USE OF STATISTICS AND INTELLIGENCE IN CENTRAL BANKING

Masaaki Shirakawa
Aoyama Gakuin University, Tokyo, Japan

Third IMF Statistical Forum

Jointly hosted by IMF and Bundesbank

November 19, 2015

My presentation today

- Basically, musings over data and information that are so crucial in good policy making based on my 39 year experience at BOJ
- Covers both statistics and intelligence
- Not necessarily focused on the topic of this session (“The Relevance of Micro Data for Evidenced-based Policymaking”)
- Explains about great benefits as well as potential pitfalls and challenges in utilizing statistics and intelligence

Statistics and intelligence for central banks

Statistics

- Quantifiable information
- Covers both publicly available statistics and privately collected data (through supervisory information)

Intelligence

- Non-quantifiable information
- Private information gained through various contacts with financial institutions, market participants and businesses

The outline of my presentation

1. The importance of statistics and intelligence
2. Some potential pitfalls of evidenced-based policy
3. Some Challenges: “big data” and “granular data”
4. Organizational Issues of central banks to make best use of statistics and intelligence

PART 1: The Importance of Statistics and Intelligence

Data and intelligence: BOJ's case

Statistics

- A heavy user of statistics
  - Monetary policy
  - Financial supervision and macro-prudential policy
  - Payment system policy
- A producer of statistics
  - Money stock, flow of funds, balance of payments, corporate price index, "TANKAN" (business survey) etc.
- A collector of data
  - Vast amount of data is collected through supervisory process. Those data is not published as a statistics.

Intelligence

- Gained through on-site examination and off-sight monitoring of financial institutions that have account with BOJ
- Gained through business contacts (network of head office and 32 branches)

Monetary policy aiming at price stability has greatly benefitted from good (macro) statistics

- Statistics plays an important role on various fronts.
  - Numerical expression of price stability as an objective of monetary policy (goal, target, definition etc.)
  - Forecast
  - Analysis
  - Communication
- Statistics supported independence, accountability and transparency of central bank's monetary policy.
  - "Better data. Better lives" (The second World Statistics Day on Oct. 20, 2015)
- In recent years, there is a strong interest in "big data" in central banking community and economic forecasting community alike

Statistics in financial stability

- Since Asian financial crisis erupted, enormous efforts has been made internationally to improve the quality of statistics as well as data availability.
- The efforts is accelerated especially after Global Financial Crisis. Various initiatives are endorsed by G20.
- One of the noteworthy recent developments is the efforts at collecting more “granular data” from financial institutions.

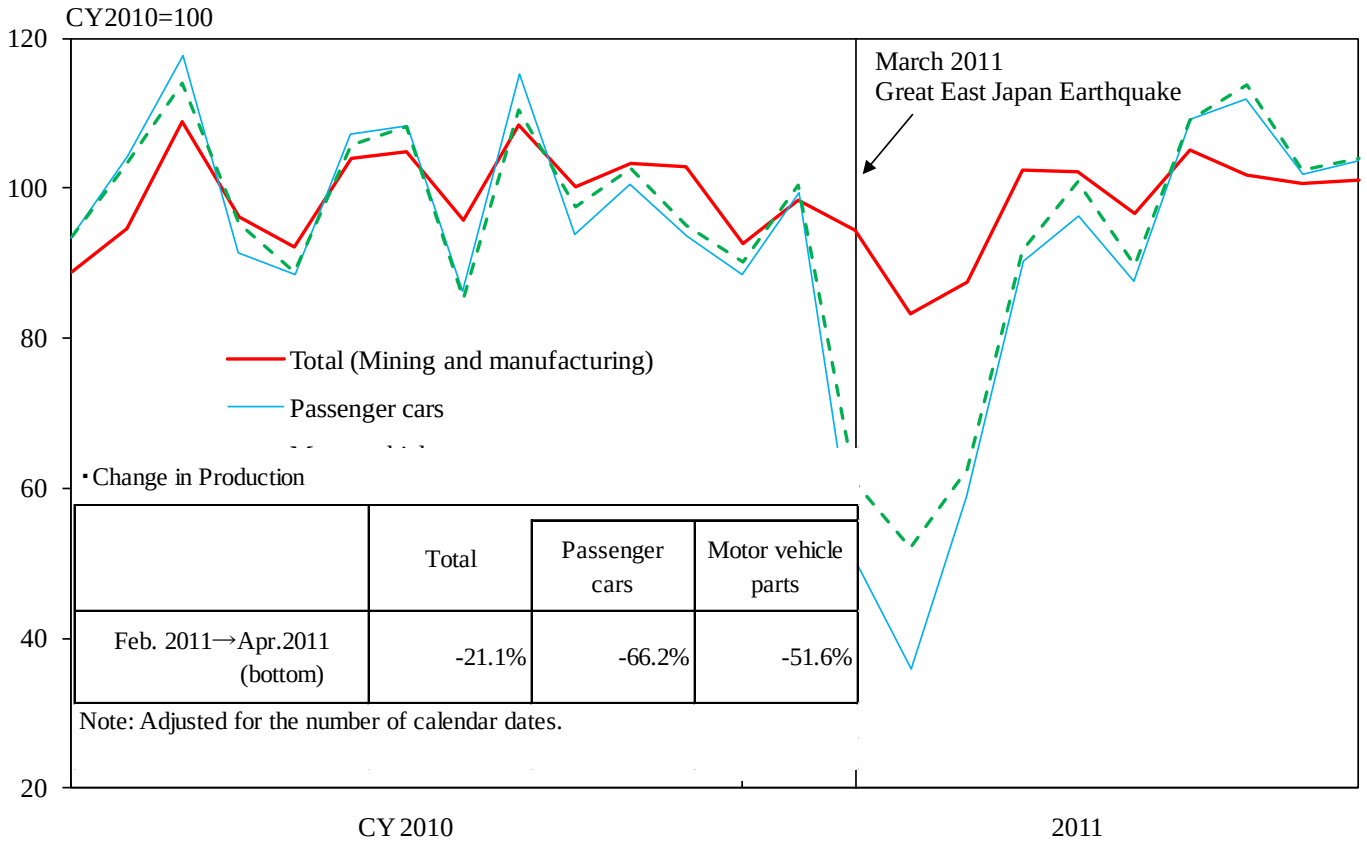
Intelligence gained through contact with private sector is also important

