

House Price Indices and the Property Market in Germany

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Contents

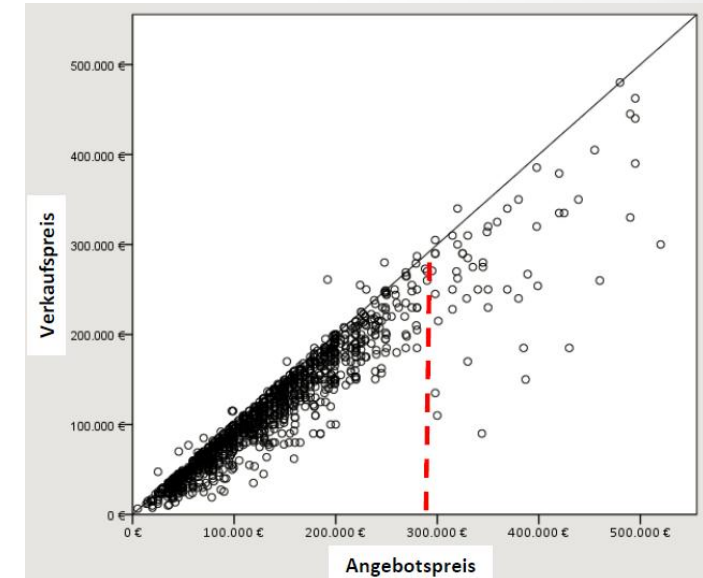
- **Measuring housing and land prices in Germany**
- **Some cross-sectional and regional results**
- **Evolution of prices and their drivers**
- **International comparison, French vs. German perspectives**

Measuring Property Prices

Private Price Discovery Dominates

- Multiple private information collection efforts
 - Bank transactions: Verband deutscher Pfandbriefbanken, Hypoport AG (Europace).
 - Real estate transactions: Zentraler Immobilienausschuss (commercial).
 - Real estate advertisements: empirica.
 - Real estate agents: Ring deutscher Makler.
 - Expert assessments/appraisers: Bulwien.
- There is no official nationwide land and housing transactions database !
 - Official appraisal committees (Gutachterausschuesse) exist on the state and communal level, coverage gaps,
 - Outdated fiscal cadastre value assumptions: Constitutional Court judgement enforces change.

Sales Prices vs. Advertisements

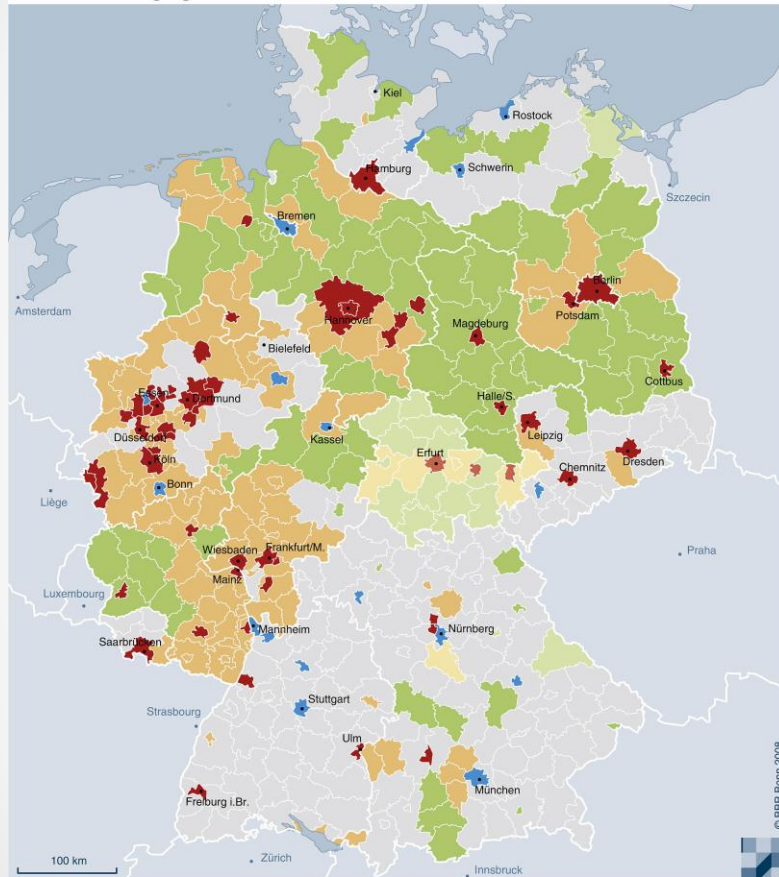


Source: Technische Universität Kaiserslautern, 2011 sample of 625 communal transaction databases and related newspaper ads.

Measuring Property Prices

Official Price Discovery Gaps

Rücklauf der Befragung der Gutachterausschüsse für Grundstückswerte 2008



Städte und Kreise mit Fragebögenrücklauf 2008



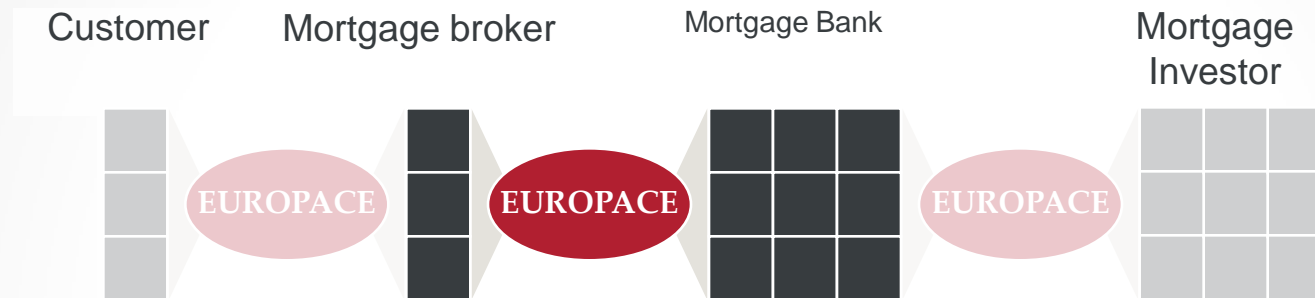
Datenbasis: BBR-Immobilienpreismonitoring
Geometrische Grundlage: BKG, Kreise 31.12.2007,
Gemeinden 31.12.2006

- Official appraisal committees
 - Large areas uncovered (laws exist, but underfunded or not executed),
 - Instruments are used for assessments (e.g. land values for house prices),
 - Focus is on appraisals, not market transactions,
 - Only one state (Niedersachsen) fully advanced, i.e. official hedonic index.
- Impact of lack of official data on index construction efforts
 - Competition on data generation instead of best index construction,
 - Insufficient sample sizes: max is 15-20%,
 - Different markets with different characteristics, not fully comparable,
 - No coverage of many small markets, insufficient detail on properties,
 - Bottom-up hedonic index based on regional regressions only in distant future.

Measuring House Prices

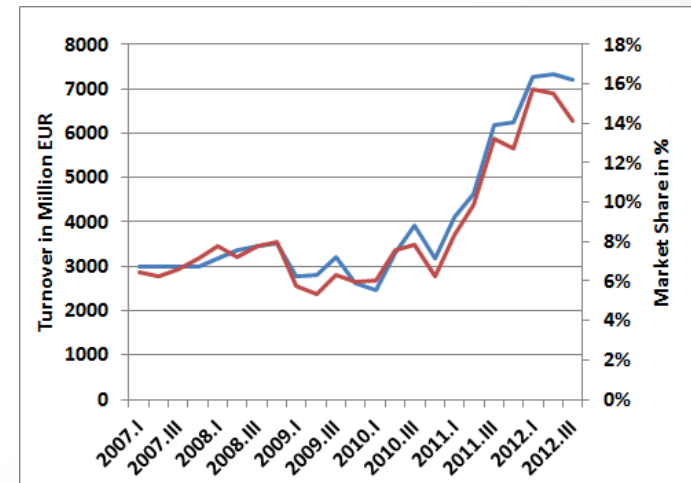
Europace Price Index EPX

EUROPACE Business-to-Business Brokerage Platform



- Central role in residential mortgage intermediation in Germany,
- All lender groups ('mortgage investors') represented,
- Has reached 15% market share,
- Verifiable transactions data,
- Reliable data entry quality, no paper work, everything is processed electronically,
- Data is available quickly, i.e. monthly, one week after end of month.

Europace Quarterly Volumes (mln EUR) and Market Share



Source: Hypoport, Bundesbank, Finpolconsult computations.

