



Market failures, business and social innovation – applications to healthcare

chap.8

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- **Market failures**
- Defining business and social innovations
- The economics of social innovation
- The future of healthcare as an innovative sector

- It is hard to innovate
- Many factors --- lack of creativity or good ideas, missing complementary resources or capacities, bad organization, economic discovery fails
- **And market imperfections and failures**
- Such imperfections and failures will translate into poor incentives to innovate
- Example in healthcare --- *where are the healthcare entrepreneurs?*
- Market imperfections and failures – a framework to distinguish between business innovation and social innovation

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Market imperfection and market failure as obstacles to business innovation

- Market imperfection
 - Important institutions not in place yet – a patent system
 - Market too poor or not existing yet
 - Imperfect market – monopoly (local, national)
- Solutions for market imperfection are not easy but obvious (such as « invent the patent system »!)
- Market failure* : structural problems that influence rationale agents to decide to give up in terms of innovation
 - Even markets with no imperfection may fail to encourage innovation for various kind of reasons

Market failures - 1

- Market failures – 4 important cases
 - Market spillovers (Not possible to make a price to generate a rent)
 - Knowledge spillovers (Not possible to control the use of the new idea)
 - Lack of information (lack of good –quality data means that consumers have a difficult time determining which providers or producers are better and worse)
 - Financial gap (start ups have to rely on external capital markets : a wedge between the rate of return required by an entrepreneur investing his own funds and that required by external investors. Some innovations will fail to be provided because the cost of external capital is too high, even when they would pass the private return hurdle if funds were available at a “normal” interest rate)
- All these market failures create a situation where poor incentives are transmitted to potential innovators and this will make it difficult for private firms to innovate
- When these market failures can't be fixed AND there is an important social needs – then we need a social innovation

- Market failures are not universal or free floating
- Degree of severity depends on many factors
 - Country specific – rules of the law, macro-economics
 - Sector specific – spillovers
 - Management capabilities
- It is easier to do innovation here than there – we need more social innovation there than here

I plan to innovate in :	Market spillovers	Knowledge spillovers	Financial gap	Information quality
Pharma, large company (US)	Low effect Capacity to set monopoly prices (patent) No price regulation on US market	Low effect Patents are effective (in this industry)	Low effect	Low effect
Generics (India)	Big effect Intense competition, prices are at marginal cost Political pressure, campaign	Moderate to big effect No patent but process innovation is easier to control	Low effect R&D fixed costs are low	Moderate effect Typically it is difficult to tell which generics are high quality and which are low quality
New health care service (IT-based coordination of care)	Big effect It is difficult to increase price to capture some value of the innovation	Moderate effect Patent is impossible, secrecy ineffective	?? Depends on the size of the potential innovator (healthcare provider)	Big effect Typical situation in healthcare – it is difficult to tell which providers are high quality and which are low quality
MDI (start up in CH)	Low effect...but Capacity to set monopoly price (patent) but the process of licensing out to a large comp. can lead to sub-optimal result for the start up	Low effect..but Patents are effective but small companies can find difficult to have an effective patent strategy	Big effect Typical situation – needs VC solutions	Low effect
New vaccine for malaria	Big effect The price can't be close to monopoly price – since the innovation addresses poor markets (+ governmt pressure, public campaign)	??	Big effect Need for public funding, philanthropy or social entrepreneurship	Low effect

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New vaccine for malaria	Big effect The price can't be close to monopoly price – since the innovation addresses poor markets (+ governmt pressure, public campaign)	?? Cases for business model and product innovation. Market failures are not too severe – can be fixed For generics – case for process innovation The private innovator expects to capture a large fraction of the value of the innovation	Big effect Need for public funding, philanthropy or social entrepreneurship	Low effect

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New vaccine for malaria	Big effect The price can't be close to monopoly price – since the innovation addresses poor markets (+ government pressure, public campaign)	Low effect The private innovator anticipates that most of the value cannot be captured by herself – the innovation needs to be supported by « social institutions »	Low effect Need for public funding, copy or social entrepreneurship	Low effect

