Insights from a new dataset of house prices in levels

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The views expressed in this presentation are those of the authors and not necessarily those of the EU Commission

BACKGROUND

CURRENT SITUATION ON HOUSING PRICES

Housing market price: potential source of macroeconomic imbalances.

MIP scoreboard indicator: house prices in indexes in deflated terms (main) and in nominal terms (auxiliary)

Main source: ESTAT, which can be extended backwards with ECB, OECD, BIS and national sources

For analytical purposes: indicators calculated (PTR or PTI indexes)

Limitations:

- *If only indexes available: cross-country comparisons not meaningful & time analysis for a country may be problematic*
- *Differences in available data length reduce the comparability of valuation gaps across countries*

PRICE LEVELS PER M² AS AN ALTERNATIVE APPROACH

Alternative: build on data in price levels per m². To this end, and building on an approach developed in BdF, the EC has conducted work to complement existing sources of data on prices levels.

→ *unique newly constructed database for residential real estate prices per m² for most EU countries (except BG, HR, LT, LV, MT, RO) and several important non-EU countries (AU, CA, JP, NZ, NO, RU, KO and US). Countries selected on data availability.*

This presentation explains the method, discusses their use and results before ending with caveats and further work.

This work was directly inspired by Dujardin, M., A. Kelber and A. Lalliard, (2015), "Overvaluation in the housing market and returns on residential real estate in the euro area: insights from data in euro per square metre". Banque de France, Quarterly Selection of Articles 37, Spring.

CONSTRUCTION OF HOUSING PRICE SERIES IN LEVELS

NATIONAL ACCOUNTS USED TO GET VALUE OF DWELLINGS

- *When data available, house prices proxied by value of dwellings as aggregate dwelling assets (including land) divided by total floor area*
- *This method gives the (magnitude of the) average value :*
- $$average\ price = \frac{\sum_{i=1}^{n} floor\ area(i) * price\ per\ sqm\ (i)}{\sum_{i=1}^{n} floor\ area(i)}$$
- *Covers all assets, whatever the nature (houses, private flats, social housing…) or the geographical situation (covers the whole nation) and the evaluation is market based (see hereafter), hence avoiding a bias that exists in prices displayed by housing dealers, above the price of realised transactions*

1ST STEP: GET VALUES OF DWELLINGS + LAND

- *By default, if only sector available: HHs' assets used*
- *Sources: OECD (few countries), NSIs, central banks or other sources (usually WP with punctual assessment of housing assets)*
- *When available, figures compared with WidWorld database (Facundo Alvaredo, Anthony B. Atkinson, Thomas Piketty, Emmanuel Saez, and Gabriel Zucman, The World Wealth and Income Database, http://www.wid.world/#Database:). Results consistent*
- *For floor areas, sources: census and more punctually, other surveys from statistical institutes or other institutions (for example to measure heated areas, for studies on energy consumption). Corrective factor to get harmonized useful floor area.*

2ND STEP (ROBUSTNESS): CROSS-CHECKING

- *Cross-checking, when possible, with other sources: aggregated price offers by housing dealers (including data provided by Dujardin et al., 2015) or results derived from the HFCS (see the box "Dwelling Stock in the euro area - new data from the Eurosystem Household Finance and Consumption Survey", pp51-55, in the July 2013 ECB Monthly Bulletin. Relate to owner-occupied dwellings and stem from HHs' self-assessment)*
- *Alternative sources: surveys performed by the central bank, the national statistical institute or private banks, cadastral data*
- *Last available year usually taken, except when comparison made for another year, for which results are robust*

LAST STEPS: ADJUSTMENTS (IF NECESSARY) & EXTENSION

- *Adjustments made, when necessary, to the initial figure obtained with national accounts, using complementary sources, for HHs' holdings, floor areas*

- *Average price levels may then be extended over time using for example the ESTAT house price index, backward-extended by Commission staff using other data sources (ECB, BIS and OECD).*

RESULTS AND USE OF HOUSING PRICES DATA IN LEVELS

OVERALL RESULTS (EA)

Country	Value retained (euro/harmonized m2)	Year
Belgium	1983.1	2011
Germany	1609.2	2011
Estonia	743.4	2011
Ireland	4532	2006
Greece	1636.3	2011
Spain	1517.7	2012
France	2626.9	2012
Italy	2135.6	2011
Cyprus	1727	2012
Luxembourg	3659.3	2011
Netherlands	2091.6	2011
Austria	2044.9	2008
Portugal	1163	2010
Slovenia	1481.1	2009
Slovakia	774.9	2015
Finland	1545.7	2012