Measuring House Prices

Europace Price Index EPX

Available Data for Hedonic Analysis

Hypoport / Europace

- Object Type
- Usage
- Age
- Living Surface
- Plot Surface
- Number of Apartments
- Loan Purpose
- Purchase Price
- Costs of modernisation
- Building costs
- Price for plot

BBSR

Mostly spatial variables:

- Population of municipality
- Commuting times
- Distance classes (Center, commuter rings)
- 4 Regions (East/West/North/South)

Matching
-By postal code

Missing hedonic property characteristics

- Number of rooms, bathrooms,
- Modernization status of bathrooms
- Garage
- Floor level, lift yes/no

Banks are hard to motivate to collect characteristics beyond what is necessary for loan contracts.

Measuring House Prices

Europe Price Index EPX

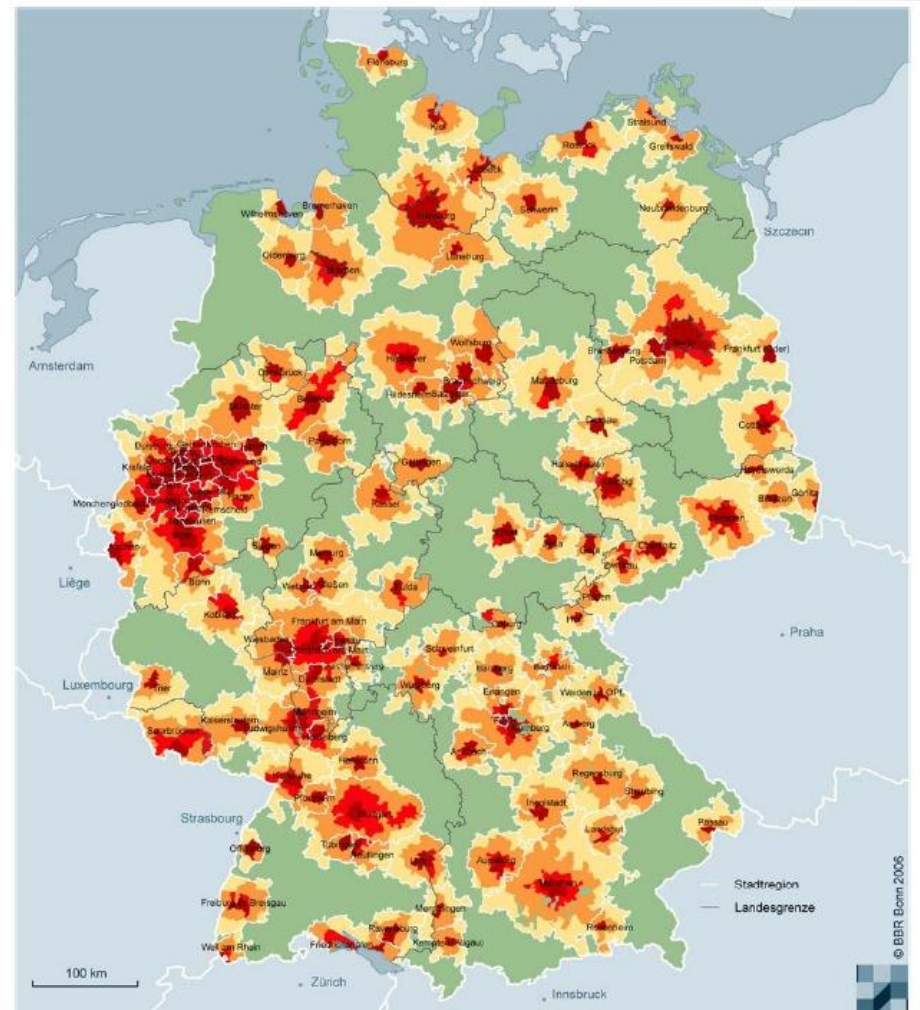
Regional Housing Market Analysis

- For national hedonic index, spatial characteristics are pre-determined by federal agency definition and then matched through postal codes,
- Currently developing regional price indices,
- Work on 'endogenous' housing market definition (subdivisioning of regions) is under way,
- Short-term goal is to develop national 'bottom-up' index w. ca 15 apartment and 30 home regressions,
- INSEE standard is beyond reach for any participant in the German index market (>700 regressions).

Stadtregionale Pendlereinzugsbereiche

- Kernstadt
- Kerngebiet
- Innerer Pendlereinzugsbereich
- Äußerer Pendlereinzugsbereich
- gemeindefreies Gebiet oder dünn besiedelter peripherer Raum außerhalb der Stadtregion

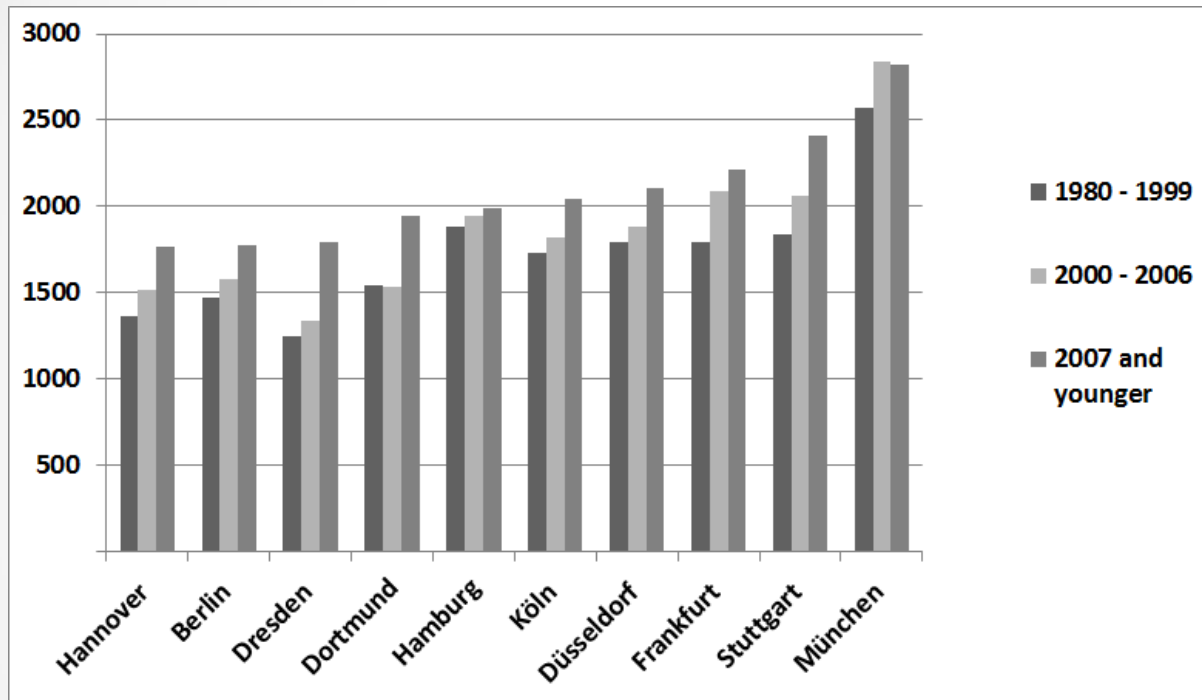
Commuting Rings around Economically Homogenous Zones Determined by BBSR



Cross-Sectional Results

Homes: Regional Price Variations

EPX Price Levels per SQM by Region, Homes by Age Classes, QIV 2011-QIII 2012



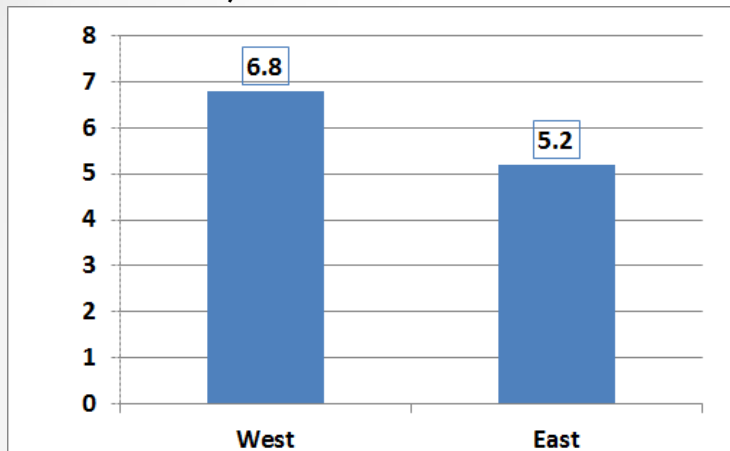
Source: Hypoport AG (Europace bank transactions data), Finpolconsult computations.