Summary

- Market failures are weakening private incentives to invest in innovation to different degrees
- We have studied 4 types of market failures
 - **Spillovers**
 - Market spillovers – *as innovator I cannot make my price*
 - Knowledge spillovers – *as innovator I cannot keep exclusivity*
 - **Finance gap** – *as innovator, I need to rely on capital market and will suffer from higher rate of return demanded by external financiers*
 - **Information** – *as innovator, I have difficulty to communicate the quality implication of my innovation*
- Market failures are not universal or free floating – they depend on many things (incl. economic specialisation, culture and management capabilities)

- Market failures
- **Defining business and social innovations**
- The economics of social innovation
- The future of healthcare as an innovative sector

From moderate market failure to business innovations - 1

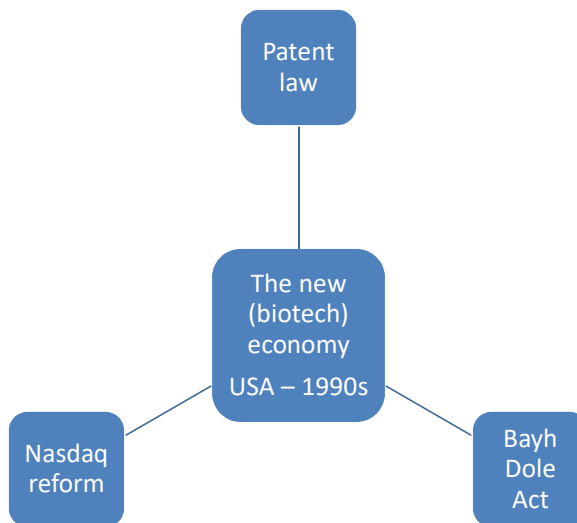
- Moderate market failures – they are easy to fix through combining:
- **Good framework conditions** help to decrease costs, minimize risks and increase reward
 - VC industry, university research and tech transfer,..increase rewards
 - Patent
 - Product market
- **Good corporate management**
 - Big firms, small firms, new firms
 - Collective actions – smart managers understand how collective or coordinated action can boost profitability (Ghemawat, 2017)
- **Switzerland**
- **Policy (?)**
 - R&D subsidies and tax credit, reimbursable loan

From moderate market failures to business innovation - 2



The perfect case for business innovation – given good framework conditions and good management, private innovators anticipate they will be able to capture a large fraction of the social value

A policy agenda – improving framework conditions



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MF are moderate – can be fixed – a successful **business innovation** model combines:
 R&D productivity
 Public science, human capital, technologies, organization, competition, network
 Financial reward
 Monopoly price, patent, demand is inelastic
 Private innovators anticipate to capture a large fraction of the value