Source: ECFIN calculations from different sources / BIS

USEFUL TO BUILD INDICATORS SUCH AS PRICE-TO-INCOME

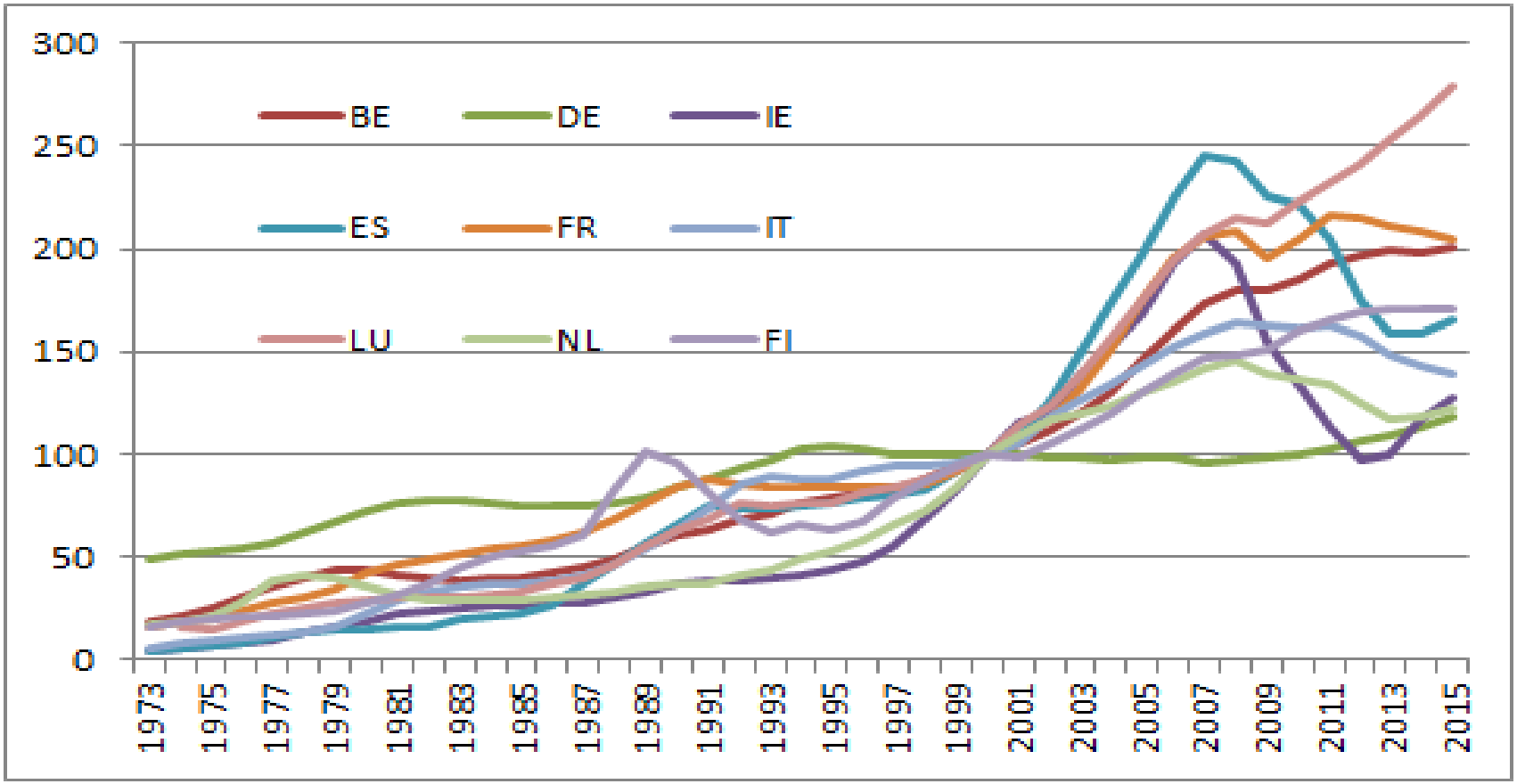
- *House prices in levels can be used to construct valuation ratios. PTI can, be obtained by multiplying the price per m^2 by an assumed size of a dwelling and dividing it by households' disposable income per capita. It reflects households' house-purchasing capacity, though it disregards interest rates or loan maturities*
- *See the evolution of PTI ratios for an assumed 100 m^2 dwelling. Firstly, current valuation levels often seem to be rather moderate compared to latest peaks. Yet, valuations in LU appear rather elevated in 2014 relative to other countries. Besides, DE & FI have low PTI ratio in level*

