Management Studies, Mar.-Apr. 2025, Vol. 13, No. 2, 55-67
doi: 10.17265/2328-2185/2025.02.001

C-K Theory of Design and Transformation of Health Systems: Paper II

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This paper focuses on C-K theory with its application to expand the scope of innovative solutions to transform health systems. The previous paper (Huttin, 2024) provided a review of main design theories and a description of the research process and interactions between investigators for physicians' choice models using random price generators. The selection of alternatives for that user case mainly related to medical policy problems (e.g. Huttin & Hausman, 2021). However, such experimental studies require scaling up for bigger samples and therefore comprehensive user cases, to be useful for transformative tools in health system reforms. The use of C-K theory (Hatchuel & Weil, 2002) may be a useful framework to generate data elements on economic and financial information, from conversation of care, and expand the dataspace, with innovative applications of the algorithms (as proposed in Prof. Huttin's studies). The development of such economic models will impact the architecture of national or international accounting systems; therefore, they may require the design of *ad hoc* or satellite health accounts with such additional type of information. However, the architecture of health accounts is more driven by environmental communities who dominate methodological advances (e.g. agriculture, forestry management, etc.); modeling techniques in international health accounting generate specific tracers to integrate in aggregate indexes. Such development of the K space may be used for the health targets under the global agenda (e.g. SDGs). The statistical methods used to transform this K space, their selection process, and the identification of key parameters estimates will determine to a certain extent the transformation of health systems and will nurture the C concepts (e.g. more justice in reallocation of services and access to care). In global health, comparable national estimates are used (e.g. "Global Burden of Diseases" (GBD) and risk predictors for health risk evaluation). In relation to global pricing, the agenda refers to "Universal Health Coverage" (UHC), to accelerate access to affordable medical services in different regions of the world. Additional economic and financial information on populations with methodologies such as Hierarchical Bayesian Modeling (HBM) and its countervailing use (e.g., physicians reversed conjoint models, Huttin, 2017), with trained models on bigger samples and comprehensive user cases, contributes to structuring the pathway to transformative changes.

Keywords: pricing, C-K theory, value framework, health systems, global health policies

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This article is a working paper on communication at EWG-MCDA 99th meeting, April 10-12, 2025, Ca Foscari University, Venise, Italy.

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Introduction

This paper is a contribution on possible use of design theories, such as C-K theory for transformation of health systems and operationalization of decision tools. In the recent communications at EWG-MCDA meetings, Prof. C. Huttin (2024) initiated a review of design theories, useful for decision aiding tools in health policies. This paper discusses some applications with empirical studies. Design approaches have already been used by academics, policy makers, and managers in life science and healthcare. Thinking first about values (Keeney, 1992; 1996) helps to design Value Assessment Frameworks and Advanced Value Frameworks; however, it is driven by Outcome researchers, for valuation of main technologies. Advances of design theories from cognitive and behavioral sciences have helped to design physicians' reminder systems, patients' decision aids, and their implementation in health care organizations. Soft Operational research (e.g., Tsoukias, 1991, Pluchinetta, et al. 2019) helps to structure decision-making processes but case studies in healthcare are limited.

Previous research projects have also proposed new types of research and software development to address interferences of economic information on medical decision making (Huttin, 2017; 2021; 2024); the issue of bounded rationality, in early work of design theories, has also been addressed in behavioral economic models and management sciences; inside organizations especially for medical informatic systems, it leads to addressing issues of bias, overflow, or misinformation. Reminder systems for physicians and decision aids for patients have then been designed and implemented in many systems to improve decision making processes (e.g. shared decision-making computer templates, patient decision aids, e.g. Ottawa Decision Aids, https://decisionaid.ohri.ca); but they usually exclude information on economics and costs. The different institutional arrangements used to run experiments and prototypical development for inclusion of decision aiding tools with additional economic information are also provided in the paper, to be useful for transformative milestones in healthcare financing reforms.

History of the Various Institutional Arrangements

The original organizational form has been a Virtual Development Center (VDC) started within a framework from the European Commission to develop research networks in Europe, under the Human and Mobility program; six teams joined the network founded by Prof. C. Huttin, under the Umbrella of the Belgian Foundation and called Evaluation Network of European Policies (acronym: ENDEP). The objective of the network was an agenda of evaluation research for pharmaceutical policies in Europe. Each national team was responsible for selecting the policy areas of interest to their countries (e.g. positive or negative incentives to Physicians, switch from prescription to over-the-counter medicines, public-private mechanisms of copayments, etc.) and proposed a research evaluation plan to assess the results of the policy. This was the preliminary version of what is called now "Impact Assessment", which is internally performed by the European Commission services and reviewed by its Secretary General, before a review by the European Parliament. The last project under the Framework program called BIOMED, was more integrated into common methodologies to assess the impact of complex public-private arrangements in health care financing for medicines. It led to the application of pricing methodologies usually used by pharmaceutical marketing; but with counter detailing techniques and similar layers of information in the cognitive fields, behavioral modeling and use of multi-cues systems from psychological models (Brunswik model) were used to identify series of attributes, instead of using conventional marketing methods to identify criteria of product and services attributes.

