisms does choice of a first outpatient appointment affect the quality of emergency hospital care?

Introducing private providers

- Ad hoc purchasing from the private sector has existed for years
- Private sector provision of NHS-funded secondary care was formalised in 2003 with the launch of Independent Sector Providers
- There are two types of ISPs
  - Independent Sector Treatment Centres (ISTCs)
  - Any Qualified Providers (AQPs)

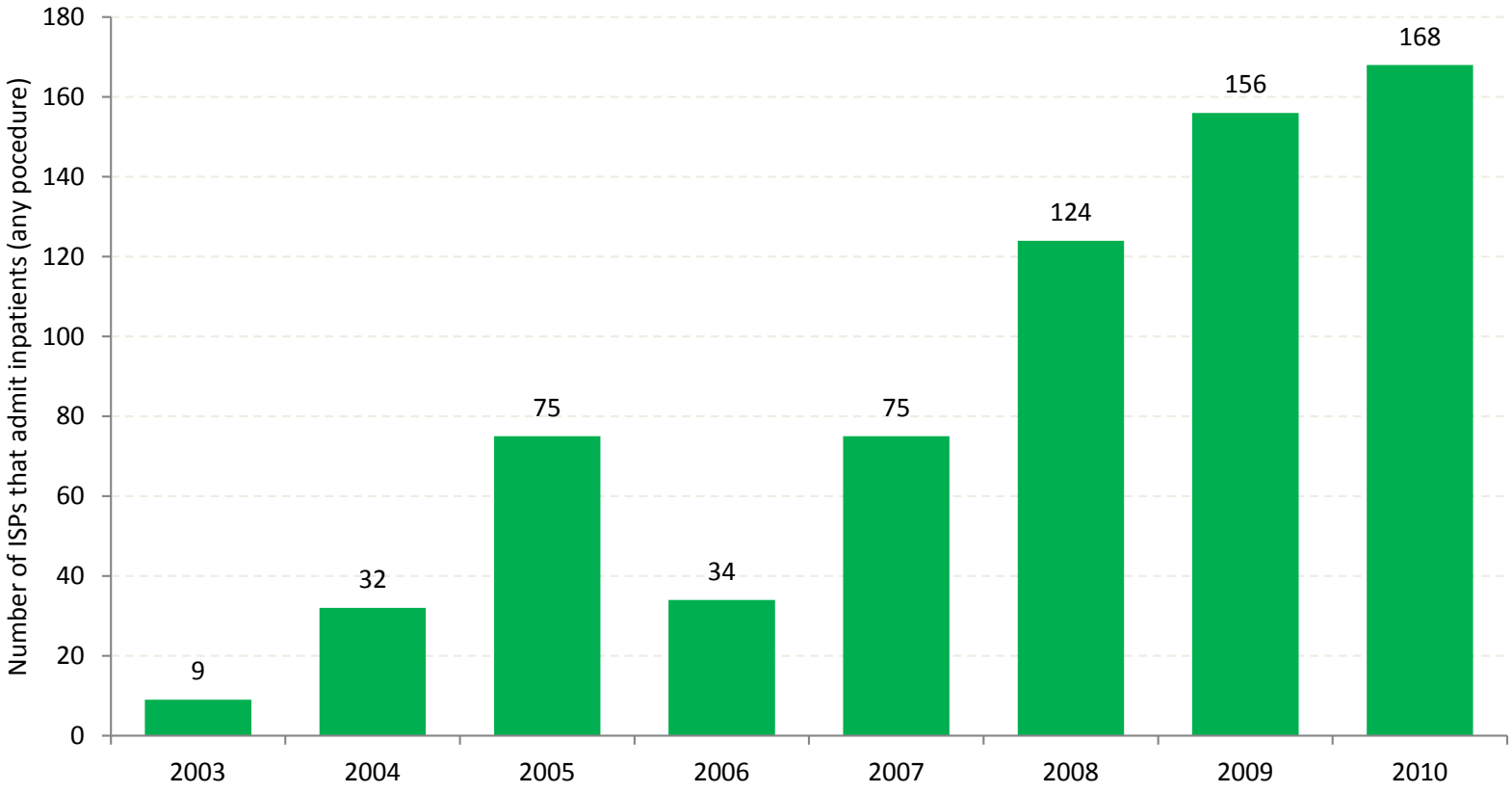
Independent Sector Providers

- Independent Sector Treatment Centres (ISTCs) are privately owned, but under contract to provide planned diagnostic tests and operations to NHS patients (Naylor & Gregory, 2009)
- Wave 1 ISTC objectives (2003-6)