- National median for new construction is in the range of EUR 1,750/SQM (w land), i.e. EUR 262,500 for 150 SQM Home.
- Local property transfer taxes to be added may vary from 2-4.5% after regionalization (1990s: national 2%).

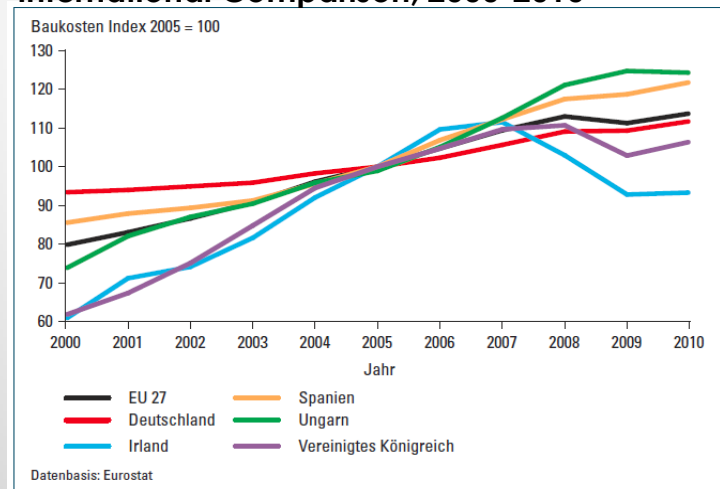
Cross-Sectional Results

Homes: 1990s Initiatives to Reduce Costs

New SFH House Price Income Relation in East & West, 2003



German Residential Construction Cost in International Comparison, 2000-2010



- Reunification effect: East adds low-cost housing, low land prices,
- Building standard deregulation in the 1990s,
- Emergence of low-cost SFH construction techniques, e.g. Scandinavian wood construction, pre-fabricated,
- Smaller lot sizes (limits?),
- Moderate labor cost increase,
- Anticipative land supply policies,
- Industrial land conversions in some cities/regions (e.g. Dortmund).

Cross-Sectional Results

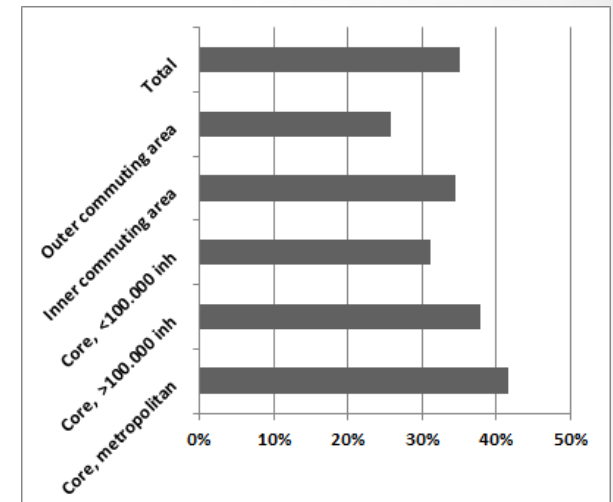
Homes: Increasing New Construction Cost in the 2000s

Single-family Home Mean Statistics 2004 - 2010

Item	Unit	2004	2005	2006	2007	2008	2009	2010	2010/2004 growth p.a.
SFH price	EUR/SQM	1589.7	1577	1566.1	1553	1553.1	1542.5	1563.5	-0.28%
Construction cost	EUR/SQM	1230.9	1224.5	1234.1	1254.3	1291.6	1322.8	1337.1	1.39%
Land cost	EUR/SQM	119.8	128.5	124.6	124.9	124.6	126	130	1.37%
Production costs	EUR/SQM	1590.3	1610	1607.9	1629	1665.4	1700.8	1727.1	1.38%
Price/production cost	Ratio	1.00	0.98	0.97	0.95	0.93	0.91	0.91	-1.64%
Memo: Cost of 150 sqm SFH	EUR	238,545	241,500	241,185	244,350	249,810	255,120	259,065	

Source: Oliver Lerbs, Inwis/Ruhr-Universität Bochum, 413 cities and districts (Kreise) (NUTS3).

Land to Total Production Cost Share, New SFH, by Urban Density, Medians 2003 – 2011



Source: author, from Europace bank transactions dataset.

Result: 10% cumulative gap between new construction cost and existing home prices within 7 years, correlated with decline in the investment ratio.

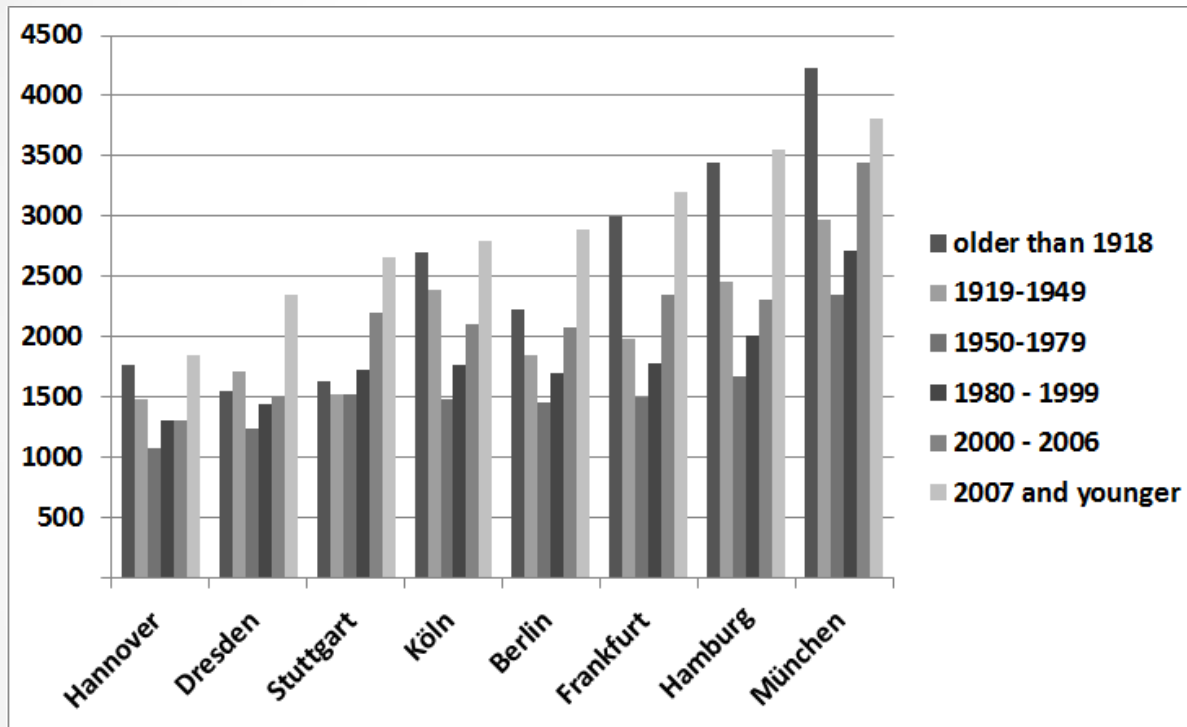
Notes:

- New construction in Germany is taxed with accumulating VAT (included in data) and property transfer tax (not included in data). Both strong VAT and PTT increases,
- Land cost share, in Europace: mean 25.7%, median 33.9%.

Cross-Sectional Results

Apartments: Regional Price Variations

EPX Price Levels per SQM by Region, Apartments by Age Classes, QIV 2011-QIII 2012



Source: Hypoport AG (Europace bank transactions data), Finpolconsult computations.