Judgement research using psychological models has had very good performance in clinical settings, so this type of judgement research with economic cognitive cues and not only medical cues has been explored within network research protocols. However, due to the ethical barriers in medical schools, the research agenda in this field is controversial and study design is the critical stage, rather than the analytical step as possible policy decision aiding tools.

Due to the potential applications of such decision tools, ISPOR society invited me in special task forces, especially for the Conjoint Design Task force, and the Discrete Choice Experiment Task force, as well as special interest groups for the use of MCDAs in Global Technology Assessments. Moreover, a global study had also been performed with conjoint techniques, with a consulting team to OECD, under the leadership of Prof. Dixon in the USA. Prof. C. Huttin was associated to his team for the European side, before the launch of the Biomed project; However, the objective was not in a cost sharing research agenda as in the EU project, but more on a comparative conjoint international study for marketing of products and services in OECD countries.

At the end of the Biomed project, since North America (both Canada and the USA) expressed interest in the study results for potential applications in reforms of their health laws, Prof. C. Huttin discussed the options with some BIAC members, which is the representative body of business to OECD, at a meeting before the Council of Health Ministers in Paris.

Background and foreground results of the physicians cost studies using a reversed conjoint were the Intellectual Property of each team; as no consortium was agreed, each team was free to use its national study results. In addition, patent attorneys from Cambridge Massachusetts, were recruited by Prof. Huttin to examine and determine her scope of invention, to develop prototypes and decision tools with her methodological approaches and study results.

Prof. C. Huttin decided to move to the USA since her presentations and publications retained a lot of attention from Canadian provinces, some US States, the World Bank, and Asian countries especially Thailand, Singapore, and Japan.

To develop some decision tools, a filing in the category of business method and system was performed at the US Patent Office (USPTO), since in the EU, there was no patent for this category (even if Russia also recognized business methods patents). Copyrights from the different team results were then filed to the US Congress Office for copyrights, since Professor C. Huttin could not engage other teams to invest in prototypes outside Europe and their own country and could not engage them in patent filing.

Due to financial restrictions, only a limited number of claims could be filed, and a step approach was chosen to interact with the USPTO examiner. Not all the claims were rejected, unfortunately as a sole entrepreneur, Prof. Huttin could not continue the filing, and it was suspended. Other claims may have been used as patentable claims in a co-licensing procedure with business partners. So far, the work has mainly been published with copyrights from several publishers, the main ones from IOS Press journal, Technology and Health Care (acquired in 2024 by the group, SAGE publisher). That journal published some of the important methodological papers, but all series of seminal papers anticipated at the start of the patenting process could not be published especially in the order it was scheduled (especially during the visits to Professor McFadden's econometric lab, at UC Berkeley, USA, who invited Professor Huttin). This journal was not the only one but is a continuation of the ENDEP-BIOMED book with the main findings from the original series of studies in each country. However, the book did not provide any statistical analysis on the physicians' studies, only Prof. Huttin's papers lead to scientific

presentations of statistical analysis and discussions of axiomatic system that may be required. Different validation approaches have been explored, one with secondary data from the US National Ambulatory Medical Survey, which confirmed the critical role of patient economics at the point of care, even inside organizations with triage on insurance status, before the visit to the physician.

In Europe, the organizational form chosen to continue the development of both research and development in health care and life sciences was similar in Europe to the Canadian model: the development of Networks of Excellence[1] (1). However, In the enlargement process of Europe to central Europe, the cost sharing research area was marginal in the priority setting of the new governance of the European Union. So, activities of the policy research network on Evaluation of European Pharmaceutical Policies (ENDEP) were interrupted on the European side. Prof. C. Huttin's research was then partly relocated in Cambridge (MA, USA) and another organizational form was selected; the academic enterprise, ENDEPUSresearch, Inc. has been the legal entity for the R&D operations: extractions or generation of analytical datasets, experiments, prototypes for decision tools on various economic topics that could interfere with critical decision points, mainly in the translation medicine space.

In the first stage, a concept of Virtual Development Center (VDC) (instead of Network of Excellence), attached to a school of design, such as the one visited at UC Berkeley was chosen, with an association with the Virtual Lab from Prof. McFadden. Internet research on different modes of administration for health surveys was then performed; it helped to identify issues of systematic bias with administration of internet versus paper surveys in health surveys (Huttin, 2017, Chapter 2; Huttin, McFadden, & Winter, 2007).

The concept of VDC in California was coming from Hewlett Packard Philanthropy branch to help Women with Technology; HP computers were then installed in the school of design, some key research resources were then translated to be used in the community around the university, with software development supported in HP computer support. As Professor Huttin was in Massachusetts, she also established institutional arrangements with the School of Public Health[2] and the Medical School investigators from Partners HealthCare and Harvard Medical School. The VDC concept was designed for medical groups, with medical investigators and Prof. Huttin's relationships with services from the medical library (Countway Medical Library from the medical school). A clinical pharmacist from Dana Farber Pharmacists' Pool was also a coworker from the academic enterprise.

