

# Unconventional Monetary Policy and Inequality: Evidence from Japan

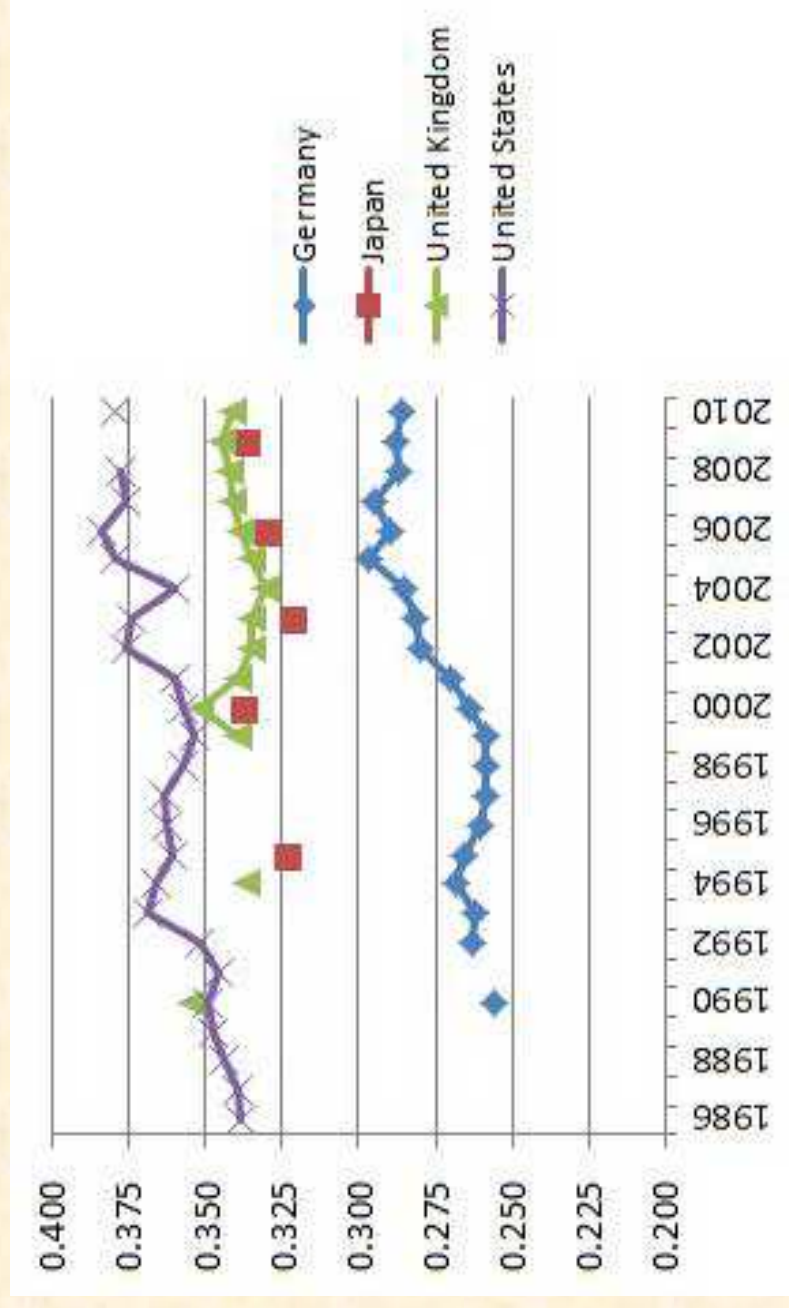
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# Gini coefficient in longer horizon and across economies