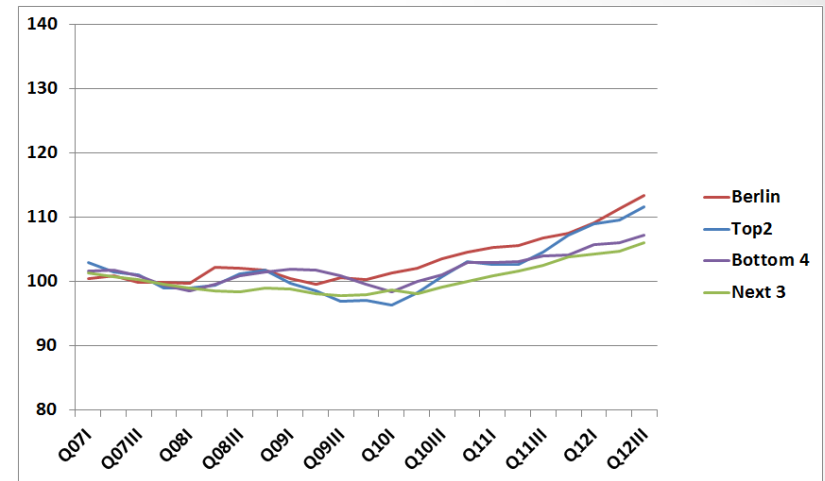
- De-facto elimination of rental housing subsidies in 2005.
- More market-based construction: higher ceilings, larger units, elevators / sub parking, roof-top apartments.
- 'Gruenderzeit' (late 19th century) with high ceilings, representative facades, still in strong demand.
- Dübel, Finpolconsult

Housing Market Dynamics

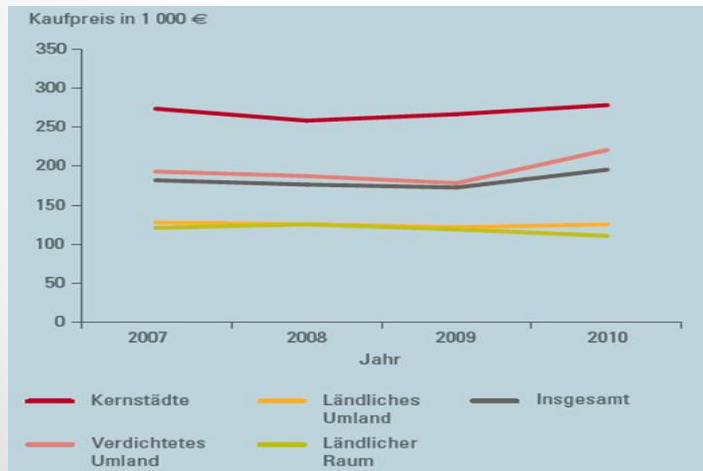
Evolution of Prices

- Recent boom in urban apartments (prices, transactions),
- Stagnation in rural / commuting areas after decline during 06-08 (VAT and energy cost increases).
- Increasing age effects due to energy modernization needs, to be accelerated ('passive house' / CO2 emission regulations).

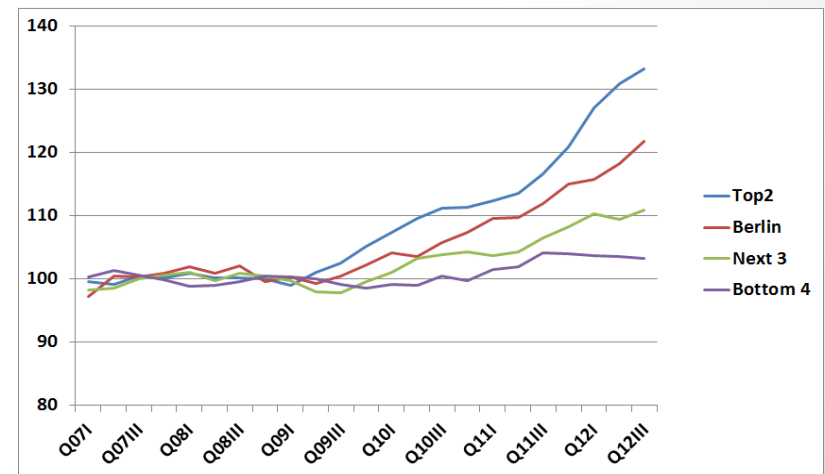
EPX Homes Prices in Top-10 Regions



Home Prices: Cities vs. Periphery vs. Rural



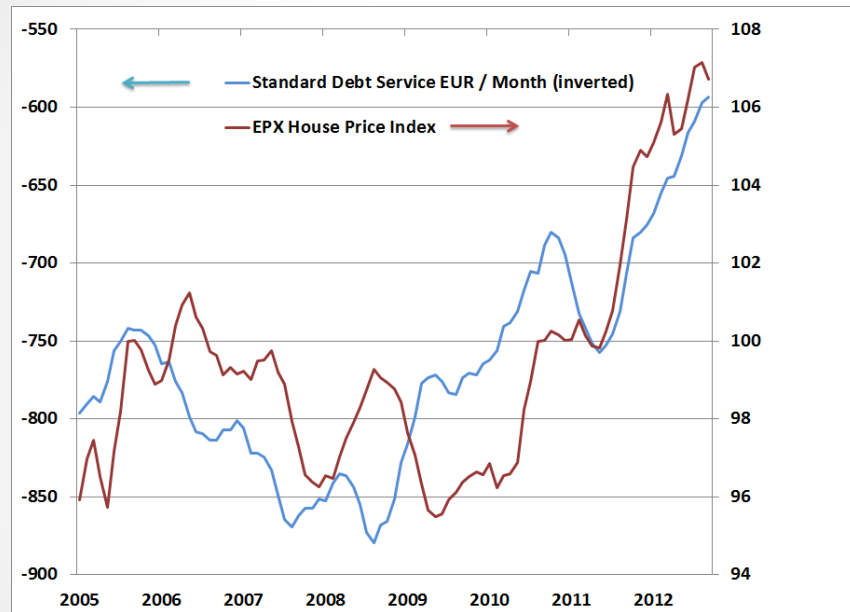
EPX Apartment Prices in Top-10 Regions



Housing Market Dynamics

Is there a German House Price Bubble?

EPX Combined Price Index and Standard Monthly Rate of a EUR 150,000 Loan



Source: Hypoport AG (Europace), Bundesbank, Finpolconsult computations

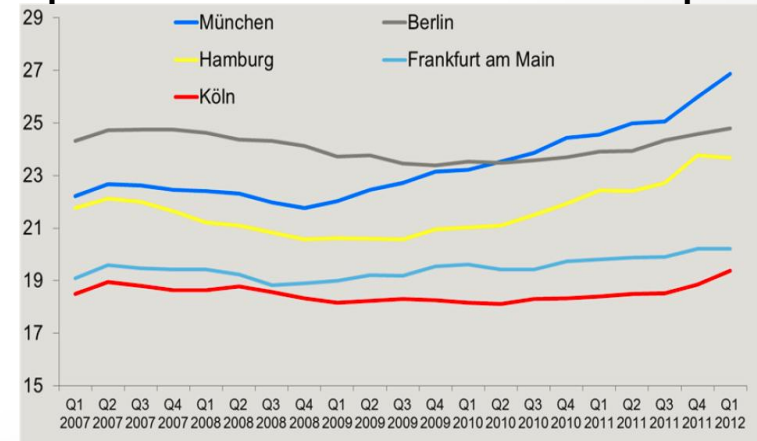
Financials:

- Strong decline in rates, debt service,
- But no increase in mortgage debt → equity, foreign boom,
- Moderate increase in rent multiples only.

Fundamentals:

- Strong real demand support,
- But some demand patterns may be unsustainable.

Apartment Price to Annual Rent Multiple

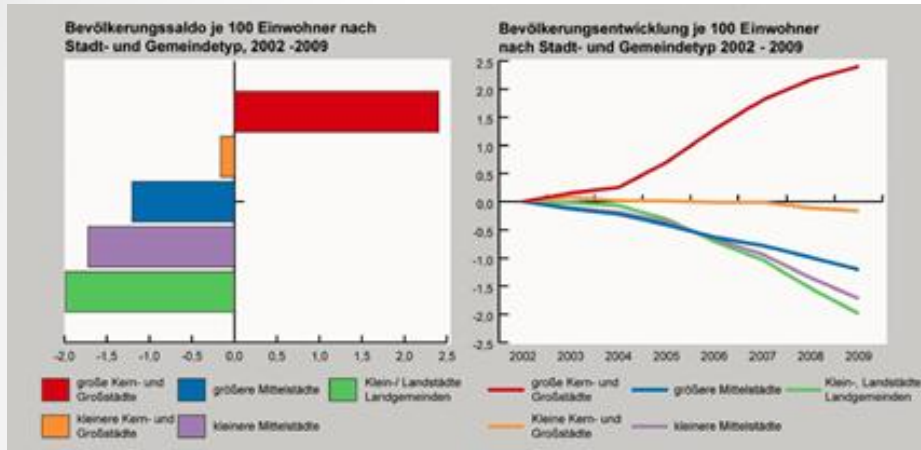


Source: Institut der deutschen Wirtschaft, data Immobilienscout 24

Housing Market Dynamics

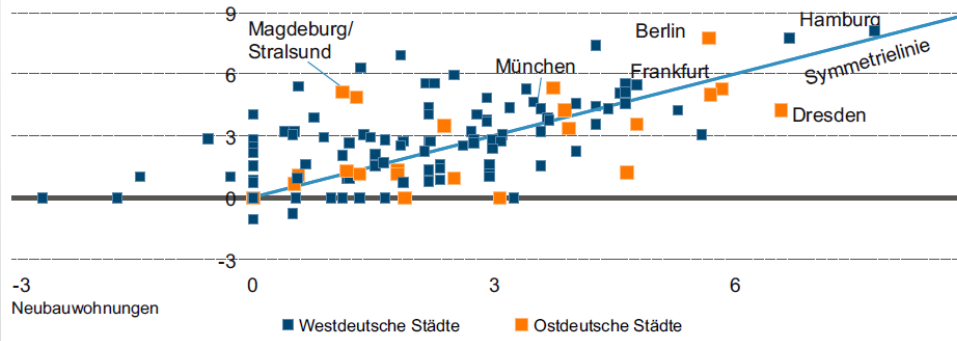
Lagged 'Metropolization' or Real Bubble?