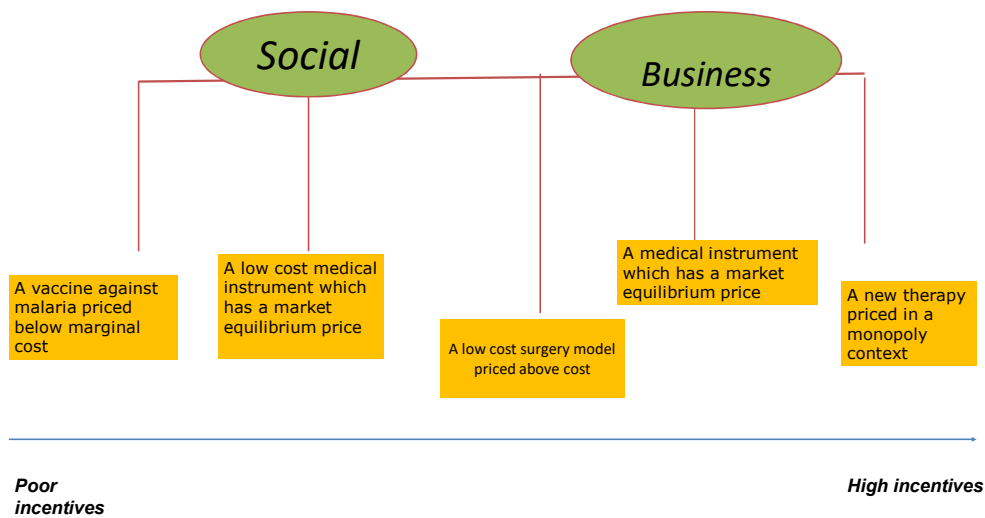
Laurent Dominique Piveteau lectures

- Market failures
- Defining business and social innovations
- **The economics of social innovation**
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Social innovation

- How to define a social innovation
 - It happens in the social domain?
 - It is non technological?
 - It drives major social changes?
 - It is an innovation whose most value is captured by society rather than potential private innovators
 - Innovation in healthcare
 - Vaccine for neglected disease
- « *An innovation is truly social only if the balance is tilted toward social value rather than private value* »
- No cutting edge boundary but a matter of degree of how social and private values are shared

A matter of degree



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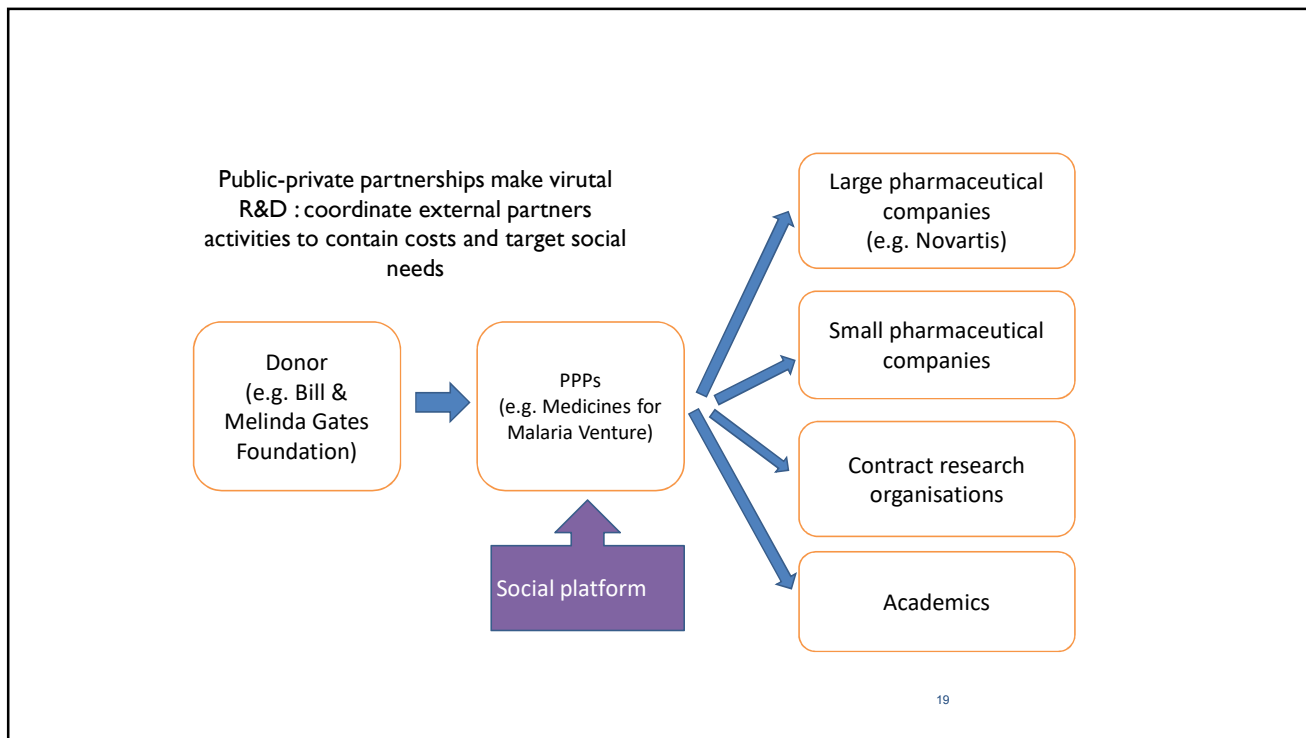
A social entrepreneur



