Economic Reasoning in Theory and Practice: Microfoundations and Rules-of-Thumb

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Plan of talk

- **economic reasoning** as a methodological issue
  - in *theory*: formal economic and econometric analysis reinforced by numerical methods
  - in *practice*: (enlightened) intuition ≈ rules-of thumb
  - so is there a *gap* or not and why
- my PhD thesis as a **background illustration**
  - *summary* of approach and conclusions
  - why *microfounded formalisation*
  - why *numerical simulation*
  - why *econometric estimation*

Economic reasoning in theory

- **formal** economic and econometric analysis ≡

≡ mathematical methods of (dynamic-stochastic) *optimization* applied to microfounded (macro)modles and their *statistical estimation*

- **simplified** in at least three dimensions
  - functional forms are specific
  - parameters are (often) assumed constant
  - variables are limited to the (seemingly) essential ones
- **irrelevance** <=> *no guidance* in practical contexts

More realistic set-ups

- advent of *computer* technology =>
- much more complicated models (*C*GE) solved by
- **numerical methods** (iterations, simulations)
- yet, problems remain: **sensitivity** of programme outcomes to initial and subsequent choices of
  - functional forms
  - parameter ranges
  - relevant variables
- **indefiniteness** <=> *multiplicity* of guidance

Economic reasoning in practice

- economic **reality** (at the level of an individual, household, firm, bank, government)
  - more *complex* than simplistic fables of analytic models
  - more *concrete and urgent* than exhaustive simulations

=> *no* relevant **decision-worth information** *vs. too much* information which is *costly* to process

- frustrated by this *gap*, people and organisations rely on **intuition** and **rules-of-thumb**
- but is that **bad?** → obviously *not* (much): economic reality
  - reproduces from a period to the next <=> across *time*
  - survives from a shock to another <=> across *uncertainty*
  - in perpetually modifying configurations <=> across *space*

How do economic agents act?

- **enlightened intuition ≈ rules-of-thumb** ≡

≡ received wisdom + own experience ≡

≡ quintessence of summing over similar situations which have *happened* in the past or which have *been inferred* from vulgarised scientific constructs

- guide(s) people, in addition to (selfish) motives, in their **near-rational** and similar **behaviour** within the *materially*-dominated (life-and-work) dimension of their existence
- "intuitive" knowledge of **how to act** is thus
  - partly *historically documented* (heard or read as general culture)
  - partly *acquired or genetically transmitted* (bio-social intuition)
  - and partly *theory-induced* (popularised lessons from science)

And is there really a gap?

- the **gap** between economic reasoning in theory and practice is perhaps *perceived as existing*
- but is actually being all the time *filled-in* or *crossed-over*
- as real-life actors are faced with bio-existential *problems* (≈ changes in environment)
- to which pragmatic solutions are anyway “intuitively” found by the *choices* (irreversibly) made

<=> *aggregation* of these individual and social choices has materialised and is materialising in the documented (historical) record known as **“the past”** ≡

≡ itself a specific combination of *realised* states of nature in the theoretical dynamic-stochastic tree spanned between the dawn of time and its (in)finite(?) future horizon