Large German Cities are the Urbanization Winners



Rent and Price Increases, Apartments, German Cities 2009-11*

x-Achse: Mittlere Mietsteigerung in den letzten drei Jahren (2009, 2010, 2011), in % p.a.
y-Achse: Mittlere Preissteigerung in den letzten drei Jahren (2009, 2010, 2011) in % p.a.



- Metropolization

- Job growth in 'creative' industries vs. traditional industries in mid-sized cities,
- Say's law: labor supply (demographics) creates demand (jobs), i.e. do jobs move where young people want to be?

- War legacy city hierarchy distortion

- Zipf's law: number of people in a city is inversely proportional to the city's rank among all cities → Berlin = Paris?

*Note: x-axis – rent changes %, y-axis – price changes %, accumulated

Housing Market Dynamics

Berlin Price Levels are Still Far From Paris

Metropolitan apartment prices

- Paris: EUR 8,339/SQM
- Berlin: EUR 2,230/SQM

Munich is closest: EUR 4,227/SQM

Secondary cities in Germany within a wider range than in France

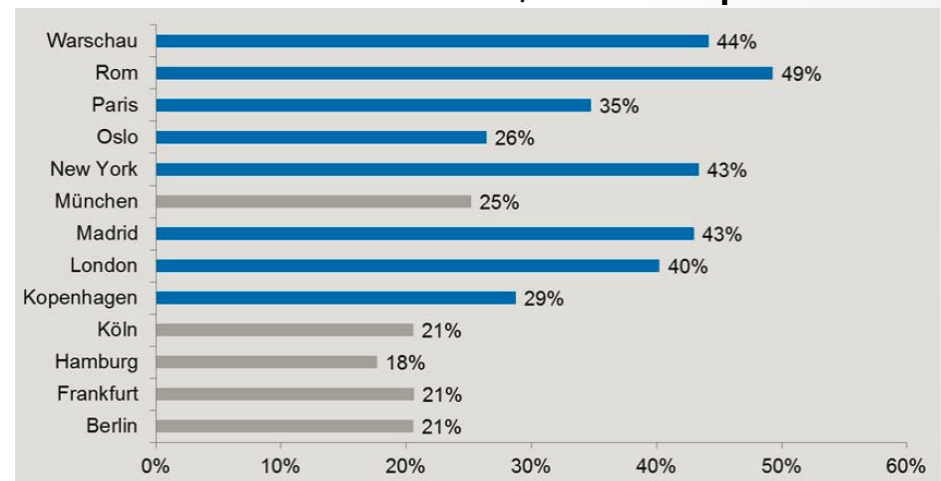
- Grenoble: EUR 2,381/SQM
- Toulouse: EUR 2,544/SQM
- Bordeaux: EUR 2,930/SQM

- Hannover: EUR 1,764 /SQM
- Koeln: EUR 2,700 /SQM
- Frankfurt: EUR 2,999/SQM

Notes:

- Medians
- France: old apartments
- Germany: Gruenderzeit (pre-1918 apartments)

Rent-to-Income Ratios, 1 Room-Apartments

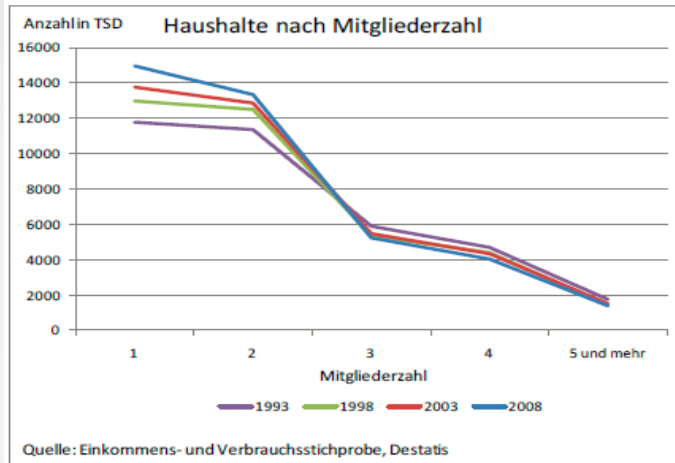


Source: M. Voigtlaender / Institut der Deutschen Wirtschaft;
Numbeo.com

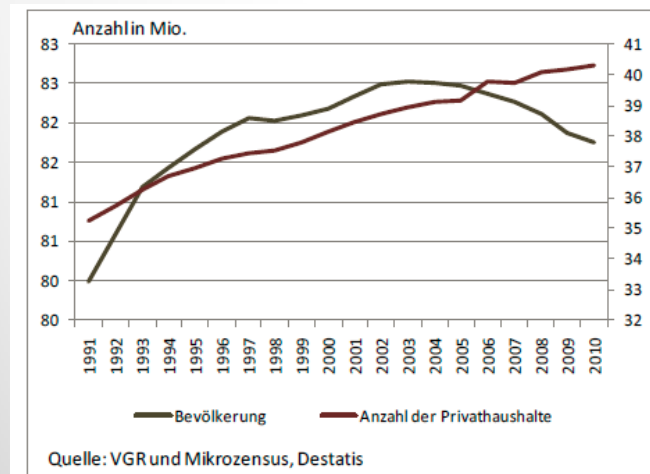
Housing Market Dynamics

Demographics and Household Growth

Average Household Size is Drastically Declining



Population and Number of Households are Diverging



- Demand driven by
 - Household size, number of single-person households,
 - Space consumption patterns esp. of the elderly (growing),
 - Immigration trend.
- Overall housing demand continues to rise until ca 2020 – 2030:
 - East Germany peak ca 2015,
 - West Germany peak ca 2030.

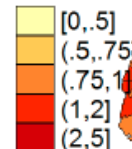
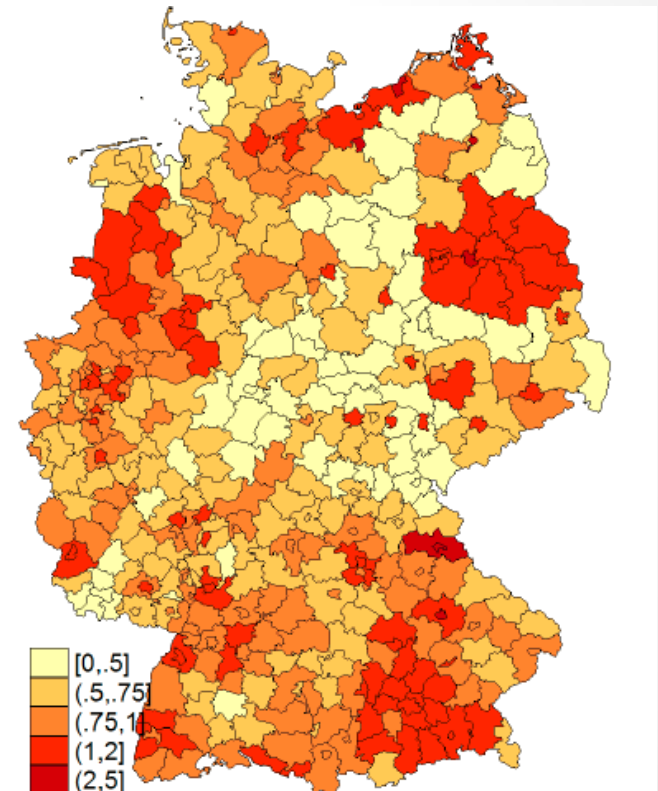
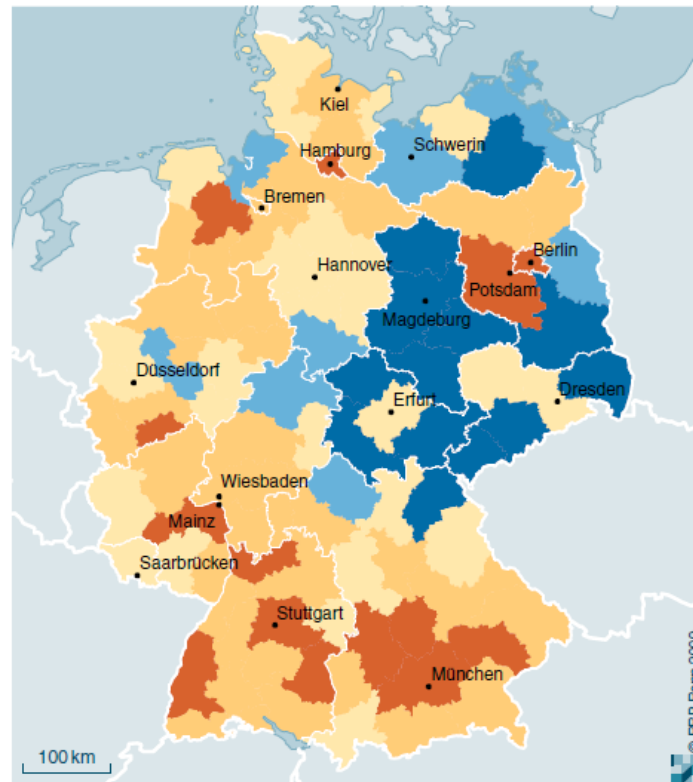
Housing Market Dynamics