  - To reduce waiting times
- Wave 2 ISTCs objectives (2007-2010)
  - To increase competitive pressure on NHS providers to improve quality (including waiting times)
  - To provide more choice to patients
  - To "create a space for innovation"

Any Qualified Providers

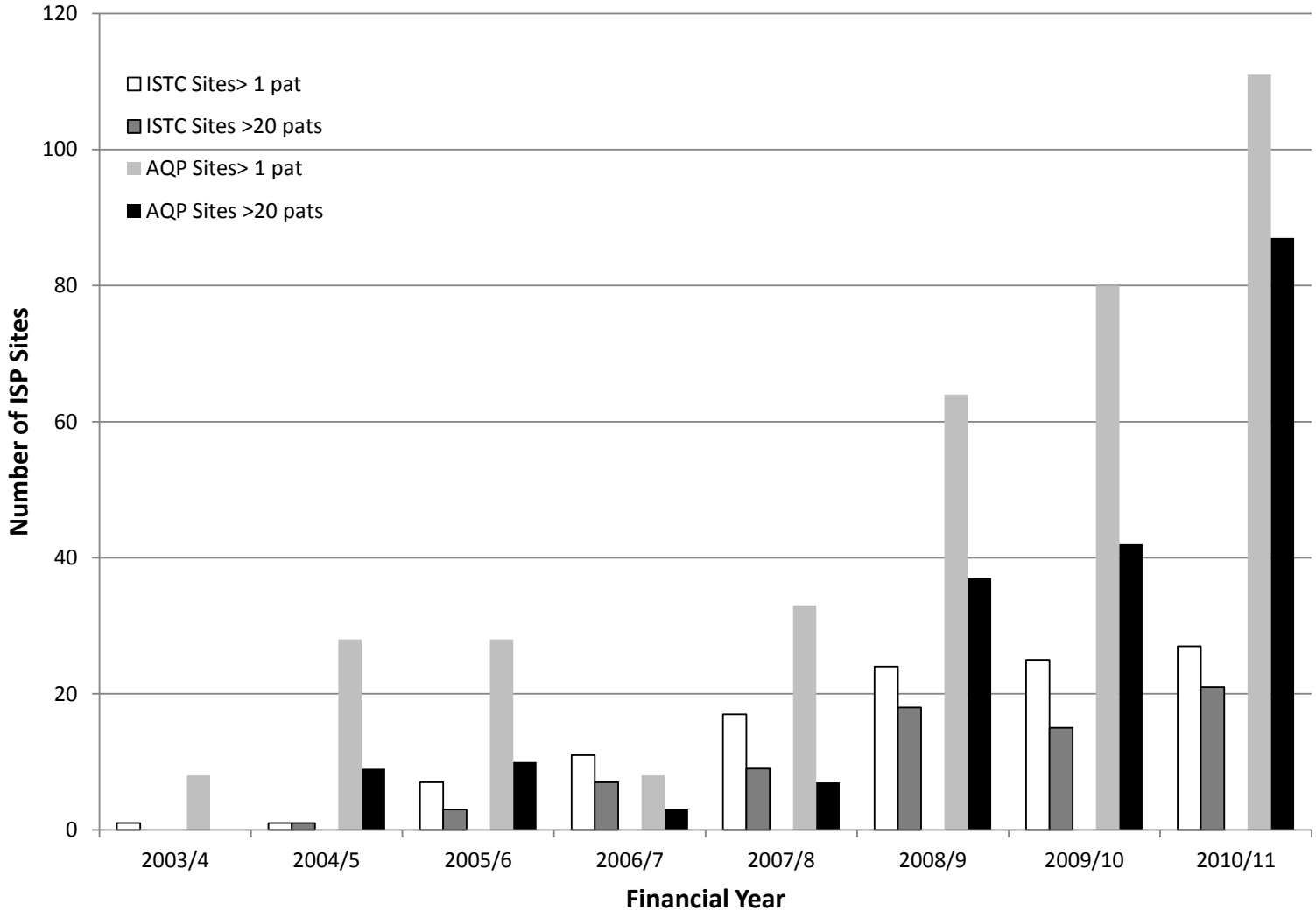
- In mid 2007, the choice of providers in orthopaedics was expanded to cover existing facilities, such as private hospitals, through the Extended Choice Network
- AQPs treat both privately funded and NHS-funded patients (at the NHS tariff)
- Extended to other specialities when the second choice reform was introduced in 2008
- There are a greater number of AQPs in operation, but they treat fewer patients per site relative to ISTCs