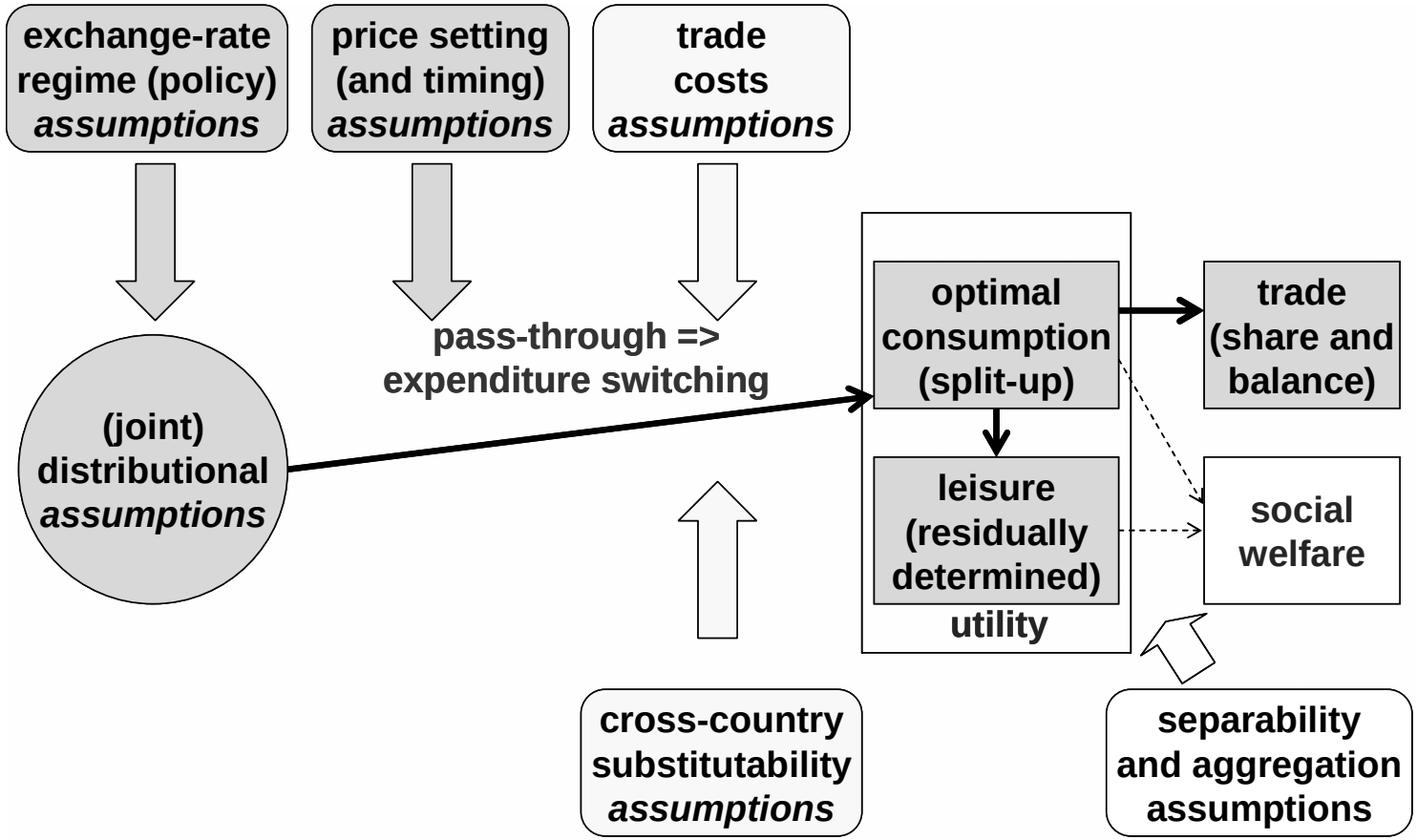
Background study: literature

- *trade* and *welfare* comparisons of **exchange-rate regimes**
- *(monetary)* **uncertainty** => *exchange-rate* **risk**
  - *NOEM*: Obstfeld-Rogoff (1995, 1996) exchange-rate *dynamics* "redux" model with *diversified production* of varieties of *one* good
  - Corsetti-Pesenti (1997, 2001): "redux" version under national *specialisation* but *unit* substitutability solvable without linearising
  - Obstfeld-Rogoff (1998, 2000): *explicitly stochastic GE* framework
- **price setting** in *open* economies and **costs** of trade
  - Helpman and Razin (1984): *seller's* vs. *buyer's* currency pricing
  - Betts-Devereux (1996, 2000), Devereux-Engel (1998, 1999, 2000) and Bacchetta-van Wincoop (1998, 2000): *PTM* within NOEM
  - Samuelson (1952, 1954) => Obstfeld-Rogoff (2001): *iceberg* costs

