

# **New Consumption Statistics: Consumption Trend Indexes**

***- Making use of big data for  
Official statistics -***

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- 1. Consumption Trend Index (CTI):  
Background**
- 2. CTI: Macro Trend and Big data**
- 3. CTI: Micro Trend and Big data**
- 4. The CTI Research Consortium**

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# Consumption Trend Index (CTI): Background

## In FY 2015

- The “Council on Economic and Fiscal Policy”
- The “Statistics Commission”

➤ Discussion for the improvement of consumption statistics

## In FY 2016

- The “Study Group”



➤ Discussion for developing New Consumption Indexes

- Development of the “CTI” (Consumption Trend Index)
- Discussion for making use of Big data for CTI

**CTI Macro**

Index for the monthly trend of the total Domestic Final Consumption Expenditure of Households

**CTI Micro**

Index for the monthly trend of the Average Consumption per Household

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# The CTI: Macro Consumption

## CTI macro: Overview

- Index for the monthly trend of the total Domestic Final Consumption Expenditure of Households

### Needs for the Macro Index

- Timeliness for monthly estimation
- Estimation of monthly GDP series
- Consistency between estimation results and GDP series

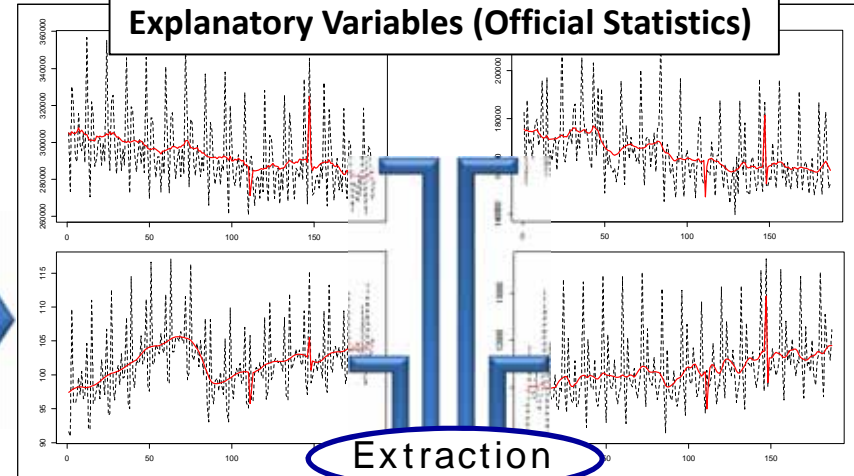
### Time series modeling

- Estimation of the latent monthly GDP series by state space models and various official statistics



## Estimation Method

### Explanatory Variables (Official Statistics)

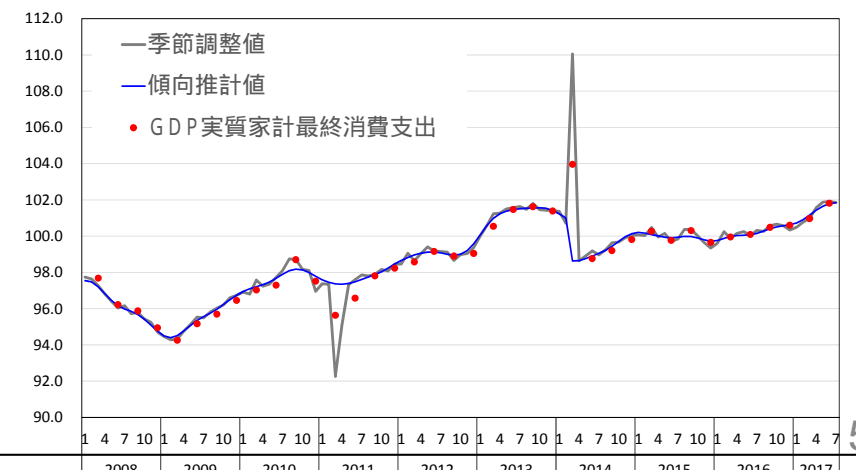


Extraction

Prediction by the time series regression model

### Monthly and Quarterly Prediction and observation

(2015年 = 100)



