

# **Home Prices Over the Long Run**

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# Who I am

- A civil servant with the French ministry in charge of (among many other things) housing
- Working with the internal audit department (CGEDD, formerly CGPC)
- We audit policies (and organizations) ex-ante and ex-post
- We developed audit tools, among them a long term vision
- We provide our long term tools and analyses to our colleagues and to the general public:
  - since Dec 2008 on [http://www.cgedd.developpement-durable.gouv.fr/rubrique.php3?id\\_rubrique=138](http://www.cgedd.developpement-durable.gouv.fr/rubrique.php3?id_rubrique=138)
  - earlier, on [www.adef.org/statistiques](http://www.adef.org/statistiques) (ADEF is a non-profit organization, independent from the government; although I published on its website and in its journal, I am not a member of ADEF)
  - including a page and some documents in English
- My work on home prices in the long run began in the late 1990's.
  - 1950-1997 Paris and France indices published in 1998
  - 1840-1999 Paris and 1936-1999 France indices published in 2001

# The two papers presented here

- « [Comparing Four Secular Home Price Indices](#) » , February 2008. This working paper compares secular home price indices in four countries, one of which goes back to the 13th century. It stresses that their long term trend should be interpreted with caution.

([http://www.cgedd.developpement-durable.gouv.fr/IMG/zip/comp4secind\\_cle6a1453-1.zip](http://www.cgedd.developpement-durable.gouv.fr/IMG/zip/comp4secind_cle6a1453-1.zip))

- « [Long term \(1800-2005\) Investment in Gold, Bonds, Stocks and Housing in France - with Insights into the USA and the UK : a Few Regularities](#) » , January 2007 (1st version: mid-2006). This working paper comments on the evolution of asset prices for the past two centuries. Its exhibit 1 compares French and British home prices in the long term. Its exhibit 2 comments on French American cross-border investments in the past two centuries, in terms of return, volatility and diversifying power.

([http://www.cgedd.developpement-durable.gouv.fr/IMG/zip/ltinv\\_cle2321f8-1.zip](http://www.cgedd.developpement-durable.gouv.fr/IMG/zip/ltinv_cle2321f8-1.zip))

- I'll try here to focus more on the results than on the methodology

# Methodology (=mostly the 1st paper)

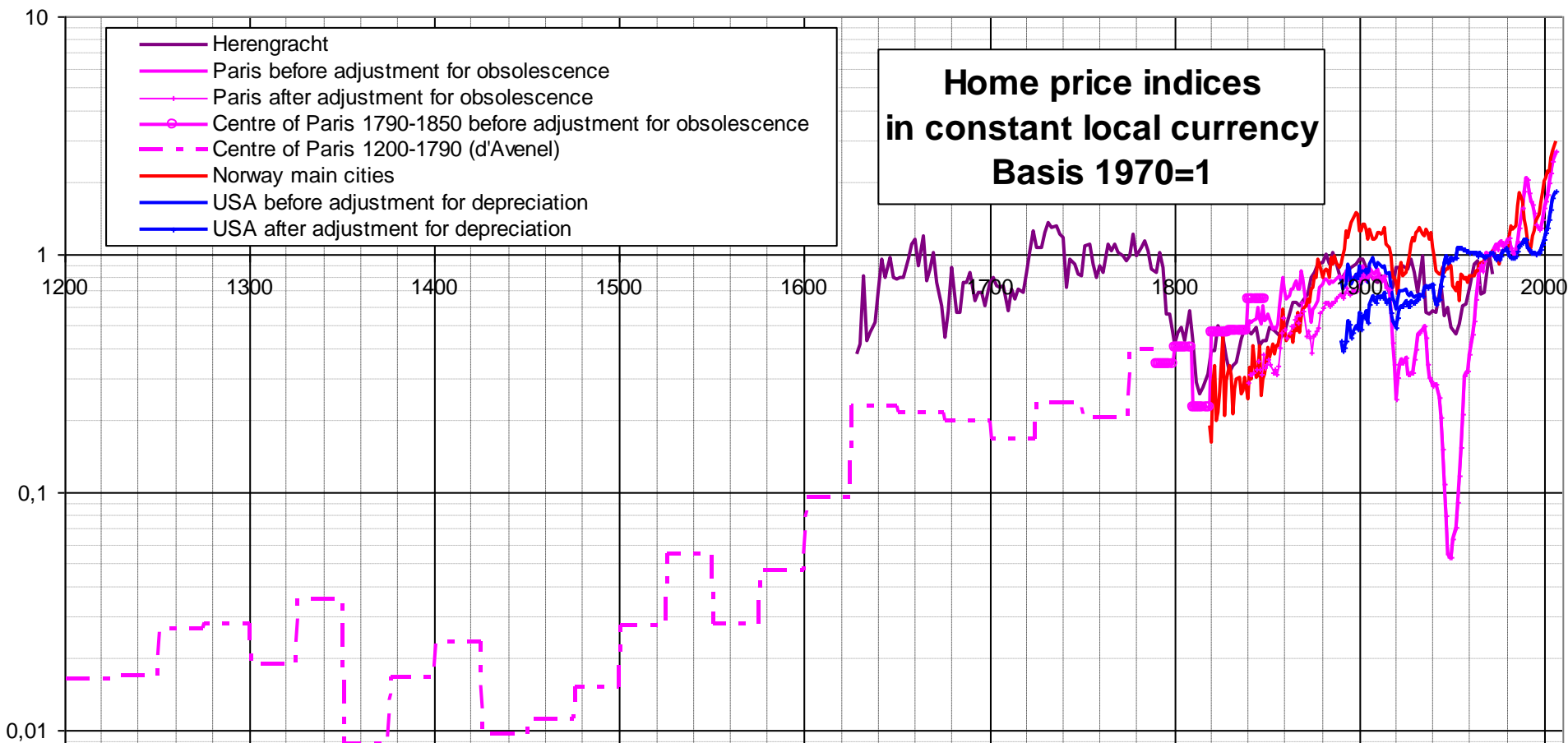
- Long run home price indices are very sensitive to:
  - their perimeter (ex: did its social status go up, down?)
    - => a « Paris index » is not a « France » index, a « Herengracht index » is not a « Netherlands index » nor even an « Amsterdam index »
  - their methodology (may impact an index by around 1% per year or more)
- Usually you don't choose the perimeter (it is determined by your database) and you try to fit the methodology to the type of data as best as you can
- Secular indices usually are based on repeat sales methods (least bad choice or, often, the only possibility) but repeat sales methods are not perfect and there are several variants, ex:
  - How do you take into account changes in quality of a given building over time (obsolescence, better comfort)?
  - What is quality? (includes or not the “quality” of the neighborhood) (and which measure of quality does the database provide)
  - A method fit to one neighborhood, one type of buildings may not be to other ones (ex: Haussmanian Paris buildings versus 13th century Paris wooden houses or versus American wooden suburban houses)