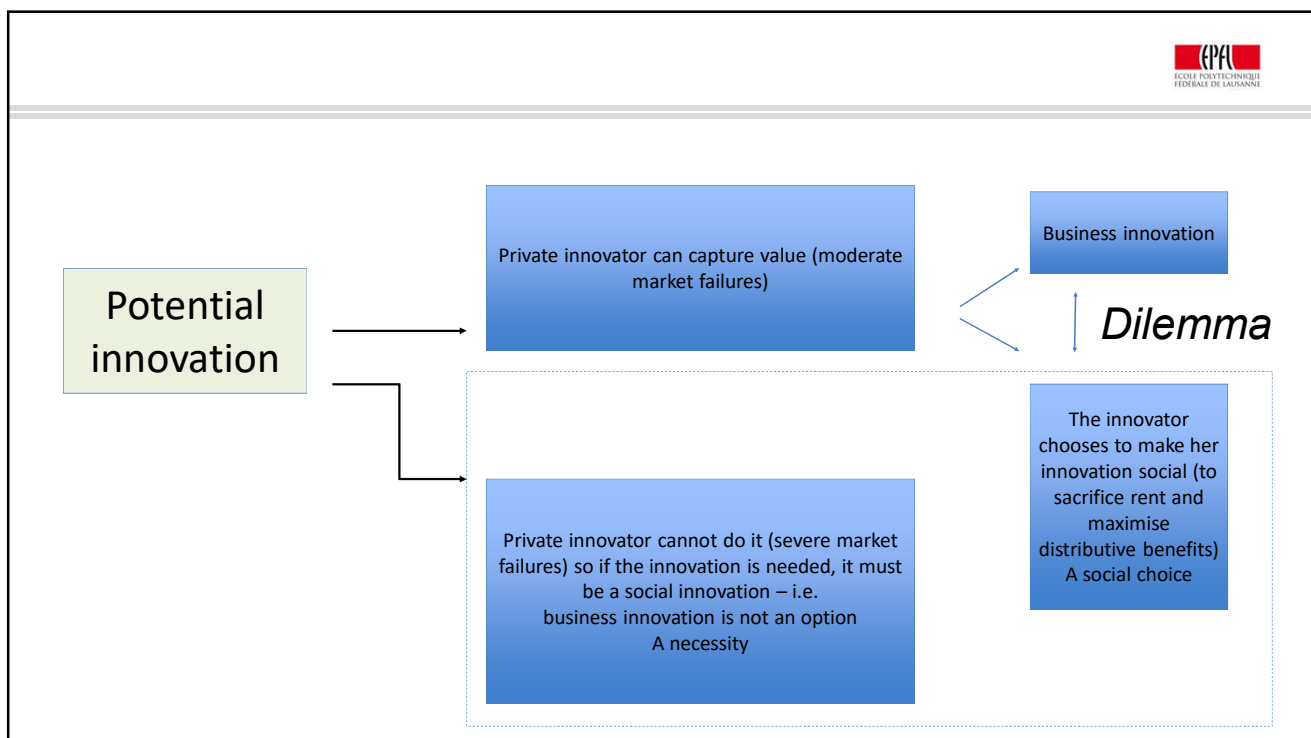
Targets a social needs
 Aims at building an economically sustainable activity
 Accepts non-profitability (social choice)



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- Social innovations are the results of..
- ..**social decisions** – I could « make money » but I want to maximize social surplus and accept to sacrifice my own profits
- ..**severe market failures** - situations where we need absolutely the innovation but potential private innovators anticipate the impossibility to capture value
- In the latter case the innovation – if happening – can only be social and will be supported through complex institutional arrangements (PPPs, donators, public sector)
- In the first case business innovation is an option, not in the second case



