The importance of János Kornai's research for understanding China's development and the economics of healthcare systems

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Conference to celebrate János Kornai's 85th birthday

Corvinus University of Budapest

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Outline

- **Comparative systems**
  - China
  - Korean peninsula
  - **Innovation**
- SBC and ownership
- **Health systems**
  - Empirical measures of SBC
  - Islands of **shortage within surplus**
  - Innovation conundrum

Importance of János Kornai's research for understanding China's development

- China’s economic growth unprecedented in global history, yet not well explained by standard paradigms
- János Kornai's research
  - Invaluable to understanding the economic trajectory of China over past 60 years
  - One of most important non-Chinese influences on China’s economic reforms starting in the 1980s

Economics of Shortage and the Bashan Steamship Conference I

- Professor WU Jianlian, one of the architects of China's reforms
- "Economics and China's Rise" July 4, 2011 keynote plenary, International Economics Association 16th World Congress, Beijing
  - 19-page speech
  - devoted 1.5 pages to Bashan Steamship conference and **János Kornai's** influence

Economics of Shortage and the Bashan Steamship Conference II

- Early September 1985
- Formative for 5-year plan decided that year
- Kornai's remarks on macroeconomic management
- Professor Wu notes:
  - "In Chinese economic circles at the time, Kornai was probably the most influencial foreign economist"
  - Although *Economics of Shortage* not officially published until 1986, a Chinese translation had "been widely disseminated among economists prior to the Bashan conference, which meant there were constant references to Kornai's work…"

- I first went to China 1 year later, summer 1986
- First read Kornai's work in Mandarin

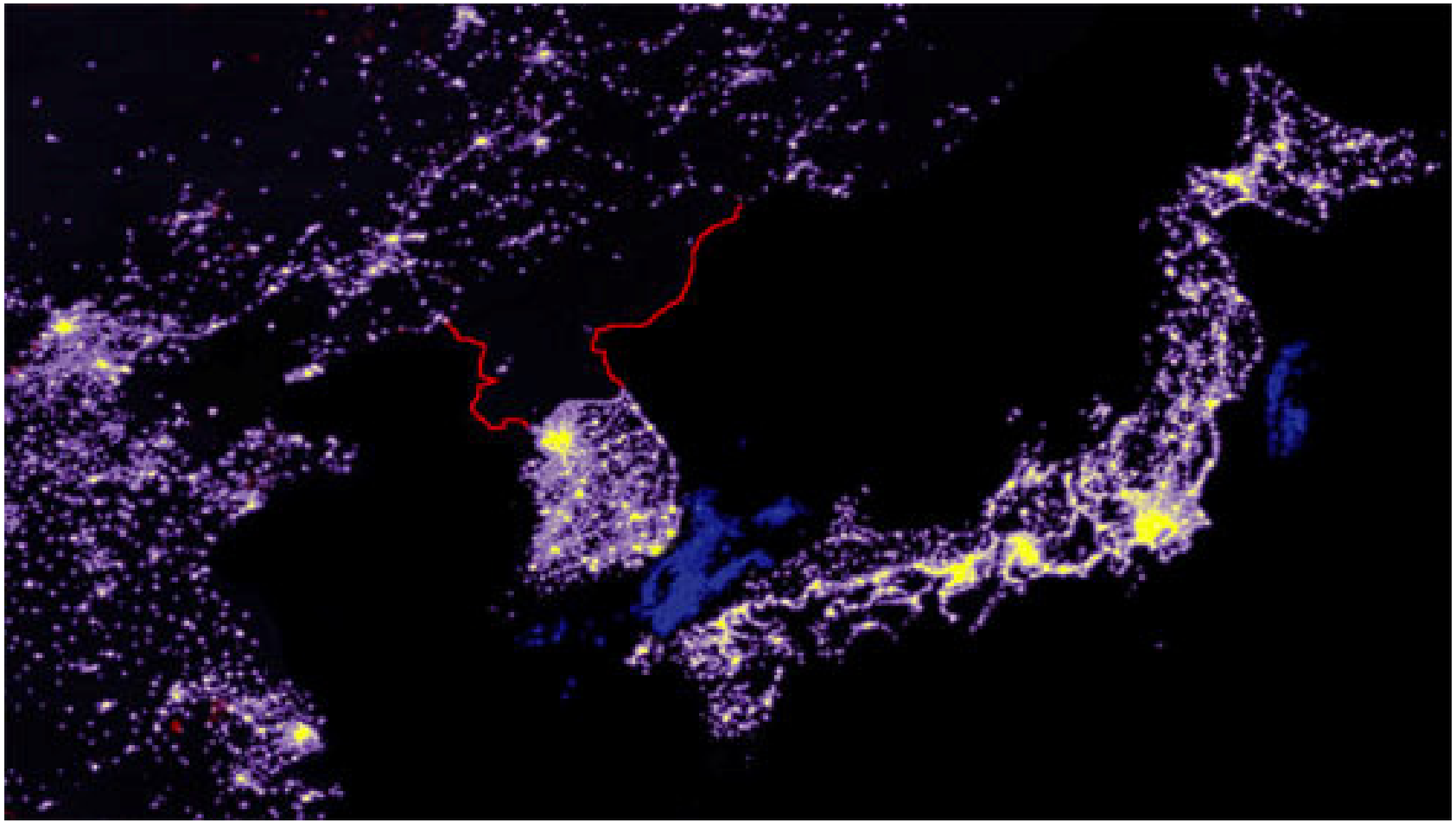
  短缺经济 （Economics of Shortage)
- Delighted that Chenggang Xu will be presenting, so I keep this section of my remarks brief