# Our record: d'Avenel's Paris home price index 1200-1800

... but fragile:

- quality effects identified but treated in an undisclosed way (not repeat sales),
- transformation of the area ("center of Paris"),
- « CPI », etc.

although d'Avenel was a very intelligent person



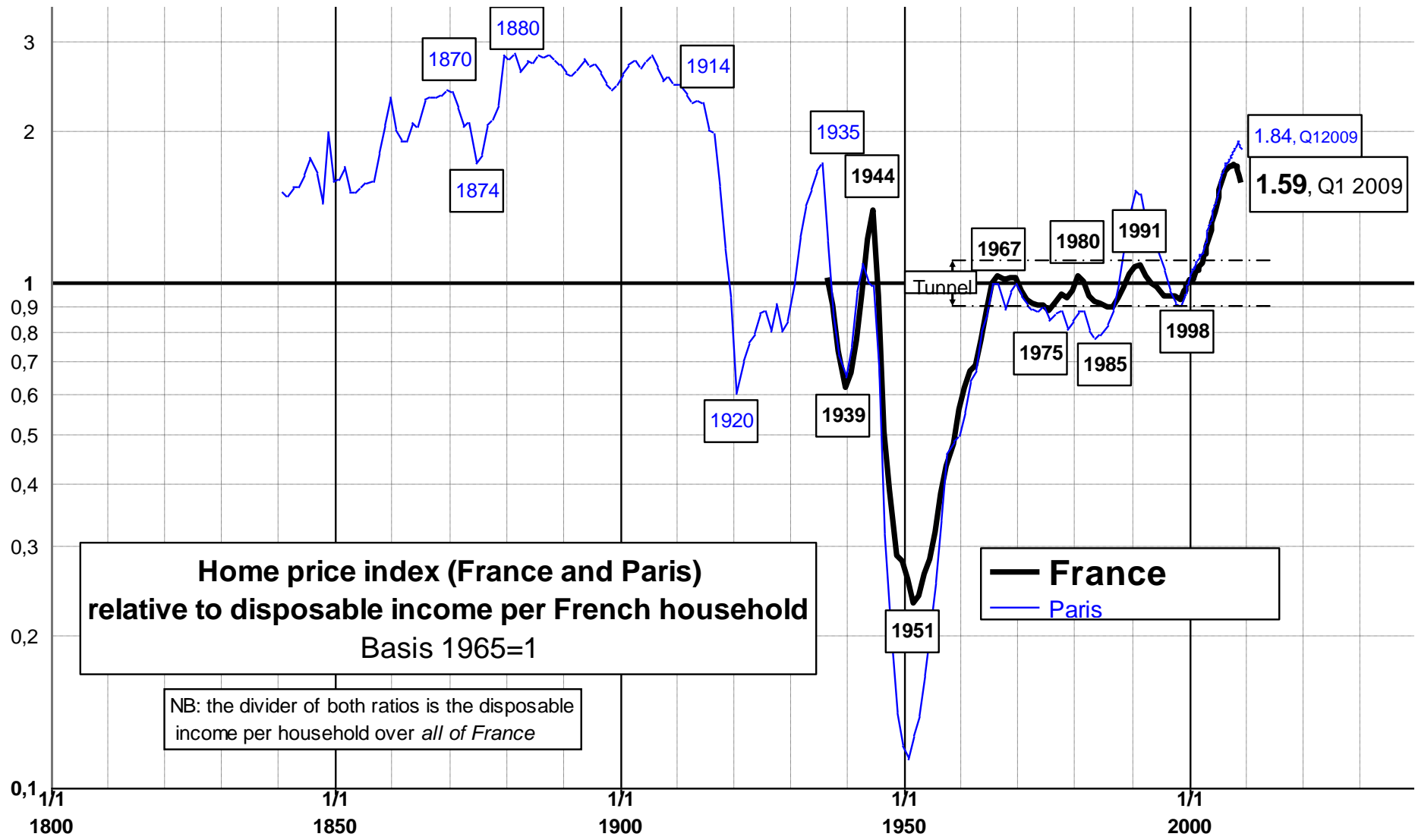
# A common feature of the four secular home price indices compared