- In the second case – business innovation is not an option : a social innovation is an innovative solution that the market cannot provide = **there is no value to be captured by the private innovator – private profitability is 0**
- « *that the market cannot provide* » : cases of severe market failures
- **Severe** market failures or imperfections :
 - Market too small, too poor
 - Willingness to pay is too low (Market not yet here)
 - Structural deficiencies of the market (market failures) :
 - Problem in private appropriation (spillovers)
 - Problem in information on quality
 - Problem in finance

Quiz



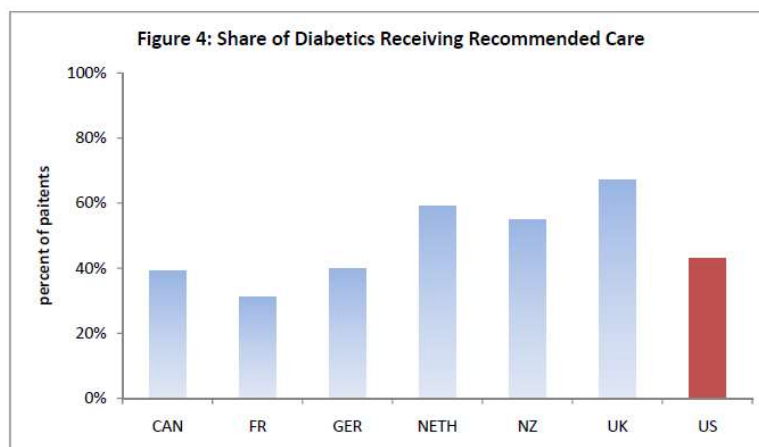
- *Can a social innovation be technological?*
- *Can an innovation in social practices be a business innovation?*
- *Can a product or a service – resulting from a social innovation – become a business product or service?*
- *Can a given area of social innovation become favourable to business innovation?*
- *A business innovation is at some point given for free. Did it become a social innovation?*
- *Is an innovation involving a low cost model always a social innovation?*

Case study - Healthcare

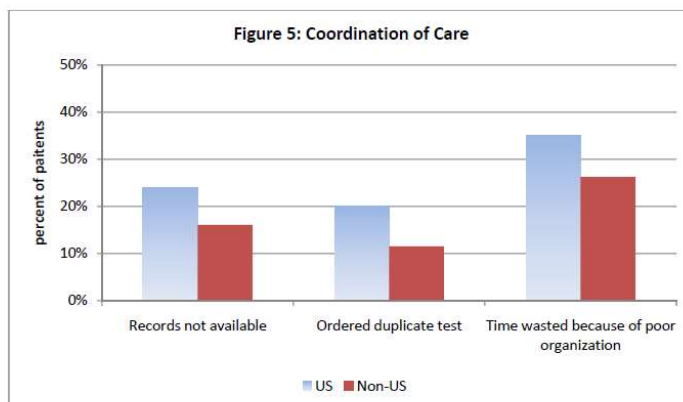


- A lot of inefficiencies in health care
 - No incentive to limit spending (*too much is done*)
 - Coordination
 - Production (delivery)
- « *Health care is notorious for market imperfections...To reduce this waste, organizational innovation will be required. Today, however, such innovation has been very rare in health care* » David Cutler , 2010
- « *Where are the healthcare entrepreneurs?* » (where are the business innovations?)

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Note: The specific question is: "In the past 2 years, when getting care for a medical problem, was there ever a time when...?"

Source: Commonwealth Fund 2008 International Health Policy Survey in Eight Countries. See Schoen et al., (2008).