Comparative Systems: The Korean Peninsula

- Resisted Chinese absorption and Japanese invasion for ~2000 years
- Divided by socialism/capitalism 6 decades
- Stark evidence of comparative systems in action
- In ROK (South Korea)
  - Economy developed rapidly
  - 28-year increase in life expectancy 1960-2010
  - Life expectancy 80.7 years (above OECD average 79.8)

DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA

- Economic stagnation
- Stark example of "genetic tendencies" of socialist system, from political power to daily life
- Health measures declining since devastating famine of 1990s
  - Studying DPRK one focus of our Asia-Pacific research center
  - Prolific citation of *The Socialist System* in describing and analyzing DPRK economy…

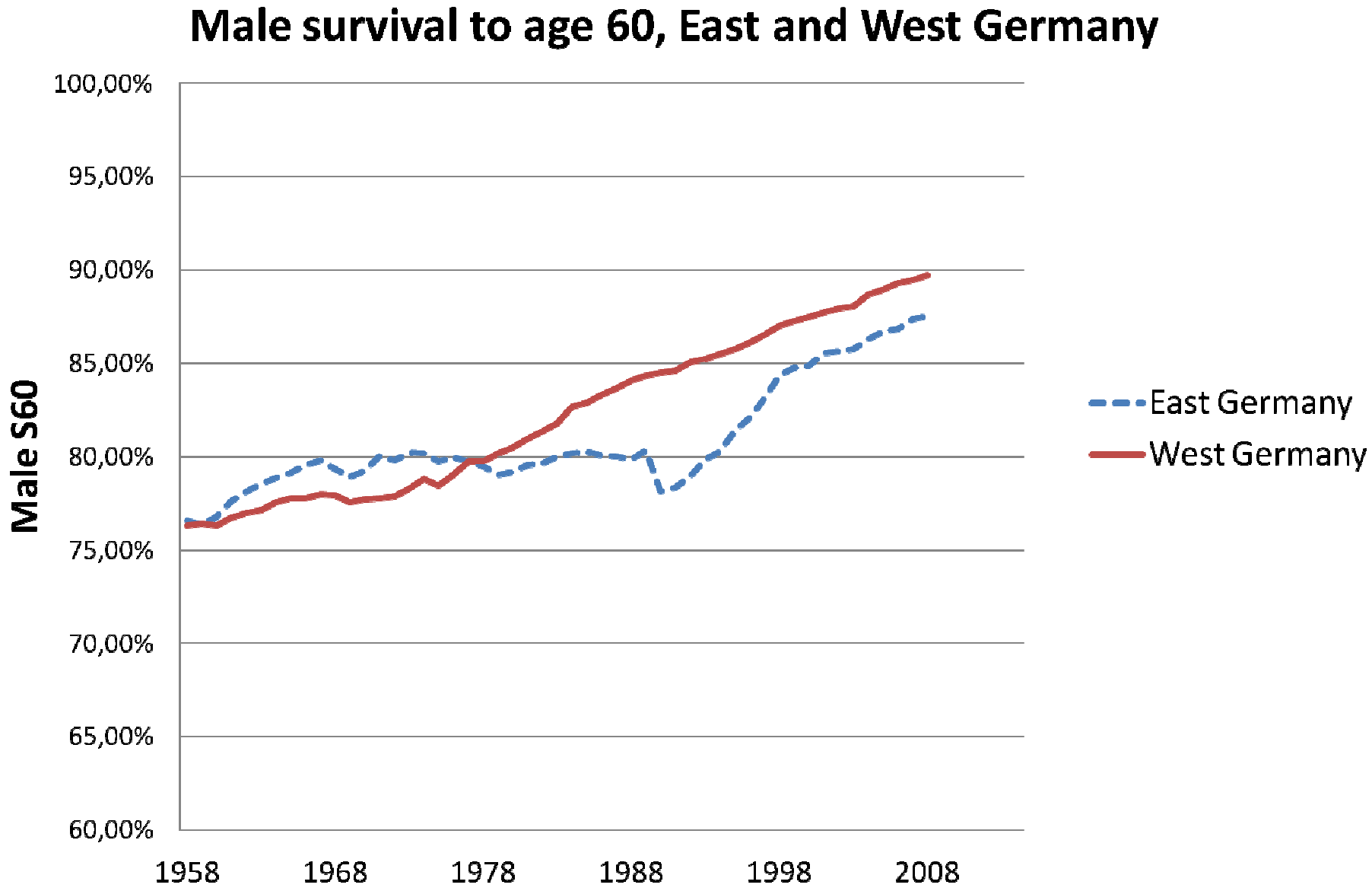


North Korea’s Night Map
Source: http://paradoxoff.com/north-korea-night-map.html

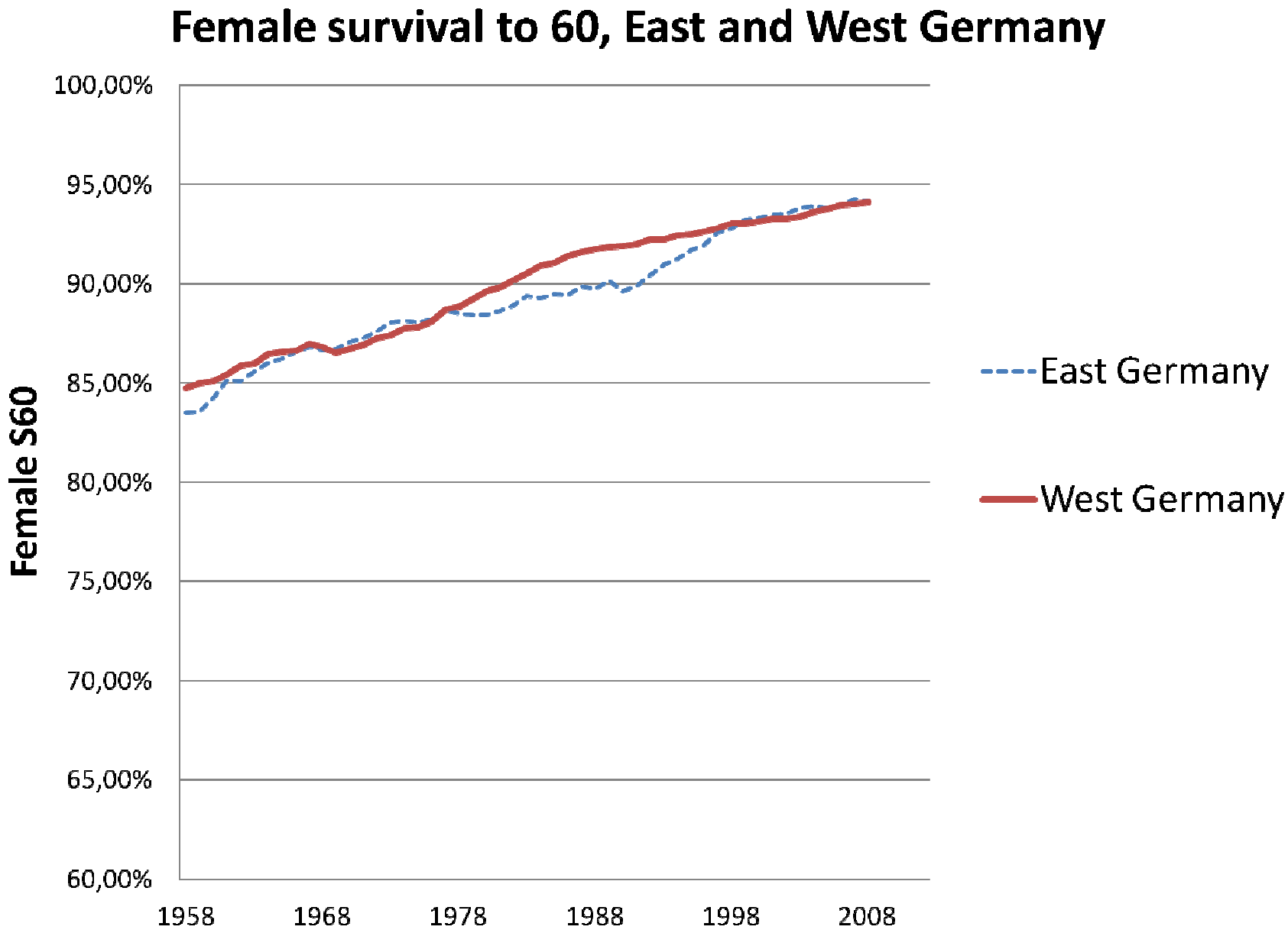
Health (Height) as Measure of Comparative Systems

- "The adult stature of 6,512 North Korean refugees born from the 1930s to the 1980s was employed as an indicator of living standards in North Korea.
- The height of North Koreans born before the division of the Korean Peninsula exceeded that of their South Korean peers.
- All North Korean cohorts born thereafter were shorter than their South Korean counterparts.
- North Koreans did not experience a meaningful secular increase in height during 60 years of communism."

Pak, Sunyoung, Daniel Schwekendiek, and Hee Kyoung Kim, 2011. "Height and living standards in North Korea, 1930s–1980s," *Economic History Review* 64, S1 (2011), pp. 142–158.



Source: Human Mortality Database


Female survival to 60, East and West Germany
Female S60
100,00%
95,00%
90,00%
85,00%
80,00%
75,00%
70,00%
65,00%
60,00%
1958
1968
1978
1988
1998
2008
East Germany
West Germany