- Intelligence also plays an important role:
  - Facilitate timely recognition
  - Highlight heterogeneity of economy
    - Analysis based on “representative agent” is often misleading as is shown in before, during and after global financial crisis.
  - Providing “foods for thought” for posing right questions and stimulating new thinking

Two events vividly show their importance during my central bank life:

- The Great East Japan Earthquake in 2011
- Period after bubble bursting in early 1990

Case 1:The Great East Japan Earthquake in 2011: Disruption of supply-chain and shortage of electricity



・Change in Production

	Total	Passenger cars	Motor vehicle parts
Feb. 2011→Apr.2011 (bottom)	-21.1%	-66.2%	-51.6%

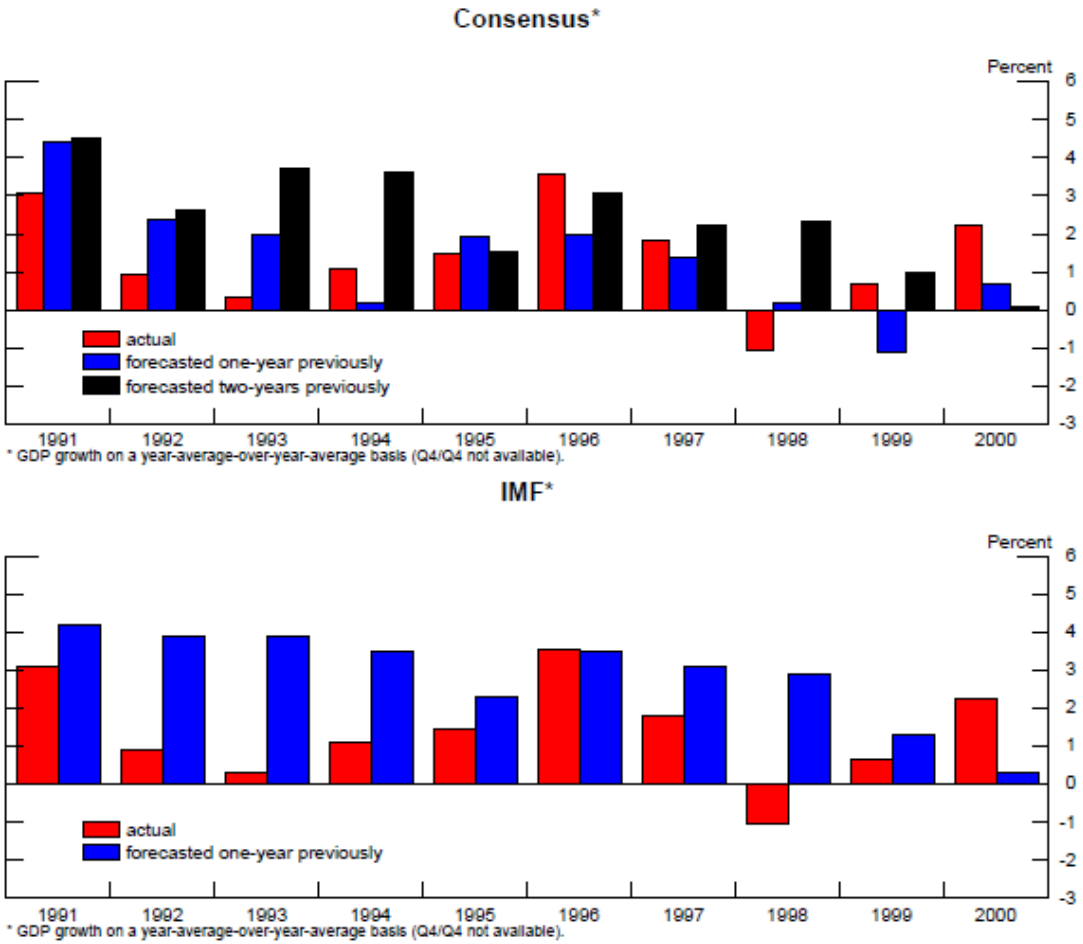
Note: Adjusted for the number of calendar dates.

Source: Ministry of Economy, Trade and Industry, "Indices of Industrial Production."