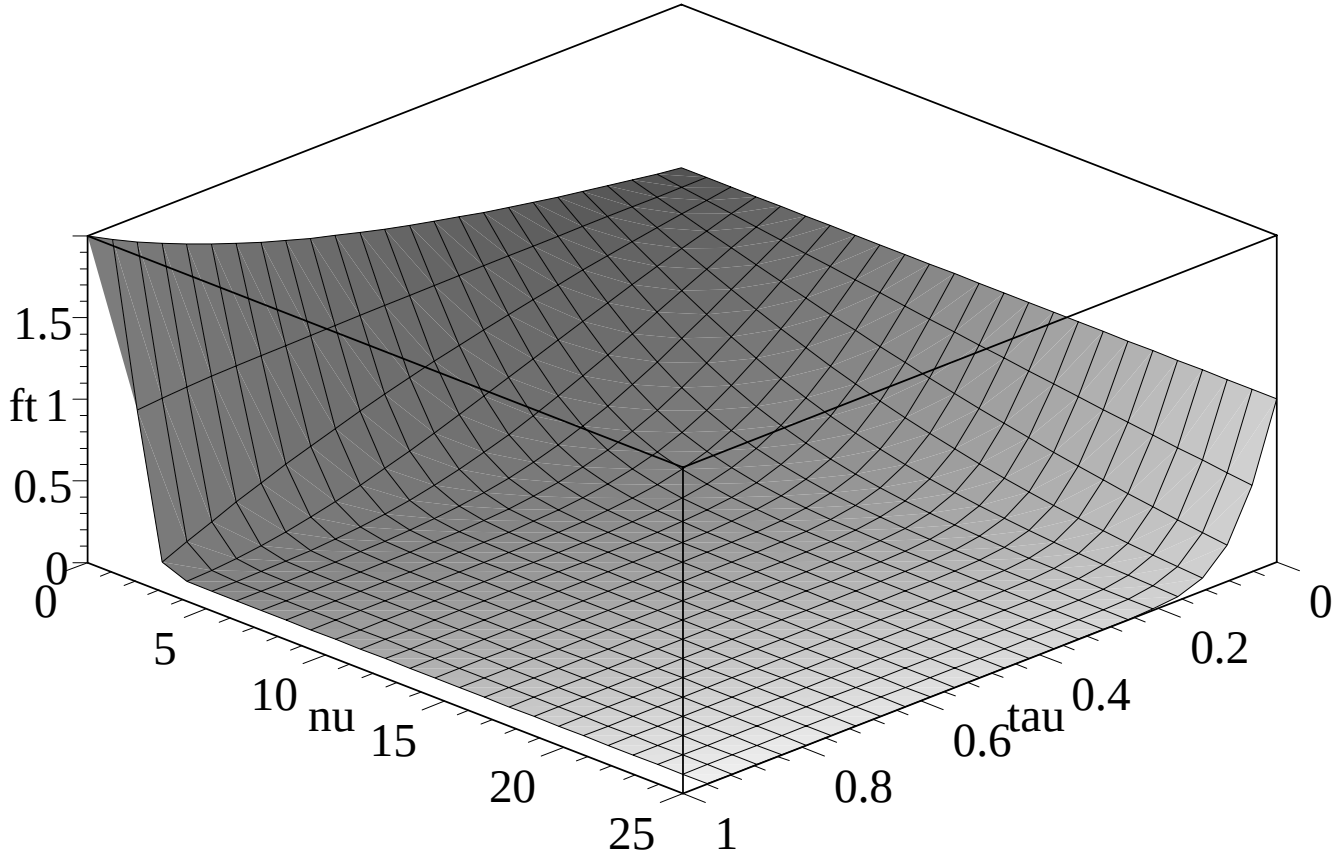
Background study: goal and approach

- **aim:** to derive and compare the effects of the exchange-rate regime and some real fundamentals on *costly* trade
  - under (monetary) uncertainty in microfounded GE
  - across alternative invoicing conventions, consumer's currency pricing (*C*CP) vs. producer's currency pricing (*P*CP)
- **methodology:** a *stochastic NOEM* model of exchange rate and trade determination as simple as possible so as
  - to allow the insights of a closed-form *analytical* solution
  - and nest *intra*-industry trade under *diversified production* and *inter*-industry trade under *national specialization* (due to endowment differences and not Ricardian comparative advantage)

Background study: what do I model?



Background study results: *expected* trade-to-output



Background study results: trade-to-output *volatility*

□	$[(M_s, M_s^*); \nu, \tau]$ -		*Cif* Trade Shares in Output:				
$\mathcal{U}_l$	*determined* NER:		*PCP-cum-Float*				*CCP⇔Peg*
□	*PCP-cum-Float*		Mean, %		SD, %		⇔*const*, %
□	Mean	SD, %	*H*	*F*	*H*	*F*	*H* = *F*
low transport costs: $\tau = 0.01$							
$\nu = 11$	0.9997	0.37	95.15	94.81	1.82	1.82	94.98
$\nu = 2$	0.9983	2.01	99.59	99.40	1.00	1.00	99.50
$\nu = 0.5$	0.9957	7.98	100.06	100.43	1.99	1.99	100.25
moderate transport costs: $\tau = 0.2$							
$\nu = 11$	0.9996	0.40	19.47	19.34	0.71	0.71	19.39
$\nu = 2$	0.9986	2.16	88.97	88.81	1.06	1.06	88.89
$\nu = 0.5$	0.9958	7.22	105.40	105.74	1.80	1.80	105.57
high transport costs: $\tau = 0.6$							
$\nu = 11$	0.9995	0.60	0.021	0.021	0.000	0.000	0.021
$\nu = 2$	0.9979	2.55	57.25	57.05	1.04	1.04	57.14
$\nu = 0.5$	0.9963	5.61	122.39	122.64	1.33	1.33	122.51

