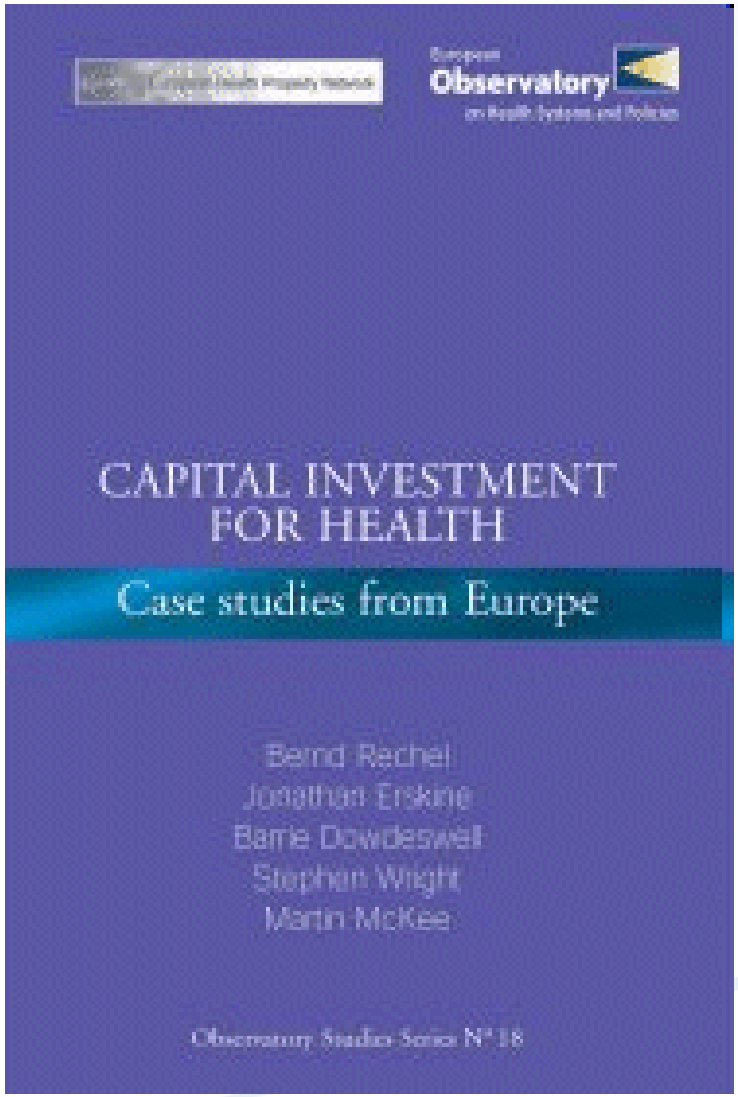
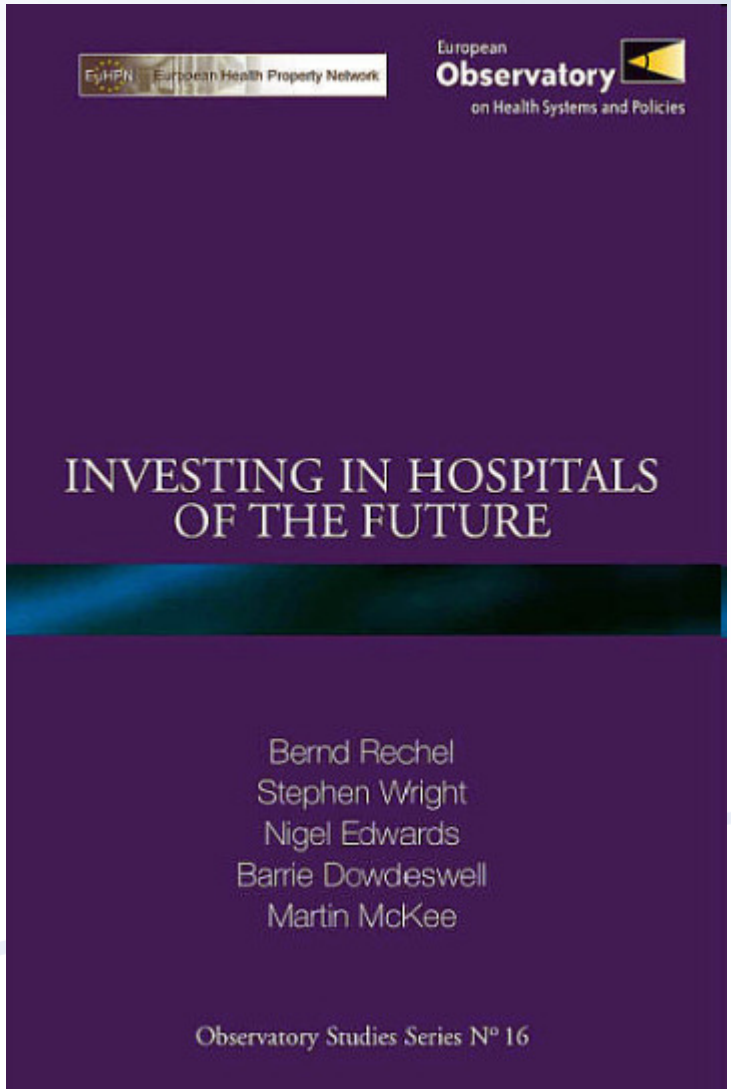
Designing for Quality
26h ISQua International Conference
11-14th October 2009