PICTURE DIFFERENT FROM INDEXES

Comparison of 3 graphs: indexes (100=2000), prices in levels and price to income:

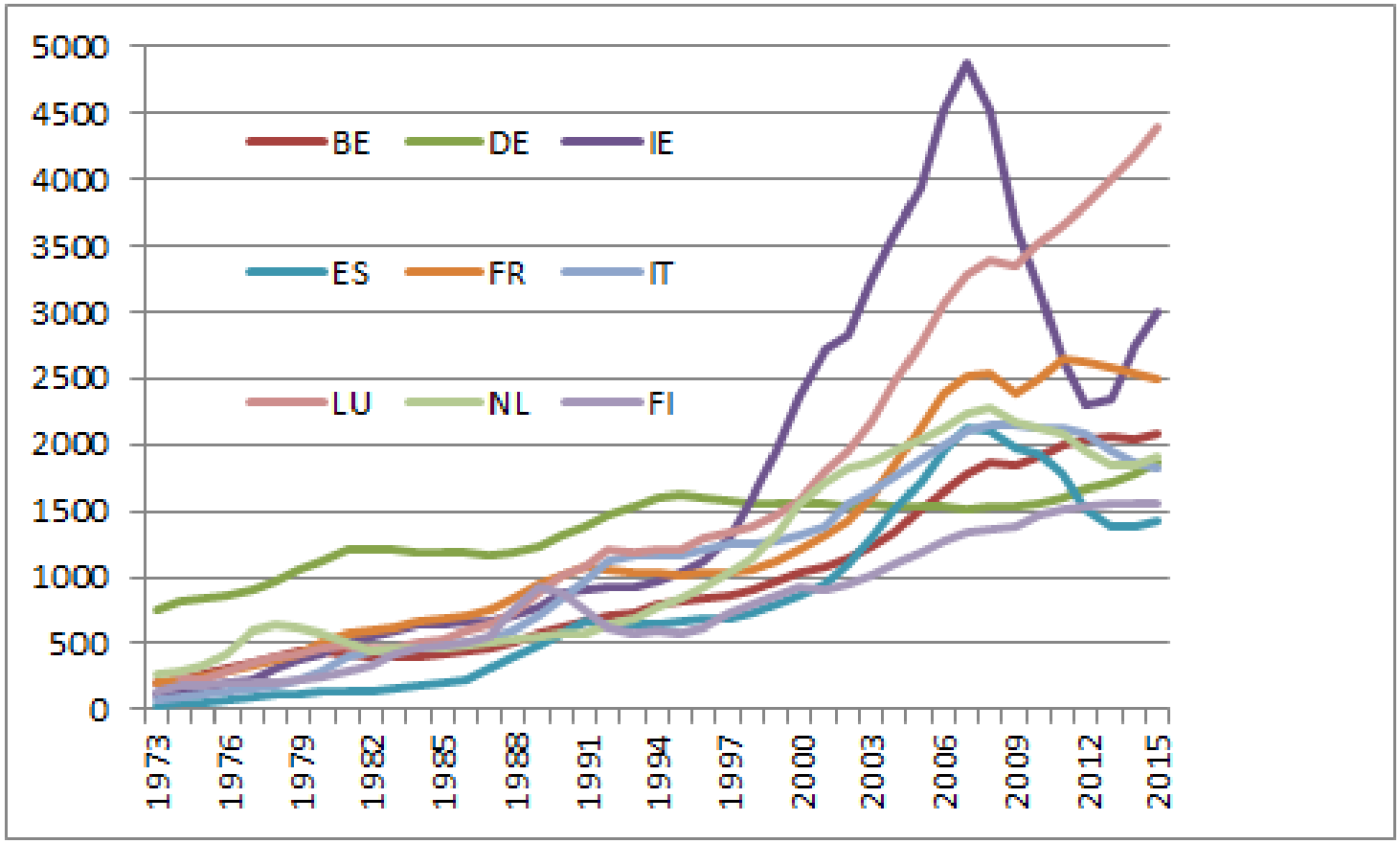
- *Until 2014, moderate evolutions and PTI in DE*
- *Cf. index, FI evolutions seem very dynamic but PTI moderate*
- *IE index ≈ back to 2000, but due to lower incomes, PTI still high*
- *FR, BE, ES & IT: quite high PTI, but fall in ES and more moderately in IT. BE & FR: quite comparable increases in prices since 2000, higher PTI in FR*
- *NL: decreasing PTI (≈ 9 in 2014), fall >2pp compared to 2008 peak*
- *Whatever the indicator, LU: highest evolutions & PTI*