Source: OECD Database

# Monetary Policy and Inequality

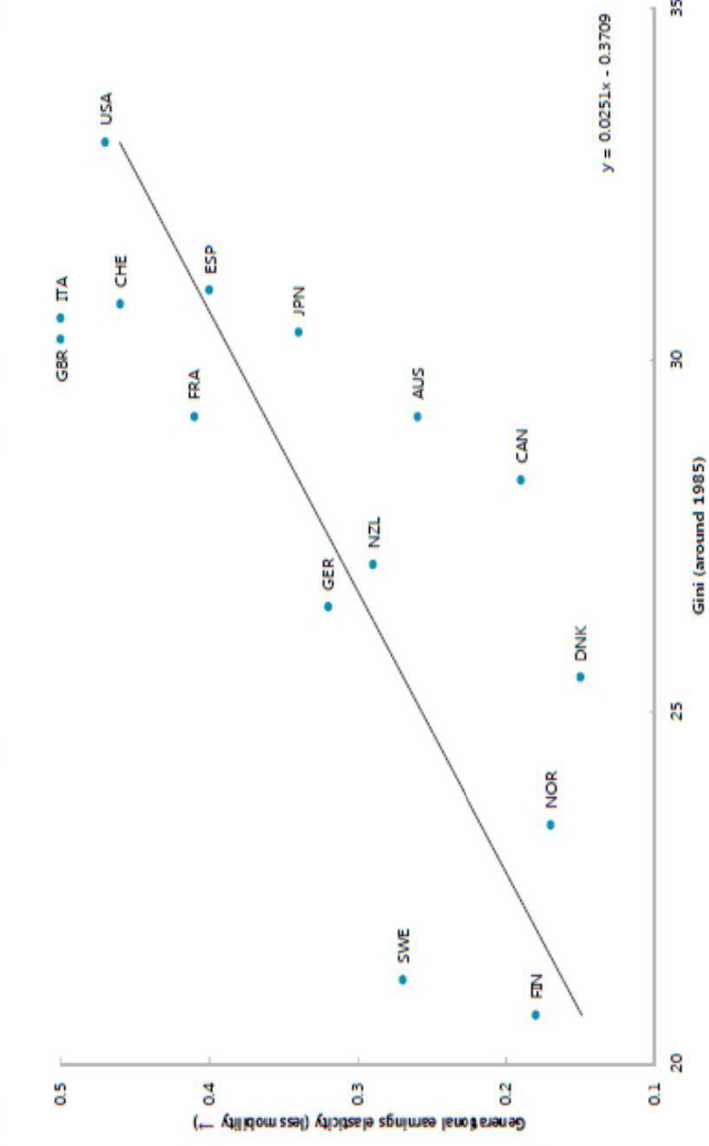
- It has been largely ignored in the literature, but gaining some attention since the crisis
- Romer and Romer (1998): “stable inflation and financial stability is good for *the poor*”
- Mainstream view is still that monetary policy has little to do with income inequality
- Two recent exceptions:
  - Brunnermeier and Sannikov (2013): monetary policy can redistribute wealth and systemic (tail) risk
  - Watkins (2014): QE as new “trickle-down economics”
- **US case: inequality rose sharply after crisis**

# Key Questions

- **Should CBs care about inequality? Can they play a role?**
  - “Stability is conducive to equity. To the extent that it stabilizes economic activity, monetary policy can help shield from poverty the lowest income classes of society, especially during recessions.” (Speech by Benoît Coeuré, ECB, October 2012)
  - Link to financial instability? (Rajan, 2010; van Treeck, 2012; Prasad, 2013): Income inequality → unsustainable debt-sustained growth → financial crisis
  - Link to long-run growth? (Ostry et al., 2014)
- **How do we define inequality?**
  - Income inequality (Gini, range, Thiel’s and Atkinson’s measures)
  - Wealth inequality (idem ditto)
  - Inequality of opportunity (intergenerational mobility, access to jobs, finance, etc.)
  - (Absolute and relative) poverty

# Economic mobility: an illustration

Figure 5. The Great Gatsby Curve: Income Inequality and Economic Mobility



Sources: Corak (2013); OECD; Luxembourg Income Study Database; Socio-Economic Database for Latin America and the Caribbean (SEDLAC); World Bank; Eurostat.

Note: The intergenerational earnings elasticity estimates in the chart are the elasticity between a father's income and a son's income. The upward slope of the line suggests that countries with a high inequality of income around 1985 (high Gini coefficients) had high intergenerational earnings elasticities. A high elasticity suggests a strong relationship between a father and son's income and less mobility of incomes across generations.