The primary targets to operationalize the decision tools were the primary care sector, and the product, an alert system to physicians since the prospective method can help to anticipate major budget and health impacts when there is interference of economics (physicians and patient economics as well as product economics) with the clinical decision-making process. Even if the main organization to use the decision tools is medical groups, issues of security and maintenance lead to conducting research, inside facilities from teaching hospitals or managed care organization with medical leadership (e.g. Kaiser Northern Medical Group).

The collaborative arrangements have been used mainly for one shot prototype, addressing a special policy or legislative reform. Transferability issues were addressed in Europe, during European Public Health Association conferences. A transferability of cost sensitivity tools to comply with EURONHEED (De

[1] Examples of international networks models within Canadian-EU partnership: Networks of excellence are AllerGen N.C.E platform for outcome research and translation in Asthma and Allergy (Porta), CHIR, Canada or Agree I and II for quality of care (https://www.agreetrust.org).

[2] Other forms of translations have emerged from academic centers or consortia, in addition to usual research and development offices, especially on the East coast, at Harvard University, created new services (e.g. Harvard Catalyst).

Pouvourville, Ulmann, Nixon, Boulenger, Glanville, & Drummond, 2005) criteria was presented at the European Public Health Association meeting from EUPHA (Amsterdam) (Huttin, 2010). A link was established between ENDEP consortium website and EUPHA organization. However, transferability rules for such tools have not been addressed by clinical governance managers or state policy makers.

As an example of a prototypical development, the methodology from Prof. Huttin's team was used for revision of the "ODB drug budget" for the Ontario Ministry of Health used a collaboration between MacMaster University and the internal resources of the Ministry of Health with joint funding from Canadian business and provincial ministry. The experimental research led to a revision of the formulary listing for drugs to the elderlies. The representative sampling of primary care offices of the province was used for experimental research and findings helped the decision-making process towards the revision of the drug listing categories.

This type of application, however, did not sustain the original group of methodologists and is limited to existing relationships between academics and governments in a state or inside an organization.

Other organizational forms have been explored since the audience for the development of such decision tools and methodologies came from diverse groups of countries from North and South hemispheres (see Figure 1).