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An innovative solution

- Healthpartner (Health Maintenance Organization - staff model)
- Integrative management plan involving physicians, nurses and IT system
- « *The organisation works with its physicians to identify diabetic patients who had not received recommended screening and provides nurse case managers to call the patients. Physicians were encouraged to start medication therapy in patients whom diet and exercise were not sufficient. Patients, in turn, were reminded to take their medications and receive recommended screenings...In the 5 years after this program was implemented, patient's rates of high blood sugar fell by half and their diabetes was brought under much better control* ».
- High social return but multiple difficulties to privately capture the value of the innovation:

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Severe market failures



- **Market spillovers**
- « Health plans report that they are *unable to raise prices* after such programs are implemented. Employers and buyers are unwilling to pay higher premiums »
- « Employers may be unwilling to pay higher premium because they know that *physicians treat all their patients in the same way*, whatever health plan they belong to. »
- **Knowledge spillovers**
- « The frequency of *plan turnover* compounds the financial difficulties. Median time in a health plan is 18 to 24 months. As a result, programs with returns over five to 10 years do not have a rapid enough payoff to justify up-front investment costs »
- **Adverse selection**
- « Adverse selection is also a disincentive to adopt disease management program. *Innovative plans are more likely to attract sick patients* than less innovative plans. As a result, plans may be reluctant to improve quality, fearing that the proportion of diabetic patients in the plan will increase due to their improved reputation for diabetes management »

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- « *The return on investment was favorable over a decade but not by anywhere near the social value of the program* »
- Such a gap between social value and private value means that this can only happen as a social innovation done by a non profit organisation
- *Given all these structural deficiencies of markets : no business entrepreneurs*

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From market failures to firms' ability to fix them

- Market failures are weakening incentives to invest in innovation to different degrees
- We have studied 4 types of market failures
 - Market spillovers – *as innovator I cannot make my price*
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 - Finance gap – *as innovator, I need to rely on capital market and will suffer from higher rate of return demanded by external financiers*
 - Information – *as innovator, I have difficulty to communicate the quality implication of my innovation*
- In some cases – firms have plenty of solutions to fix such potential market failures : patent, finance, marketing and access to market – typically a large firm in US or Switzerland – strong case for Business Innovation
- In some other cases, solutions exist but can be difficult to deploy – typically a start up – strong case for BI
- In both strong cases for BI, social choices can be made
- In other cases, market failures are so severe that they cannot be fixed with simple solutions – typically innovation for poor markets or innovation in health care - strong case for Social Innovation
- A role for policy



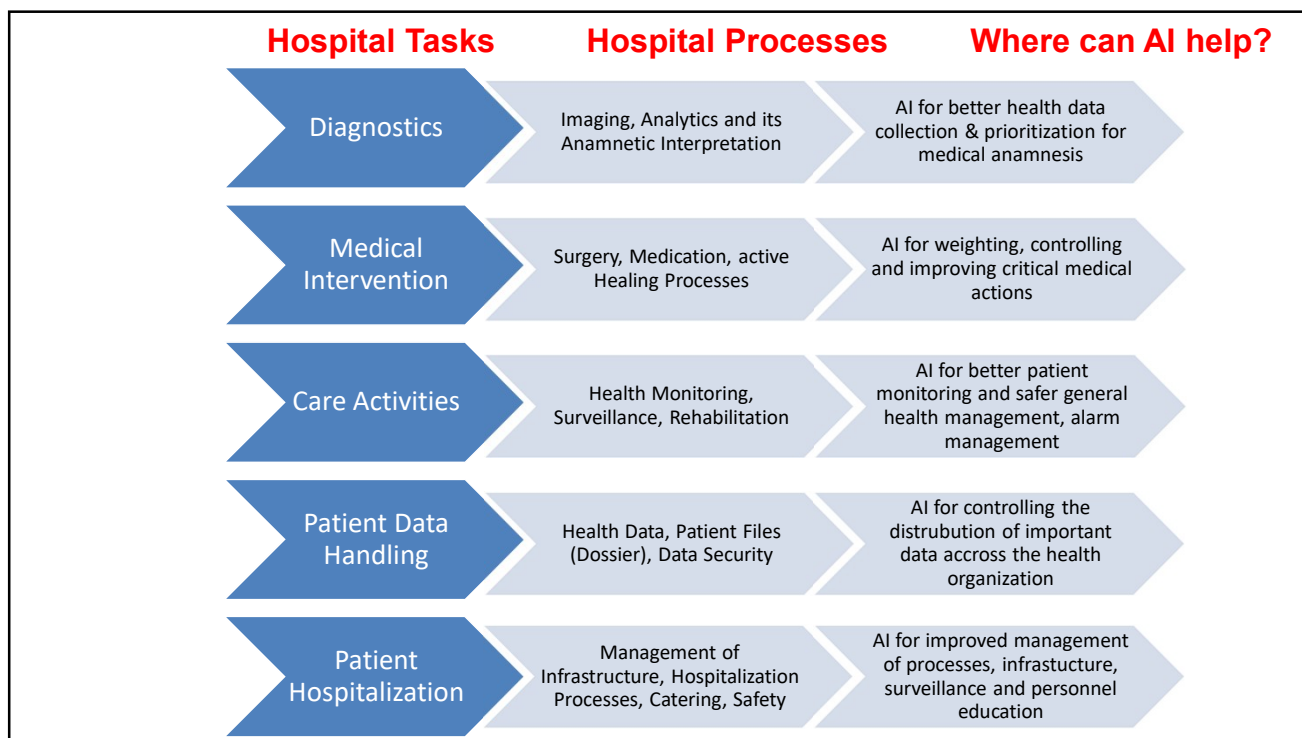
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The economic problem