Evolutions of prices in index (100=2000)



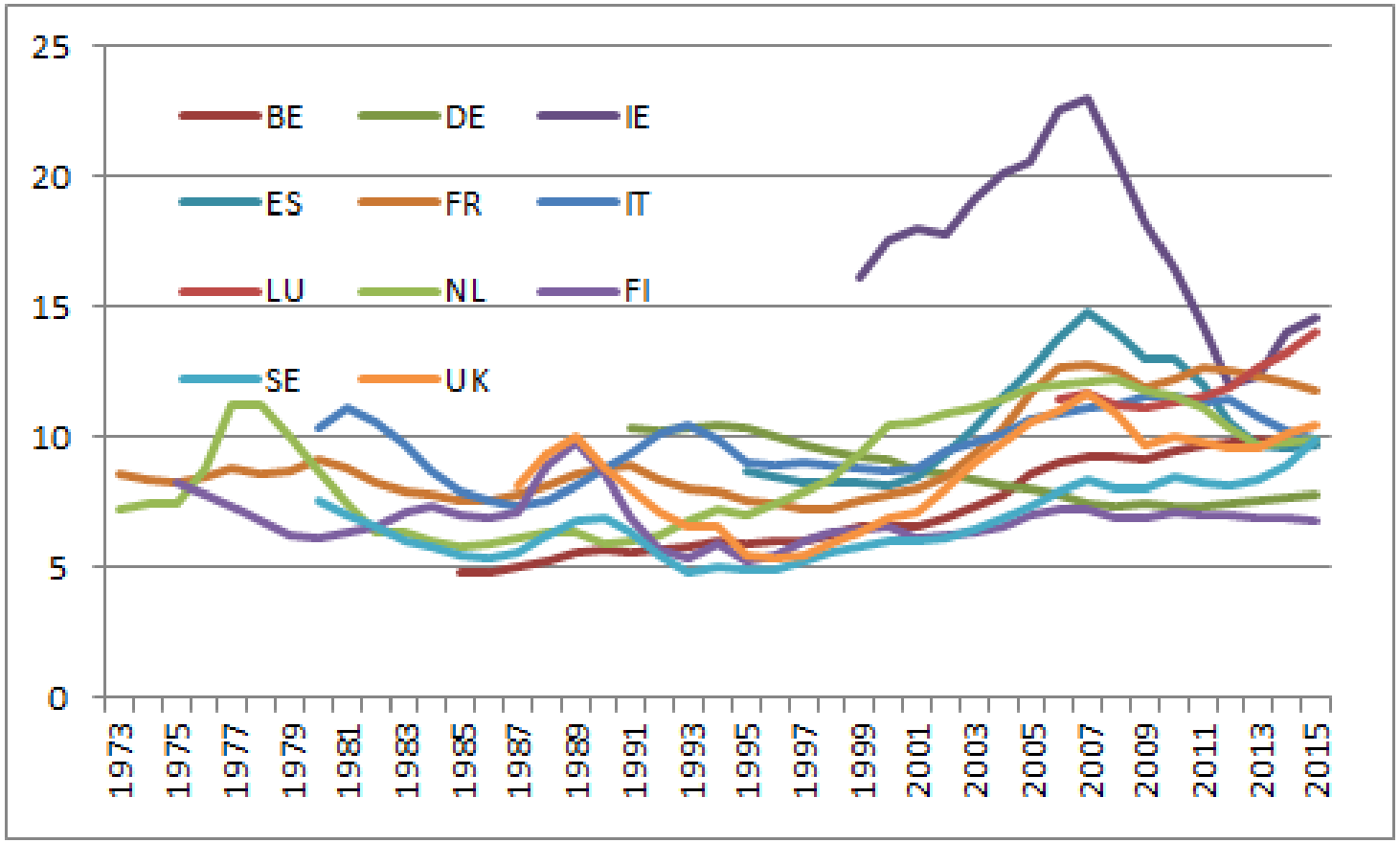
Sources: national statistical institutes, central banks, Eurostat, OECD, BIS, censuses, own calculations

Evolutions of prices in levels (€/m2)



Sources: national statistical institutes, central banks, Eurostat, OECD, BIS, censuses, own calculations

Evolutions of price-to-income (for a 100 m2 dwelling)