Source: IMF (2014)

# The distributional impact of monetary policy (Coibion, et al. 2012)

- **Income distribution channel:** wage increases vs. financial asset price increases
- **Financial segmentation:** higher-income actors are more connected to financial markets
- **Savings redistribution channel:** impact on savings and debt of (unanticipated) inflation
- **Earnings heterogeneity channel:** lowest wages and unemployment fluctuate most over business cycle
- **Portfolio channel:** upper-income households tend to hold more financial assets; lower-income fewer

# The difference between conventional and unconventional monetary policy

- Unconventional monetary policy: the (main) objective is no longer inflation stability
- The prime objectives (although they are not in mandate of central banks) become financial stability and repairing the monetary transmission mechanism
- Higher asset prices help ensure asset liquidity and funding conditions of banks, which indirectly leads to financial stability; central banks *may be* less inclined to “leaning against the wind”
- No study looking at the effect of UMP on income distribution

# The reason why we choose Japan

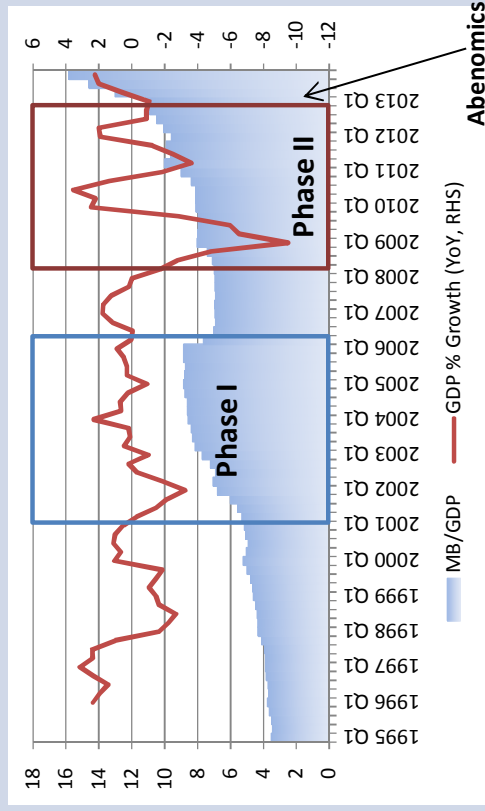
- A decade of unconventional monetary policy (UMP), with little change in prices and interest rates were at the ZLB (zero lower bound)
- Increasing inequality is stressed in the media (but the connection with monetary policy is hardly made)
- Recent monetary policy change – “quantitative and qualitative easing” (QQE) April 2013: With asset price rise, the connection between income inequality and monetary policy is becoming more visible to the public



# Three stages of UMP

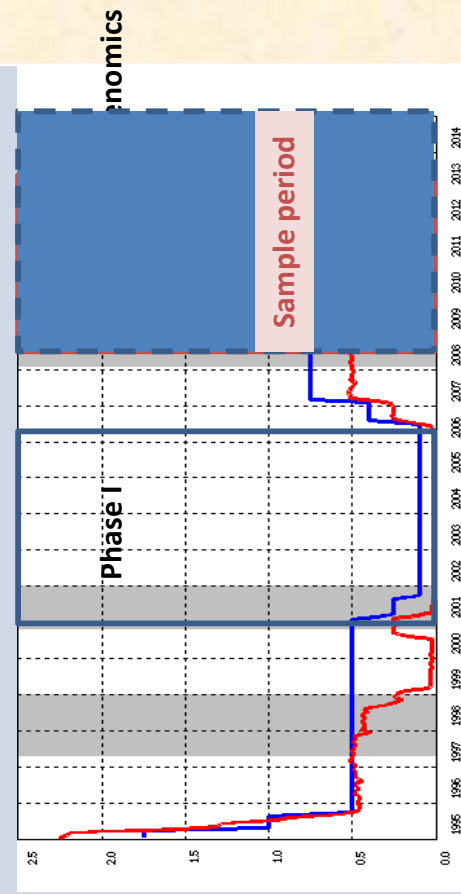
- Quantitative Easing (QE) 2001-2006 [Phase I]
- Comprehensive Monetary Easing (CME) 2008-2013 March [Phase II]
- Quantitative and Qualitative Easing (QQE): April 2013-present  
→ Abenomics' first arrow – largely exogenous [Abenomics]

