

# Fiscal Policy and MPC Heterogeneity

by Tullio Jappelli and Luigi Pistaferri

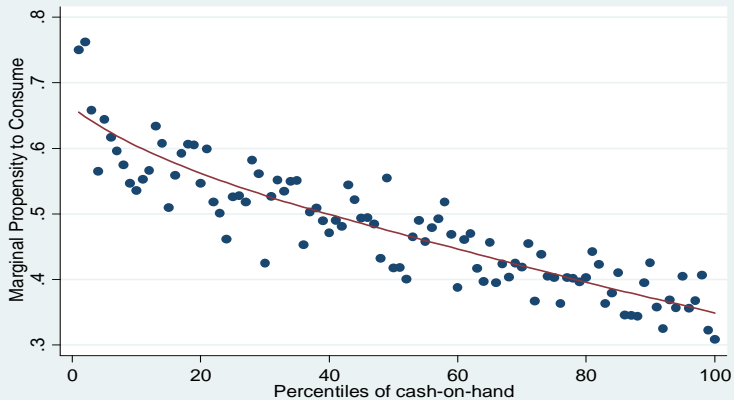
Discussion by: Fabrizio Perri  
Bocconi, Minneapolis Fed, IGER & NBER

Macroeconomic Dynamics with Heterogeneous Agents,  
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# Summary

- Survey of Household Income and Wealth (Shiw) 2010
- Imagine you unexpectedly receive a reimbursement equal to the amount your household earns in a month. How much of it would you save and how much would you spend?
- Key finding: households say they would spend a large fraction (on average 40%) and the fraction is declining with their cash in hand

# Key finding



# Fiscal policy implications

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- In recessions governments should implement RH policies..  
Not sure about JP, but certainly Krugman or Stiglitz would support this!

# Outline

- Micro implications
- Macro implications

# What these findings imply for consumption models?

Household problem in a standard heterogenous agents macro model (Aiyagari, 1994)

$$\begin{aligned} \max \quad & \sum \beta^t \frac{c_t^{1-\sigma}}{1-\sigma} \\ \text{s.t.} \quad & \end{aligned}$$

$$\begin{aligned} c_t + a_{t+1} &\leq y_t + a_t(1+r) \\ a_{t+1} &\geq 0 \end{aligned}$$



# Income Process

$$y_t = \exp(z_t + \varepsilon_t)$$

$$z_t = \rho z_{t-1} + \eta_t$$

$\varepsilon_t, \eta_t$  Normal i.i.d,

Mean 0 and  $\sigma_\varepsilon, \sigma_\eta$

- Note that here an increase of  $\varepsilon_t$  is akin to the rebate considered in the paper

## Deriving MPC in the model

- Let  $c(a, z, \varepsilon)$  and  $a'(a, z, \varepsilon)$  be the optimal decision rules.
- Consider  $\varepsilon_t = 0, \varepsilon_t = \bar{\varepsilon} = 0.1$

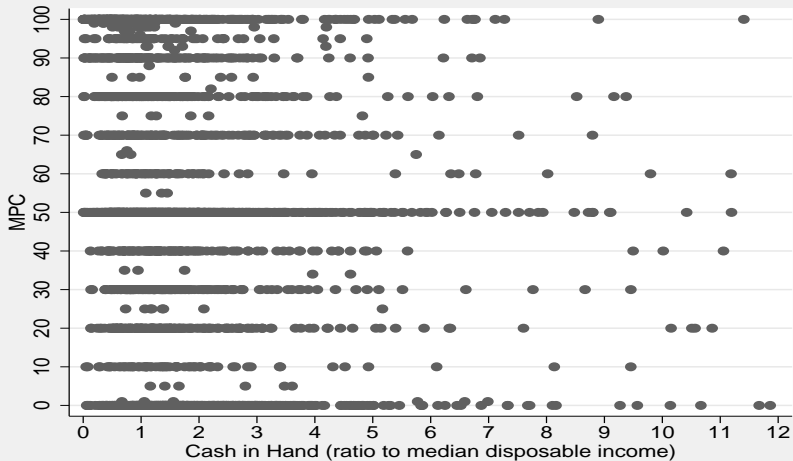
From budget constraints

$$(c(a, z, \bar{\varepsilon}) - c(a, z, 0)) + (a'(a, z, \bar{\varepsilon}) - a'(a, z, 0)) = \exp(z)\bar{\varepsilon}$$

So model's equivalent of MPC can be read directly from the decision rules, i.e.