Case 2: Period after bubble bursting in Japan in early 1990s: optimistic forecast

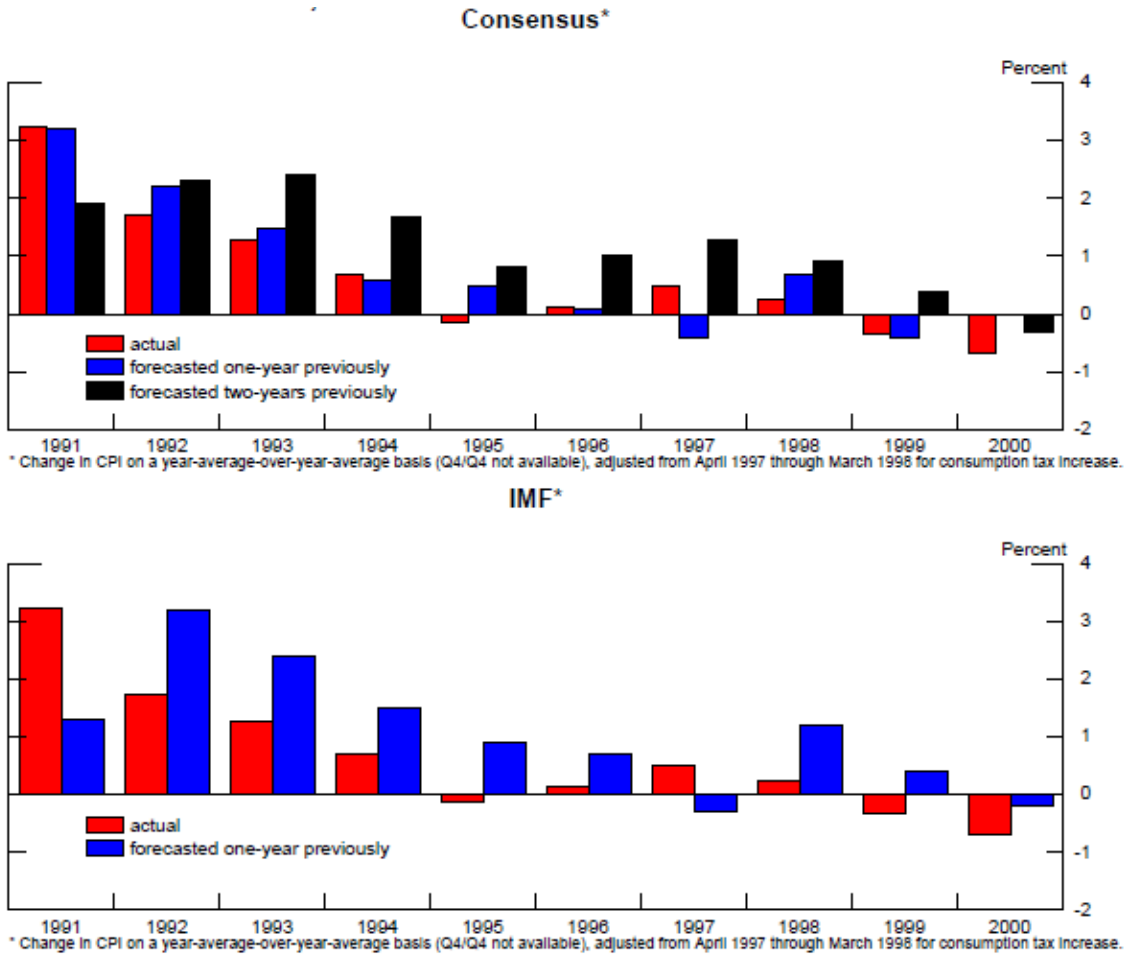
- GDP growth rate declined and inflation rate came down. Macro economists' forecasts were grossly optimistic. ⇒SLIDE 12, 13
- Growth of bank lending declined and lending standard tightened very sharply. ⇒SLIDE 14
- The analysis of and the response to the early sign of dysfunction of banking sector is sharply divided
- What unfolded in many advanced economies after Global Financial Crisis was quite similar to Japan's experience