- They grow at various paces, but at most like income per household, more often like the « CPI »
- The differences in trend growth stem in large part at least from methodological differences

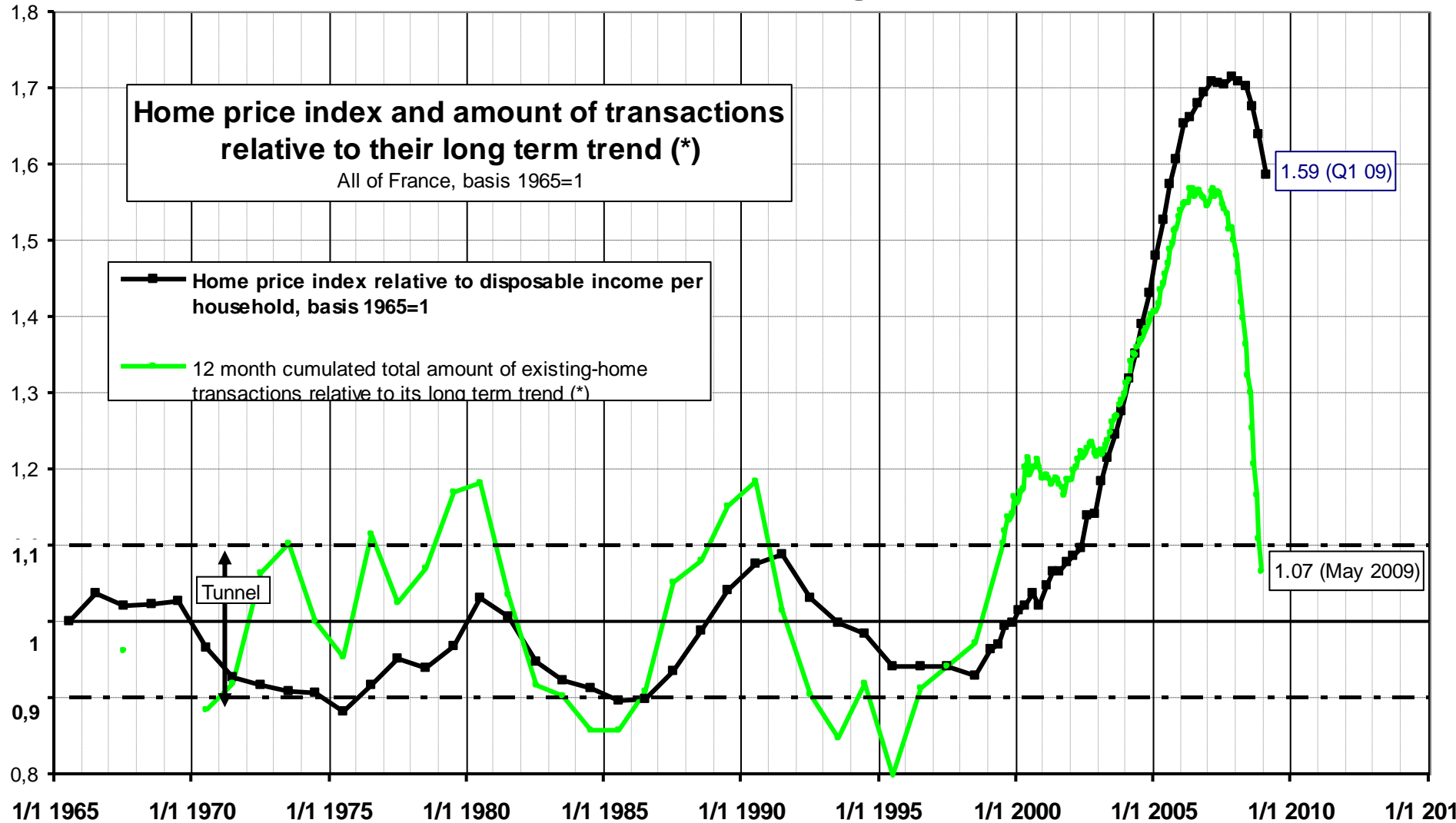
# Results (mostly the 2nd paper)

for France with comparative insights into the USA and the UK  
(updated charts)