Innovation: Capitalism and Socialism

- "New products and services used for medical care, that is, medicine, diagnostic equipment etc. are not included, simply because of the difficulty of selection of the greatest innovations out of hundreds or thousands of new drugs and new medical instruments. (**Perhaps at a later stage of research this sector might be included**.)"
- To help fill this gap, I gathered materials from the following sources:
  - List of top 15 discoveries in health and medicine submitted by readers of British Medical Journal (*http://sydney.edu.au/medicine/public-health/news/events/bmjlectures/index.php*)
  - Victor R. Fuchs and Harold C. Sox, Jr., 2001. "Value Of Innovation: Physicians' Views Of The Relative Importance Of Thirty Medical Innovations," *Health Affairs* 20:530-42; doi:10.1377/hlthaff.20.5.30.
  - The Nobel Prize in Physiology or Medicine, 1901-2000". Nobelprize.org
  - *New England Journal of Medicine* 200th anniversary series, Special Anniversary Articles (http://nejm200.nejm.org/explore/special-anniversary-articles/)
  - "Chronology of Medical Technological Advances" by Michael S. Vinas, Bellevue Hospital Center, New York Health and Hospitals Corporation, *Virtual Textbook of Extracorporeal Technology* (http://perfline.com/textbook/local/mvinas_chronol.htm)

Nobel Prize in Medicine, 1901-2012: Geographic Distribution

	1901-1925	1926-1950	1951-1975	1976-2000	2001-2012
USA	1	13	32	40	14
Germany	5	3	3	4	1
UK	2	7	10	4	8
France	2	1	3	1	3
Other	13	12	9	7	6
Total	**23**	**36**	**57**	**56**	**32**

- Practically all Laureates come from or have carried out their work in capitalist Europe or North America.

"The Nobel Prize in Physiology or Medicine, 1901-2000". Nobelprize.org. 31 Dec 2012 http://www.nobelprize.org/nobel_prizes/medicine/articles/lindsten-ringertz-rev/index.html; 2001-2012 tabulated by Karen Eggleston

2 Nobels in Medicine Awarded to Researchers from Socialist Countries, But Both Did Research in Capitalist Countries

- Nobel Prize in Physiology or Medicine 1950
- Awarded jointly to Edward Calvin Kendall, **Tadeus Reichstein** and Philip Showalter Hench *"for their discoveries relating to the hormones of the adrenal cortex, their structure and biological effects"*.
- Tadeus Reichstein
  - Born in Poland, but moved to Switzerland before college
  - Affiliation at the time of the award: Basel University, Basel, Switzerland
    - "Tadeus Reichstein - Biography". Nobelprize.org. 14 Jan 2013 http://www.nobelprize.org/nobel_prizes/medicine/laureates/1950/reichstein.html

- Nobel Prize in Physiology or Medicine 1974
- Awarded jointly to Albert Claude, Christian de Duve and **George E. Palade** *"for their discoveries concerning the structural and functional organization of the cell"*.
- George E. Palade from Romania
  - School of Medicine of University of Bucharest (Romania) in 1930
  - During world war, II served in medical corps of Romanian Army
  - To United States in 1946 for further studies
  - Did award-winning innovation in the US
    - George E. Palade - Autobiography". Nobelprize.org. 14 Jan 2013 http://www.nobelprize.org/nobel_prizes/medicine/laureates/1974/palade-autobio.html

Hungarian Nobel Laureate in Medicine

- The Nobel Prize in Physiology or Medicine 1937 was awarded to Albert Szent-Györgyi *"for his discoveries in connection with the biological combustion processes, with special reference to vitamin C and the catalysis of fumaric acid"*.
  - Born in Budapest 1893, studied in uncle's lab at University of Budapest
  - Worked in Germany, Netherlands, US
  - During World War II he became a Swedish citizen
  - To US in 1947

"The Nobel Prize in Physiology or Medicine 1937". Nobelprize.org. 14 Jan 2013
http://www.nobelprize.org/nobel_prizes/medicine/laureates/1937/index.html

