The Distributional Consequences of Macroeconomic Stabilization Policies

Alexandra Effenberger, BMWi (seconded to OECD)

Christian Friedrich, Bank of Canada

Jeromin Zettelmeyer, IMF

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Motivation

- Concerns about the <u>distributional consequences</u> of macroeconomic (stabilization) policies deployed during and after the global financial crisis
  - Monetary Policy (MP): Usually, focus on aggregate outcomes; however, more debate recently (e.g., Bernanke, 2015; Rosengren, 2018; Wilkins, 2018), especially around low interest rates and QE (e.g., Ampudia et al., 2018)
  - Fiscal Policy (FP): Usually, focus on distributional objectives; however, sometimes other objectives dominate (e.g., economic growth, allocational efficiency, reducing debt levels)
- Uncertainty about the role of both policies in increasing <u>inequality</u> in advanced economies
  - MP: Coibion et al. (2017); Furceri et al., 2018; FP: Ball et al. (2013)
  - Consensus: Both policies contribute to inequality but they are not the main drivers (instead, these are long-term trends, such as technological change or globalization)
- Heterogeneous agent New Keynesian (<u>HANK) models</u> make theoretical predictions about the distributional implications of these policies
  - MP: Kaplan, Moll and Violante (2018); FP: McKay and Reis (2016)

Contribution

- First, we use a cross-country household panel dataset
  - Household data allow us to examine the effects of policies on specific groups: e.g., across the income distribution or for house owners
  - Panel data allow us to trace the same households over time
  - Cross-country data increases the variation of monetary and fiscal policy (at the same time, the impact of institutional characteristics is mitigated)
- Second, we examine and compare the effects of monetary and fiscal policy
- Third, our data cover both the global financial crisis and the European debt crisis

Summary of Results

- Distributional Impacts
  - A joint MP and FP easing (e.g., response to the GFC) benefits particularly households at the bottom of the income distribution
  - A MP easing combined with a FP tightening (e.g., response to the European debt crisis) might have provided only little benefit to households at the bottom and negatively affect those at the top
- Inequality
  - A MP tightening increases income inequality as it hurts households at the bottom of the distribution and benefits those at the top
  - A FP tightening has a more balanced effect across the distribution (at least objectively)
- HANK Models
  - We find evidence for the existence of an earnings heterogeneity channel and an income composition channel; moreover, the indirect income channels appear to be important
  - We also find evidence consistent with an interest rate exposure channel and/or a savings redistribution channel

Summary of Income Effects

| Tightening of:	Bottom of Distribution	Top of Distribution
Monetary Policy	↓	↑
Fiscal Policy	↓	↓
Net Effect	↓↓	↑ ↓