Monetary base per GDP



Source: Cabinet office, BOJ

Overnight call rate (red) and lending rate (blue)

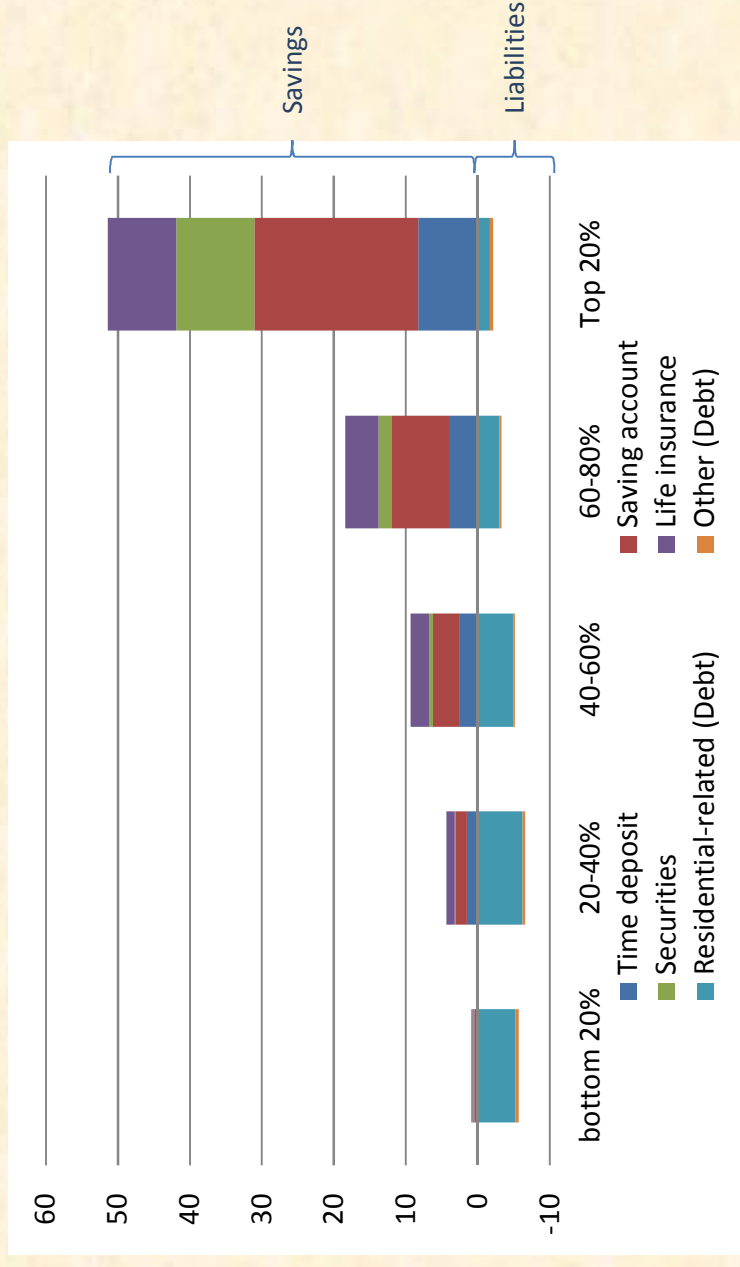


Gray line denotes recession:  
Source: BOJ

# Japanese household survey data (“*kakei tyousa*”)

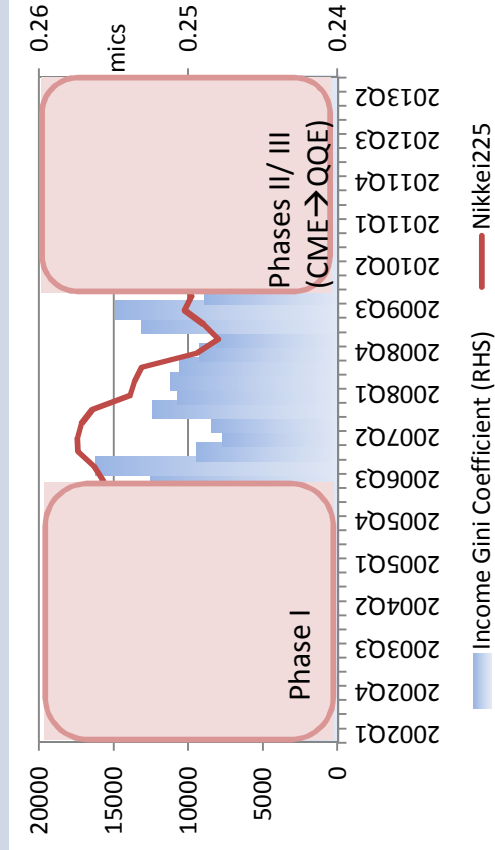
- Conducted by the Cabinet Office; sample size is about 7,000 households by surveys. <http://www.stat.go.jp/english/data/kakei/156index.htm> (English version contains very limited data)
- One option: **Income and expenditure survey**
  - Frequency: monthly; data taken from 1953 (available on the web after 2002), covers income, (very detailed) consumption, etc.; 1/6 of HHs is replaced every 6 months to ensure continuity
