When theory is much ahead of measurement

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IMAEP, 13 June 2014

[1]The views expressed are those of individual authors and do not necessarily reflect official positions of the Federal Reserve Bank of St. Louis, the Federal Reserve System, or the Board of Governors.

The criticism

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empirics can be misleading

The reality

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Just looking at data is not sufficient

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History is not always useful

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We need theory

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History is not always useful
We need theory
Data is of poor quality anyway

There is more potential

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Theory can help is data-poor environments

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Theory can help is data-poor environments
Organize the data

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Theory can help is data-poor environments
Organize the data
Poor measurement

There is more potential

Theory can help is data-poor environments
Organize the data
Poor measurement
No history

And now: shameless plugs

With Douglas Gollin (Oxford)

What determines malaria prevalence?

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Epidemiology: mosquito density, ecological factors

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Epidemiology: mosquito density, ecological factors
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Policy response: change both. Difficult. Distribute bednets.
Is this the best we can do?

What theory tells us

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- Humans respond to incentives

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- Why do they not take bednets without incentives?

What theory tells us

- Humans respond to incentives
- Why do they not take bednets without incentives?
- Is this a trap?

Empirics do not have an answer

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Empirics do not have an answer

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- Prevalence data is literally made up
- Endogeneity issues of gigantic proportions (data construction, income)

Theory to the rescue!

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- Maximizing agent

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- Borrowing constraint

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- Idiosyncratic productivity and health shocks

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- Idiosyncratic productivity and health shocks
- Option to buy full protection from malaria
- Endogenous infection rate
- Malaria lowers productivity and increases mortality

High-cost prevention

Endogenously determined fertility rate	0.0690	0.0150
Proportion sick	0.9007	0.0000
Proportion protected from disease	0.0000	0.0000
Average assets	2.9596	12.0797
Average output	1.3913	2.4521
Average consumption	1.1565	2.2668

Reasonable cost of protection

Endogenously determined fertility rate	0.0150	0.0150
Proportion sick	0.0006	0.0000
Proportion protected from disease	0.9770	0.0000
Average assets	12.0631	12.0797
Average output	2.4488	2.4521
Average consumption	2.2553	2.2668

(figure y vs. eff)

With Stéphane Pallage (UQAM)

Alternative unemployment insurance schemes
Unemployment saving accounts
Universal basic income

Unemployment insurance

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- Moral hazard problem (common pool)

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- Tax distortion

Unemployment insurance

- Moral hazard problem (common pool)
- Tax distortion
- Discourages savings

Unemployment savings accounts

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- Minimum payment into personal account

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- Maximum withdrawal from account

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- Cap on mandatory account

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- Supplemental unemployment insurance for empty accounts

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How to optimize this? Is this feasible?

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How to optimize this? Is this feasible? No data to draw from

Theory to the rescue!

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A minimal model

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A minimal model

- Incomplete markets

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- Incomplete markets
- Idiosyncratic labor history

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- Utility for leisure

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- Retirement

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A minimal model

- Incomplete markets
- Idiosyncratic labor history
- Utility for leisure
- Retirement
- Calibrate to particular labor market risk

Oregon

- Criterion: expected value of newborn

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- shirkers: 1.17%

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- UI beneficiaries: 0.9%

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- $\bar{b} = 0.5$
- $\bar{k} = 5$
- $\tau = 0.1393$
- shirkers: 1.17%
- UI beneficiaries: 0.9%
- unemployed: 7.5%
- mean assets: 3.3

Consumption equivalence

- $\pi = 0, \theta^* = 0.55, \lambda = -0.42\%$

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- $\pi = 0.05, \theta = 0.55, \lambda = 1.18\%$
- $\pi = 0.2, \theta^* = 0.10, \lambda = 1.10\%$
- $\pi = 0.2, \theta = .40, \lambda = 3.90\%$

Austria

- $\theta = 0.4$

Austria

- $\theta = 0.4$
- $\underline{a} = 0$

Austria

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- $\underline{a} = 0$
- $\bar{b} = 0$

Austria

- $\theta = 0.4$
- $\underline{a} = 0$
- $\bar{b} = 0$
- $\bar{k} = NA$

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- $\underline{a} = 0$
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- shirkers: 0%

Austria

- $\theta = 0.4$
- $\underline{a} = 0$
- $\bar{b} = 0$
- $\bar{k} = NA$
- $\tau = 0.3377$
- shirkers: 0%
- UI beneficiaries: 0.38%

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- $\underline{a} = 0$
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- $\bar{k} = NA$
- $\tau = 0.3377$
- shirkers: 0%
- UI beneficiaries: 0.38%
- unemployed: 5.0%

Austria

- $\theta = 0.4$
- $\underline{a} = 0$
- $\bar{b} = 0$
- $\bar{k} = NA$
- $\tau = 0.3377$
- shirkers: 0%
- UI beneficiaries: 0.38%
- unemployed: 5.0%
- mean assets: 0

Universal Basic Income

(With Alice Fabre (Aix-Marseille) and Stéphane Pallage (UQAM))
Often proposed
Rarely implemented
No good data
Very politicized

A good replacement for unemployment insurance?

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- moral hazard

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- administrative costs

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Data? No!

Theory to the rescue!

A minimal model

- Incomplete markets
- Idiosyncratic labor history
- Utility for leisure
- Calibrate to particular labor market risk
- UI, UBI, self-insurance

Oregon 1990

	θ or ω	τ	$\bar{V}$	u	u+	a
Opt UBI	0.0125	0.0131	-110.7581	0.06	0.0018	2.58
Opt UI (π=0)	0.70	0.0431	- 110.0127	0.06	0	0.00
Opt UI (π=0.1)	0.30	0.0206	- 110.5311	0.06	0.0259	0.72
Opt UI (π=0.2)	0.15	0.0108	-110.6909	0.06	0.0209	1.46
Opt UI (π=0.3)	0.05	0.0036	- 110.7456	0.06	0.0043	2.20
Opt UI (π=0.5)	0.0250	0.0019	-110.7765	0.06	0.0019	2.44
Opt UI (π=1)	0.01	0.0009	- 110.7952	0.06	0	2.61
Self-insurance	n.a.	0	-110.7749	0.06	0	2.82

Oregon 2011

	θ or ω	τ	$\bar{V}$	u	u+	m
Opt UBI	0.0225	0.0244	-112.7626	0.09	0.0102	6.11
Opt UI (π=0)	0.65	0.0608	- 110.2378	0.09	0	0
Opt UI (π=0.1)	0.55	0.0608	-111.2316	0.09	0.0716	0.25
Opt UI (π=0.2)	0.25	0.0292	-112.0963	0.09	0.0519	1.70
Opt UI (π=0.3)	0.15	0.0180	-112.4240	0.09	0.0405	3.12
Opt UI (π=0.5)	0.0750	0.0093	-112.6666	0.09	0.0260	4.64
Opt UI (π=1)	0.02	0.0027	-112.8323	0.09	0.0093	6.24
Self-insurance	n.a.	0	-112.8519	0.09	0	7.27

Conclusion

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- DSGE theory is useful

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- DSGE theory is innovative

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- DSGE theory is innovative
- DSGE theory is essential

Conclusion

- DSGE theory is useful
- DSGE theory is innovative
- DSGE theory is essential
- DGSE theory is exciting!