Forecast error of growth



Source: Aherane et al, “Preventing deflation”, June 2002

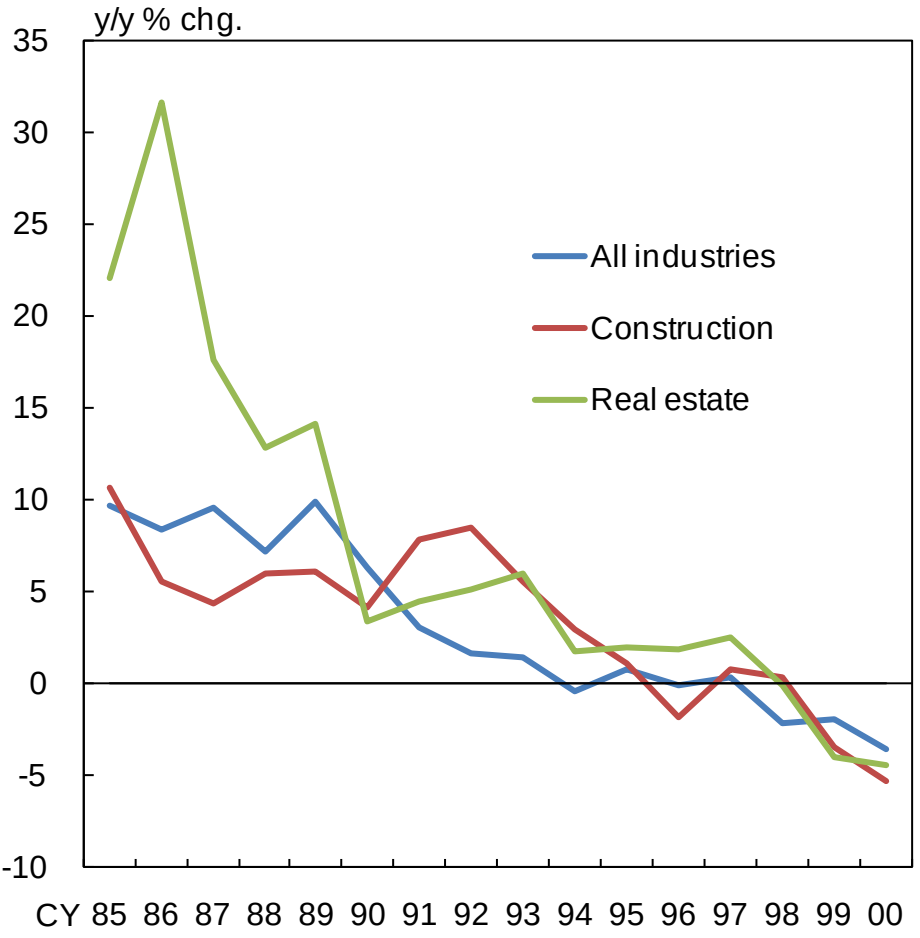
Forecast error of inflation rate



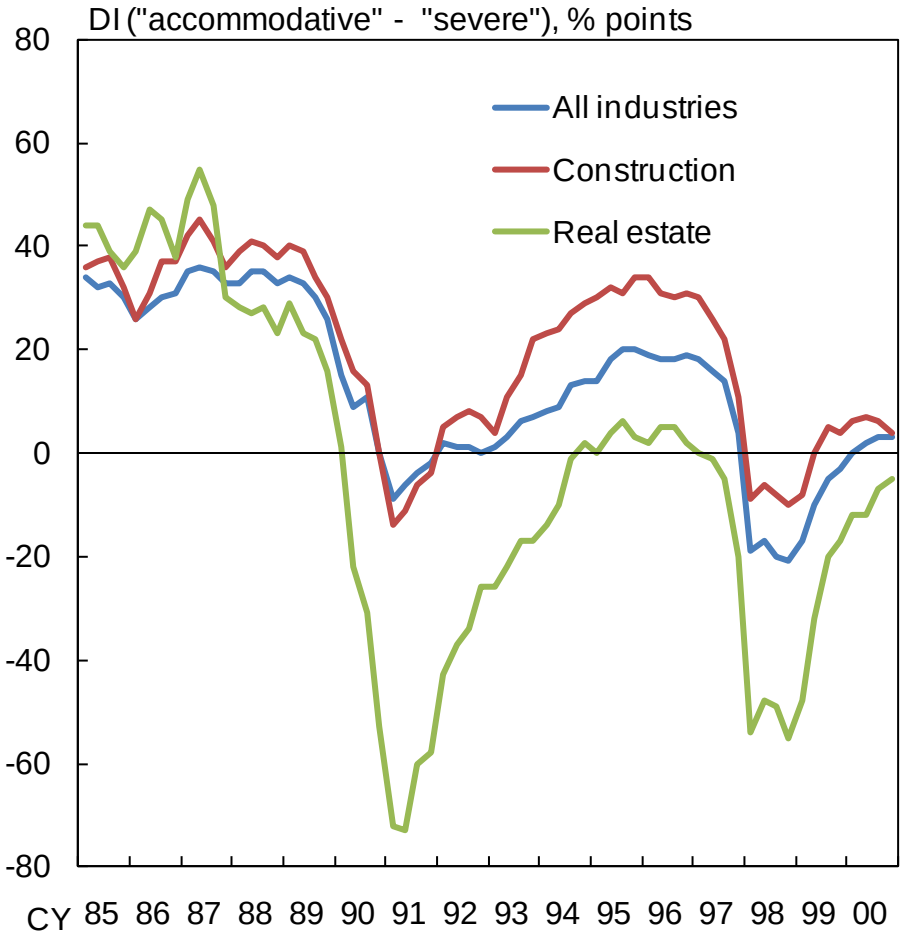
Source: Aherane et al, “Preventing deflation”, June 2002

Weak bank lending and tightened lending standard

Bank lending



Lending attitudes (TANKAN survey)



My recollection on macro economic forecasting and policy debate in early 1990s

Macro economic forecasting

- Subtle difference between economists with traditional macro economics background and practitioners who had “hands-on” knowledge on financial institution and property markets. The latter were relatively less optimistic.

Dysfunction of banking sector

- Two different schools of thought
  - “Slow growth of lending is just reflecting weak economy“
  - “Slow growth of lending is caused by capital shortage of banks as well”
- Economists with traditional macro economics background tended to be dismissive of the latter view.
- Practitioners could not successfully present the case for bank recapitalization, partly because of lack of clear intellectual framework based on macro economic and financial economics in addition to oft-cited political unpopularity.

Intelligence gained through contacts with private sector as heuristic inputs

- In retrospect, a good combination of relevant economic theory, timely observation of what is actually happening and careful reading of past history was most needed.
- Before Global Financial Crisis, “lessons from Japan’s experience” were frequently discussed by policy makers and academics alike outside Japan but “lessons” that are supposed to be learned were not learned. What did happen is more or less the same.
- Of course, “intelligence” gained through contacts with businesses and financial institutions alone does not guarantee good economic policy making but it could be a heuristic inputs for good economic policy making.

PART 2: Some Potential Pitfalls of Evidence-based Policy

Inflation targeting as evidenced based policy: viewed from statistics

- Above-mentioned general remarks about the role of statistics in the area of monetary policy does apply to inflation targeting. Statistics could contribute to good monetary policy by improving measurement and enhancing accountability and transparency.
- At the same time, we have to be careful about potential pitfalls of evidence-based policy as well. Especially, we have to avoid the following pitfalls:
  - Tendencies to neglect important information that cannot be easily measured
  - False sense of precision

Remarks on measurement of CPI in ECB press conference

First, let me remind you that some years ago in the US there was a commission headed by an economist called Boskin to examine the measurement of inflation. And the conclusion of the Boskin Commission was that the way inflation is measured, in particular the type of indexes that are used, Laspeyres indexes, tend to exaggerate the measurement of inflation, in the case of the US by 1.5 percentage points. So, if the target would be zero, very likely we would be targeting a negative inflation rate. So there is a measurement problem with inflation which justifies that the target for inflation should be above zero.