## Home price index (Paris and France) relative to disposable income per household (France)



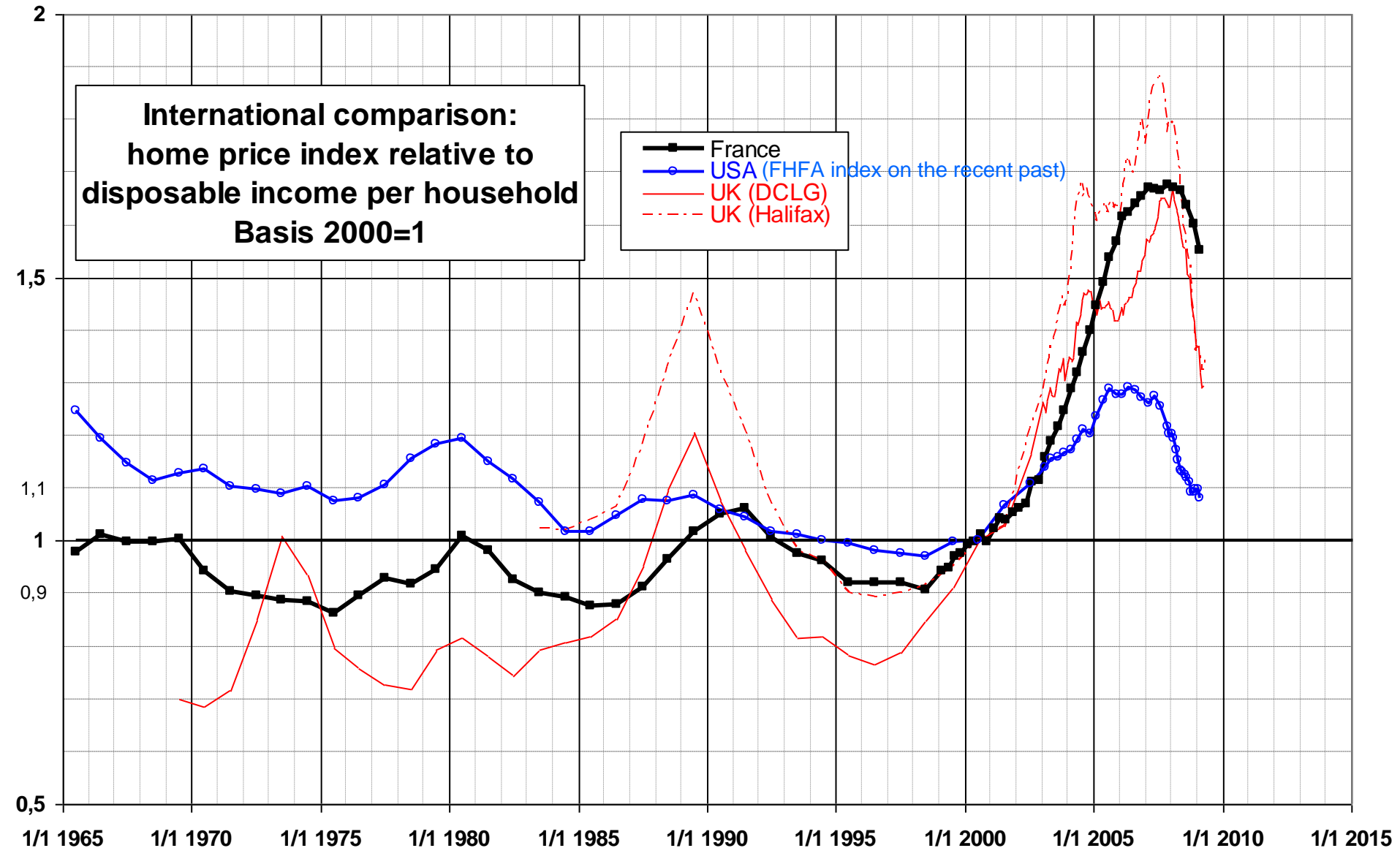
The « useful » period for extracting  
 « historical regularities » possibly pertinent  
 to anticipate the future begins in 1965 in France





# Comparison with the USA and the UK

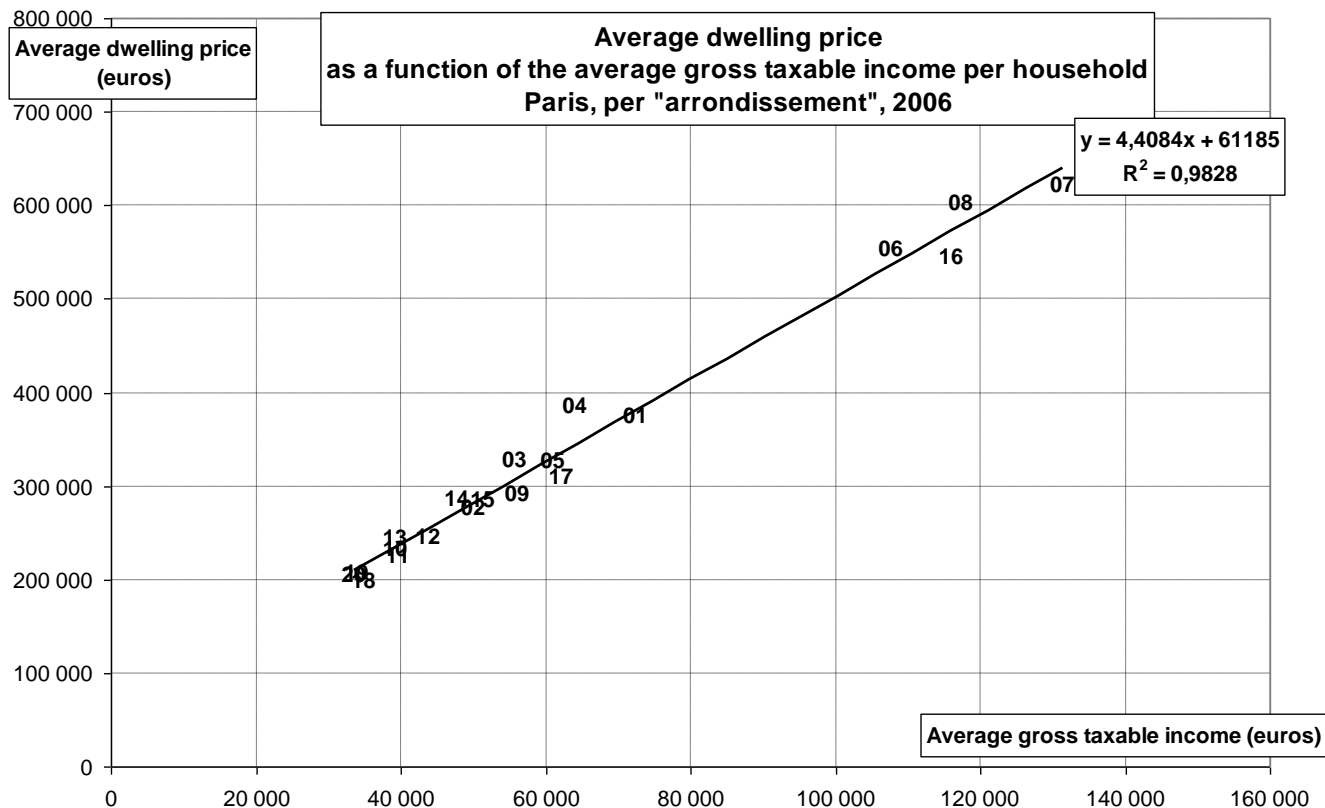
(France seems to lag the USA and the UK by 1 to 2 years)