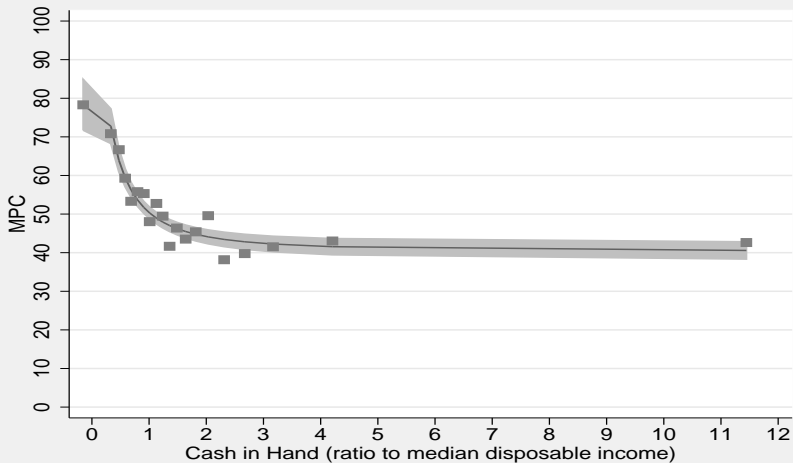
$$MPC^*(a, z) = \frac{(c(a, z, \bar{\varepsilon}) - c(a, z, 0))}{\exp(z)\bar{\varepsilon}}$$

## A slight different way of looking at the data



- Raw

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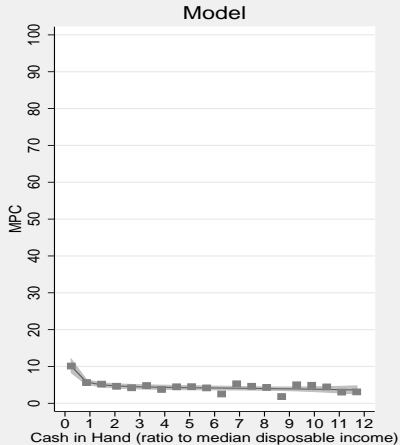
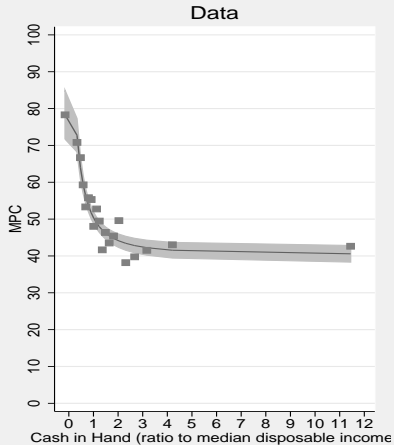


- Collapsed

# A standard calibration

- $r = 1.04$
- $\beta = 0.96, \beta(1 + r) = 0.995$
- $\sigma = 2$
- $\rho = 0.98$
- $\sigma_\varepsilon = 0.01, \sigma_\eta = 0.03$

# Comparing MPC in model and Data



# Why does the model can't match neither the level not the shape of MPC?

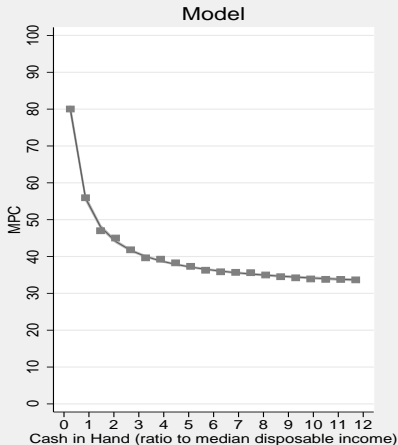
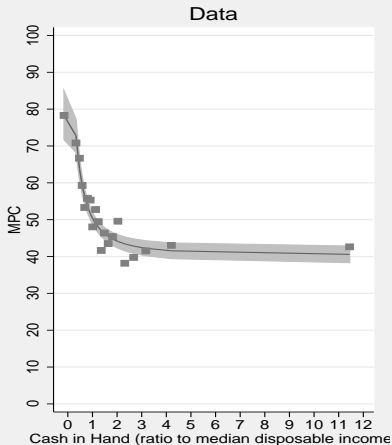
- Agents with high cash in hand behave pretty much like PIH ( $MPC = r$ )
- Agents with low cash in hand (and temporarily low income) want to borrow (and so consume out of the rebate) but not too much due to precautionary reasons
- Well recognized puzzle in the literature. Lots of evidence (US based) of high MPC from rebates program, hard to reconcile with standard models