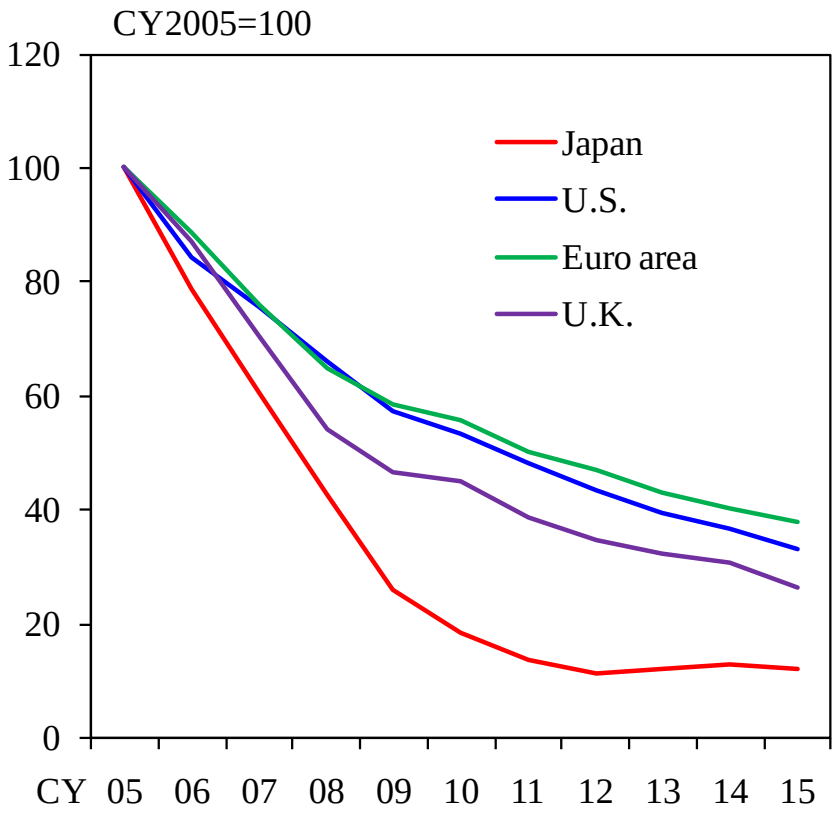
(Vice president, Constâncio, October 22, 2015)

Issue of quality adjustment method of CPI

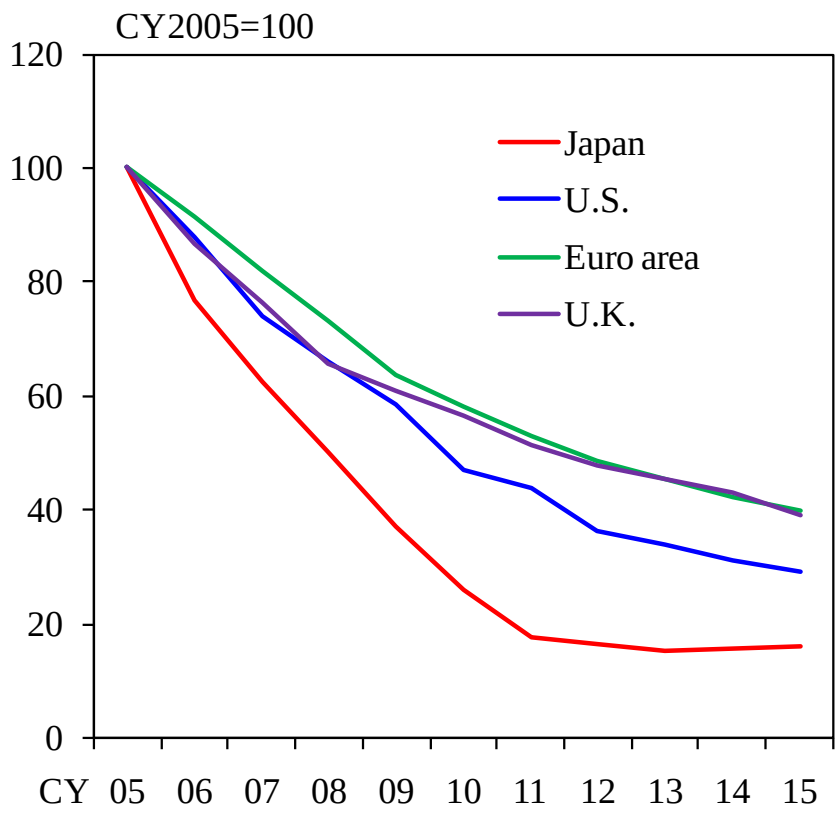
- Viewed from statistics, upward bias of CPI inflation rate due to Laspeyres index and quality change is often cited as a rationale for 2% inflation target.
- To what extent is quality adjustment in CPI accurate and consistent overt time and items?
- Some examples
  - Personal computer, flat TV etc. ⇒SLIDE 21, 22
  - Housing services ⇒SLIDE 23

International comparison of price development of personal computer and flat TV in CPI

