The Polish experience in developing House Price Index

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Meeting of the Group of Experts on Consumer Price Indices

Geneva, 2-4 May 2016

Plan of presentation

‣ Introduction

‣ Data source

‣ Methodology of HPI for Poland

‣ Results

‣ Future plans

Introduction

2009   - start of transmitting data from the Register of Real Estate Prices and Values (RCiWN) to the CSO by administrative units

2012   – start of regular production of HPI

October 2015 – first publication of the official HPI for Poland

Data source

- Registers of Real Estate Prices and Values
  - administrative data source
  - kept by regional administration units (380 units)
  - national guidelines on maintaining the register
  - includes information on transaction prices derived from notarial deeds
  - includes information on basic characteristics of properties
    - geographical variables (symbol of voivodship (NUTS 2 level), symbol of powiat (LAU 1 level), symbol of gmina (LAU 2 level), type of gmina (urban, rural))
    - transaction date
    - selling and purchasing party (State Treasury, regional administration unit, natural person, legal person)
    - sale form (sale on free market, sale under tender procedure, sale without tender procedure)
    - number of rooms (for flats)
    - storey (for flats)
    - price of transaction/property
    - square meters of floor space

Data source

- Advantages
  - access to information relevant for the HPI
  - reduction of costs of data collection
  - elimination of administrative burden on potential respondents

Data source

- Limitations and challenges
  - technical problems
    - gathering data from 380 owners of the register (different information systems)
    - format of provided data (SWDE or GML)
  - differences in used concepts
    - necessity of coverage adjustments
  - quality issues
    - lack of control over data collection and registration
    - poor quality of some variables – lack of information on the floor area for single-family houses
  - timeliness
    - time lag between signing a notarial deed and introducing information to the register
    - publication of results about 100 days after the reporting period
  - additional costs
    - electronic system of data collection, software to convert the SWDE and GML files, computer system for data validation

Data source

- Actions undertaken to improve usability of the register
  - Cooperation with administrative data owners
    - objectives:
      - □ better understand how registers are being maintained
      - □ communicate the CSO needs
      - □ explain how data are used
      - □ emphasise the importance of timely and good quality data
    - forms:
      - □ working contacts with persons supplying data
      - □ working contacts with software suppliers providing administrative systems
      - □ formal letters to administration authorities
      - □ meetings with data suppliers
      - □ active participation in the government project aimed at introducing the Integrated System on Real Estate Information

Data source

- Actions undertaken to improve usability of the register
  - Developing and implementing data validation procedures
    - detection of incomplete data, incorrect data format, recording practices inconsistent with the rules specified in the law
    - errors detection and correction
    - detection and removing non-market transactions
    - detection and removing transactions which relate to sales of a share in the ownership of a property
    - detection and removing duplicated records
    - detection and removing records lacking basic information (date, price of property, square metres of floor space)
    - checks of consistency between variables
    - creating new variables (e.g. price per square metre)
    - imputing missing values

Methodology of HPI for Poland

- stratification method
- frequency: quarterly
- scope:
  - flats (single-family houses excluded from calculations)
  - market transactions
  - whole country
- timeliness: 3 months after reporting quarter
- start of series: 2010
- results:
  - national level
    - HPI for Poland: total, new flats, existing flats
  - regional level
    - HPI for voivodships (NUTS 2 level) and the biggest cities

Methodology of HPI for Poland

- Stratification
  - objectives:
    - obtain possibly homogenous strata
    - ensure the balance between the number of strata and the number of transactions per strata
    - allow to compile price indices at regional level (for voivodships - NUTS 2 level)
  - stratification variables:
    - market segment (new/existing flats)
    - geographical location based on NUTS and LAU classification (35 strata for new flats, 94 strata for existing flats)
    - property size (tree categories: 1-2 rooms, 3 rooms, 4 and more rooms)

Methodology of HPI for Poland

- Outliers identification
  - algorithm based on interquartile range
    - limits: Q1-1.5IQR and Q3+1.5IQR
    - transactions outside limits marked as outliers
    - final decision on rejection taken on case by case basis
  - visual inspection of data (histogram, scatter plot with a line of best fit, box plot)

Methodology of HPI for Poland

▶ Calculations of indices:

    ▶ elementary indices (at stratum level) – Dutot formula

$$I_i^{\overline{Q4,Y-1}^{\,t,Y}} = \frac{P_i^{t,Y}}{P_i^{Q4,Y-1}}$$

    ▶ higher level indices – aggregation with the use of Laspeyres type formula

$$I_A^{\overline{Q4,Y-1}^{\,t,Y}} = \sum_{i=1}^{n} w_i^{Y-1(Q4)} * I_i^{\overline{Q4,Y-1}^{\,t,Y}}$$
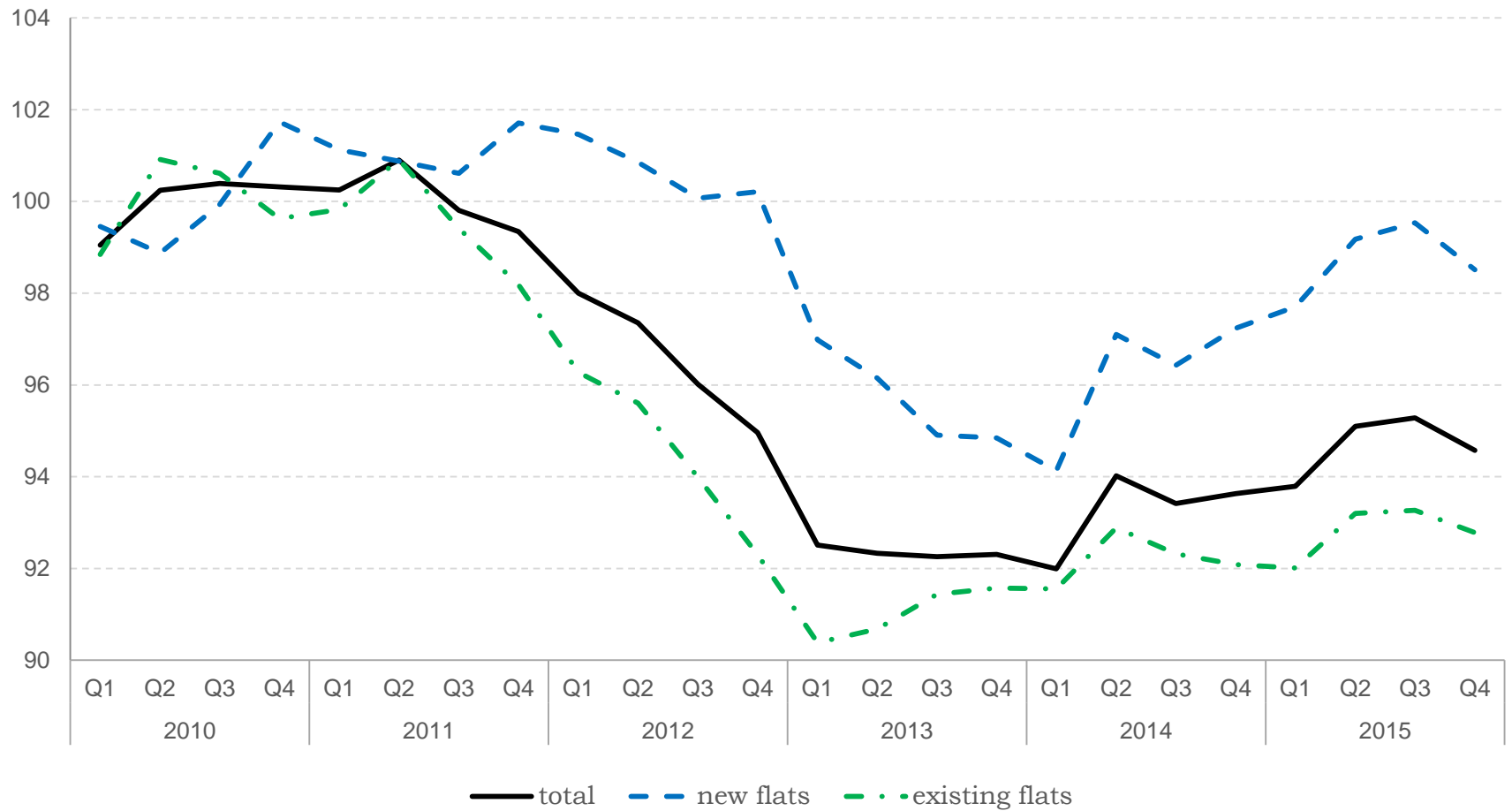
        □ weights
            □ in the form of shares based on the value of sales in the previous year
            □ changed annually and price-updated to the last quarter of the previous year