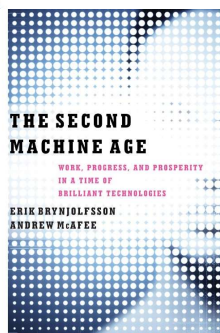


- The dramatic increase of private/public expenditures in all countries
 - Demographic but also non-demographic (productivity deficit) factors
- How to enhance productivity in healthcare?
- Innovation is one response – but «where are the healthcare entrepreneurs?»
- How to increase the rate of business innovation in healthcare?
- Fixing severe market failures in a structural way (the problem is ‘definitely’ solved)
 - HITECH Act of 2009 (health care)
- Realizing new technological opportunities – AI, big data and machine learning

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AI as a GPT – potential applications in healthcare

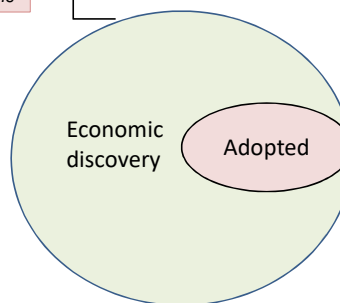
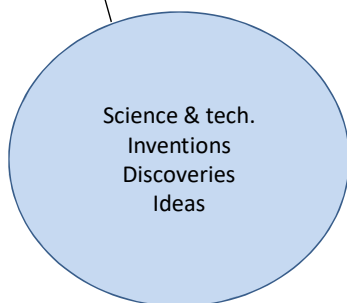


- *Medical diagnosis as a pattern matching exercise: Thanks to AI, big data and ML, computers are achieving super-human levels performance. If the world's best diagnostician in most specialties is not already digital, it soon will be.*
- *But after a digital diagnosis is made, medical professionals remain central: they can form interpersonal connections and tap into social drives to get patients to comply with the prescribed course of treatment. People will continue to be critically important in the AI-based healthcare but not always in the same roles as today. Emotionally and socially engaged care coordinators rather than brilliant diagnosticians.*
Eric Brynjolfsson