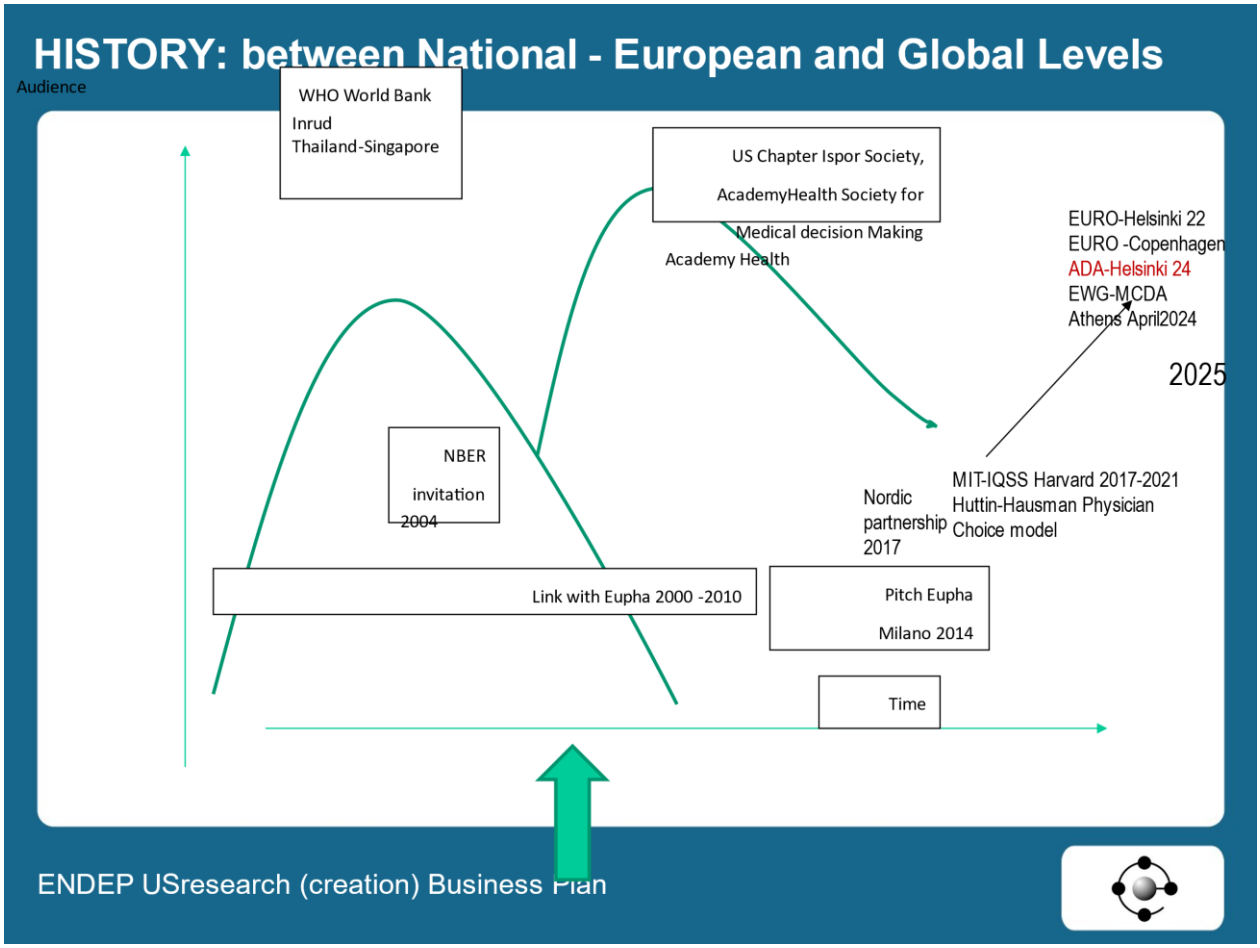

Figure 1. History: between national-European and global levels.

Since the European evaluation research network was not sustained at EU level, it continued with a WHO relationship, as umbrella organization, with different collaborative centers (CC). The CC which interacted for a

few years with Prof. Huttin for research development was based in Oslo; WHO collaborative center specialized in drug statistics and revision of coding as well as ICD coding for diseases. However, the codes used by WHO do not match the codes in North America and are used for existing products and services. Moreover, it challenges the other international organizations in charge of comparative surveys for governments. OECD, the main international organization, is in charge of a health database (with collaboration of WHO accounting experts for some of the surveys). Groups of countries, decide for instance to request from that organization, series of projects on Cost of Illness studies, Revision of Health Accounts, International Price Comparisons for pharmaceuticals and medical services, various consensus guidelines especially for biobanks or other fields of genomic medicine.

World Bank was also approached, especially for the Brain, Mind and Society project and the group of economists used what is called Type I Behavioral economics combining cognitive data and numbers in their economic analysis (Hoff and Stiglitz, 2015).

For potential use of an international umbrella with such international organizations, international accounting experts from the three organizations who belong to working groups could discuss the complexity of the issues between countries for new data generation. A country, Thailand, was selected via the contact point, which usually receives the international survey questionnaire for data generations. However, the Thai Military Government did not allow data sharing and the initiative was limited to series of educational workshops in the Faculty of Medicine of Chulalongkorn University, for use by local stakeholders. Each country may decide how to implement new methodologies or decision tools for satellite accounts or *ad hoc* accounts in some specific regions, to facilitate adjustment of national health care financing reforms and limit negative effects on some population groups from Global Agendas between South and North Global (see Appendix 1 for methodology related to cost sensitivity simulator, Huttin-ENDEPUSresearch).

Applications of Design Theories for Health Systems

The historical review, described in the previous section, on various institutional arrangements is important background information since decision tools may be useful as negotiation decision support systems for health policy makers (e.g. with relationships or links to existing international technical groups, committees, and organizations); design theories, such as C-K framework, may provide some creative ways to include the tools in the different institutional or organizational arrangements.

In the current welfare contract crisis and public budget deficits, innovative ways to transform medical and health systems may be useful so inputs from theoretical frameworks proposed by designers may enhance creative new solutions not only for management of product innovation but also public management of health services.

Prof. Huttin's paper from 2024, following EWG-MCDA communication in Athens, reviewed main contributions from design theories for health policies. It is summarized in this section of the paper.

The value thinking approach (e.g. Keeney, 1992-1996) has received a consensus for Global Assessment of Health Technologies and had largely contributed to Value Framework and Advanced Value Frameworks (AVF), drafted especially in the task force reports produced by the International Society for Pharmacoeconomics (ISPOR); Figure 2 provides the main definitions for value retained by the task force.