(1) Personal Computers and Peripheral Equipment



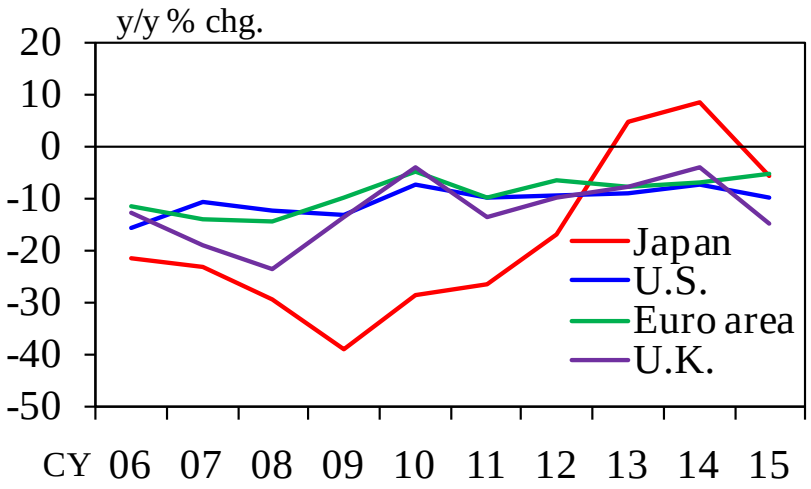
(2) Flat TV, Video and Audio Equipments



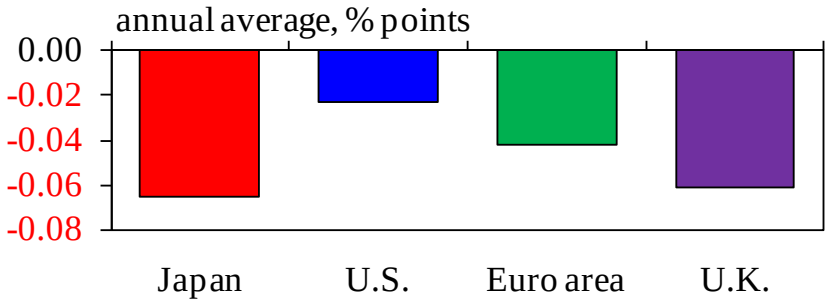
How can we explain such huge international difference? :Quality adjustment as a culprit

(1) Personal Computers and Peripheral Equipment

(a) Year-on-year rate

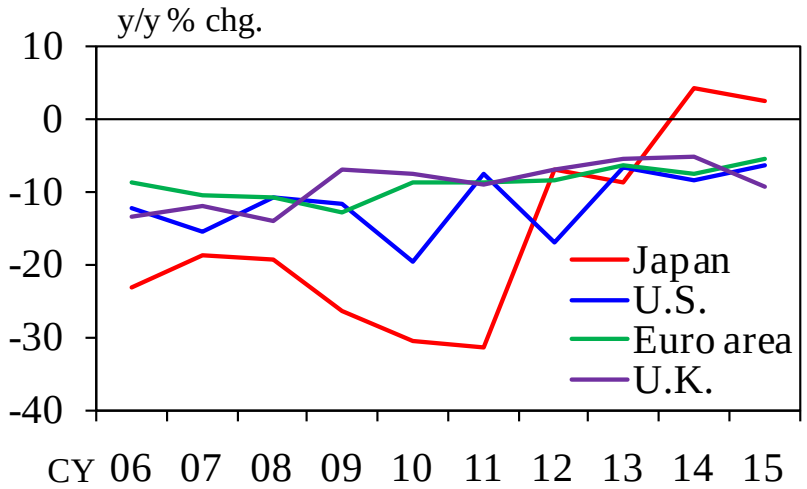


(b) Contributions to yearly changes of CPI all items (10years average)



(2) Flat TV, Video and Audio Equipments

(a) Year-on-year rate



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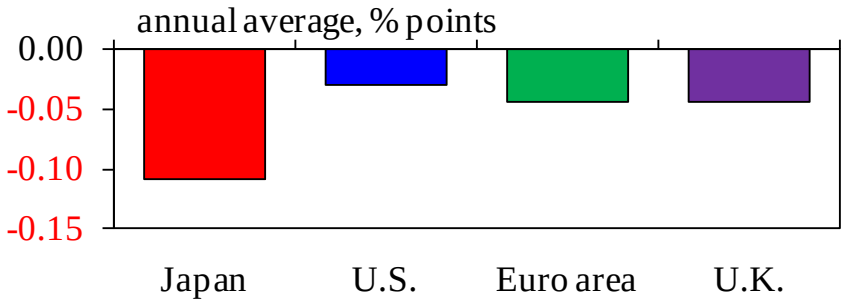
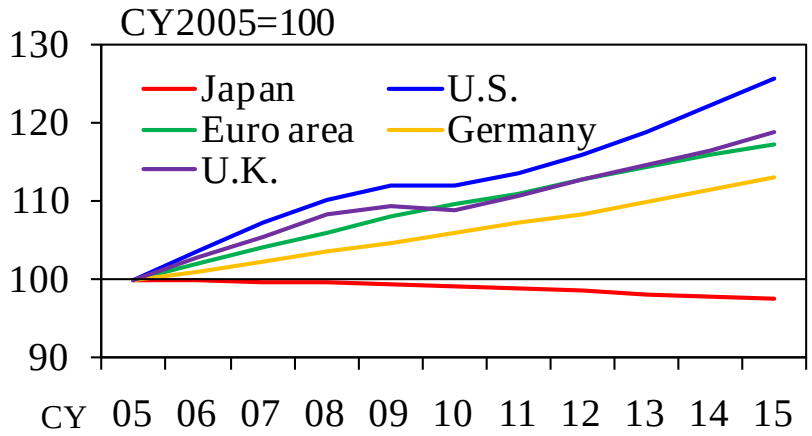