EUROPEAN CENTRE FOR HEALTH ASSETS AND ARCHITECTURE

"Investing in hospitals of the future"

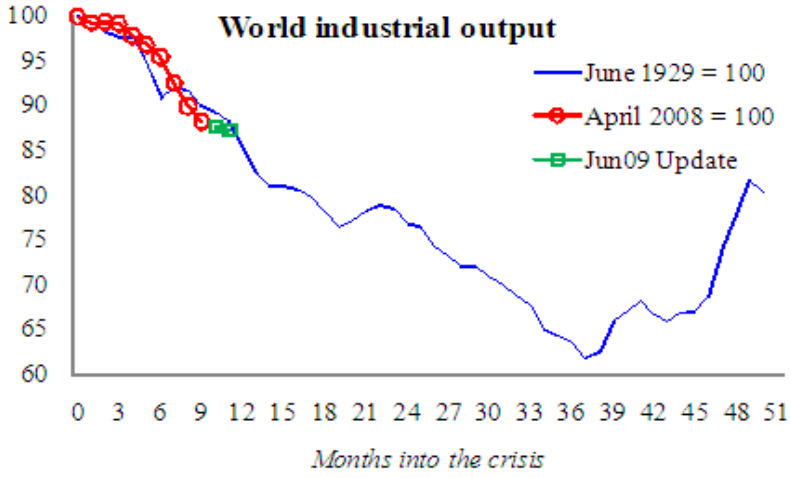
Steve Wright

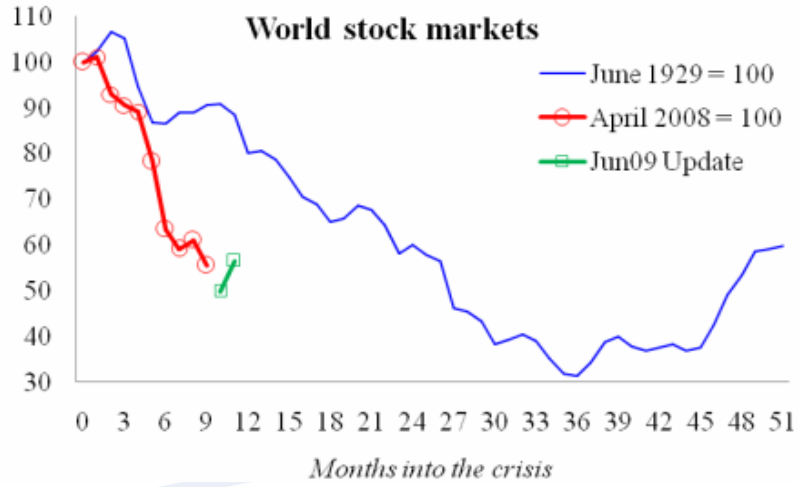

European Observatory on Health Systems and Policies
CAPITAL INVESTMENT FOR HEALTH
Case studies from Europe
Bernd Rechel
Jonathan Erskine
Barrie Dowdeswell
Stephen Wright
Martin McKee
Observatory Studies Series N° 18


EuHPN European Health Property Network
European Observatory on Health Systems and Policies
INVESTING IN HOSPITALS OF THE FUTURE
Bernd Rechel
Stephen Wright
Nigel Edwards
Barrie Dowdeswell
Martin McKee
Observatory Studies Series N° 16

Btw It's a tough world out there: is this the Great Recession? 2009 vs 1929

Source: Eichengreen & O'Rourke





& with the ageing crisis (baby boomers) now almost on us. In this environment, keep investing. But, even more than before, get the capex decisions right…

For the study, why these two organisations?