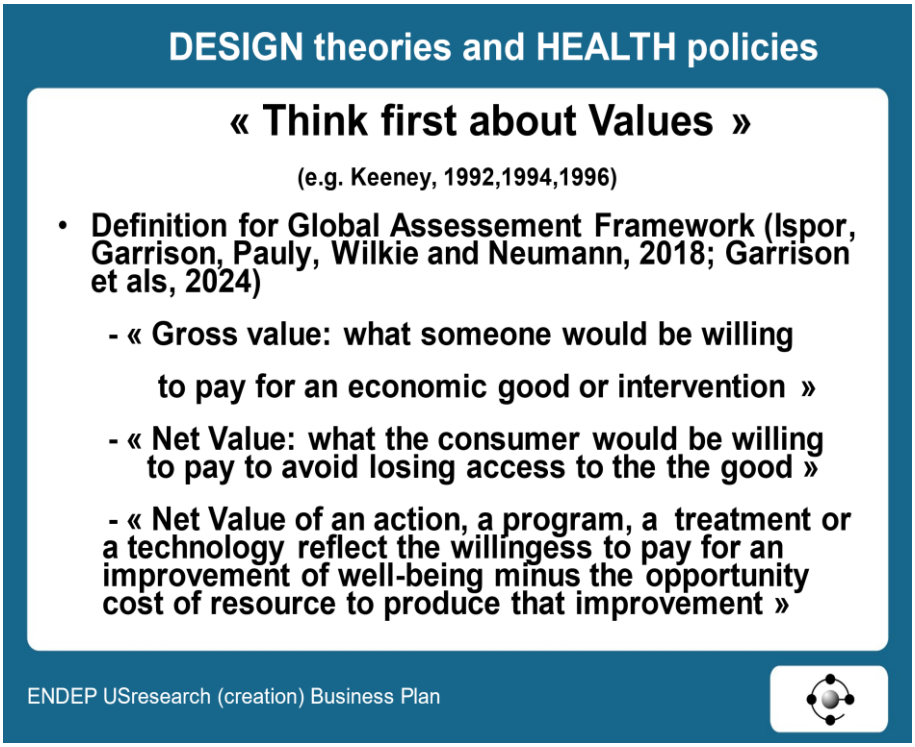

Figure 2. Prof. Huttin's communication, EWG-MCDAn April 2025, Venezia (Huttin, 2021).

The concept of Willingness To Pay (WTP), is clearly mentioned in this definition of value for health, it shows that for pricing of medical services, contingent valuation methods are largely recognized to incorporate patient preferences; moreover, the approach uses the economic concept of opportunity cost and compares benefits and costs, in different economic evaluation techniques (Cost of Illness studies, Cost Benefit analysis, Cost Effectiveness analysis, Benefit/Risk assessment). Quantification of well-being in monetary terms is also measured especially in QALY or DALY models.

Recent development of Value Assessment Frameworks (AVF) (Garrison, Pauly, Wilkie, & Neumann, 2018) includes additional criteria:

- Disease severity (e.g. used in drug adjusters)
- Disadvantages/vulnerable populations
- Broader economic impact
- Rarity of disease
- Scientific spillovers
- Insurance value (risk protection)
- Fear of contagion (risk protection)

Multi-criteria methods are then very useful, especially with dominant criteria such as disease severity or for discussion issues around weighting systems of such additional elements.

Decision making process in Health Technology Agencies (HTA) largely relies on advances of such methodologies and techniques to assess reimbursement of products and services. The most conventional approaches come from health economists. The mostly used techniques by such agencies are cost of illness studies,

cost benefit analysis, cost effectiveness analysis. The types of decision tools used for policy aiding decisions are QALY models, Incremental Cost Effectiveness Ratios (ICER, per programs, for groups of programs), Thresholds for ICERs (grouping of countries per GNP level).

Pricing methodologies used by macroeconomists for budgets and economic forecast usually use numbers. If they include more heterogeneity in the economic model for individual preferences, it is with discrete choice modeling, latent class models, or other methods of disaggregation and micro-macro analysis. Most of the time, these economists will avoid the use of stated preference data for revealed preference models only.

However, this does not impede the development of combined pricing methodologies using both types of data elements in complex modeling; this was initiated with the Nobel Prize, Prof. McFadden that included in his economic choice models, market survey data and developed the Mixed Logit (ML) models and other models with joint stated and revealed preference data.

Professor C. Huttin accepted his invitation to explore such approach for medical markets and include physicians' choice modeling for economic models using possibly not only discrete choice data (microdata) but possibly also micro-conjoint or reversed conjoint data. Influence mechanisms are also well studied in health systems, since pharmaceutical marketing has used very advanced techniques among contingent valuation methods (e.g. conjoint models for pricing new products). Prof. Huttin's research has also used such methodology on patient or physician economics, and not only product economics, to identify decision shifts and interference of clinical and economic cues at points of care.

Such methodologies and additional data elements could be of use for adjustment of Cost Effectiveness ratios or thresholds for ICERS for instance. However, the top-down approach from these agencies is a hurdle to integrate a bottom-up information generated with most contingent valuation methodologies. Moreover, such methods are prospective and are used for adjustment of supply and demand; it has been used for instance for flu vaccines in Japan, with regular prospective surveys on panels, six months before the flu period. After five or six years of regular surveys, such data proved to be quite reliable to anticipate demand and avoid shortages during the flu season (Suzuki & Ohkusa, 1999).

A recent academy, called International Academy of Health Preference Research (IAHPR), launched separately from the main International Health Economist Association (IHEA), an agenda on preference research, mainly for patient preferences. A joint meeting happened between ISPOR and IAHPR in 2019 in Basel, for methodological and scientific discussions. Regulators also started to include such methods, especially for medical devices, but it was under the initiative of the American Food and Drug Administration (FDA), and not the HTA agencies (e.g. studies on obesity, www.dcri.org).

Relevance of C-K Theory for Benefit Designs in Health Care Financing

Economic evaluation research is becoming more complex with additional criteria, explosion of data especially unstructured data, such as texts from conversation of care and open notes from nurses and physicians in health systems. The growth of technology platforms and IT software development encourages innovative solutions for the transformation of healthcare. So, design theories may help the conception of new frameworks with the help of technology. However, healthcare organizations are hard to change in evolving ecosystems; the institutional arrangements described in the first section of the paper show potential venues to enhance learning processes and e-governance tools, especially for transformations of health systems.

The first paper presented in Athens drew a first contribution on possible use of the 6_K approach for health care financing. Figure 3 presents a summary of the first C concepts and K, knowledge elements presented with the theoretical framework (see technical note, Huttin, 2024).

