Uninsured Risk, Stagnation and Fiscal Policy

R. Anton Braun[1] Tomoyuki Nakajima[2]

[1]Federal Reserve Bank of Atlanta

[2]Kyoto University

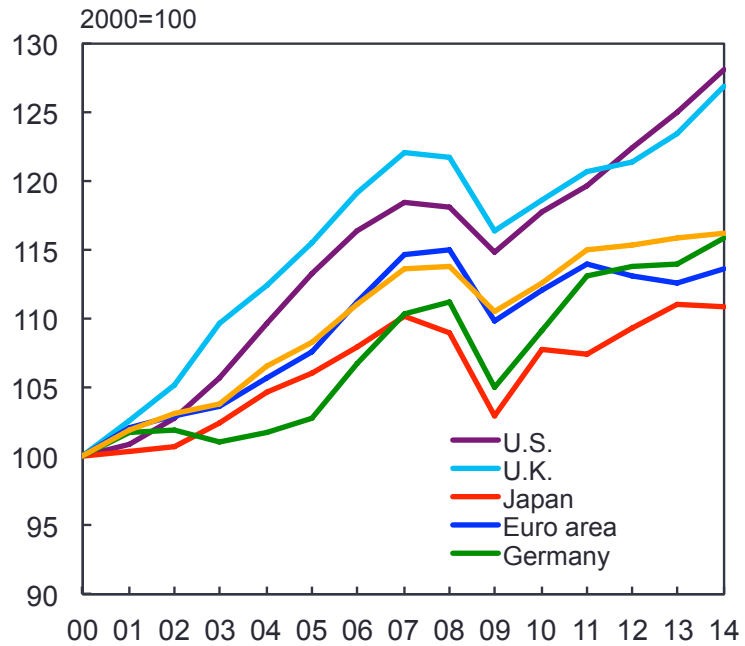
Canon Institute for Global Studies

June 1, 2016

These are our personal views and not those of the Federal Reserve System.

Motivation: some facts about stagnation: GDP

- Japan is in the midst of a protracted episode of depressed economic activity
- Per Capita GDP is depressed relative to Japan's peers.

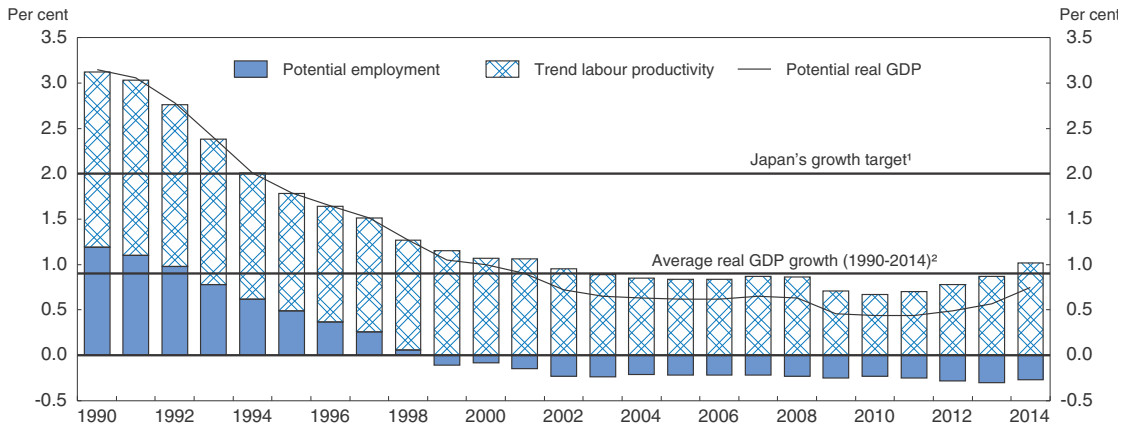


*Thanks to Masaaki Shirakawa.

Potential GDP

- Labor productivity growth is low but has been gradually increasing since 2010.
- Japan is loosing 1 million workers a year due to retirement.