Data

Household Data

- EU Statistics on Income and Living Conditions (EU-SILC)
  - 4-year rotating panel (unbalanced) based on annual national household surveys in EU member states and a few neighboring countries, using common guidelines
  - Detailed data on income (e.g. labor, capital, rental, business and government transfer income), financial and housing situation, standard household characteristics (balance sheet/wealth information is only qualitative)
  - 18 Euro Area (EA) countries, and 8 non-EA countries (including United Kingdom, Sweden, Norway)
  - Period covered: 2005-2013 (available until 2015)
- Data preparations
  - Determination of a household head based on income and age
  - Income is aggregated at the household level, recorded in gross terms and refers to the year prior to the survey
  - Income: Time-constant (inflation adj.) PPP units (PPP adj.) per adult-equivalent (household size adj.)
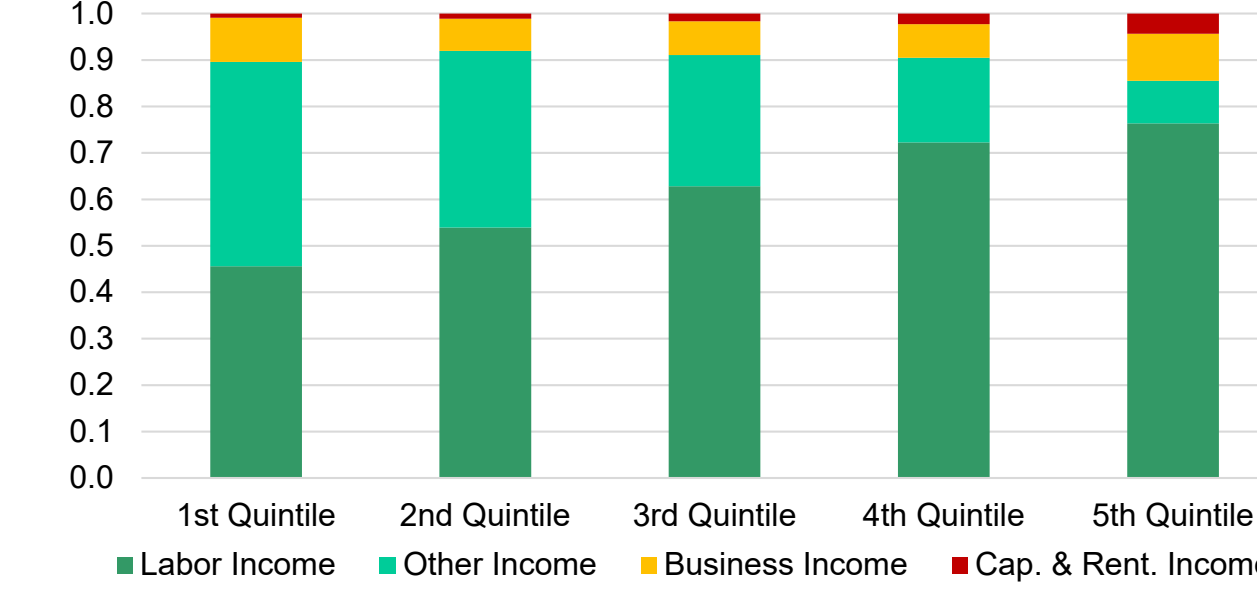

Comparison of EU-SILC Incomes with GDP
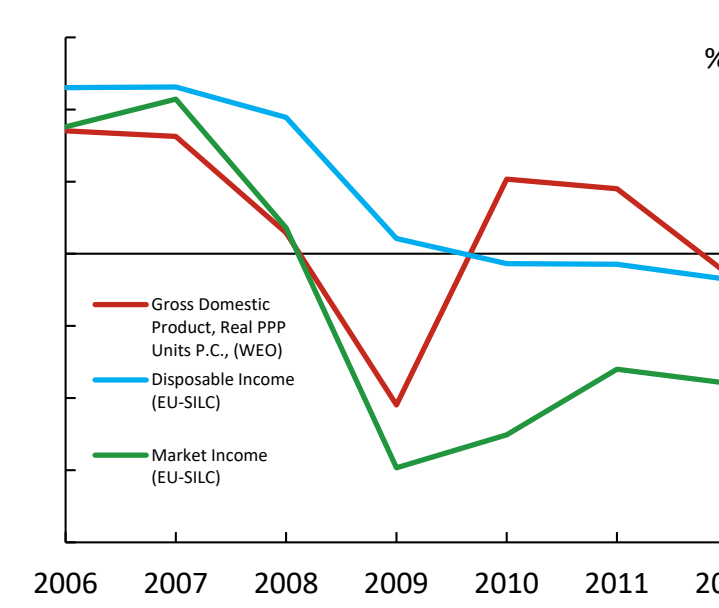
Incomes and Expenditures during the GFC
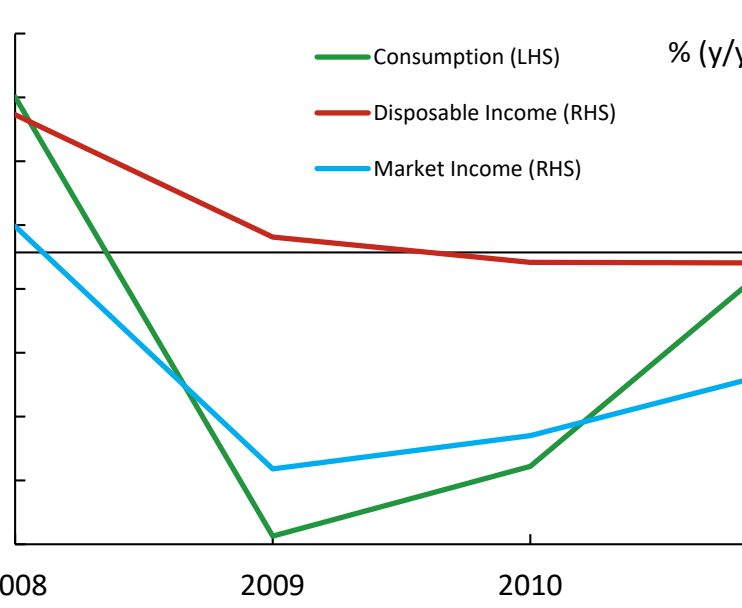
Income Shares by Quintile of the Disposable Income Distribution