# Main properties of the home price index since 1965

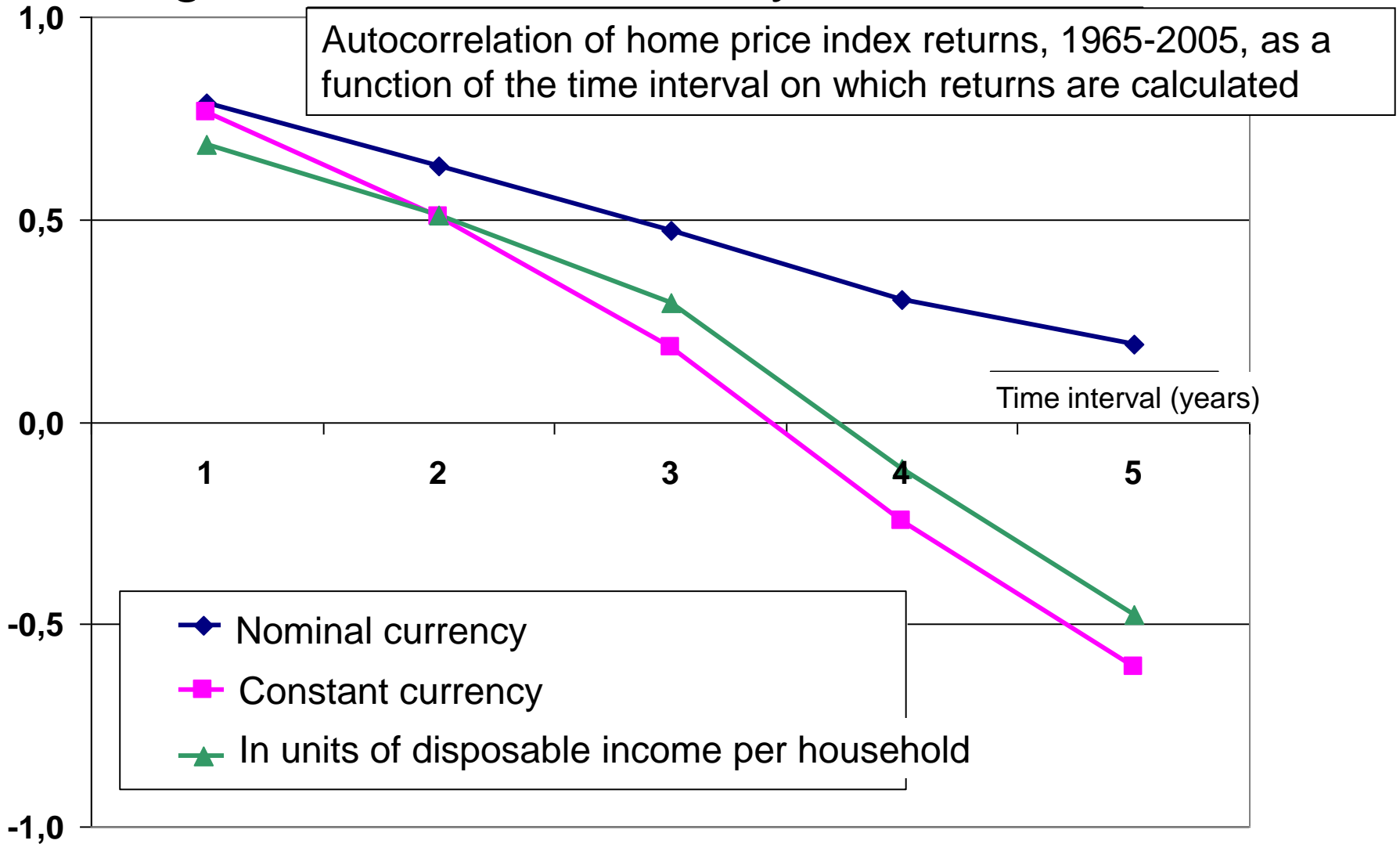
- Mean return process around trend parallel to income per household (or equivalent)

Consistent with link in space between home price and income per household (but less obvious than it seems)



# Main properties of the home price index since 1965 (foll.)

- High autocorrelation of 1 year returns



# Main properties of the home price index since 1965 (foll.)

- Beyond that, little link with:

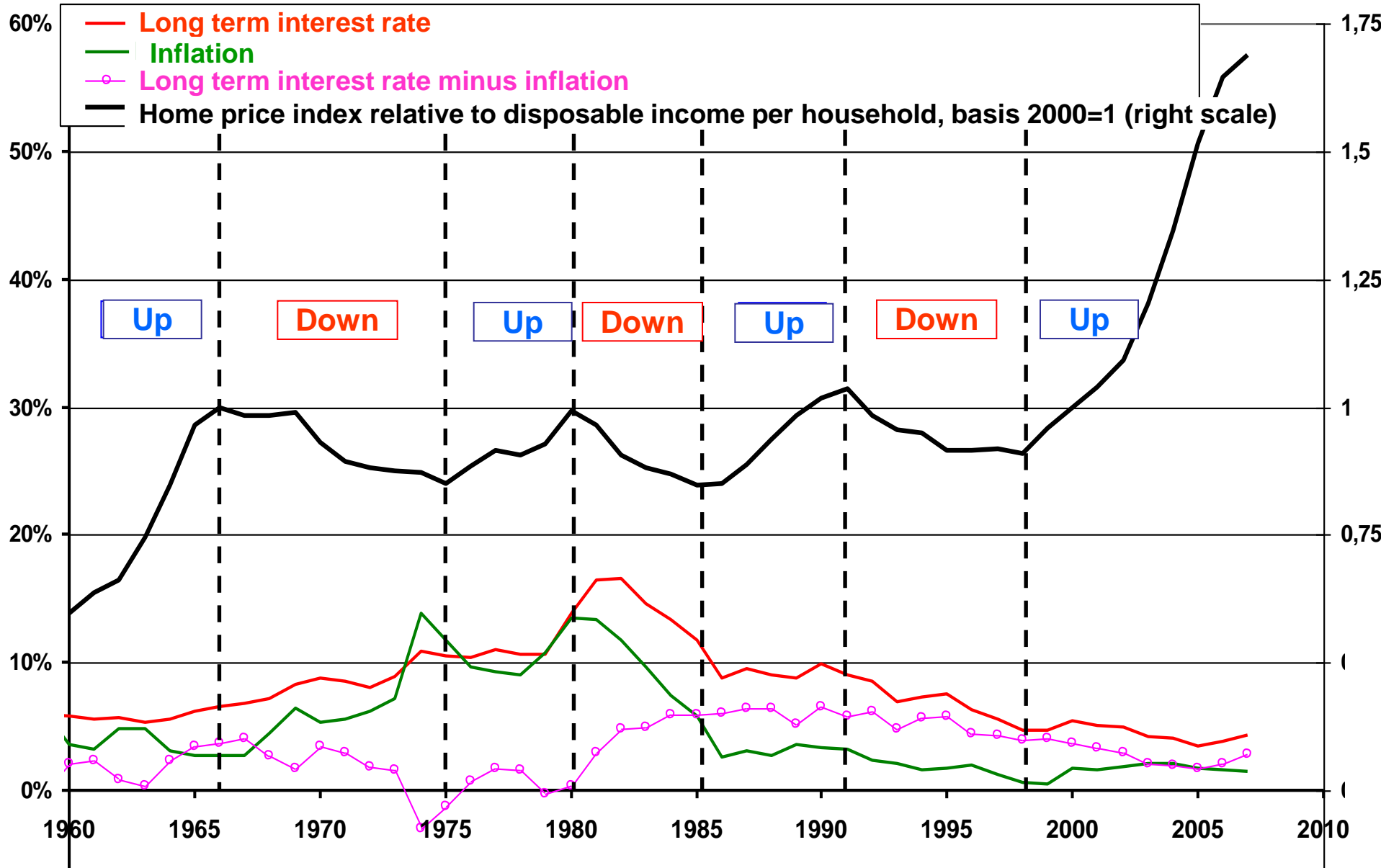
- « Supply / demand » variables (i.e. size of the housing stock / population or number of households)
- Interest rates

Counter to intuition but a fact

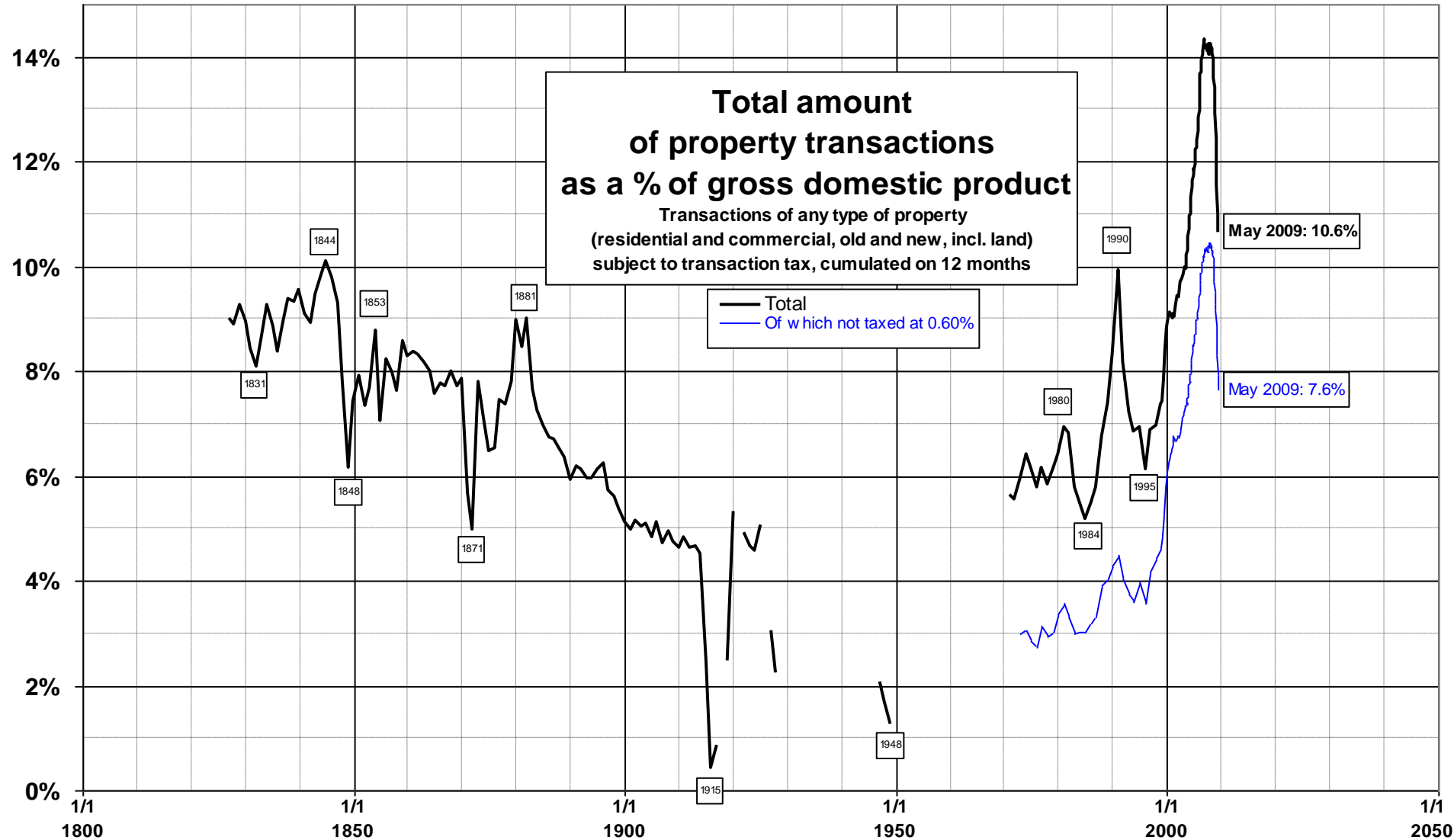
Tools:

- multiple regressions of returns (or residuals of 1-year autoregression), with or without lags, on various time intervals, with respect to various aggregates
- Box-Jenkins (ongoing, to be formalized)
- State spaces (SAS proc ucm) (to be done, but little prospect of change in the conclusion)
- Dependence with respect to « liquidity », or lenders' « propensity to lend », not tested because I don't have a data series representative of these concepts – Maybe explains France's 1 to 2 year lag with respect to the USA and the UK – Link with the other papers presented in this session?

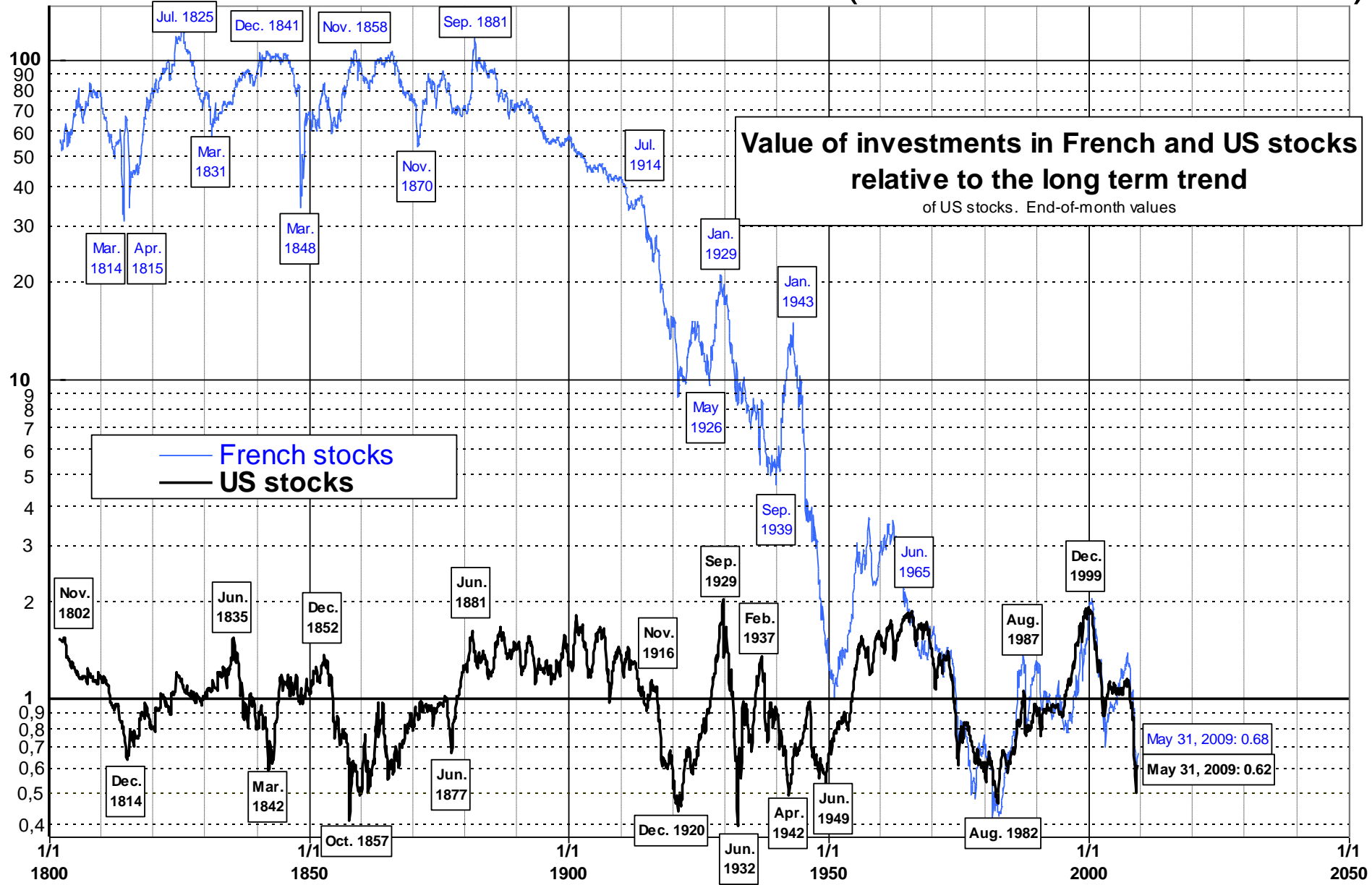
# Illustration (beginner's level): no coincidence between changes in home prices and changes in interest rates