□	$[(M_s, M_s^*); \nu, \tau]$ -		*Cif* Trade Shares in Output:				
$\mathcal{U}_h$	*determined* NER:		*PCP-cum-Float*				*CCP⇔Peg*
□	*PCP-cum-Float*		Mean, %		SD, %		⇔*const*, %
□	Mean	SD, %	*H*	*F*	*H*	*F*	*H* = *F*
low transport costs: $\tau = 0.01$							
$\nu = 11$	0.9971	3.96	96.96	93.37	19.20	19.17	94.98
$\nu = 2$	1.0023	22.18	100.56	98.45	10.75	10.75	99.50
$\nu = 0.5$	1.3373	130.12	98.29	102.19	20.85	20.85	100.25
moderate transport costs: $\tau = 0.2$							
$\nu = 11$	0.9969	4.39	21.48	20.02	8.21	8.05	19.39
$\nu = 2$	1.0036	23.48	90.14	87.92	11.21	11.19	88.89
$\nu = 0.5$	1.2685	111.88	103.59	107.15	19.11	19.08	105.57
high transport costs: $\tau = 0.6$							
$\nu = 11$	0.9961	6.47	0.027	0.024	0.017	0.017	0.021
$\nu = 2$	1.0106	28.49	58.89	56.68	11.20	11.12	57.14
$\nu = 0.5$	1.1441	76.81	120.68	123.36	14.49	14.43	122.51

Background study: what have we learnt?

- a **peg** cannot increase, but with *some P*CP *can stabilise* trade shares at their expected level
- **trade costs** and **substitutability** of output across countries can affect *both* trade level and volatility
- a peg would achieve **higher** trade stabilisation if
  - (symmetric) nations have a *higher* degree of *P*CP
  - are exposed to *higher monetary uncertainty*
  - produce *less substitutable output* mixes
  - are *located closer* and/or *apply lower restrictions*
- **CCP** does not yet predominate over PCP but becomes more and *more important* thus reducing the trade stabilisation role of a peg

Why microfounded formalisation

- because of the impossibility in economics (and most other social sciences) of cumulative descriptive knowledge based on experiments carried out under fixed conditions: economists have **no laboratories**, or at least it seemed like this before *formalisation* stepped in to (imperfectly) substitute for this absence
- any scientific interpretation proposes a **framework** of coherent logic, organising the *fragments* of its ever-accruing knowledge into a whole and common structure characterised (insofar possible) by internal consistency
- what economic formalization requires to be **explicitly** stated is what a theoretical framework assumes and what it does not assume: without such a point of departure, clearly *(de)limiting the scope and method* of study, any research will remain too vast and therefore probably futile
- science is at best **approximation** to reality, not only in the field of economics: the quest for knowledge as periodic *"progress reports"*

Why numerical simulation

- first, because (endogenous) model outcomes in *positive* economics are fundamentally driven by (exogenous) shock distributions so the *properties* of **equilibrium** have to be artificially inferred
- and second, because *normative* economics has to often simulate a number of *policy* **scenarios**, as if experimenting in a lab, before deciding which attitude to take on major trade-offs like those presented by real-world (socio-)economic developments

Why econometric estimation

- because, in addition to *artificially-computed realizations* out of specified shock distributions, **registered statistical series** resulting from imperfectly known or even unknown (combinations of) natural and social dynamic-stochastic processes are often available too
- to face theoretical predictions with observed data and reformulate theories in subsequent iterations so as to **match** real-world facts in a *closer* fit is logically the ultimate goal, and the decisive test, of the (always incomplete and relative) validity of economic knowledge
- furthermore – and to the extent the most recent theory has managed to well approximate, or replicate, reality – **forecasting** of the most likely future developments *in anticipation of how to react* is rather the true objective of homo oeconomicus, at the levels of individual/household optimization, firm/bank strategy or government/institutional policy