Monetary and Fiscal Policy Shocks

- MP Shocks: We use data from Georgiadis and Jančoková (2017)
  - Select shocks that have the longest sample coverage and that are from best published papers/the central bank
  - EA shock plus eight non-EA countries
  - Mix of methodologies but mostly from DSGE models
  - We control for additional variables in case the shocks do not capture the international dimension very well
- FP Shocks: Based on Auerbach and Gorodnichenko (2013) and Furceri et al. (2018)
  - Residuals of a regression of the policy forecast errors on the forecast errors of business cycle controls

Empirical Analysis

(1) Aggregate and Distributional Results:

$$depvar_{h,c,t} = \alpha + \alpha_h + \alpha_t + \rho HC_{h,c,t} + \sum_{i=0}^{1} \mu_i MP_{c,t-i} + \sum_{i=0}^{1} \theta_i FP_{c,t-i} + \varepsilon_{h,c,t}$$ where:

- $depvar_{h,c,t}$ = disposable income growth (y-o-y)
- $\alpha, \alpha_h, \alpha_t$ = constant, household and time fixed effects
- $HC_{h,c,t}$ = household controls
- $\sum_{i=0}^{1} \mu_i MP_{c,t-i}, \sum_{i=0}^{1} \theta_i FP_{c,t-i}$ = contemporaneous and lagged value of the monetary and fiscal policy shock

Dependent Variable: Disp. Income Growth	(1) Aggregate	(2) 1st Quintile	(3) 2nd Quintile	(4) 3rd Quintile	(5) 4th Quintile	(6) 5th Quintile
Monetary Policy Shock_t	0.00193*	-0.00716*	-0.00257	0.00152	0.00390**	0.00907***
	(0.00105)	(0.00406)	(0.00239)	(0.00220)	(0.00194)	(0.00221)
Monetary Policy Shock_t-1	0.00118	-0.00621	-0.00325	0.00129	0.00526***	0.00766***
	(0.00103)	(0.00405)	(0.00232)	(0.00212)	(0.00191)	(0.00213)
Fiscal Policy Shock_t	-0.00445***	-0.00230	-0.00324***	-0.00465***	-0.00451***	-0.00490***
	(0.000445)	(0.00170)	(0.00105)	(0.00103)	(0.000851)	(0.000931)
Fiscal Policy Shock_t-1	-0.000862**	0.000895	-0.00040	-0.000507	-0.000610	-0.000700
	(0.000435)	(0.00162)	(0.00121)	(0.00104)	(0.000778)	(0.000905)
Memo:						
Joint Effect MP Shocks (Prob > F)	0.0031* (0.0809)	-0.0134* (0.0519)	-0.0058 (0.1392)	0.0028 (0.4438)	0.0092*** (0.0064)	0.0167*** (0.0000)
Joint Effect FP Shocks (Prob > F)	-0.0053*** (0.0000)	-0.0014 (0.6159)	-0.0037* (0.0628)	-0.0052*** (0.0044)	-0.0051*** (0.0003)	-0.0056*** (0.0004)
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Household Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Household Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	631,914	118,840	115,475	126,608	134,044	136,947
Countries	26	26	26	26	26	26
R-squared	0.413	0.649	0.852	0.852	0.832	0.664

- A fiscal policy tightening…
  - …reduces disposable income growth across all quintiles of the disposable income distribution
- A monetary policy tightening…
  - …reduces disposable income growth for households at the bottom of the distribution
  - …increases disposable income growth for households in the top of the distribution

(2) Testing for Transmission Channels:

- The previous literature has identified a number of transmission channels:
  - **Wage/earnings heterogeneity channel (via income level or skills)**
  - **Income composition channel (via income sources)**
  - Savings redistribution channel (via unexpected inflation)
  - Interest rate exposure channel (via different maturities)
  - Intertemporal substitution channel (via liquid wealth)
  - Inflation tax channel (via expected inflation)
- We rely on the same empirical specification as above
- We replace disposable income growth with labor income growth and capital income growth, respectively