Regional Space Demand Pattern Is Reflected in Activity

Long-term Housing Space Demand
Forecast, 2010-2025, % Change

SFH Construction Activity 2000-2010,
% of Existing Stock

Entwicklung der Wohnflächennachfrage



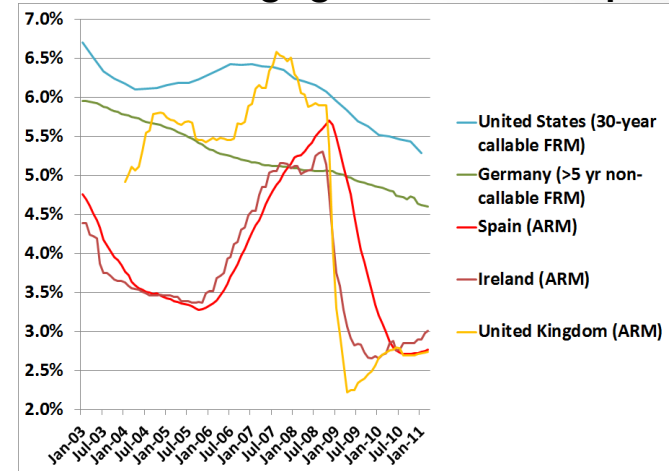
Housing Market Dynamics

Housing Finance System Drivers (1)

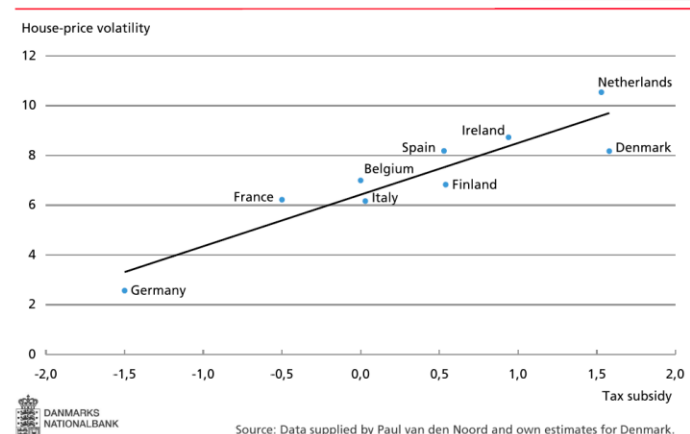
Potentially stabilizing

- Low homeownership ratio self-targeted to higher income levels,
- Social housing investments of the 70s render subprime market redundant,
- Conservative tax support policy (no tax deduction for mortgage interest),
- Long-term fixed-rate product means pricing of housing over less volatile long-term rates,
- No equity release products that would artificially enhance the value of house for debt purposes,
- Conservative loan-to-value ratios and valuation standards,
- Source of equity is mainly cash as a result of savings culture, low house price inflation,
- Agency (KfW) programs leave credit risk to banks rather than nationalizing.

German Mortgage Rates in Comparison



House Price Fluctuations and Tax Subsidies



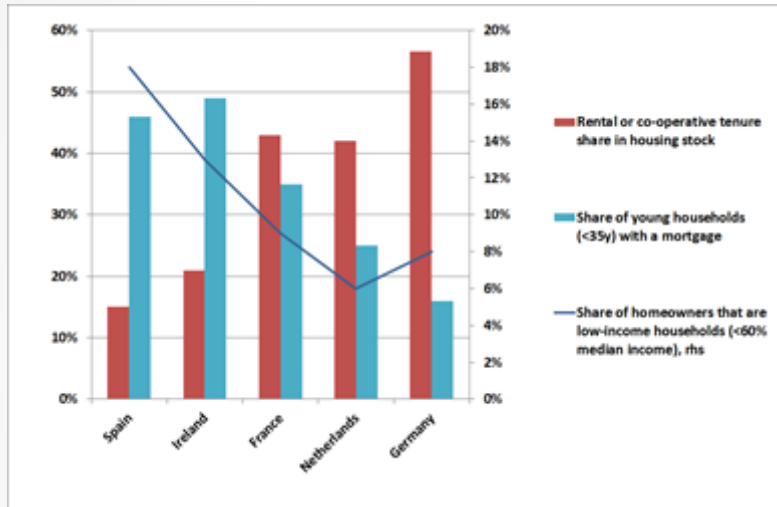
Source: Data supplied by Paul van den Noord and own estimates for Denmark.

Sources: National central banks and statistical institutes, Danish Central Bank/Paul van Noord, Finpolconsult calculations.

Housing Market Dynamics

Housing Finance System Drivers (2)

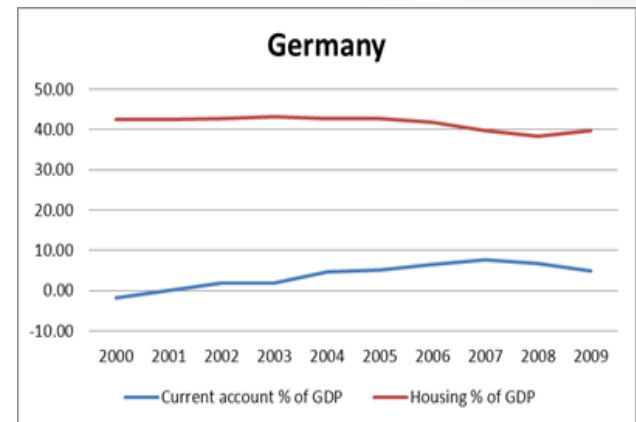
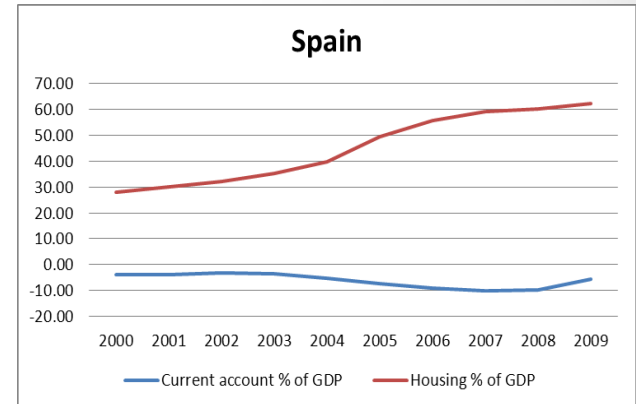
Rental Sector Share and Incidence of Mortgage Lending to Vulnerable households, ca. 2005



Potentially destabilizing

- Repatriation of cross-border capital flows, flight to 'safety',
- No capital gains tax,
- Low amortizations, only slowly rising,
- Too low interest rates of fixed-rate lending due to lender mismatches,
- Large role of public savings banks (cajas?).

Current Account and Outstanding Housing Loans to GDP 2000 - 2010



Sources: European Statistics on Housing, IMF, Finpolconsult computations.