  - Major downside: income data only covers HHs whose head of HH is employed (excluding company presidents, boards of directors, unemployed, agriculture, self-employed, retired, lawyers and other professionals, etc.)
    - income data covers only ½ of Japanese HHs; expenditure data covers all HHs
- We use **the savings and liabilities survey**, which covers all types of households (HH; excl. foreigners, prisoners, in-hospital patients). The survey also reports **annual income (past 12 months)**: quarterly, 1/6 of household is replaced every 6 months: savings and income reported by decile or quintile; Savings by savings decile is only annual (2007-2012)
  - we can calculate Gini coefficient

# Composition of savings by savings amount quintile, all households



# Evolution of Gini coefficient of income inequality

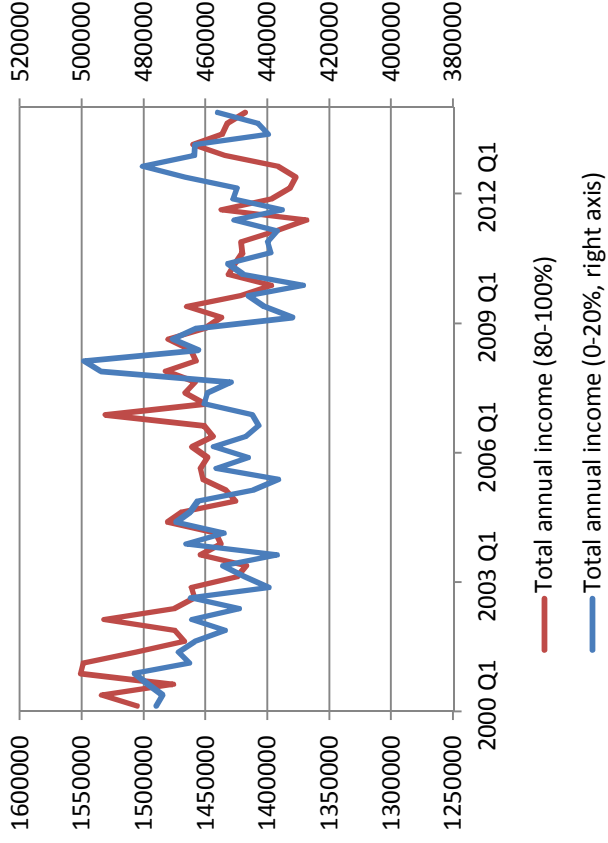
## GINI coefficient of Income and Nikkei 225