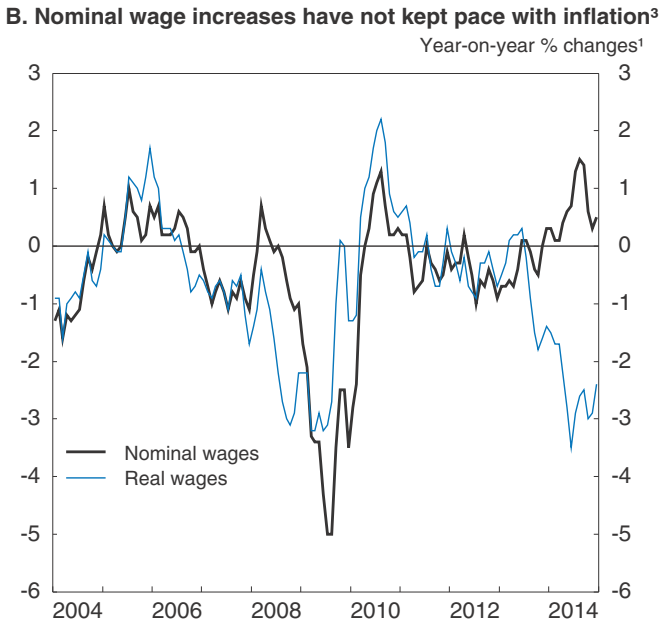
Figure 4. **Japan's potential GDP growth rate has fallen sharply since 1990**



*OECD Japan Survey 2015.

Average Wages

- Nominal wages are flat.
- Real wages are falling.
- Recent gains in labor productivity have not been passed through to real wages.

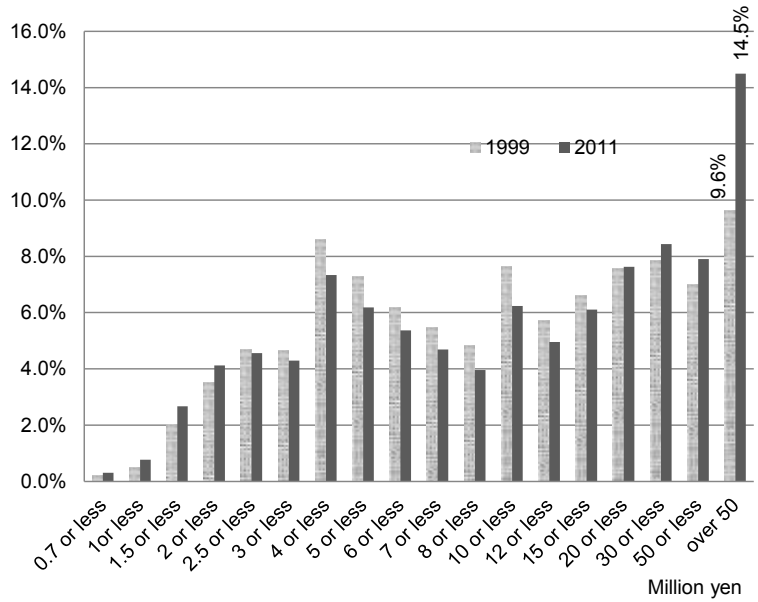


*OECD Japan Survey 2015.

Income Inequality in Japan

- Income equality is increasing.
- Share of total income by those in high income groups has risen between 1999 and 2011.

Figure 15 Share (percentage) of income by income group



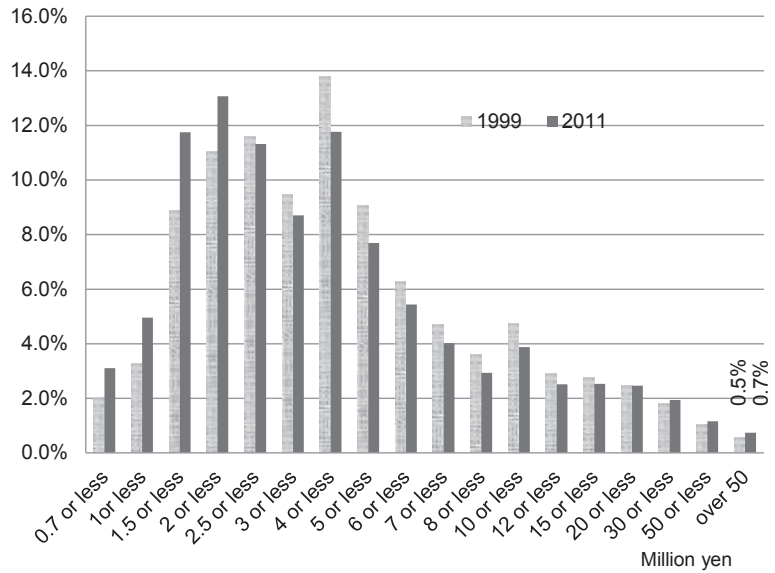
(Source) Adopted from table 1 (overview) of Shinsho income survey by the NTA

Naoki Oka: Public Policy Review Vol. 10 No. 3 October 2014.