# The CTI: Macro Consumption

## CTI macro: Overview

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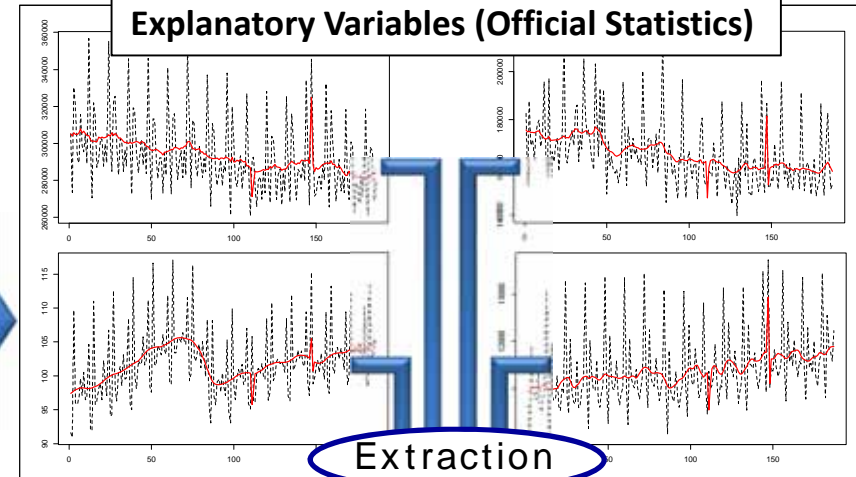
### Time series modeling

- Estimation of the latent monthly GDP series by state space models and various official statistics

**Big Data :**  
**For Timeliness**  
**(Future Plan)**

## Estimation Method

### Explanatory Variables (Official Statistics)




### Prediction by the time series regression model

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# The CTI: Micro Consumption

- New improved survey will be introduced in January 2018
- Start a new survey (Single Household expenditure monitor survey)
- Index system for grasping the whole household expenditure by three surveys

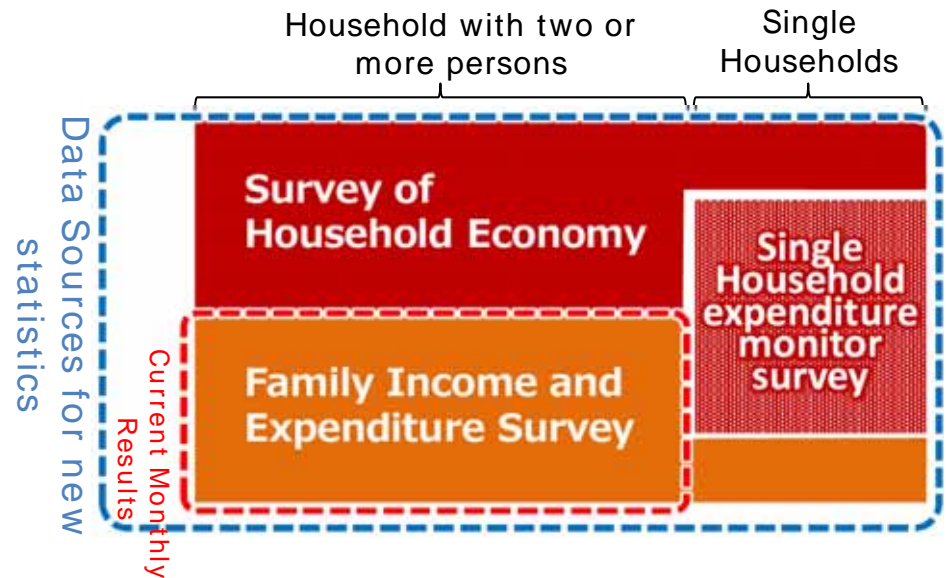
Improvement of the Family Income and Expenditure Survey



Start the Single Household expenditure monitor survey

Further Research

- Complement and reinforce household survey
- Three survey data are mixed



# The CTI: Micro Consumption

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Improvement of the Family Income and Expenditure Survey