Sources: national statistical institutes, central banks, Eurostat, OECD, BIS, censuses, own calculations

POSSIBLE USES OF THE DATABASE

- *Signalling power for price falls: PTI powerful indicator, whatever the period, compared to spreads to the mean (threshold ≈ 10)*
- *Inclusion of PTI in housing prices equations: significant mean-reverting effect*
- *Complement existing macro-prudential ratios such as LTV, by building indicators covering all buyers, including with cash*
- *Average use of mortgage credit to buy dwellings = Value of gross new mortgage loans (without renegotiated) / (nb of transactions x average size of transacted goods x dwelling prices level)*
- *Calculation for FR f.e. consistent with the one from Commissariat Général au Développement durable (2015)*

ROBUSTNESS AND COMPLEMENTARY WORK

HARMONIZATION OF FLOOR AREAS

Use of corrective factors to get as close as possible to the harmonized concept of useful floor area, either using Eurostat, or conversion factors (from living to useful floor area, f.e.)

Country	Odyssee (floor space, 2012) / Entranze (2012, or alternatively 2011 or 2013), useful floor area, m2	Useful floor area (Census, Eurostat, 2011 and, ad-hoc Eurostat module on housing conditions HC020 (2012))	Value used for calculations or for comparison, m2	Source used for calculation / comparison
Australia	n.a. / n.a.	n.a.	143.2 (2006)	energy use
Austria	99.1 / 96 (2013)	94.1 (census); 99.7 (HC020)	99 for main residences in 2011 and 89.8 (in 2011 for all dwellings and 93.4 for main residence)	register-based Census
Belgium	n.a. / 84	124.3 (HC020)	119 (2011), used for comparison	private source (Century 21)
Canada	n.a. / n.a.	n.a.	130 in 2011 (189.3 of heated surface)	Office for Energy efficiency
Cyprus	144.8 / 130	141.4 (HC020)	147.9 (2011, Census) / 148.8 (own calculations using ranges)	Census

HOUSING ASSETS ARE AT MARKET VALUE

	Housing assets data used	Method of valuation used	Sectors covered
Australia	WidWorld database, using Australian Bureau of Statistics sectoral balance sheets & Australian Bureau of Statistics total value of the dwelling stock	Representative prices for dwellings in the stock are obtained from information on dwellings sold (including land) during the reference period and are combined with the number of residential dwellings, using a stratification approach by location and dwelling type	All sectors
Austria	Household Survey on Housing Wealth (2008)	Respondents are asked to provide the purchase price of the real estate, the construction costs or, if applicable, the costs of conversion after purchasing / building the property. Respondents are also requested to give an estimate of the currently achievable selling price of their property.	Households, who own around 85% of dwelling assets
Belgium	Assets in dwellings, including land, coming from https://www.nbb.be/doc/ts/publications/economicreview/2013/revecoi2013_h5.pdf	Valuation of dwellings is made by taking transaction prices, coming from the registering by notaries, SPF Finances and the Direction générale Statistique et Information économique (DGSIE), with some treatments to keep only significant values	All sectors

COUNTRIES WITH HIGH VACANCY/UNOCCUPIED RATES

	Vacancy rate	Rate of unoccupied dwellings
Cyprus	6.6% in 2001 (source: Eurostat) and 12.7% in 2011 (statistics Cyprus)	23.4% in 2001 and 30.9% in 2011 (source: Eurostat)
Greece	24.3% in 2001 (source: Eurostat)	26.4% in 2001 and 35.3% in 2011 (source: Eurostat)
Italy	20.7% in 2001 (source: Eurostat)	22.7% in 2011 (source: Eurostat and Istat)
Malta	27% in 2011 (source: Malta Census) / 18.4% in 2013 (European Mortgage Federation)	46.5% in 2011 (source: Malta Census) / 31.8% in 2013 (source: European Mortgage Federation)
Portugal	10.7% in 2001 (source: Eurostat)	28.9% in 2001 and 31.9% in 2011 (source: Eurostat)
Spain	16.2% in 2001 (source: Eurostat), of which 14.8% are really vacant and 1.4% correspond to other types (successive rents for short lasting)	32.3% in 2001 (source Eurostat and Spanish Census) and 28.5% in 2011 (source: Eurostat)

Note: unoccupied = vacant + secondary or seasonal use. The number of secondary or seasonal dwellings in Greece may be underestimated in 2001, representing around 2% of total dwellings.