Income Inequality in Japan

- Fraction of taxpayers in low income groups increased between 1999 and 2011.

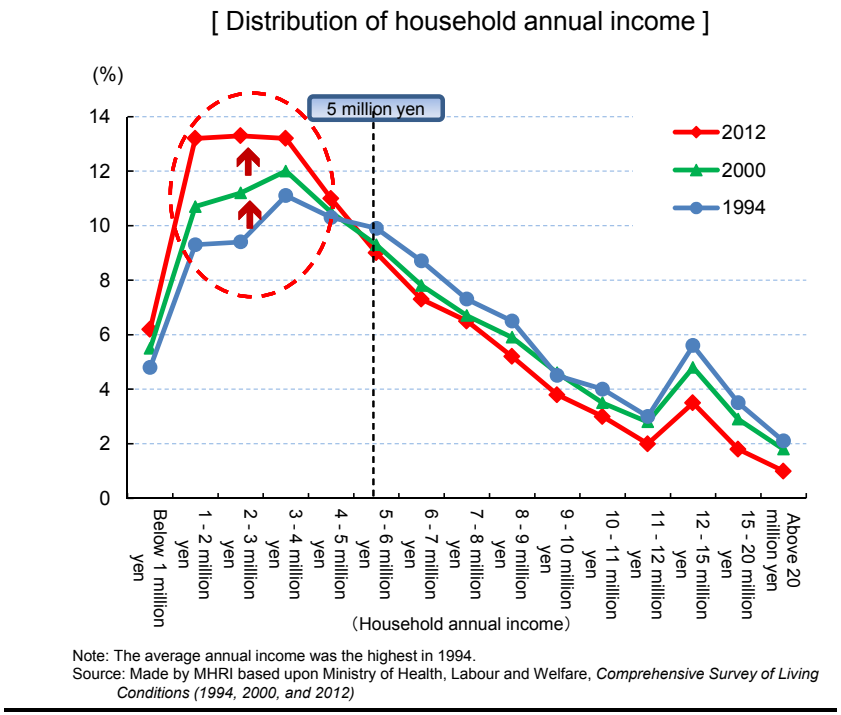
Figure 14 Share (percentage) of taxpayers by income groups



(Source) Adopted from table 1 (overview) of Shinsho income survey by the NTA

Naoki Oka: Public Policy Review Vol. 10 No. 3 October 2014.

Declining Middle Class



Note: The average annual income was the highest in 1994.
Source: Made by MHRI based upon Ministry of Health, Labour and Welfare, *Comprehensive Survey of Living Conditions (1994, 2000, and 2012)*

*Mizuho Research Institute: Japan's Inequality Today and Policy Issues (2015)

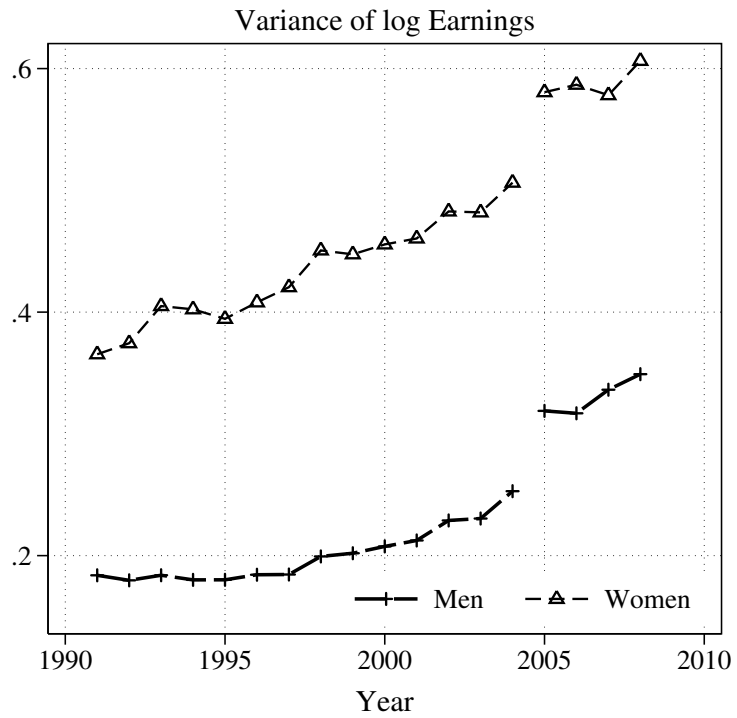
Polarization in Japan

- Wages of high earners (90 percentile) is increasing relative to median (50 percentile) wages.