European Centre for Health Assets and Architecture

- European Observatory on Health Systems & Policies:
  - 12 members from government, international institutions, academia, NGOs
  - Secondary research
  - Flood of evidence-based country/regional & thematic studies
  - The prime source of European health policy advice
- EHPN:
  - 12 members representing nations, international institution
  - Main European source on the *estate : services* interface
  - Information-sharing (still in EHPN)
  - Knowledge development & strategic advice (**now in ECHAA**)

Context of the study

- The healthcare system is changing fast (the known epidemiological, demographic, technological, societal shifts)
- The acute (district general) hospital in particular is threatened from both sides (teaching hospitals ⇔ primary/intermediate care settings)
- Hospitals are expensive places – around 40-50% of national healthcare system costs passes through
- Social infrastructure is long-lasting (40-50 years?)
- **The estate is critical (in poorly-understood ways) to modern service delivery**

Question:
Given this context, how would <u>you</u> start thinking about good healthcare capital investment?

The case studies

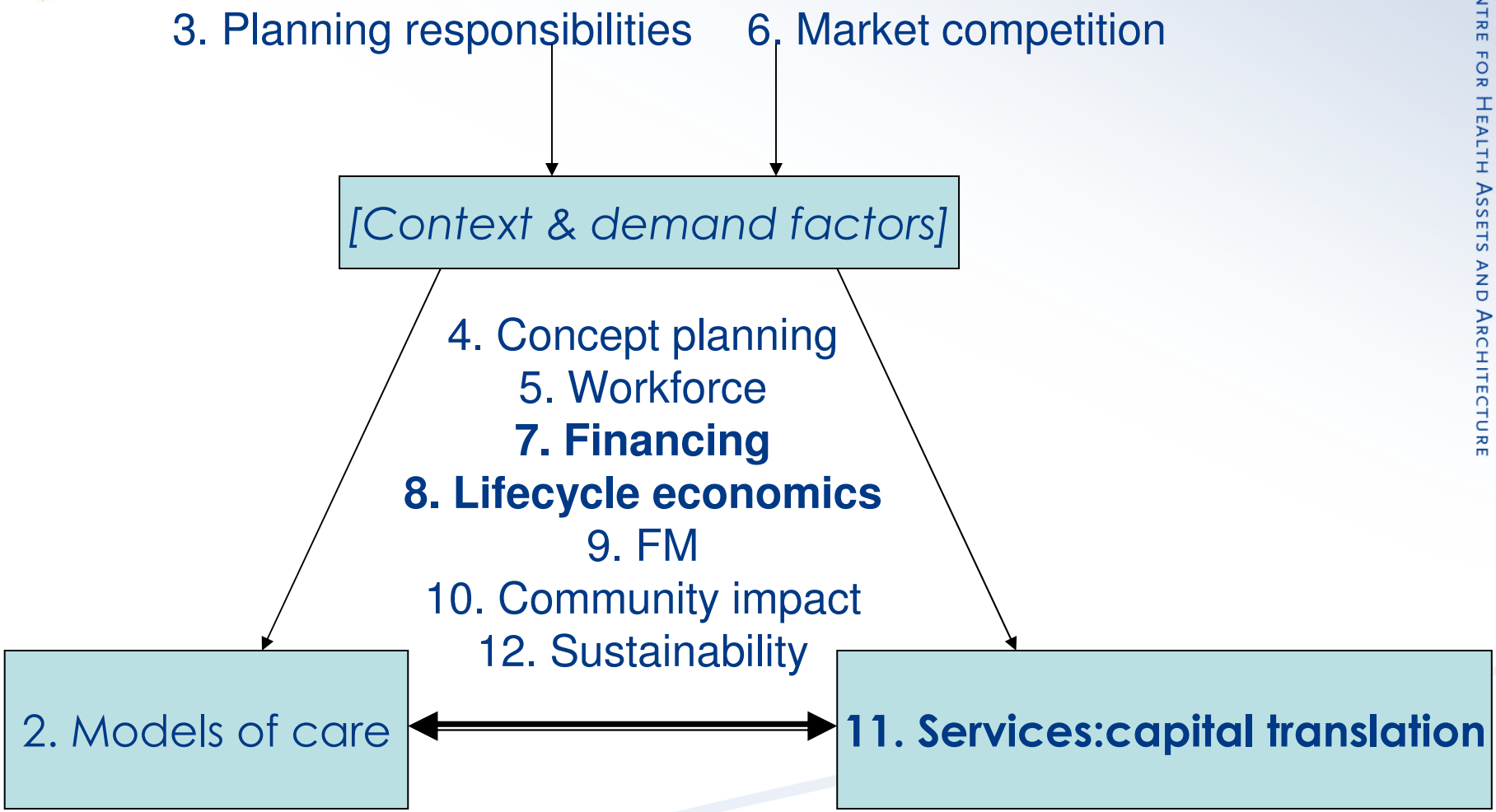
Hospitals or systems: Alzira (E), Coxa (FL), Martini Groningen (NL), Trondheim (NO), John Paul II Krakow (PL), Stockholm County (SE), Northern Ireland, Sittard (NL), Rhön Klinikum (D), Tuscany (I), PFI (UK)