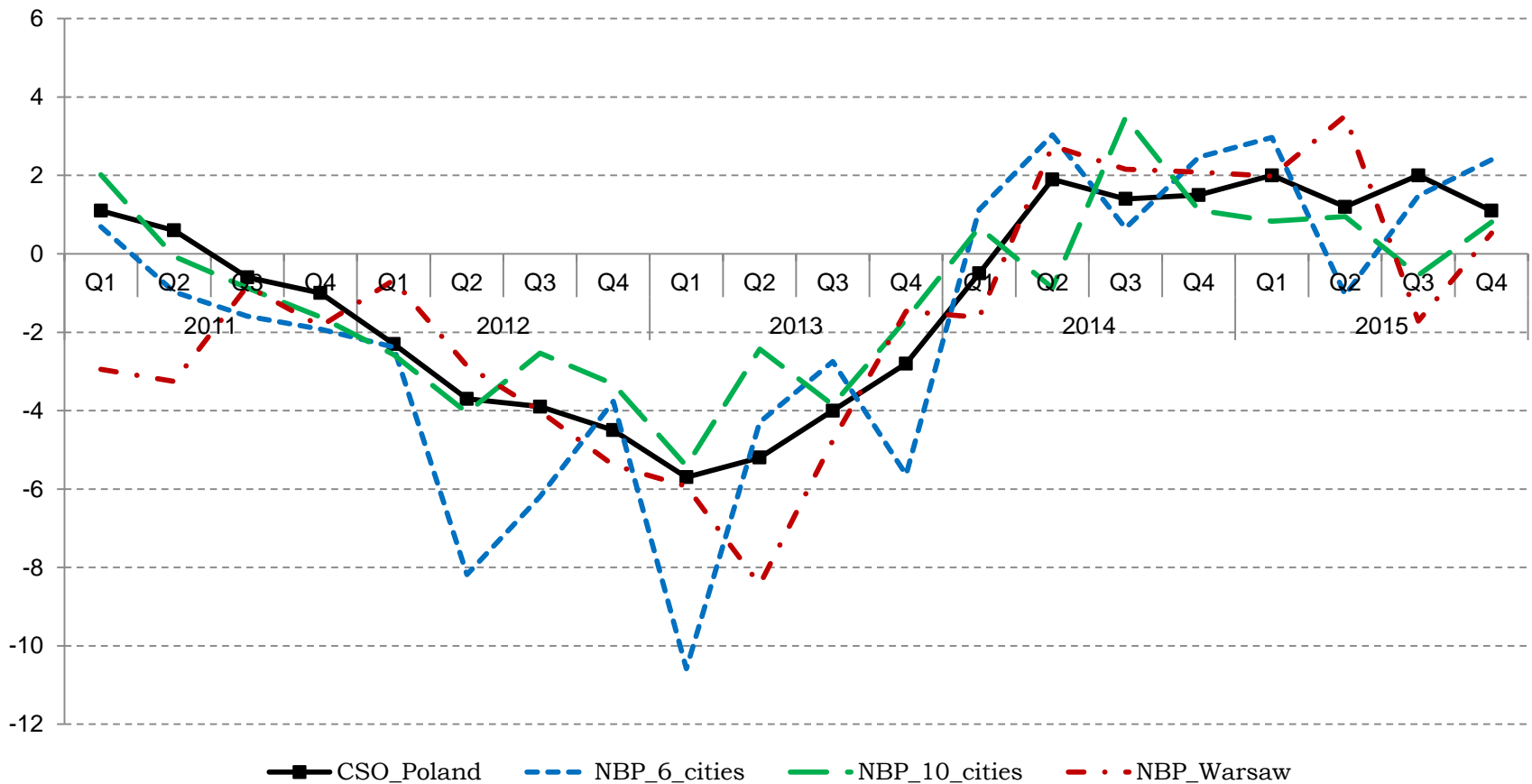▶ indices based on Q4,Y-1 are chain-linked with the reference year (2010=100)

Results

House Price Index for Poland (2010=100)

Results

House price indices compiled by the CSO and the NBP
annual growth rate

Future plans

- long term perspective - improvements thanks to planned changes in RCiWN
  - government project on Integrated System on Real Estate Information
    - unification of data sets maintained at local level
    - introduction of notarial deeds in electronic form
    - quick access to up-to-date information on real estate
- short term perspective – supplementing data from RCiWN with data from other sources (Building Database)
  - including single-family houses into calculations of HPI
  - replacement of stratification method with hedonic method
  - compiling HPI for periods prior to Q1 2010
  - improving timeliness of results

Thank you for your attention