Lise et al. (2013).

Polarization in Japan

- Variance of earnings is increasing.



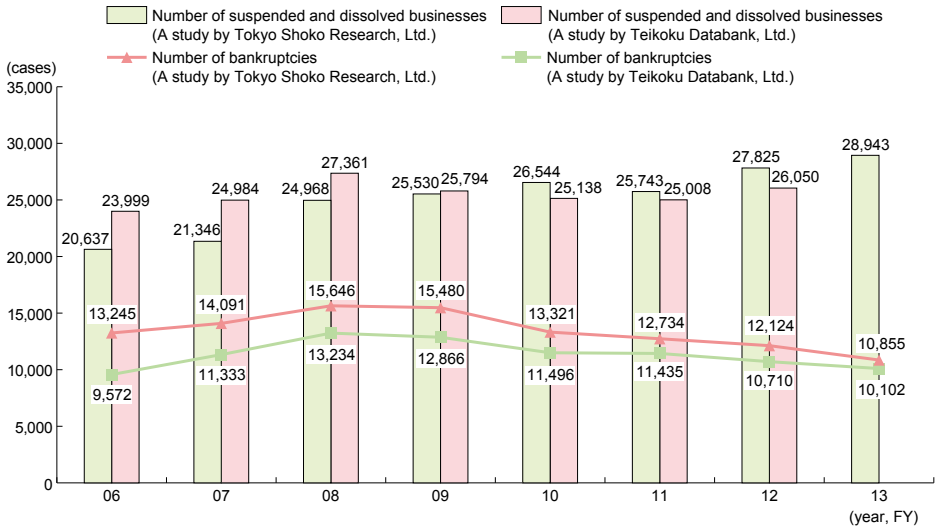
Lise et al. (2013).

Some factors underlying these changes

- Aging: Income drops as people move into retirement
- Earnings polarization
  - Regular versus non-regular wages.
  - Decline in lifetime employment guarantees.
  - Decline in routine middle skilled jobs.

Aging is resulting in higher firm dissolutions

Fig. 1-1-25 Numbers of business shutdowns, closures and dissolutions, and bankruptcies



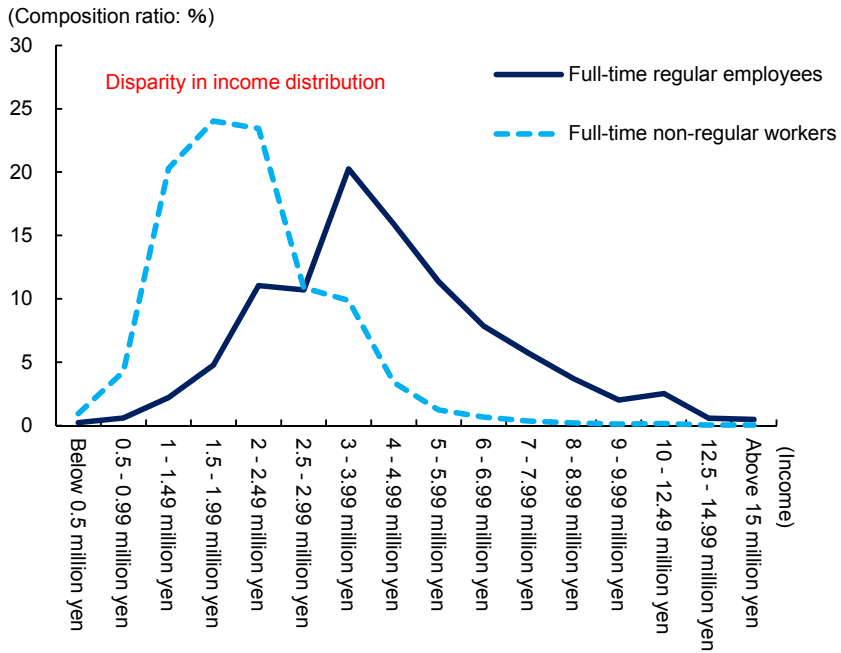
Source: Tokyo Shoko Research, Ltd., Teikoku Databank, Ltd.
Note: The figures presented by Tokyo Shoko Research, Ltd. are based on year, and those presented by Teikoku Databank, Ltd. are based on fiscal year.