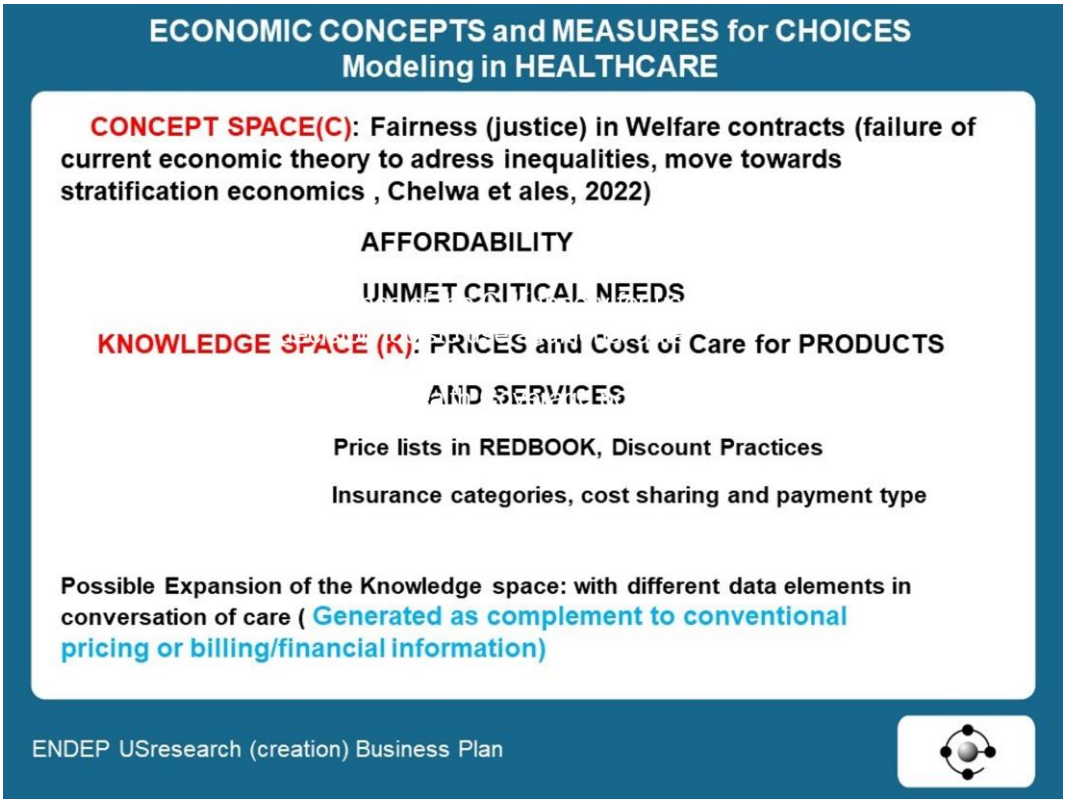

Figure 3. Economis concepts and measures for choices modeling in healthcare.

It identified more fairness and justice as key CONCEPTs © for health care financing reforms, as a component of a redesign of welfare contracts and public budgeting. The research areas are pricing and cost sharing research, in the context of global agenda, especially for Universal Health Coverage (UHC), such as in WHO agenda of objective oriented reforms for fairness and justice between countries (Kutzin, 2000; objective oriented reform, WHO HFTG meeting, March 3rd, 2025).

The UHC objective is to target "UHC minded" civil servants and policy advisors, senior bureaucrats, experts, elected officials, for reform design and instruments in insurance economics. This pro equity approach is only partially covered with the advanced value framework agreed with the industry, pharmacists, and physicians. The use of preference research is adopted also for revealing preference of various interest groups in a growing awareness of a multi-stakeholder framework. Who will put the value of UHC, how? Are questions that challenge the current value frameworks used by most countries in the Western world? These are based on consensus building among the professions for outcome research (industry managers; health economists; pharmacists and other health professionals).

The global agenda means a level off for a larger proportion of the population for western countries with higher level of GNP/inhabitants, but also the larger R&D expenditures in medical technologies and growing inequalities among civil society. There are more and more commonalities between the North and the South Hemispheres. So additional CONCEPTs suggested are also affordability and unmet critical needs; many medical

markets are technology-driven so adjustment of supply and demand is not optimized towards all needs; there is excess demand in many segments or shortage of research and treatments in critical areas.

Using an expansion of existing concepts to health states, especially related to aging of the population can be illustrated in a reference from the C-K theory as shown in the following Figure 4 on the concept of frailty.