International comparison of price of housing services in CPI

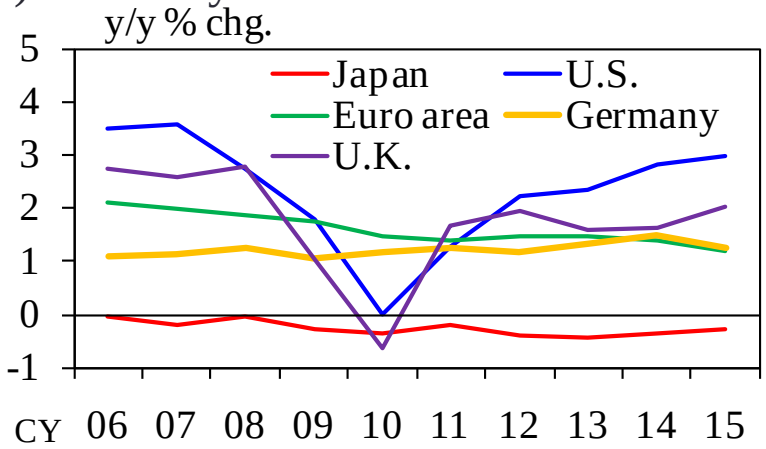
(1) Weights

Country	Weight
Japan	18.7%
U.S.	31.8%
Euro area(note2)	6.4%
Germany	21.0%
U.K.	23.8%

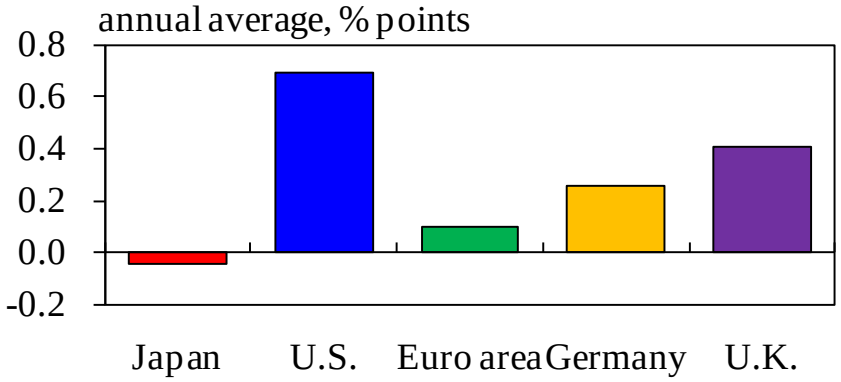
(2) Index



(3) Year-on-year rate



(4) Contributions to yearly changes of CPI all items (10years average)



(Note1) “Housing services” includes “owners‘ equivalent rent of residence” and “rent of primary residence”.
(Note2) “Owners‘ equivalent rent of residence” is not included in “rent” of Euro area.
(Note3) Weights of chart(1) are the latest values.

Treatment of quality change of housing service in CPI

	Rent of primary residence			Imputed rent	Future Initiatives
	Included in CPI	Quality Adjustments for		Included in CPI	
		Aging bias	Modernization*		
Japan	Yes	No	No	Yes	National Statistics Bureau will begin analyzing methods of quality adjustments for aging bias, projected from 2017.
U.S.	Yes	Yes	Yes	Yes	–
Euro-area	Yes	No	No	No	European Commission agreed to implement quality adjustments for modernization from January 2016. (Directorate, "Treatment of actual rentals in the HICP")
U.K.	Yes	No	No	Yes (not included in CPI, but included in CPIH)	

(*) Modernization implies an increased quality of existing dwellings and houses, covering activities like major renovations, improvements, reconstructions and enlargements.

False sense of precision?

- Quality adjustment itself is needed, especially for the purpose of indexing public pension payment. But in the case of monetary policy conduct, some cares are warranted.
  - Upward bias or downward bias?
  - Is the treatment of quality change constant across time?
  - Is quality adjustment comparable across countries?
- When inflation rate is high, these issues are negligible. But as inflation rate declines and 2 % becomes sacrosanct number globally, problems associated with quality adjustment are non-negligible and could be a source of the problem.
- To what extent, can we be confident about split between P and Q in future in light of the following trend?
  - Growing expenditure on medical services
  - Charge for public service that was free against the background of budget deficit

PART 3: Some Challenges: “Big Data” and “Granular Data”