Dependent Variable: Labor Income Growth	(1) Aggregate	(2) 1st Quintile	(3) 5th Quintile
Monetary Policy Shock_t	-0.0104	-0.0694**	-0.00434
	(0.0132)	(0.0315)	(0.0230)
Monetary Policy Shock_t-1	-0.0223*	-0.0852***	-0.0217
	(0.0129)	(0.0322)	(0.0277)
Fiscal Policy Shock_t	-0.0228***	-0.0766***	-0.00981
	(0.00519)	(0.0271)	(0.00638)
Fiscal Policy Shock_t-1	-0.00607	-0.0106	-0.00643
	(0.00540)	(0.0277)	(0.00795)
Memo:			
Joint Effect MP Shocks (Prob > F)	-0.0327 (0.1573)	-0.1546*** (0.0082)	-0.0261 (0.5491)
Joint Effect FP Shocks (Prob > F)	-0.0288*** (0.0013)	-0.0106** (0.0369)	-0.0162 (0.1953)
Time Fixed Effects	Yes	Yes	Yes
Household Fixed Effects	Yes	Yes	Yes
Household Controls	Yes	Yes	Yes
Observations	631,008	123,234	130,612
Countries	26	26	26
R-squared	0.421	0.544	0.572

Dependent Variable: Capital Income Growth	(1) Aggregate	(2) 1st Quintile	(3) 5th Quintile
Monetary Policy Shock_t	0.0343	-0.00519	0.967***
	(0.0363)	(0.0470)	(0.306)
Monetary Policy Shock_t-1	-0.0926***	-0.0283	0.271
	(0.0309)	(0.0495)	(0.301)
Fiscal Policy Shock_t	-0.0894***	-0.0390	-0.140***
	(0.0188)	(0.0483)	(0.0528)
Fiscal Policy Shock_t-1	-0.147***	-0.0506	-0.181***
	(0.0190)	(0.0513)	(0.0552)
Memo:			
Joint Effect MP Shocks (Prob > F)	-0.0576 (0.3247)	-0.0335 (0.6997)	1.2380*** (0.0049)
Joint Effect FP Shocks (Prob > F)	-0.2366*** (0.0000)	-0.0051 (0.5220)	-0.3023*** (0.0007)
Time Fixed Effects	Yes	Yes	Yes
Household Fixed Effects	Yes	Yes	Yes
Household Controls	Yes	Yes	Yes
Observations	624,844	123,234	128,999
Countries	26	26	26
R-squared	0.369	0.591	0.485

- The response of labor income growth differs across the distribution
  - ✓ Wage/earnings heterogeneity channel
- The response of labor income and capital income differs
  - ✓ Income composition channel

(3) Impact on Expenditures/"Consumption":

- HS130: Lowest monthly income to make ends meet
  - *"In your opinion, what is the very lowest net monthly income that your household would have to have in order to make ends meet, that is to pay its usual necessary expenses?"*
- Reference period of this variable is "contemporaneous" (vs. income)
- We rely on a similar empirical specification as above (we use the first and the second lags of the shocks this time)
- We replace disposable income growth with expenditure/"consumption" growth

Dependent Variable: Consumption Growth	(1) Aggregate	(2) 1st Quintile	(3) 5th Quintile
Monetary Policy Shock_t	-0.0109***	-0.0442***	0.0203***
	(0.00166)	(0.00302)	(0.00697)
Monetary Policy Shock_t-1	-0.0406***	-0.0772***	-9.92e-06
	(0.00165)	(0.00306)	(0.00797)
Memo:			
Joint Effect MP Shocks (Prob > F)	-0.05145*** (0.000)	-0.12143*** (0.000)	0.0203* (0.0831)
Time Fixed Effects	Yes	Yes	Yes
Household Fixed Effect	Yes	Yes	Yes
Household Controls	Yes	Yes	Yes
Fiscal Policy Controls	Yes	Yes	Yes
Observations	627,645	124,708	127,288
Countries	26	26	26
R-squared	0.376	0.492	0.478

- Evidence qualitatively consistent with HANK models
  - Kaplan and Violante (2018, WP)
  - Impact of a contractionary monetary shock in HANK on different percentiles of the consumption distribution