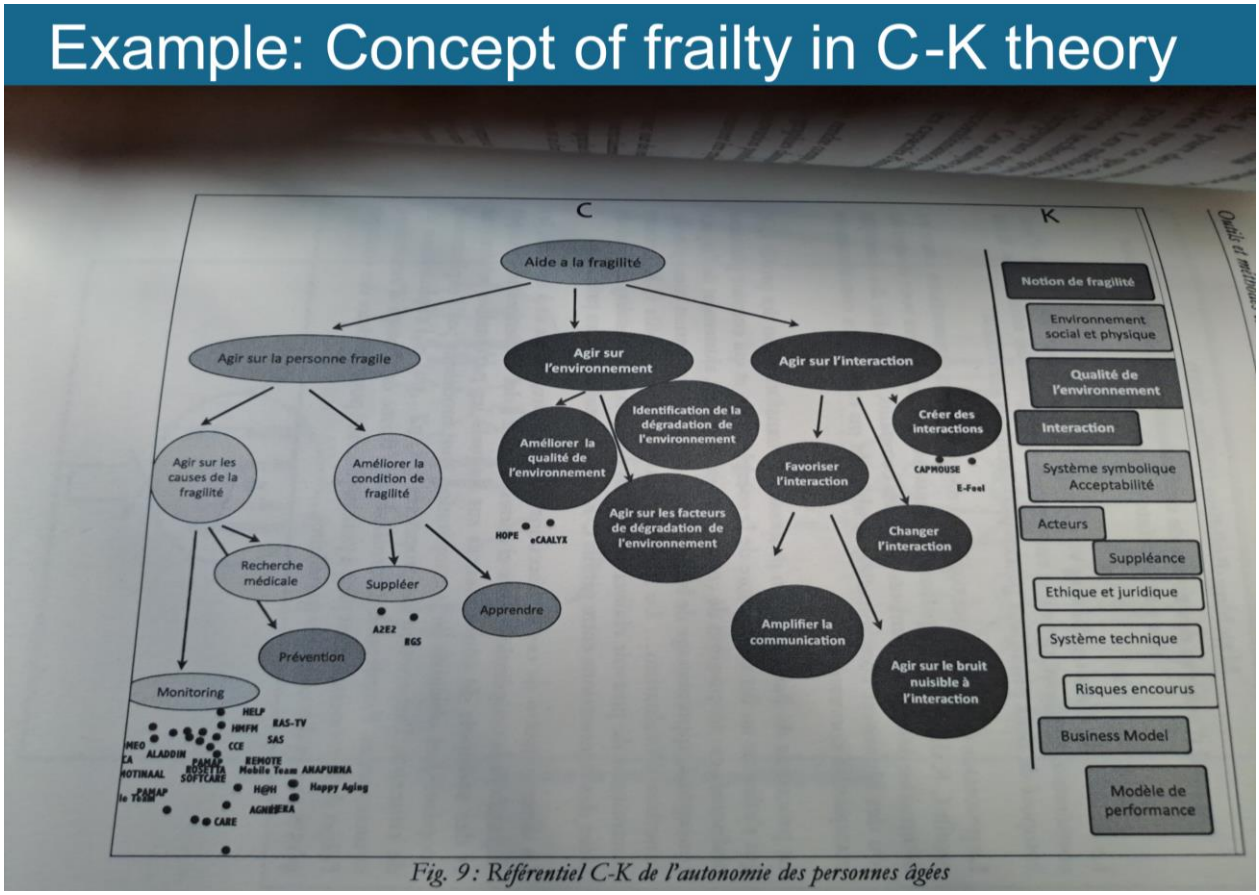

Figure 4. Example: concept of frailty in C-K theory.
(Source: C-K theory)

For the K space on health care financing reforms for western socialized Europe, the link to taxes and social contributions is critical, government and insurance funds negotiate the tax rates in system such as the NHS in England or in employment-based systems, such as France and Germany, mainly driven by the insurance funds.

Key elements for the K space are:

- Demographic trends, aging, longevity
- Social protection trends
- Social contributions and financing of social security
- Labor market and negotiating bodies with sick funds
- GNP level and growth or decline
- Assumptions for demand for health (mainly determined by a derived demand model for inputs such as health care workers, providers, drugs and devices, others)
- Scientific revolutions in Biology and Computer Sciences, trends towards precision medicine and paradigm shift in medicine.

The expansion of the K space for public budgeting could be with the generation of additional data elements (for instance using findings of preference research studies or additional unstructured data in conversation of care) within the Universal Health Coverage agenda.

How to Expand the K Space

Controversies exist now with the emergence of Artificial Intelligence (AI), especially to understand implicit and explicit criteria in welfare contracts (Huttin, 2024).

However, AI strategies and the role of LLM to uncover such information is challenged by researchers such as chemists and biologists, more driven to expand the granularity with innovative new technologies such as knowledge graphs: they believe to better control risk stratifications and benefit risk ratios for major diseases such as cancer, neurological disorders, multiple sclerosis.

At this stage, we can propose some reference for UHC adjustment as described in Figure 5.