# Reconciling data and theory

- Making agents very impatient
- 
-



## Model with impatient agents ( $\beta = 0.6$ )

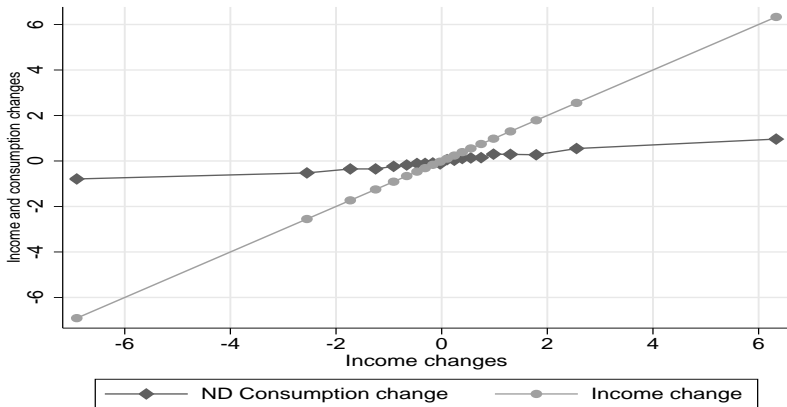


- Match both shape and level of MPC, how about wealth distribution?

## Reconciling data and theory

- Making agents very impatient
- Kaplan and Violante (2011) suggest that even agents with high CIH might be constrained (due to cost of accessing wealth)
- A related story: suppose I am about to write a big check to my dentist. The person from SHIW knocks on my door and ask me what I would do with a rebate: I'd probably tell I'll spend it all.. but is it spending or saving?

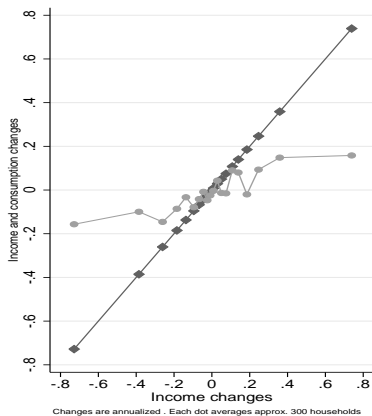
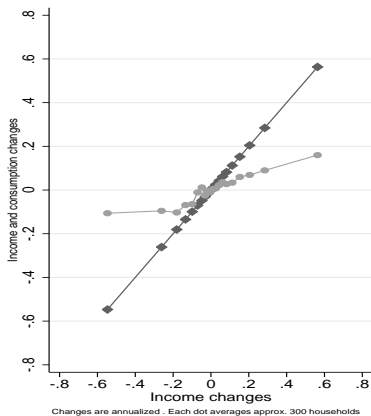
# A different way of measuring MPC



Changes are annualized and in thousands of 2000 Euros. Each dot averages approx. 700 households

- Using actual consumption and income data, measured MPC are much lower (Previous work by JP also finds that)

## Comparing MPC of Rich (left) and Poor (right) (Total consumption expenditure, % Changes )



- Rich (  $Cih > 1.5 \times \text{median}$  ), Poor (  $Cih < 0.5 \times \text{median}$  )
- Not much difference (if anything large for the rich)

# Macro considerations

- Assume there are differences in MPC
- Consider the Robin Hood Tax
- Two arguments for it
  - Want more redistribution in recession.. this is the role of automatic stabilizer (UI) and progressive taxation.. not obvious you want to use discretionary fiscal policy
  - Want to increase GDP/employment

# Would a Robin Hood tax increase GDP/Employment?

- Theoretically not clear (GE effects)
  - In standard Aiyagari model the answer is no. Increase in consumption pushes up interest rate and investment falls: **GDP/Employment not affected**
  - Aiyagari with endogenous labor supply (Lorenzoni and Guerrieri, 2011) answer depends on labor supply responses of the rich/poor: ambiguous
  - Models with nominal rigidities (Bilbie, Monacelli and Perotti, 2012): yes

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- Empirically it is an interesting question but not one that can be answered with micro data.
  - Interesting work by Monacelli and Perotti (2013) is trying to answer this by classifying tax changes in more/less redistributive and assess the effect of this feature on the tax impact. No results yet

# Conclusions

- Interesting new survey evidence
- Needs to be reconciled with MPC estimates on data on income and consumption
- More work needed to assess macro consequences