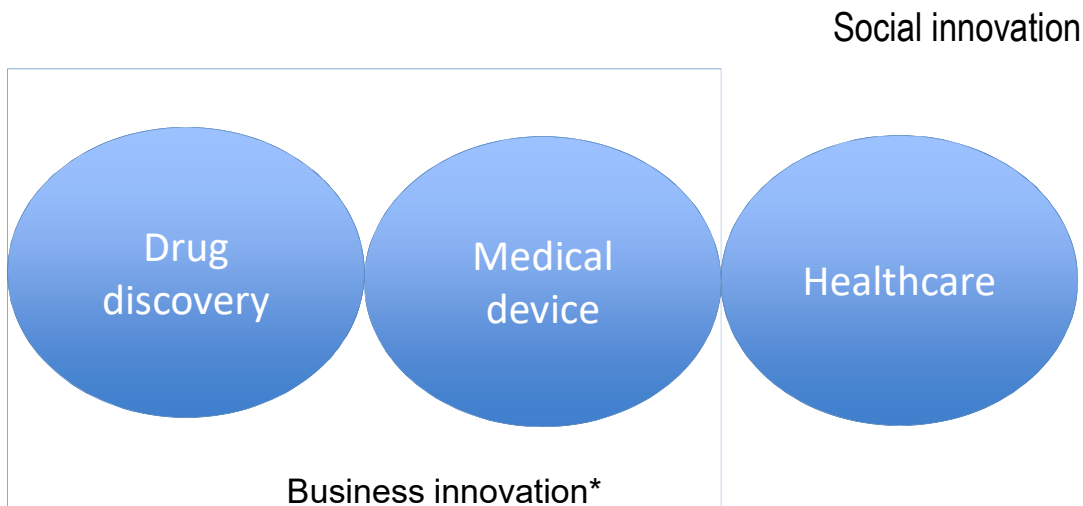
Machine learning and big data – development of algorithms to offer predictive analytics for medical decisions

It appears rapidly that “more is better” – it is critical to involve as many hospitals as possible to collect as much data as possible and improve analytics performance. Marketing and selling capacities are crucial to “recruit” new clients. SaaS model for the transactions

SOPHiA Genetics is growing. Three locations. The network becomes worldwide



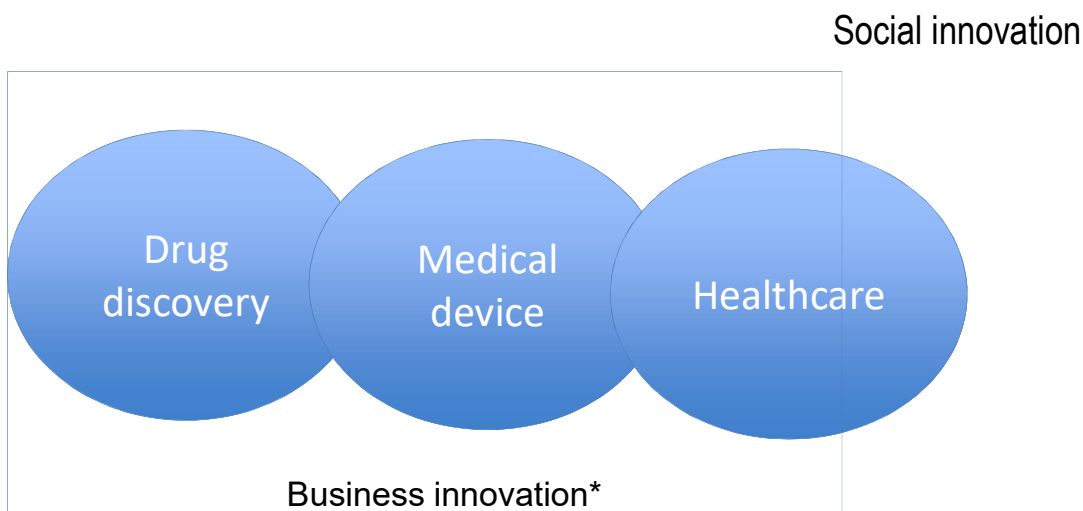
Healthcare versus drug discovery/med tech - yesterday



* Not entirely true!

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Healthcare versus drug discovery/med tech today and tomorrow



* Not entirely true!

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