*2014 White Paper on Small and Medium Enterprises in Japan

- Higher firm dissolutions imply less job security.

Earnings gap between regular and non-regular workers

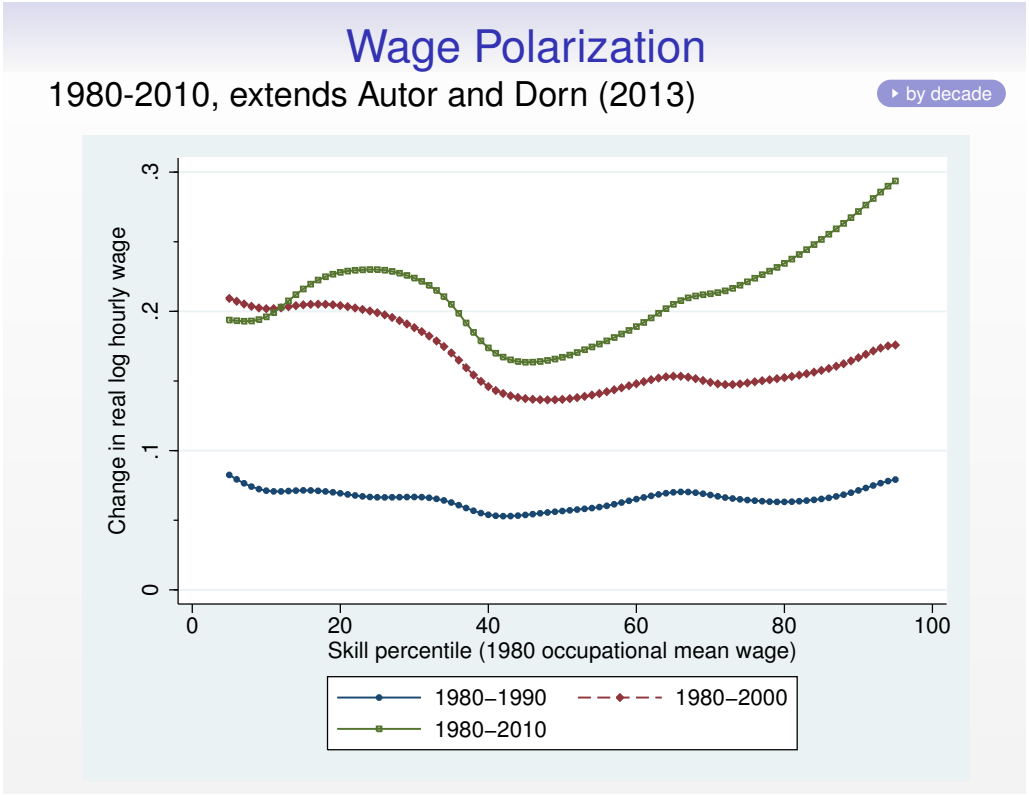
[Income distribution of full-time regular employees and full-time non-regular workers]



Note: Income shown here is annual income (including taxes) from regular work. Full-time work refers to working over 35 hours in a week and over 200 days in a year.
Source: Made by MHRI based upon Ministry of Internal Affairs and Communications, *Basic Survey on Employment Structure (2012)*