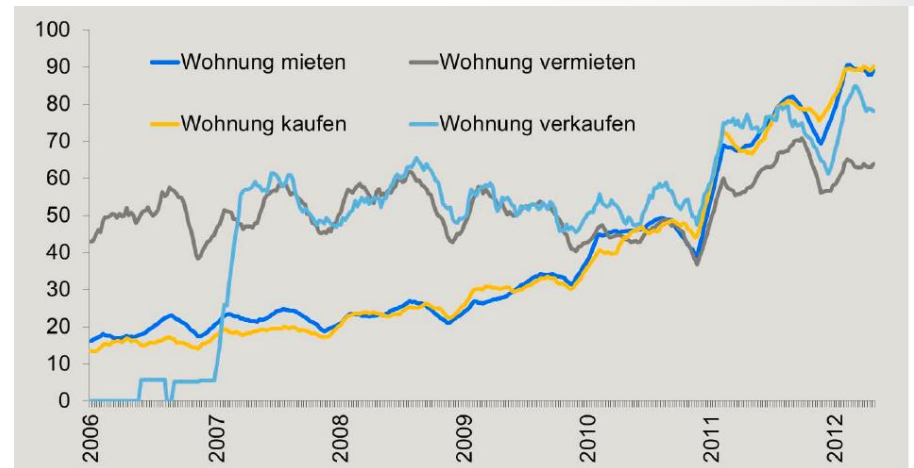
Housing Market Dynamics

Capital Market Drivers

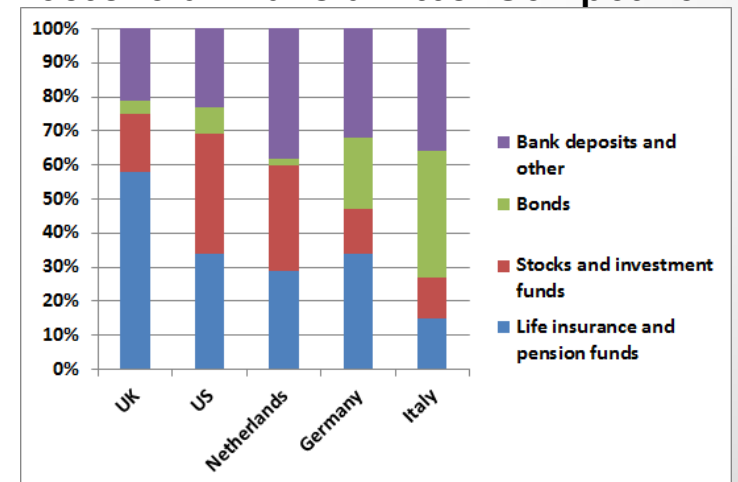
- **Financial crisis aftershocks**
 - High safety preference of German households backfires through low rates (gov bonds),
 - or turns out to be potentially unsafe (banks).
- **Declining pension risk amnesia**
 - Doubtful public pension promise & rising retirement age,
 - More volatile employment situation, reduced employment chances over 50.
- **In combination supports real estate investment**
 - Increased saving ratio,
 - High aversion against stocks forces move into real estate.

Sources: upper chart Institut der deutschen Wirtschaft based on Google data; lower chart OECD
 Legend upper chart: 'Wohnung – Dwelling, 'mieten – take lease', 'vermieten – give lease', 'kaufen – purchase', 'verkaufen – sell'.

Household Motives for Purchasing/Renting



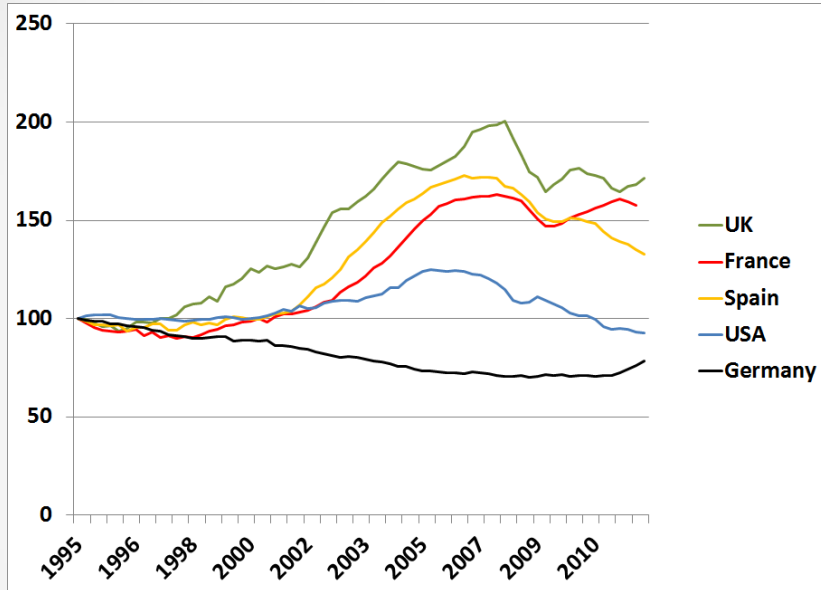
Household Financial Asset Composition



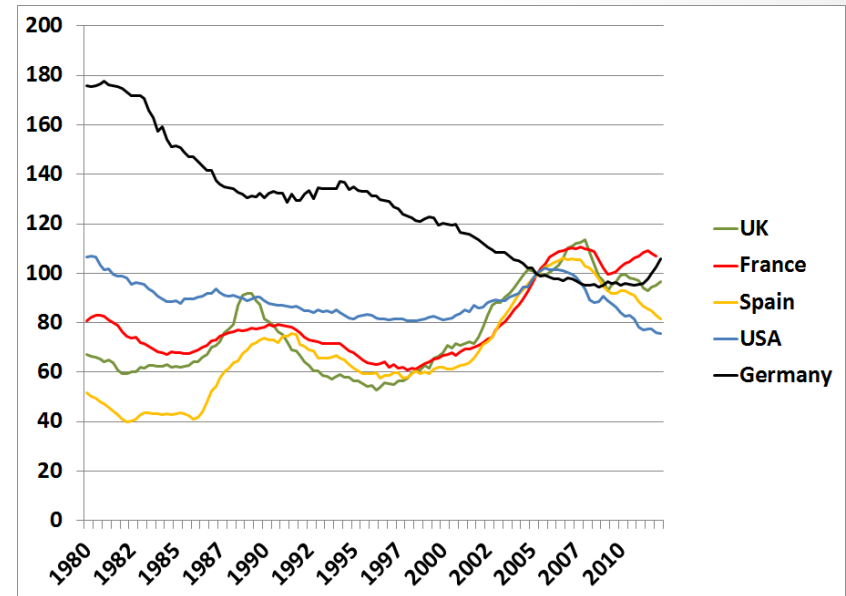
International Comparison

Are French Prices too High or German Prices too Low?

House Price-to-Income Ratios, Short-Term

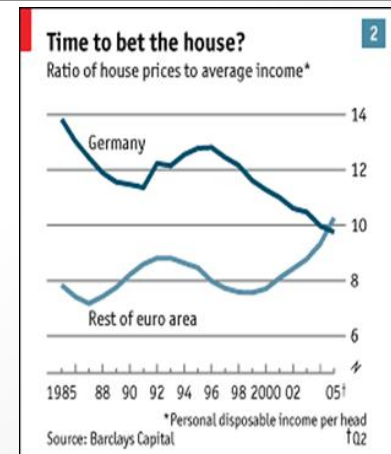


House Price-to-Income Ratios, Long-Term



- Goldman-Sachs: 2 groups of markets
- Germany/France still in take-off group? Or exuberance?
- Long-term view important.
- Denmark: proposal to tie bank house price valuation to income growth

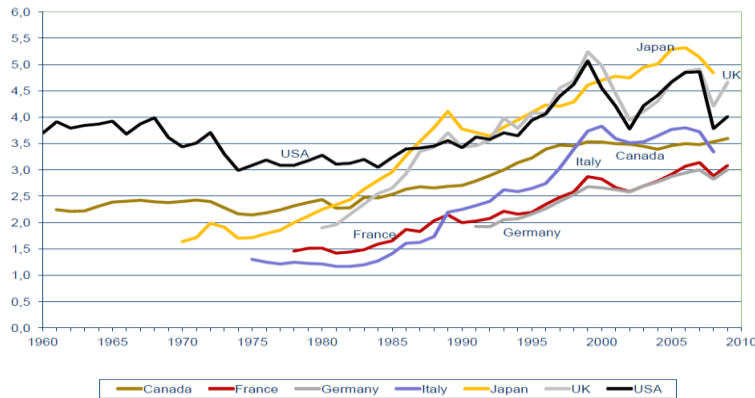
Source: OECD, Finpolconsult computations, The Economist