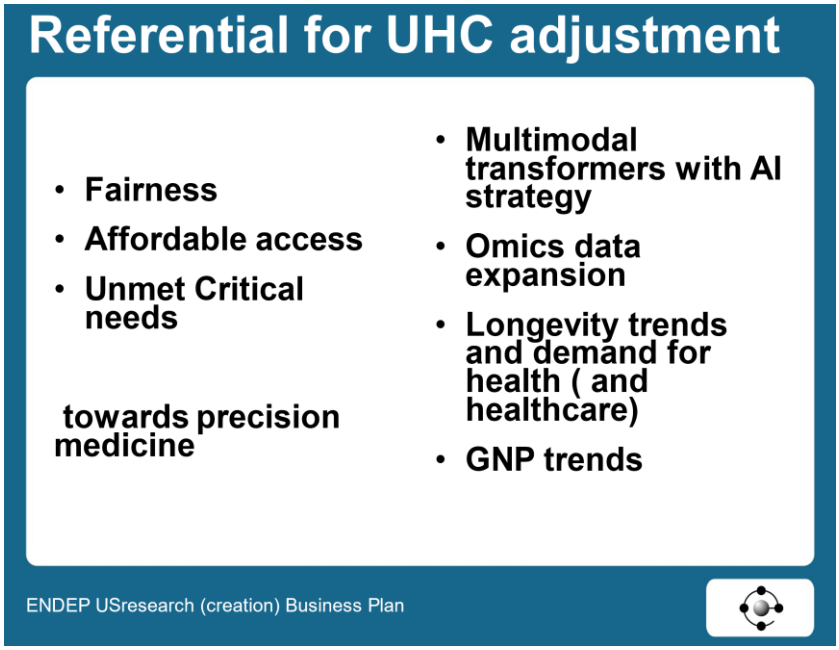

Figure 5. Referential for UHC adjustment.

Conclusion

This second paper provides a reflection of possible applications of a C-K theoretical framework for revision of welfare contracts, and especially elements related to health systems, with implementation of decision tools such as the cost sensitivity simulators and the physicians' choice models proposed by Prof. Huttin and her co-investigators. New development of the K space may be used for the health targets under the global agenda (e.g. SDGs). The statistical methods used to transform this K space, their selection process, and the identification of key parameters estimates will determine to a certain extent the transformation of health systems and will nurture the C concepts (e.g. more justice in reallocation of services and access to care).

In Global Health, comparable national estimates are used (e.g. "Global Burden of Diseases" (GBD) and risk predictors for health risk evaluation). In relation to global pricing, the agenda refers to "Universal Health Coverage" (UHC), to accelerate access to affordable medical services in different regions of the world. Additional

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Appendix 1

Note on the use of counter-detailing techniques in medical economics

As the main methodology relies on counter detailing techniques and is called reversed model such as conjoint models, it was conceived first with the original team of investigators that used the field of counter detailing techniques from education field to medicine. Dr. J. Avorn and Prof. Soumerai teamed up at that time to generate competitive information from the top teaching hospital center of excellence on clinical information (1). Their main objective was to provide additional information using similar marketing techniques to harmaceutical marketing companies, to ensure that competitive information was available to the medical profession especially before or during the clinical consensus guidelines and the publication in top medical journals such as the *New England Journal of Medicine*. The collaboration between Dr. J. Avorn and Prof. C. Huttin during the Takemi fellowship in his team at Partners Health Care led to the construction of predictive disease econometric models for non-communicable disease, first with hypertension and cardiovascular disease, asthma and its complication in COPD, and diabetes. The predictive models led to reliable estimates for key parameters both on clinical and co-morbidities, and socio-economic predictors. However, the experiment on asthma for use of cost cognitive cues, was limited to major health organizations collaborating with Partners Health Care. This step was very important at the level of reminder systems in use in the medical informatics system of partners, at the level where additional economic information could complement the template used by some medical teams inside the hospital. However, it was under a project in collaboration with the small academic enterprise (additional steps could have been with a sponsored research project for small businesses).

(1) On the global level, the two Harvard investigators (Dr. J. Avorn and S. Soumerai) however split and Dr. Soumerai created another global network called INRUD, met in Thailand. INRUD is a network specialized in pharmaceutical policies, based in Boston and operating on global issues on pharmaceutical economics. The experimental research and decision aiding tool for policy from Prof. Huttin's academic enterprise had different objectives than the INRUD programs cited below and Prof. Huttin continued to interact with Partners Health Care team.

(2) other networks for pharmaceuticals policies

- Global other networks: INRUD on global issues on pharmaceuticals economics (Boston and Asia);
- In Europe, other collaborative network with WHO in Geneva Pharmaceutical Pricing network for comparison of pricing policies inside EU;
- See also alternative NGOs for international price comparisons between groups of countries.

Appendix 2

Issues of transferability relevance of EUROHEED framework for transferability of cost sensitivity simulators (Prof. C. C. Huttin communication at EUPHA, Amsterdam, 2010)

Study question	Exploration of patterns in cost reduction strategies by patients and whether cost to the patient influences the patient decision making process
Health technology	Decision support system and decision tools for CMO/CTO providers of care/payors/life science stakeholders (national and foreign)
Setting	Primary care physicians (solo, group), pharmacies
Perspective	European agenda or state agenda for health care reforms, use of international evidence
Study population	Hypertensive population (questionnaires filled by patients given by pharmacists and doctors at the point of dispensing and the point of visit, var. by country)
Modeling	For use of stated revealed preference modeling at disease level (cost of illness)
Effectiveness	Not relevant
Benefit measure	Not relevant
Cost	New cost concepts: cost awareness, cost consciousness—New measures of economic information at points of dispensing and visit