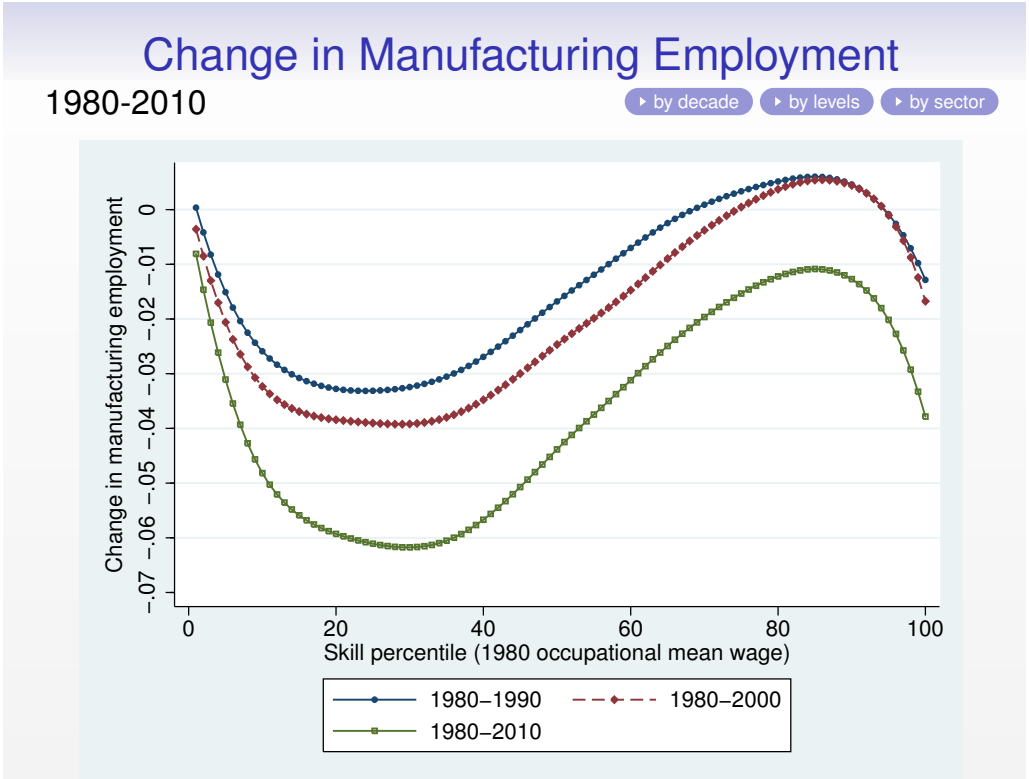
*Mizuho Research Institute: Japan's Inequality Today and Policy Issues (2015)

Labor market polarization is also occurring in U.S.



Lee and Shin (2016).

U.S. Polarization is particularly pronounced in manufacturing

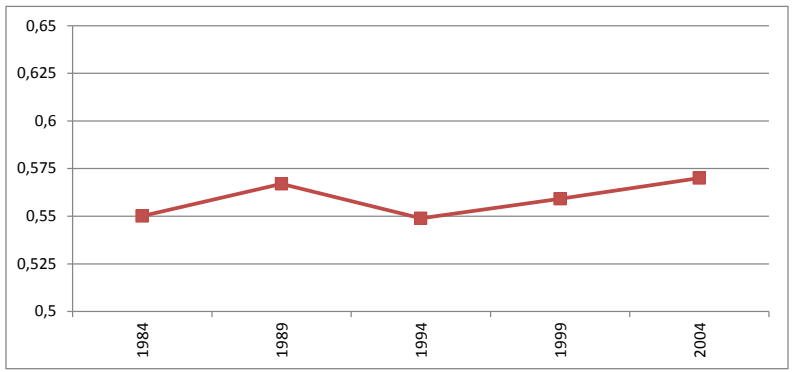


Lee and Shin (2016).

Wealth Inequality in Japan

Higher earnings inequality has been associated with an increase in wealth inequality.

Figure 2.4: Gini coefficient for financial asset holdings



Source: Authors' calculations using microdata of the NSFIE.

Note: For the calculation, total household asset holdings is divided by the square root of the number of household members.

Ohtake et al. (2013).

Summary

- Secular stagnation: Japan's economy is depressed (per capita GDP is low relative Japan's peers.)
- This is occurring against a background of
  - Earnings polarization (Lise, Sudo, Suzuki, Yamada and Yamada, 2014) that is concentrated in periods of recession (Furukawa and Toyoda, 2013).
  - Earnings of higher skilled workers are increasing while earnings of middle-skilled workers are growing more slowly or even falling.
  - Wealth inequality is rising (Ohtake et. al., 2013 and Lise et. al., 2014).
- These same patterns can be observed in other advanced economies too.

These observations are related.

- Autor (2010) argues that earnings polarization is due to a bias in technological change.
- Automation is destroying medium skilled routine occupations.
- International integration of labor markets is another contributing factor.
- Our first objective: show that automation and international integration act to:
  - depress aggregate economic activity
  - increase wealth inequality.

Our second objective: consider how should fiscal policy respond.

- Three criteria:
  1. Bring an end to stagnation by boosting output.
  2. Reduce wealth inequality
  3. Raise welfare.

Conventional prescriptions for fiscal policy

- Premise of current policy in Japan is that stagnation can be reversed by:
  - Easy monetary policy.
  - Fiscal stimulus (higher deficit spending).
  - Structural reforms.
- Piketty's recommendations for responding to wealth and earnings inequality:
  - Increase the tax rate on capital.
  - He is silent about the effects of his recommendation on aggregate economic activity.
- Piketty's recommendation is a bad policy in our model.

How we make these points.