Source: Statistics Bureau of Japan, all HH

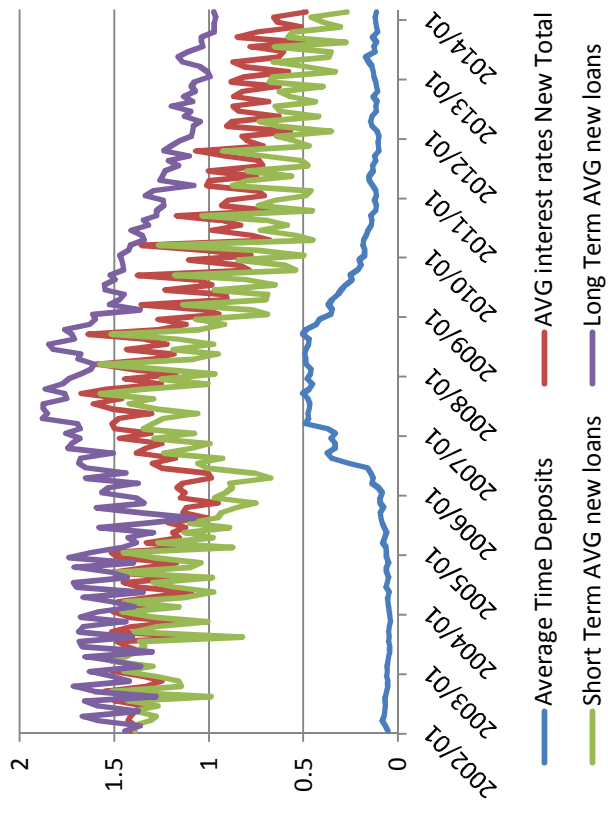
# Wages stagnant, interest rates still near zero

Total annual income of top and bottom income quintile of workers' HH



Source: Statistics Bureau of Japan, workers' HH

Selected Interest rates



Source: Bank of Japan

# VAR analysis

Vector of endogenous variables:

$$Y_t = [\Delta \log(MB_t), \Delta \log(S_t), \pi, (Gini_t)]$$

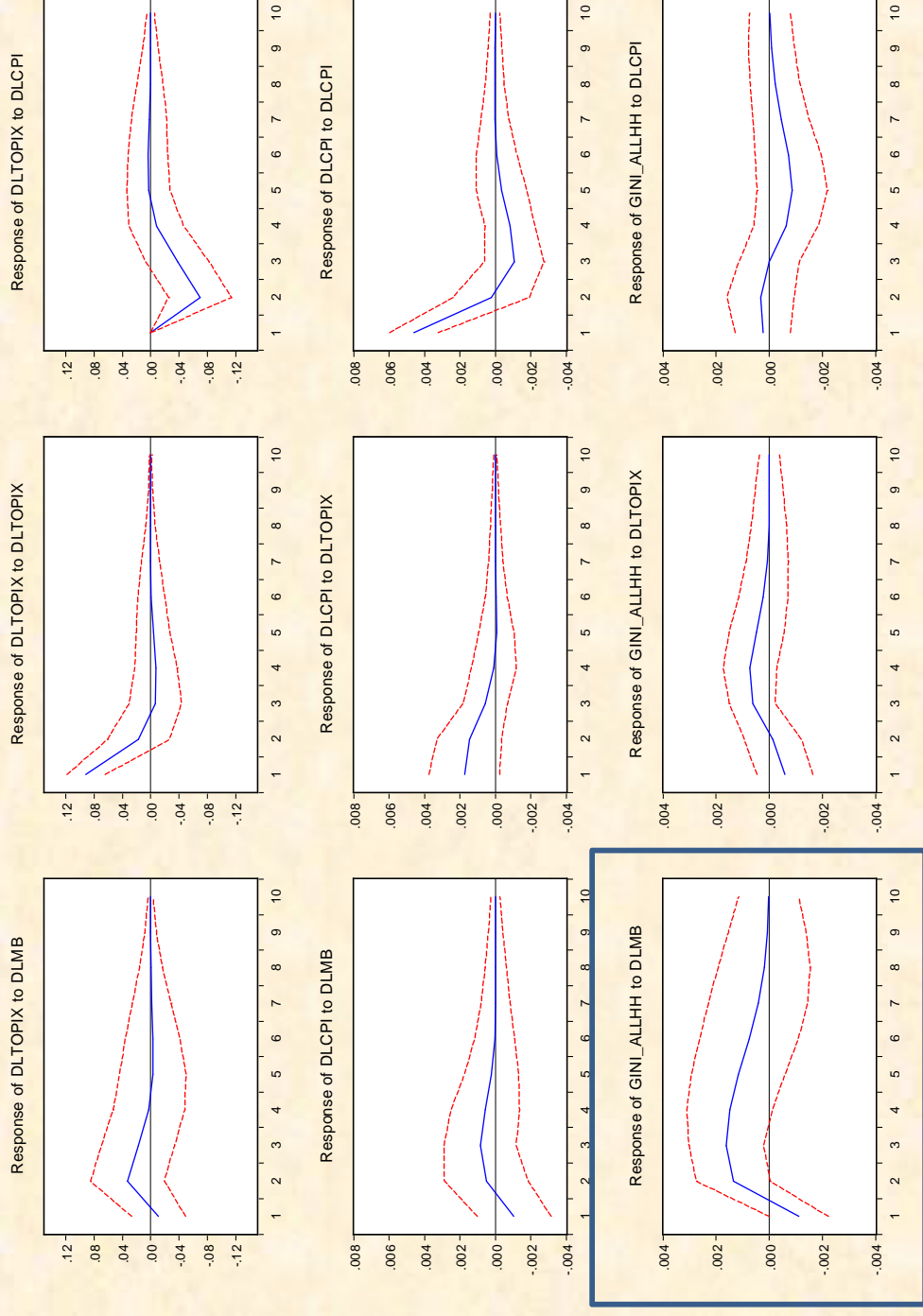
- **MB**: monetary base to GDP, seasonally adjusted
- **S**: Stock prices (Tokyo Stock Price Index, TOPIX)
- $\pi$ : quarterly CPI inflation, seasonally adjusted
- **Gini**: Gini coefficient of income inequality, based on household survey