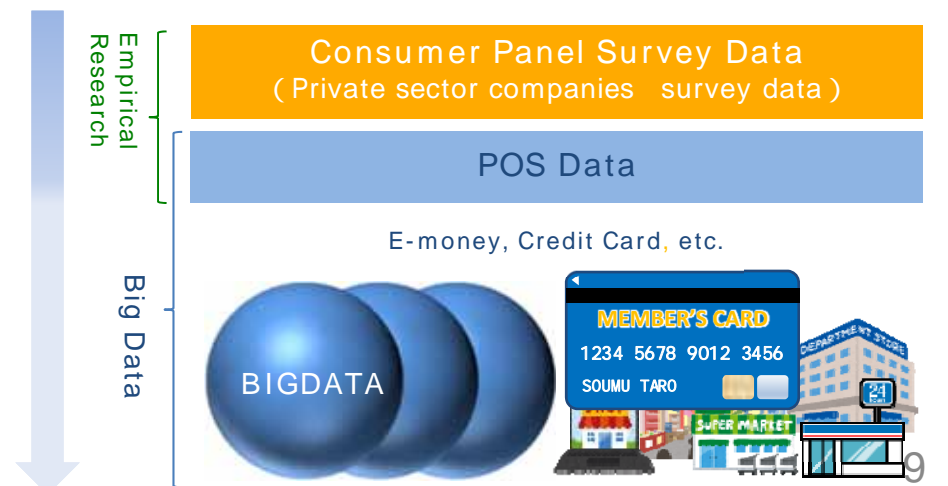
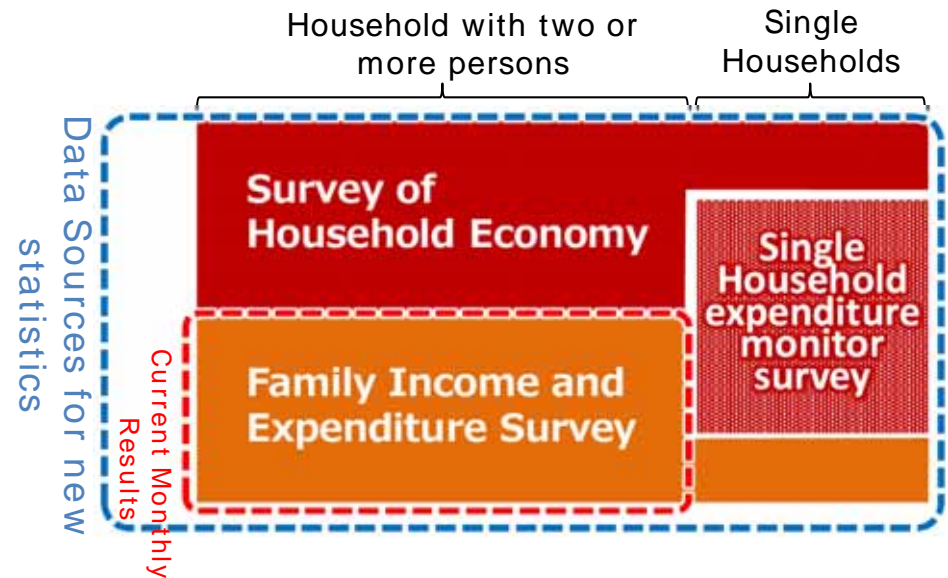
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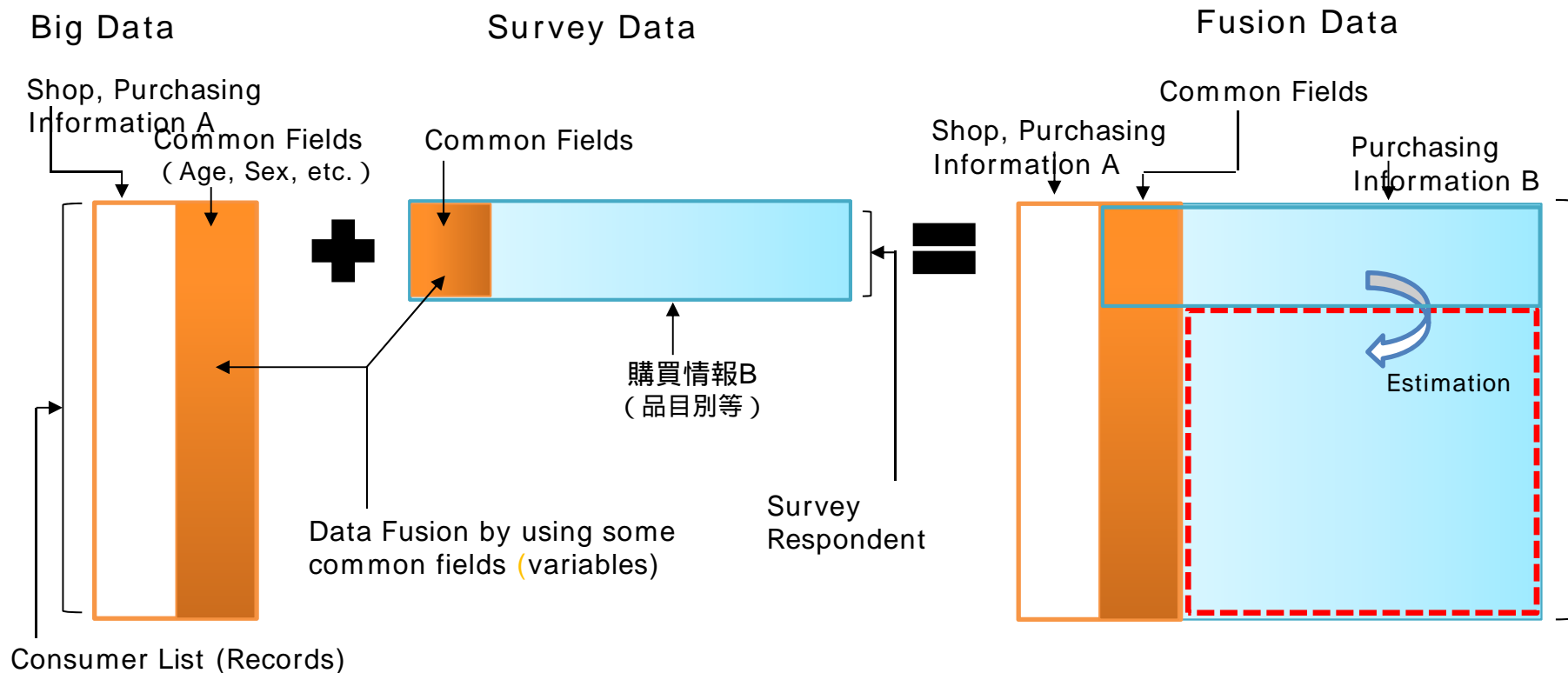
Medium or long - term challenges