Top medical innovations according to sources other than Nobel Prize

Identifies vitamins.	**1912**	**Casimir Funk**	**Polish**

CHRONOLOGY OF MEDICAL/ TECHNOLOGICAL ADVANCES

Source: The 10 Greatest Medical Inventions of the last 50 years（http://healthexecnews.com/medical-inventions/）			
Active Bionic Prosthesis (a mobile machine Integrated with human movements)	1960s	GE	US
Molecular breast imaging (MBI)	1990s	Mayo Clinic	US
Highly active antiretroviral therapy, or HAART	1996	David Ho	US
Functional magnetic resonance imaging (fMRI)	1990	Seiji Ogawa, AT&T Bell labs	US
Minimally invasive robotic surgery, "da Vinci"	1999	Intuitive Surgical Inc	US
Robot first used with the laparoscopic surgery	1987	Phillipe Mouret of Lyon	France
Laser surgery (using laser technology to correct vision)	1987	Charles Munnerlyn	US
Artificial heart	1982	Robert Jarvik	US
First whole-body MRI scanner	1977	Dr. Damadian	US

Again, innovation in capitalist economies only (though exact date and first application debatable)

Source: Fuchs and Sox 2001, [US] Physician's views of the relative importance of thirty medical innovations		
ACE inhibitors	1956	US
Angioplasty: invention of angioplasty and the catheter-delivered stent	1964	US
Statins	1971	Japan
Coronary artery bypass surgery (CABS first performed)	1960	US
Cataract extraction (first modern European physician to successfully extract cataracts from the eye)	1748	France
Lens implant (achieved the first implant of an intraocular lens)	1949	UK
Hip replacement	1891	Germany
Knee replacement (knee replacement surgery)	1954	US
Ultrasonography (first applied to the human body)	1940s	US
Gastrointestinal endoscopy	1958	US
Laparoscopic surgery (performed first laparoscopic procedure in dogs)	1902	Germany
Laparoscopic surgery (first laparoscopic operation in humans)	1910	Sweden
COX-2 inhibitor	1988	US
First HIV treatment	1987	US
Tamoxifen	1970s	US
Prostate cancer screening	1972	US

Exceptions: Cost-saving and Military-driven Innovations

Possible examples from China

- Barefoot doctors – Alma Alta Primary care example
- Artemisinin for malaria: Qinghaosu (青蒿素)
  - Discovered (1972) and manufactured (1979) as part of military project under Mao government (project 523)
  - In 2009, approved by US Food and Drug Administration
  - Discoverer Youyou Tu awarded prestigious Lasker-DeBakey Clinical Medical Research Award
  - Now standard combination therapy for one of worst global killers, malaria

Soft Budget Constraints, Ownership, and Health Systems

- Inspired by Kornai's research, have studied the theory of SBC and ownership, as well as the empirical manifestations of SBCs in health sector
  - **Karen Eggleston**, 2008. "Soft Budget Constraints and the Property Rights Theory of Ownership," *Economics Letters* 100: 425–427 (http://dx.doi.org/10.1016/j.econlet.2008.03.010).
  - **Karen Eggleston** and Yu-Chu Shen, 2011. "Soft Budget Constraints and Ownership: Empirical Evidence from US Hospitals," *Economics Letters* 110(1): 7-11.
  - Yu-Chu Shen, and **Karen Eggleston**, 2009. "The Effect of Soft Budget Constraints on Access and Quality in US Hospital Care," *International Journal of Healthcare Finance and Economics* 9(2): 211-32. DOI 10.1007/s10754-009-9067-1
  - **Karen Eggleston**, Yu-Chu Shen, Mingshan Lu, Congdong Li, Jian Wang, Zhe Yang, 2009. "Soft Budget Constraints in China: Evidence from the Guangdong Hospital Industry," *International Journal of Healthcare Finance and Economics* 9(2): 233-42. DOI **10.1007/s10754-009-9067-1** **http://www.springerlink.com/openurl.asp?genre=article&id=doi:10.1007/s10754-009-9067-1**

Soft Budget Constraints and the Property Rights Theory of Ownership

- Hart, Shleifer and Vishny (1997) property rights theory of ownership
  - assumes government providers are exogenously more replaceable than private providers.
  - seems counter-intuitive.
- I develop an alternative explanation of the soft incentives of government managers, endogenizing HSV's "replaceability parameter" with a model of **soft budget constraints**.
- By design, this model
  - replicates the results of the HSV property rights theory of ownership;
  - but government managers' soft incentives arise **endogenously** from their lack of control rights.