Some results:

- Sittard - medical process systematisation, fully integrated care via IT, leadership
- Coxa - focused outsourced business "joint-replacement factory", PPP, leadership
- Rhön Klinikum – regulated privatisation, medical process systematisation, financial management
- Alzira - whole-population PPP, health targets
- Northern Ireland - integrated care model, large investment, PPP

Systematisation/care pathways, clinical & business models, PPP, clear strategy…

Structuring the thematic book



I'm going to pick out certain bits to be **bold** about during this morning (especially chapter 11)

Ch 7 Procurement & financing models

- Risks & exposure created by different procurement methods vary – especially with concessions
- Often in the past there were only soft budget constraints
- Finance by traditional methods (public sector equity & debt) is being supplemented by new funding methods (EU grants, PPP):
  - EU Structural Fund grants:
    - ERDF (infrastructure) & ESF (soft)
    - Now specifically written-into SF protocols
    - Responsibility shared somehow between DG-REGIO & DG-SANCO
    - If <2% of SF monies goes to healthcare, why is this less than the 9% share of healthcare in GDP?
  - PPP:
    - Different scopes: accommodation, accommodation + clinical, whole-population, regulated privatisation – a question of setting the envelope
    - PPPs don't generate new funds (just a different sort of debt)
    - Contracts try to be "complete" but fail because of transaction costs, so should instead be aimed at "contingent adaptability" & trust between partners

Ch 8 Life-cycle economics

- Costs of capital:
  - Are small (relative to total of annual maintenance)
  - Very small (relative to total of annual medical service expenditures)
  - But the capital stock determines *in part* both of these larger flows
- Acceptable functional life is far less than technical life for most elements of health buildings
- "Layers" model indicates for hot floor (24-46%), office (36-24%), hotel (27-21%), factory (13-9%):
  - different costs/m^2 to build
  - different functional lives ("Service Life Periods")
- Design adaptability depends on:
  - Elements with different SLPs having minimum friction between them
  - Foundations, roofs & main technical systems having maximum technical lifetimes
  - Inner parts (ceilings, partitions…) being alterable

Ch 11 The hospital is a healthcare location which exploits **economies of scope** (but not economies of scale)

Economies of scope in treatment (especially for advanced work & complications, & despite pressures to take all these into other settings):