Figure : The number of ISPs that admit inpatients, all procedures (2003 - 2010)



Source: Hospital Episodes Statistics.

Figure : Number of ISP sites that conduct hip replacements, by year and ISP type

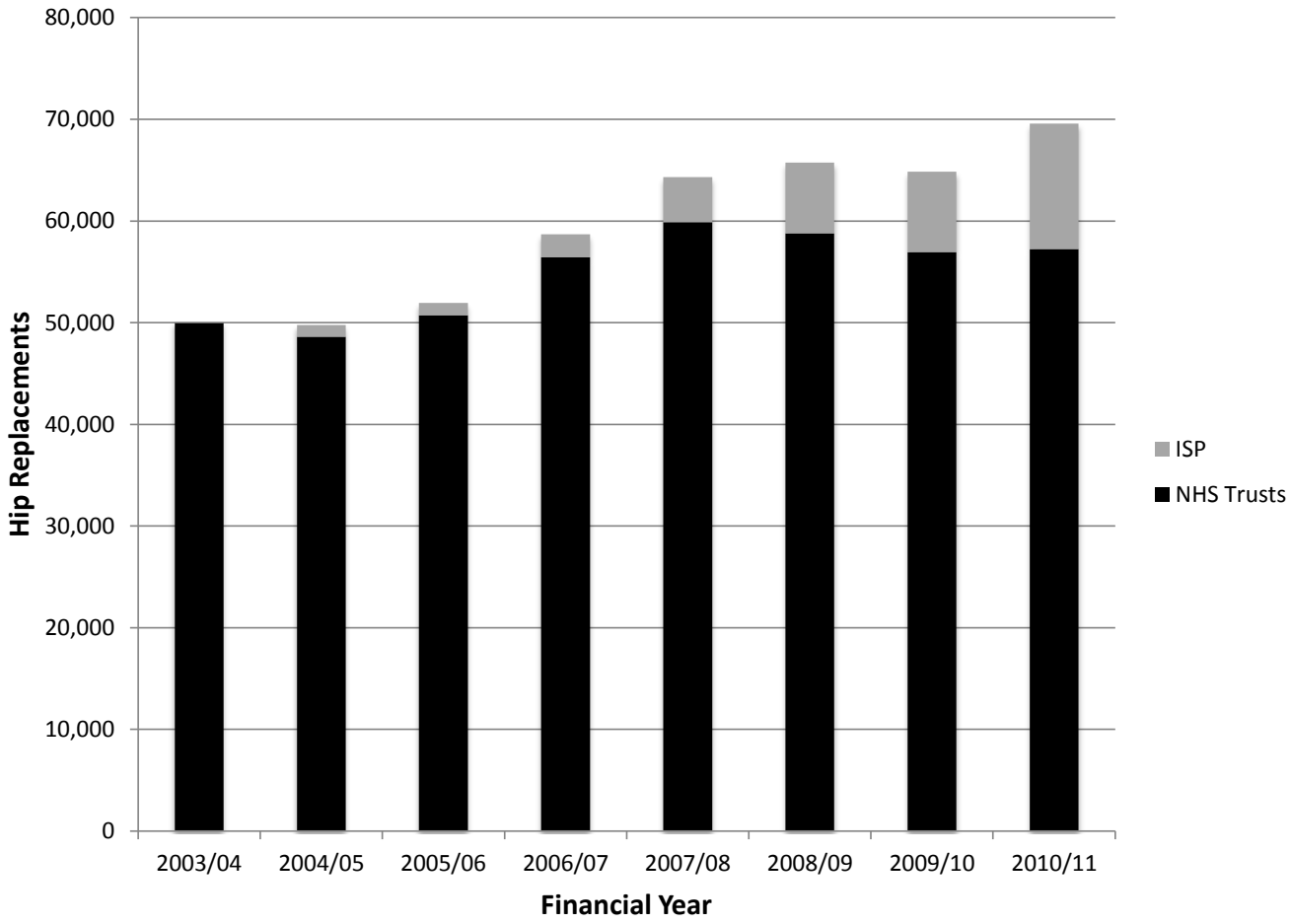


- There are far more AQP sites, but ISTC procedures are more concentrated across sites.
- In 2010/11, average hip replacements per site were 65 for AQPs and 160 for ISTCs.

What impact have ISPs had on NHS-funded volumes?

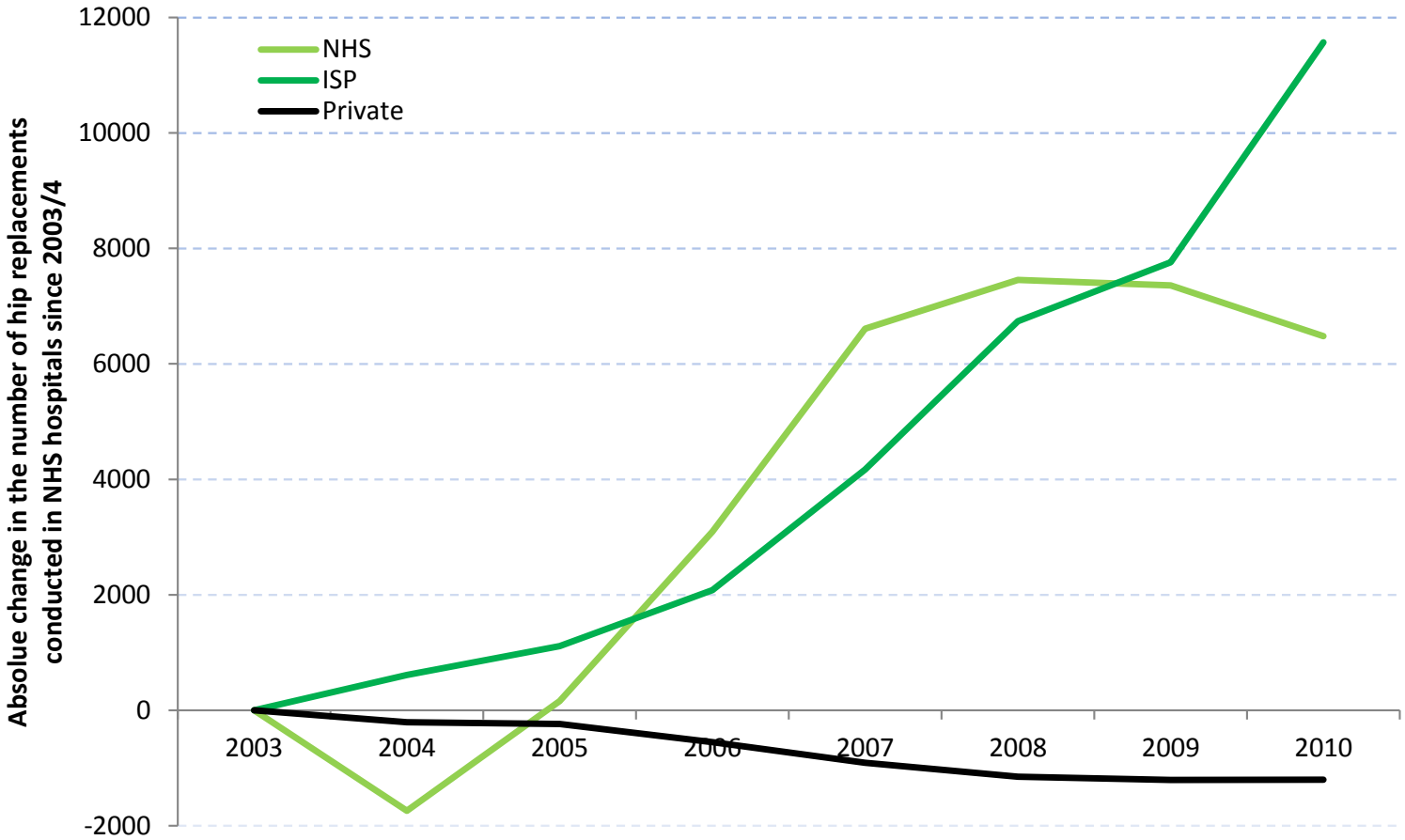
- ISPs accounted for 3.5% of NHS-funded first outpatient appointments in 2010/11 (Kelly and Tetlow, 2012)
  - However this is significantly greater for certain procedures.
- ISPs were initially introduced to reduce capacity constraints. Have they been successful?
- We will examine what has happened to NHS-funded and private-pay volumes for NHS-funded hip replacements.
  - Occur in relatively large volumes.
  - Data are available for NHS-funded and overall volumes of procedures.