- Develop a model that relates stagnation and increasing wealth inequality to uninsured earnings risk.
- Show that the model can account for the observations from Japan.
- An increase in earnings risk for high skilled jobs lowers output and increases wealth inequality.
- Use the model to analyze alternative fiscal policies in terms of their ability to boost output, reduce wealth inequality, improve welfare.

An overview of our model: households

- Blanchard-Yaari perpetual youth model. New households are born at every moment of time and other households pass away. Life-expectancy is uncertain.
- Households are endowed with two types of labor
  1. unskilled labor (non-accumulable) but safe.
  2. human capital that can be augmented via investment but is risky.
- Households can save by accumulating physical capital or acquiring government debt. Both are risk free.
- Households value consumption but supply both types of labor inelastically.

Model overview: firms

1. Perfectly competitive firms use physical capital, skilled labor and unskilled labor to produce a single good with a constant returns to scale technology.
2. Output is used for consumption, investment in physical capital and investment in human capital.

Model overview: government and equilibrium

- Government
  - Raises revenue using taxes in consumption, capital and wages.
  - Uses proceeds to finance transfers (lumpsum) and government purchases.
  - Government also issues debt.
- Equilibrium
  - Closed economy: interest rate and wage rates are determined endogenously.
  - Results based on a comparison across steady-states.

Solving the model.

- Our model has a rich set of implications but does not admit a closed form solution.
- We solve it on a computer instead. This requires us to specify the precise values for the model's parameters.
- We choose model parameters to capture Japan's situation.

Parameterization of the model

- Model period is one year.
- Individuals live on average 83.7 years.
- Cobb-Douglas production technology (capital share is 0.3, skilled labor share is 0.45, unskilled labor share is 0.25).
- Earnings risk in 1991: 0.246 log basis points.
- Overall tax rate on capital (τ_r): 0.63 (corporate and household).
- Overall labor tax rate (tau_w): 0.32.
- Consumption tax rate (τ_c): 0.08
- Government purchases: 21% of GDP.
- Debt-GDP ratio (net) 1.5.

An increase in earnings inequality

- We estimate that the standard deviation of earnings has increased from 0.246 log basis points in 1991 to 0.3 in 2015.
- An increase of earnings inequality of this magnitude has the following effects:
  - Output (Y) declines by 2.5%
  - Public transfers (τ) decline by 3.33% (Lower tax revenues).
  - The standard deviation of log wealth (σ_a) increases by 0.255.
  - Household welfare falls.
- From this we see that an increase in earnings inequality reproduces the observations about stagnation and rising wealth inequality that we discussed in the introduction.

Assessing Piketty's proposal in our model

- Higher earnings inequality translates into higher wealth inequality. According to Piketty the way to deal with higher wealth inequality is to tax capital.

	High earnings inequality	Piketty Proposal
τ_r	0.63	0.669
$\Delta \ln \tau$	-0.0333	
$\Delta \sigma_a$	0.255	
$\Delta \ln Y$	-0.0252	
ΔU	-0.2398	

*All changes are relative to the baseline specification.

Assessing Piketty's proposal in our model

- Higher earnings inequality translates into higher wealth inequality. According to Piketty the way to deal with higher wealth inequality is to tax capital.
- We use the proceeds from this tax to increase transfers by 2% above their baseline value.

	High earnings inequality	Piketty Proposal
τ_r	0.63	0.669
$\Delta \ln \tau$	-0.0333	0.02
$\Delta \sigma_a$	0.255	
$\Delta \ln Y$	-0.0252	
ΔU	-0.2398	

*All changes are relative to the baseline specification.

Assessing Piketty's proposal in our model

- Higher earnings inequality translates into higher wealth inequality. According to Piketty the way to deal with higher wealth inequality is to tax capital.
- We use the proceeds from this tax to increase transfers by 2%.
- Wealth inequality increases.

	High earnings inequality	Piketty Proposal
τ_r	0.63	0.669
$\Delta \ln \tau$	-0.0333	0.02
$\Delta \sigma_a$	0.255	0.335
$\Delta \ln Y$	-0.0252	
ΔU	-0.2398	

*All changes are relative to the baseline specification.

Assessing Piketty's proposal in our model

- Higher earnings inequality translates into higher wealth inequality. According to Piketty the way to deal with higher wealth inequality is to tax capital.
- We use the proceeds from this tax to increase transfers by 2%.
- Wealth inequality increases.
- Larger output declines

	High earnings inequality	Piketty Proposal
τ_r	0.63	0.669
$\Delta \ln \tau$	-0.0333	0.02
$\Delta \sigma_a$	0.255	0.335
$\Delta \ln Y$	-0.0252	-0.05
ΔU	-0.2398	

*All changes are relative to the baseline specification.