**Big Data :  
Extend Coverage  
(Future Plan)**



# Bias correction of the Sales / Purchasing Big Data

- There are no unique Big Data which have sufficiently wide coverage for household expenditure.
  - Multiple Big Data are combined as single-source Data using Data Fusion techniques.
- Because of the coverage of goods and service in Big Data, bias is corrected by the “Propensity Score Methods.”
- Big data and survey data are linked by the “Data Fusion” techniques.



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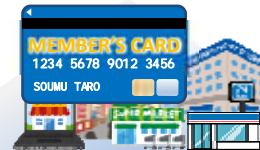
4. [The CTI Research Consortium](#)

# Consumption Trend Index Research Consortium

- Study on development of a consumption trend index in collaboration with industry, academia and government by utilizing various consumption-related information owned by private sector companies.
- Promote improvement and advancement of official statistics, and development of academic research by appropriate, effective and useful utilization of corporate holding information.

## Research Consortium

Private Sector  
Companies



Observers

(Advisor for consortium activities)

- Ministry of Internal Affairs and Communications
- Statistical Research and Training Institute
- The National Statistics Center



University researchers

Short term (FY 2017)

Medium term (FY 2018-2020)

Long term

Phase 1

Research characteristics  
of Big Data

Phase 2

Prototype Index using Big Data

Phase 3

Release the index  
using Big Data