*Cholesky decomposition is applied and ordering of the variables is as above*

- Sample period: 2008Q1 – 2013Q3 (Phase II and Abenomics), quarterly basis
- The period of earthquake (2011 Q1 and Q2, dummy variable) is included as an **exogenous** variable.
- Inflation is low throughout the sample period, but (very) recent up-tick
- MB and TOPIX have unit roots; we take natural logs of those variables and take the first difference.
- Optimal lag = 1 (determined by AIC, SIC, LM, HQ tests)

# Impulse response functions

Response to Cholesky One S.D. Innovations  $\pm 2$  S.E.



# Outcome of VAR analysis

- A shock in monetary base seems to amplify income inequality via portfolio channel
- Caveat: largest MB shock is at the end of sample period, still waiting on (crucial) Q4 data.
- Going forward, incoming data releases will provide valuable new information (e.g. interaction with consumption tax hike, etc.)



# Conclusions and policy implications

- First evidence that UMP shocks have an *upward* impact on income inequality through asset prices (portfolio channel)
- Complementary fiscal measures (e.g. transfers) may be desirable from an equity perspective when UMP is in place
- Japan's long experience with UMP may hold lessons for other countries – including the US, where UMP is being phased out, and the euro area and UK, where UMP may continue

# Potential extensions

- How will positive inflation affect inequality, given Japan's high saving rate? (Cash and deposits represent half of the total household financial assets, debt limited on average, but bottom 20% of households hold negative net assets)
- Introducing more structure and variables into the VAR model, e.g. wages, output gap, etc.
- Comparison with other countries with UMP

# Open questions – input welcome!

- How to define a monetary shock?
  - Unable to use interest rate as it has been zero  
→ we use monetary base to GDP instead; alternative: excess reserves
  - Ideally, we would like to have monetary shock to be exogenous (Coibion *et al.*, use residuals from Taylor rule, but not possible under ZLB)
- Lack of micro data (household level, individual level, city level, etc.)
- How to factor out demographic factors?

**Thank you!**