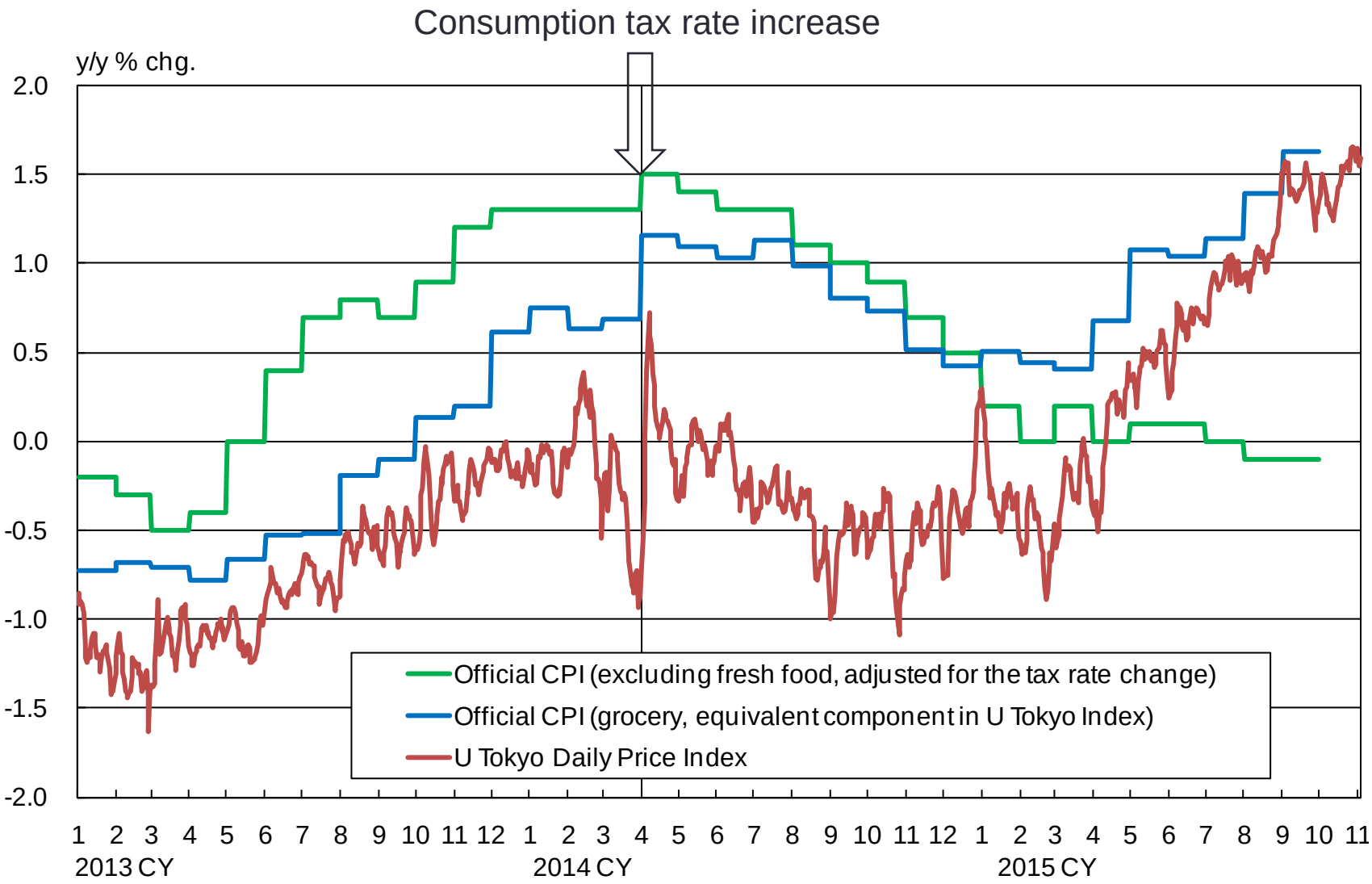
“New data revolution”: “big data”, “granular data”

- Big data and granular date are related concepts.

Two examples

- Inflation rate: POS data
- Financial interconnectedness

University of Tokyo Daily Price Index



Tentative assessment of value of POS data for monetary policy

- Availability of high-frequency data (daily) based on “big data is strength, while limited coverage and lack of quality adjustment are weakness
- But, these oft-cited strength and weakness might be somewhat exaggerated
  - After all, does central bank adjust monetary policy on a daily basis?
  - Lack of quality adjustment could be strength, if CPI base on quality adjustment creates false sense of precision.

My sense is POS data on both price and quantity could be used as a heuristic tool for knowing what is happening.

Quest for more granular data: knowing financial interconnectedness

- In the area of macro economics, inappropriateness of “representative agent model” was quite vividly shown in post-crisis period. (creditor vs. debtor, wealthy people vs. low income family etc.)
- In the area of financial stability, we have come to realize the importance of financial interconnectedness. Various initiatives to collect more granular data from financial institutions and market participants are now under way.

Knowing financial interconnectedness is more than knowing direct linkage

- It needs information on:
  - The size of “position”
  - Cross-country exposure
  - Large exposure to counterparty relative to capital
  - Distribution of “position” in entire financial system
- Initiatives under way to fill the “data gap” are quite important but at the same time we should not naively believe that “more data solve the problem.”
- “Position” itself is affected by (1) the interplay between macro economy and financial market and (2) dynamics of market created by the above factors.

PART 4: Organizational Issues of Central Banks to Make Best Use of statistics and Intelligence

“Silo culture” in central banks viewed from using statistics and intelligence

- What central banks need is holistic view. For this, we have to mobilize all information and data--real or financial, quantifiable or non- quantifiable.
- However, “silo culture” exists both intellectually and organizationally. Legal restriction beyond point of data collection also exists on the use of micro data collected for compiling statistics and for supervision.
- In the case of central banks:
  - Boundary between monetary policy wing and financial stability wing
  - Boundary between statistics department and research department
  - Boundary between group of macro forecasting and group of business contact
  - Boundary between policy side of financial stability and bank examiners

Breaking up “silo culture” is important

- “Silo culture” is not just the problem of failure to create potential synergy but could lead to bad policy.
- Central banks need some organizational mechanism to cope with these inherent tendencies so as to make central bank “ever-learning institution.”

Possible solution

- No magic solution.
- Job experience that enables economist staff to learn statistics and contact with financial institutions and businesses to gain hands-on is quite valuable.
- BOJ‘s HR practice
  - Fresh university graduates are assigned the job of contacting with firms at an early stage of their career
  - Senior macro economists often have some experiences as manager in statistics area
  - Staff working in policy side of financial stability often are encouraged to have some working experience as bank examiner.