International Comparison

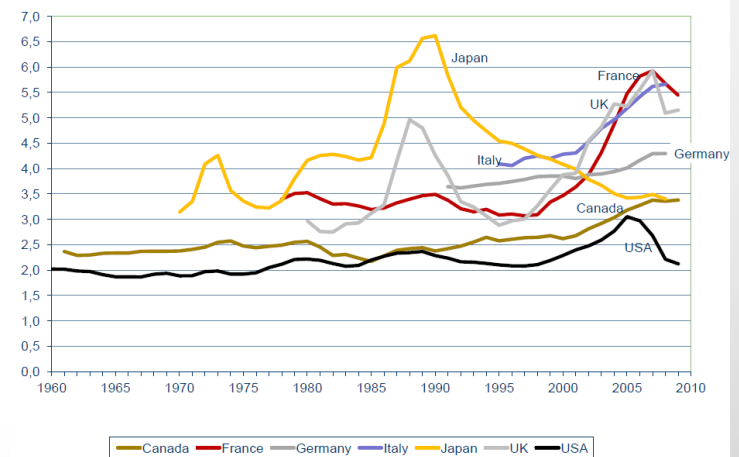
French and German Households are at Par on Financial Wealth

Gross financial assets - income ratio



... but Differ Strongly in Real Asset Wealth

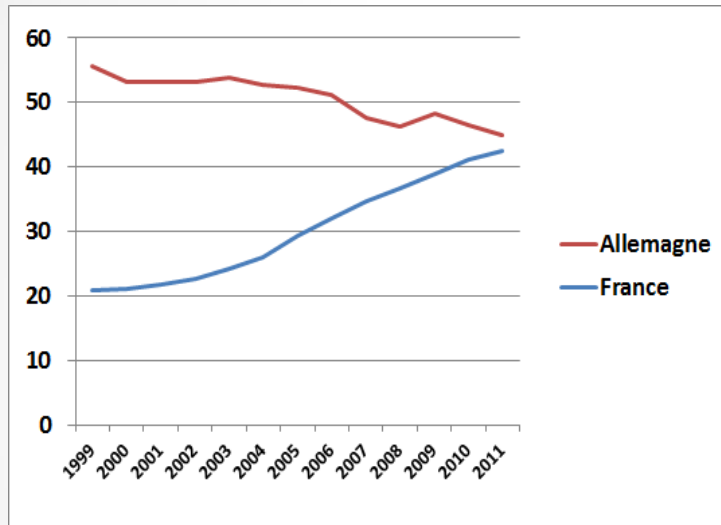
Real assets-income ratio in G7 countries



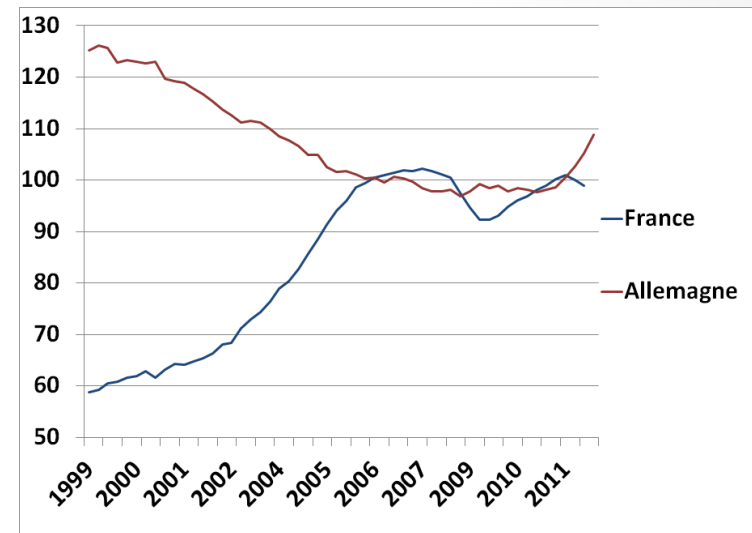
International Comparison

Debt Dynamics Explain Some of the Differences

Mortgage-to-GDP Ratios

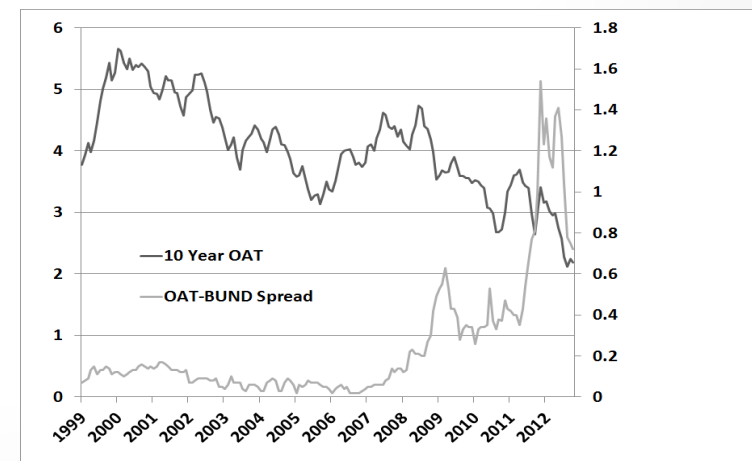


House Price-to-Income Ratios*



- Rate compression and catch-up effects have boosted French mortgage market more than German,
- Otherwise similar structures (fixed-rate product, conservative LTV etc.),
- Is France importing too much capital?
- Effect limited to hot spots (Paris) or nationwide?

French Government Bond Rates

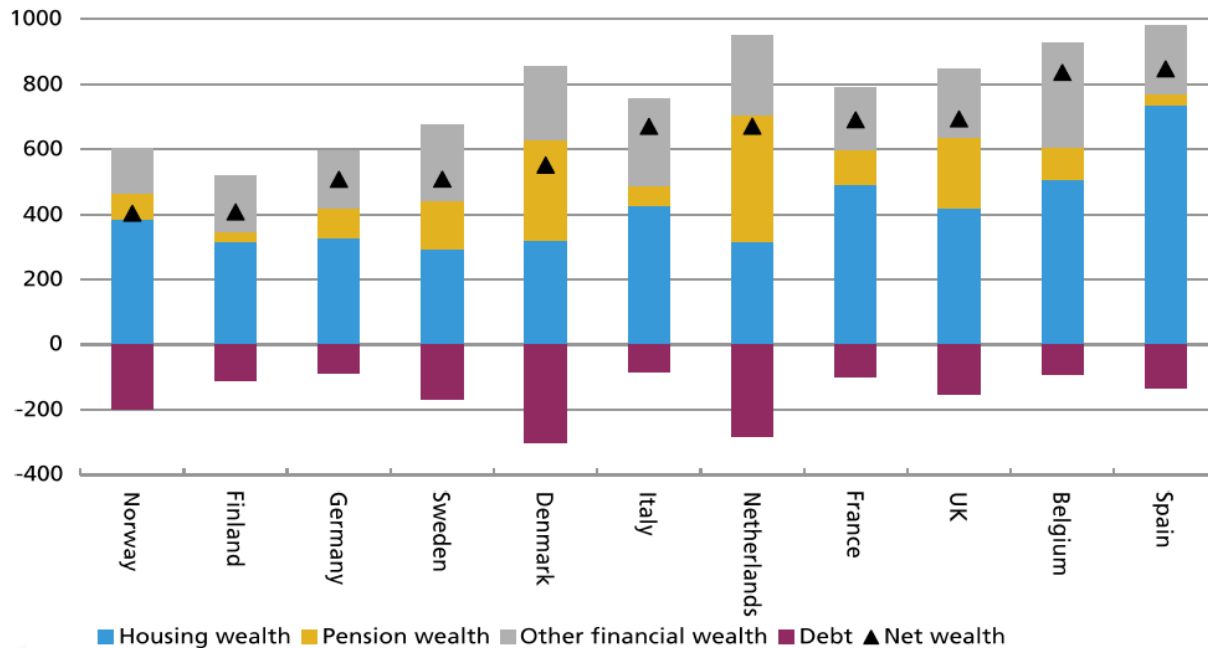


Source: Hypostat, OECD, ECB, Finpolconsult computations. *reindexed to 2011.

International Comparison Household Assets and Debt

Household assets and gross debt

Per cent of disposable income, 2011



Source: OECD, national central banks and own calculations.

Conclusion

- German house price discovery is hampered by data problems, with the two most advanced indices covering 15-20% of transactions only.
- Bottom-up indices along the lines of INSEE are for the future, will be produced on smaller (less reliable) data bases.
- Available hedonic analysis exposes high impact of policies: VAT/property tax and energy cost increases, regulatory cost.
- Successes of the 1990s in reducing construction costs are being reversed.
- Currently developing housing bubble in metropolitan areas, driven by low rates, flight to safety / reversal of capital exports and focused investment. There may be also a real side of the bubble (overoptimism on fundamentals). However, rural/commuting areas are in stagnation.
- Price levels (absolute, price-to-income) now lower than France after catch-up growth in mortgage debt. How much mortgage debt is sustainable?