SBCs of Hospitals in US and China

- Empirically measuring softness of budget constraint is challenging
  - probability of closure, or
  - government subsidies for uncompensated care
- SBC can have positive as well as negative effects
  - more adoption of safety-net services for the poor
  - some aspects of quality improvement

Understanding of health systems around the world

- In a career as illustrious at János Kornai's, his work on the welfare sector—and health reform in particular—may seem only a tangent or footnote
- Yet there is a deeper logic and challenge in this arena than is widely understood
- We are all indebted to his "tangent" to throwing some light on health systems as islands of shortage within surplus economies
  - I am forever grateful to have studied at Harvard precisely when he started thinking about welfare sector reform (Chines term: 缘分 yuanfen -- fate)
  - Such an honor to co-author our book *Welfare, Choice, and Solidarity in Transition* (2001)

Health systems as laboratories for comparative institutional analysis

- Health and appropriate medical systems are inherently valuable; also increasingly important for economic performance.
  - cultural norms and beliefs strongly influence health and medical care decisions; yet
  - rapid technological change disrupts traditional norms and beliefs; and
  - market failures are rife in health care financing and delivery (Arrow, 1963).
- Only remaining sector of market-based economies where lively debate continues about relative merits of state and market in delivering better performance?
- Useful microcosm for studying resilience of institutions during system transformation during socialist and post-socialist transitions
  - Physician dispensing survived from pre-modern China through socialist governance during the Mao era through to today's market-based economy.

Karen N. Eggleston, 2012. "Prescribing Institutions: Explaining the Evolution of Physician Dispensing," *Journal of Institutional Economics* 8(2): 247-270.

Health systems as “islands of shortage” within surplus economies

- Kornai gives example of waiting times for services in Western European health systems
- Parallels with rationing of basic commodities under socialism
- Further examples of shortage within surplus
  - approximately **34 million** people living with HIV in 2011; only about **8 million** receiving antiretroviral therapy (ART) in low- and middle-income countries (WHO (http://www.who.int/mediacentre/factsheets/fs360/en/index.html)
  - **6 million of the almost 11 million** children who die each year could be saved by low-tech, evidence-based, cost-effective measures such as vaccines, antibiotics, micronutrient supplementation, insecticide-treated bed nets and improved family care and breastfeeding practices.” UNICEF (http://www.unicef.org/mdg/childmortality.html)

Health systems as “islands of shortage”: A normative dilemma?

- Innovation: capitalism’s greatest virtue (Kornai 2010 “Innovation and dynamism,” Econ of Trans).
  - Yet around the world, we are trying to stifle or at least channel and restrict innovation in the health sector because of its unsustainable cost implications.
  - Is the good/service we value most – health and longevity – ironically is the one where we cannot enjoy the surplus economy of capitalism?
- An island/subsystem ≠ a system
  - Shortage “created by surplus”?

Handbook of Health Economics chapter on Health Care Spending Growth: Newhouse and Chernew 2010

"**The rate of health care spending growth cannot exceed income growth indefinitely**. If we can achieve efficiencies in the short run or if we are willing to devote more resources to health care, we can forestall the **need to address the underlying question of technology-driven spending growth**, perhaps for many years. But **eventually** we will need to develop a financing system that is sustainable in the long run. Such a system will inherently **alter the process by which new innovation moves into medical practice**."

Thank you

谢谢 Köszönöm

Danke schön Merci Grazie **धन्यवाद**

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