Assessing Piketty's proposal in our model

- Higher earnings inequality translates into higher wealth inequality. According to Piketty the way to deal with higher wealth inequality is to tax capital.
- Wealth inequality increases.
- Larger output declines.
- Households are worse off.

	High earnings inequality	Piketty Proposal
τ_r	0.63	0.669
$\Delta \ln \tau$	-0.0333	0.02
$\Delta \sigma_a$	0.255	0.335
$\Delta \ln Y$	-0.0252	-0.05
ΔU	-0.2398	-0.2719

*All changes are relative to the baseline specification.

How should fiscal policy respond? Lower the tax rate on capital instead!

- Let's now consider a reduction in the capital tax rate instead. Size of the reduction is chosen to restore output to its baseline level.

	High earnings inequality	Lower τ_r
τ_r	0.63	0.581
$\Delta \ln \tau$	-0.0333	
$\Delta \sigma_a$	0.255	
$\Delta \ln Y$	-0.0252	0.00
ΔU	-0.2398	

*All changes are relative to the baseline specification.

How should fiscal policy respond? Lower the tax rate on capital instead!

- Let's now consider a reduction in the capital tax rate instead. Size of the reduction is chosen to restore output to its baseline level.
- Public transfers to the poor fall by more.
- But wealth inequality improves.

	High earnings inequality	Lower τ_r
τ_r	0.63	0.581
$\Delta \ln \tau$	-0.0333	-0.0945
$\Delta \sigma_a$	0.255	0.171
$\Delta \ln Y$	-0.0252	0.00
ΔU	-0.2398	

*All changes are relative to the baseline specification.

How should fiscal policy respond? Lower the tax rate on capital instead!

- Let's now consider a reduction in the capital tax rate instead. Size of the reduction is chosen to restore output to its baseline level.
- Lower public transfers to the poor and yet lower wealth inequality.
- Households welfare improves.

	High earnings inequality	Lower τ_r
τ_r	0.63	0.581
$\Delta \ln \tau$	-0.0333	-0.0945
$\Delta \sigma_a$	0.255	0.171
$\Delta \ln Y$	-0.0252	0.00
ΔU	-0.2398	-0.2149

*All changes are relative to the baseline specification.

How much can the tax rate on capital be reduced?

- Given that a lower tax rate on capital has all of these attractive properties the question arises as to how much it can be reduced?
- It can be reduced enough to reduce wealth-inequality to its baseline (1991) level ($\tau_r = 0.435$).
- However, it cannot be reduced enough to restore utility to its baseline level.
- Utility increases when τ_r is reduced from 0.63 to 0.45. However, it falls if τ_r is reduced below this level.
- Households value public transfers. But, they would prefer for them to be reduced well below their current levels.

Lowering the labor tax is also an even better policy

- Public transfers to the poor fall and yet wealth inequality is reduced.
- Larger improvement in welfare.

	High earnings inequality	Lower τ_w
τ_w	0.32	0.306
$\Delta \ln \tau$	-0.0333	-0.1792
$\Delta \sigma_a$	0.255	0.167
$\Delta \ln Y$	-0.0252	0.00
ΔU	-0.2398	-0.0639

*All changes are relative to the baseline specification.

The consumption tax

- Japan increased the consumption tax rate in 2014 from 5 to 8 percent and there is a plan to increase it again in 2017 to 10 percent.
- How does this policy affect output, wealth inequality and transfers?
- In our model an increase in the consumption tax has the following effects.
  - It depresses output.
  - It lowers welfare.
  - However, it reduces wealth-inequality.
- The consumption tax is a tax on the present value of lifetime income or simply wealth. Increasing this tax reduces the incentive for households to accumulate wealth over their lifetime.

- The goal of my presentation has been to provide you with a nontechnical overview of our model and our main results.
  - According to our model the recent decision to lower the corporate tax rate in Japan from 37% to 29.74% is good public policy and there is an opportunity to reduce it even further.
  - Reducing the labor tax rate would be even better.
  - The premise in both cases is that social insurance expenditures are reduced at the same time.
- A complete description of our model and results can be found in our paper: Braun and Nakajima (2016) "Uninsured Risk, Stagnation and Fiscal Policy".

Thank You!