- Surgery
- Imaging
- Diagnostics

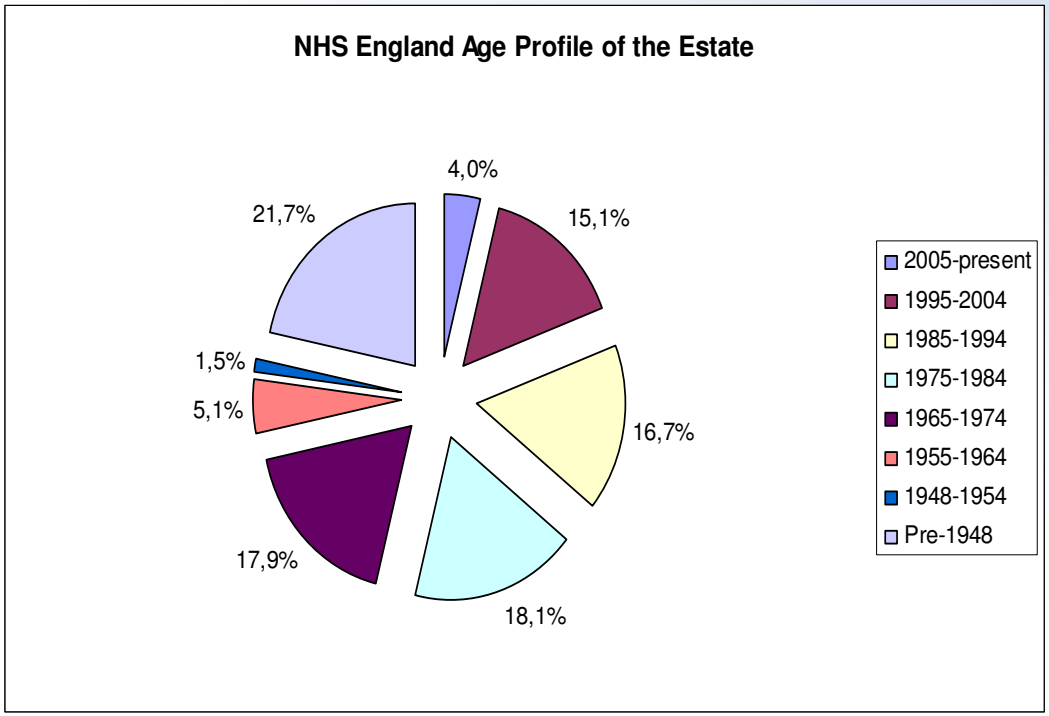
And meanwhile, hospitals also serve other scope functions:

- Training of medical staff
- R&D
- Urban regeneration

The changing environment threatens the ordinary acute site. But "the hospital" as a concept will not disappear

Ch 11 (cont.) What strange facilities hospitals are…

- Over a fifth of English NHS estate is >60 years old – but still somehow used
- The capital stock concerned must be fully depreciated
- Few other industries have (or want) capital stock this old
- **It implies that acceptable capital:labour ratios in healthcare can be dramatically variable (how?)**



Good medicine can be delivered in ancient monuments – but is it desirable?

Ch 11 (cont.) Now let's go to bed…

- Hospital capacity is a mix of buildings, medical & diagnostic equipment, operating theatres, ICUs…
- In practice, however, it is almost universal to denominate it in terms of **certified or manned beds**, forecast:

$$\text{Bed numbers} = \frac{\text{Population} * \text{Hospital admissions frequency} * \text{ALoS}}{\text{Occupancy rate} * 365}$$

- This formula substantially **drives** the capital planning process for hospitals in most healthcare jurisdictions
- Something similar is used for operating theatre capacity
- But other hospital functions are not integrated

The "bed" as a function is mostly storage – warehousing of patients while the institution works out what to do with them

Ch 11 (cont.) And what **should** be the design principles?

There may be a better approach than "beds":

- Develop & articulate models of care based on systematised care processes
- Treat such clinical pathways as ***flows*** for a patient across the system viewed as a ***network***
  - multiple paths via nodes
  - non-linear
  - reversible
- Build the appropriate ***capacity*** for those flows

Methodologies (or data) are not yet there to do this, for a hospital in its setting

Ch 11 (cont.) What is "flow"?

In the healthcare context, **flow** should:

- Group similar patient processes, not similar ailments
- Relate to the number of activities undertaken, not number of patients
- Be best grouped by complexity, not acuity
- Keep types of flow – patients, staff & goods – separate from each other
- Keep elective flows also separate from emergency ones (which are more predictable, statistically)

Question 1

How to measure flow? Pathways don't map well to DRGs (which refer to individual admissions) nor "Consultants Episodes"

Ch 11 (cont.) What is “capacity”?

In the healthcare context, **capacity** should**:**

- Reflect that hospitals are immensely complicated processing plants – need simulation modelling?
- Handle both flow & batch processes
- Be structurally in excess, to cope with inevitably variable flows (seasonal ‘flu…)
- Be loose-fit, & as standardised as possible
- Recognise the true network constraints which, like the poor, are always with us - & they’re probably hidden

Question 2

How to measure the ability to deliver network processes?

It’s not counting singular, simple structures like beds

Soundbitten!
Overview of the study major conclusions

- A strategic response to context is vital
- Planning is still a policy lever; don't rely just on market forces
- Link capital funding to desired design (not vice-versa)
- Flexibility is critical across the site, & through lifespan
- Life-cycle approach to economics
- Consideration of wider community impact
- Therapeutic design – for staff as well as patients
- Sustainability
- Whole systems perspective
- Hospitals should be planned as complex flow networks

Thank you!

www.echaa.eu

steve.wright@echaa.eu