Figure : Total number of NHS-funded hip replacements in England, by provider type



- The total number of NHS-funded hip replacements increased by 40% between 2003/04 and 2010/11.
- After 2007/08, most of this growth is accounted for by ISPs.

Figure : Change in hip replacements conducted in NHS hospitals and ISPs between 2003 and 2010, by provider



Source: Authors' calculations using Hospital Episodes Statistics data

Table : Number of Hip Replacements Recorded in the NJR and HES: Firms that operate as ISPs and private pay providers

	NJR	HES
2004/5	16256	521
2005/6	17314	768
2006/7	16045	1253
2007/8	17494	1643
2008/9	19132	4064
2009/10	19455	5055
2010/11	20600	9304
Change 2004/5 to 2010/11	4344	8783

Notes: Data includes hip replacements conducted by Ramsay Health Care, Nuffield Health Care, BMI, UK Specialist Hospitals and Horder Healthcare. Care UK are excluded due to poor coding practices.

Unanswered questions

1. Does the entry of private providers lead to improvements in quality for NHS hospitals?
2. Do private providers create demand?
3. What are the impacts of ISPs on equity?

Three things to take away

1. Competition on the basis of price has an ambiguous impact on quality
2. Competition on the basis of quality, combined with patient choice, has raised quality (but does not reduce costs)
3. The private sector now plays an important role in the healthcare market in England, although the overall share remains small

Health and Social Care Bill 2012

- **Commissioners**
  - Primary Care Trusts and Strategic Health Authorities replaced by Clinical Commissioning Groups (CCGs)
  - The new independent NHS Commissioning Board will allocate resources and provide commissioning guidance
- **Providers**
  - Monitor will become the economic regulator that oversees all aspects of access and competition in the NHS
  - Monitor will issue licenses to provide NHS-funded treatment
  - Prices are regulated (by Monitor and the NHS Commissioning Board) - competition on the basis of quality not prices

Potential Impacts?

The devil is in the implementation:

- How different are the commissioners (PCTs vs CCGs)?
- How many new providers will enter the market, and with what capacity?
- What are the implications for the finance of NHS hospitals if they lose elective patient numbers?
- What is the impact on equity?

Thank you

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