HOLDING OF DWELLINGS BY NON-RESIDENTS VERY LIMITED

Transactions on Spanish dwellings depending on the nationality and residence

	Total	By Spanish		By resident foreigners		By non-resident foreigners	
	Number	Number	% of total	Number	% of total	Number	% of total
Mar-12	69420	60109	86.6	8053	11.6	566	0.8
Jun-12	84122	72718	86.4	9772	11.6	821	1.0
Sep-12	75310	65039	86.4	8786	11.7	825	1.1
Dec-12	134601	118236	87.8	13620	10.1	1395	1.0
Mar-13	54835	43939	80.1	8379	15.3	787	1.4
Jun-13	81472	67186	82.5	12460	15.3	1057	1.3
Sep-13	70604	57981	82.1	10893	15.4	1088	1.5
Dec-13	93657	78102	83.4	13650	14.6	1160	1.2
Mar-14	81516	67270	82.5	12801	15.7	863	1.1
Jun-14	91769	75157	81.9	14773	16.1	1185	1.3
Sep-14	80388	66062	82.2	12788	15.9	1034	1.3
Dec-14	111948	93566	83.6	16405	14.7	1317	1.2
Mar-15	85605	70705	82.6	13474	15.7	938	1.1
Jun-15	107043	87898	82.1	17172	16.0	1254	1.2
Sep-15	94035	76664	81.5	15675	16.7	1201	1.3
Dec-15	115030	94758	82.4	18197	15.8	1473	1.3
Mar-16	103592	85004	82.1	16796	16.2	1072	1.0
Jun-16	123159	100750	81.8	20444	16.6	1354	1.1
Average	92117	76730.2	83.2	13563.2	14.7	1077.2	1.2

Note: the sum of percentages is not exactly equal to 100% due to some missing information

Source: Ministry of Development (Ministerio del Fomento)

http://www.fomento.gob.es/MFOM.CP.Web/handlers/pdfhandler.ashx?idpub=BAW041

POTENTIAL INTERNAL TENSIONS (EXPLORATORY)

Country	City	Average offer price (January 2012-May 2012) from Kholodilin & Ulbricht (2015), in €/m2	Alternative source	% of difference
Austria	Vienna	3657.4	Hypostat, based on different sources / Own calculations from Household Survey on Housing Wealth (2008)	20.6 / 4.8
Denmark	Copenhagen	3104.9	Own calculations from Statistics Denmark	8.3
Estonia	Tallinn	1059.5	Bank for International Settlements	-2.8
France	Paris	8865.7	Notaires INSEE	6.8
Greece	Athens	2109.1	RICS / Eurobank EPS price index	10.4
Hungary	Budapest	937.1	Bank for International Settlements	13.4
Poland	Warsaw	1976.4	Bank for International Settlements	-7.5
Romania	Bucharest	1047.7	Romanian Banking Association / Eurobank	3.4 / -9.9
Spain	Barcelona	3267.6	Sociedad de tasación (appraisal society)	-4.9
Spain	Madrid	2956.8	Sociedad de tasación (appraisal society)	-0.8

Sources: Konstantin A. Kholodilin and Dirk Ulbricht (2015). Urban House Prices: A Tale of 48 Cities. Economics: The Open-Access, Open-Assessment E-Journal, 9 (2015-28): 1—43. http://dx.doi.org/10.5018/economics-ejournal.ja.2015-28; own calculations

GENERAL PICTURE, CAVEATS AND FUTURE WORK

- *Prices in levels complete existing indicators, enable comparisons for a country over time or between countries.*

- *Data for these 30 countries enable panel analysis for more or less OECD countries*

- *For some countries, they mix the picture or reinforce the concerns:*
  - no recent adjustment in Finland, FR or BE, but PTI not a concern in FI whereas it is more the case in FR and BE
  - Concerns about Luxembourg

- *Prices in levels contain information useful to signal problems (may be enriched with further analysis, taking into account lending conditions, interest rates…)*

- *Robustness of results, across different sources / methods*
- *This exercise: stock taking about the order of magnitude of house price levels/dwelling values with existing information*
- *Important caveat: distributions of dwelling prices and incomes within a country (capitals or major cities in particular)*
- *Besides, adjustments made to add homogeneity to floor areas*
- *Last, incomplete coverage if HHs' assets are used (corrective factor used) & question of valuation of assets*
- *Further steps: fill existing gaps, especially for EU countries. required information (including land) may be transmitted in the future to ESTAT*

ONGOING WORK
PLEASE DO NOT QUOTE

THANK YOU FOR YOUR ATTENTION