# We also have data on the amount of real estate transactions



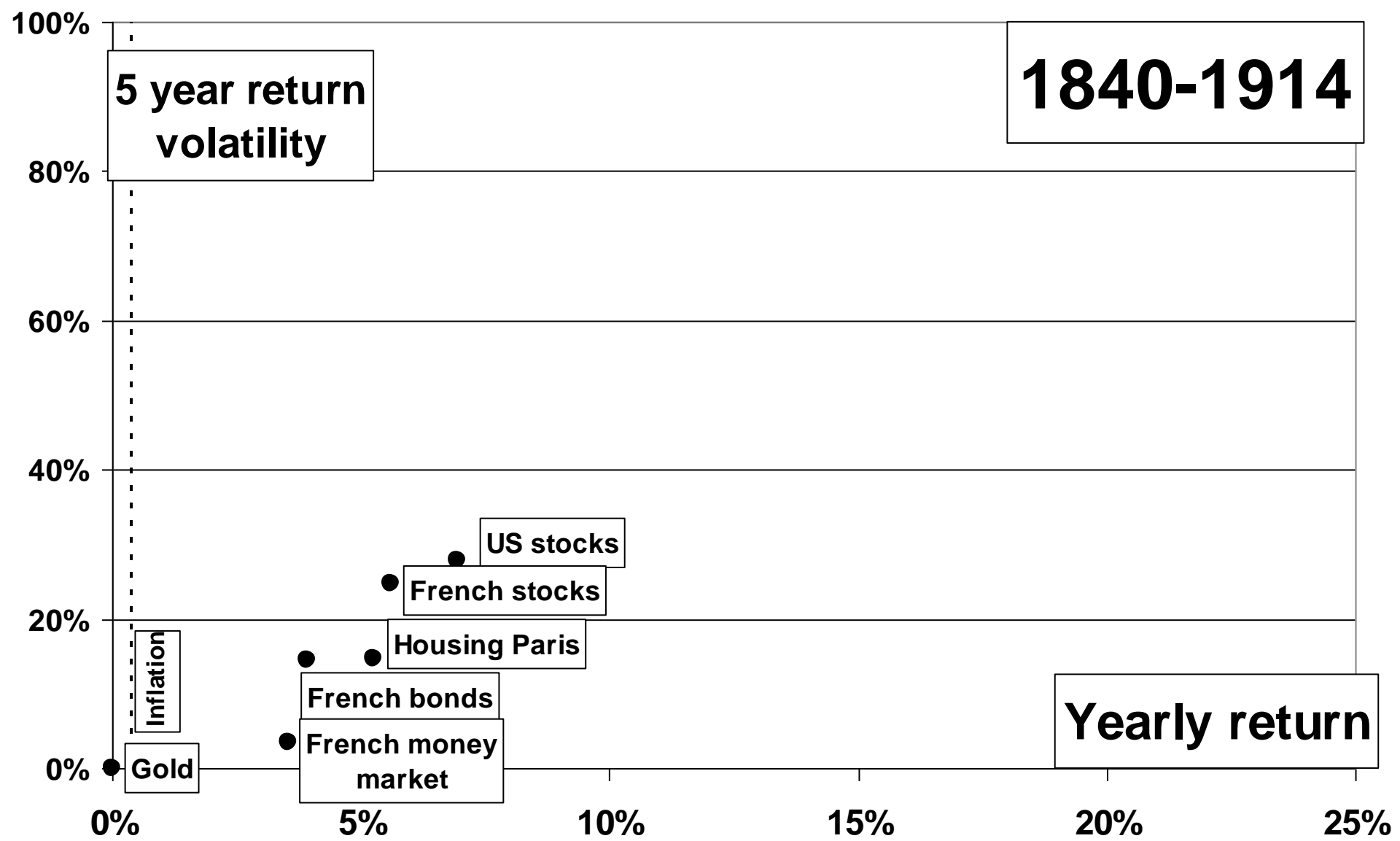
# We also have data on the value of an investment in stocks (dividends reinvested)



# Investment in housing (in Paris) compared to other investments

- Return / volatility as proxies for return / risk couples
- Return / volatility couples are mostly consistent, once one factors out specific phenomena
- The following charts are for French investors (i.e., investors whose currency is the French one)
- Excluding taxes on income and capital gains but including property taxes





**1840-1914**

**5 year return  
volatility**

**Yearly return**

**Inflation**

**Gold**

**French money  
market**

**French bonds**

**Housing Paris**

**French stocks**

**US stocks**

**0%**

**5%**

**10%**

**15%**

**20%**

**25%**

**100%**

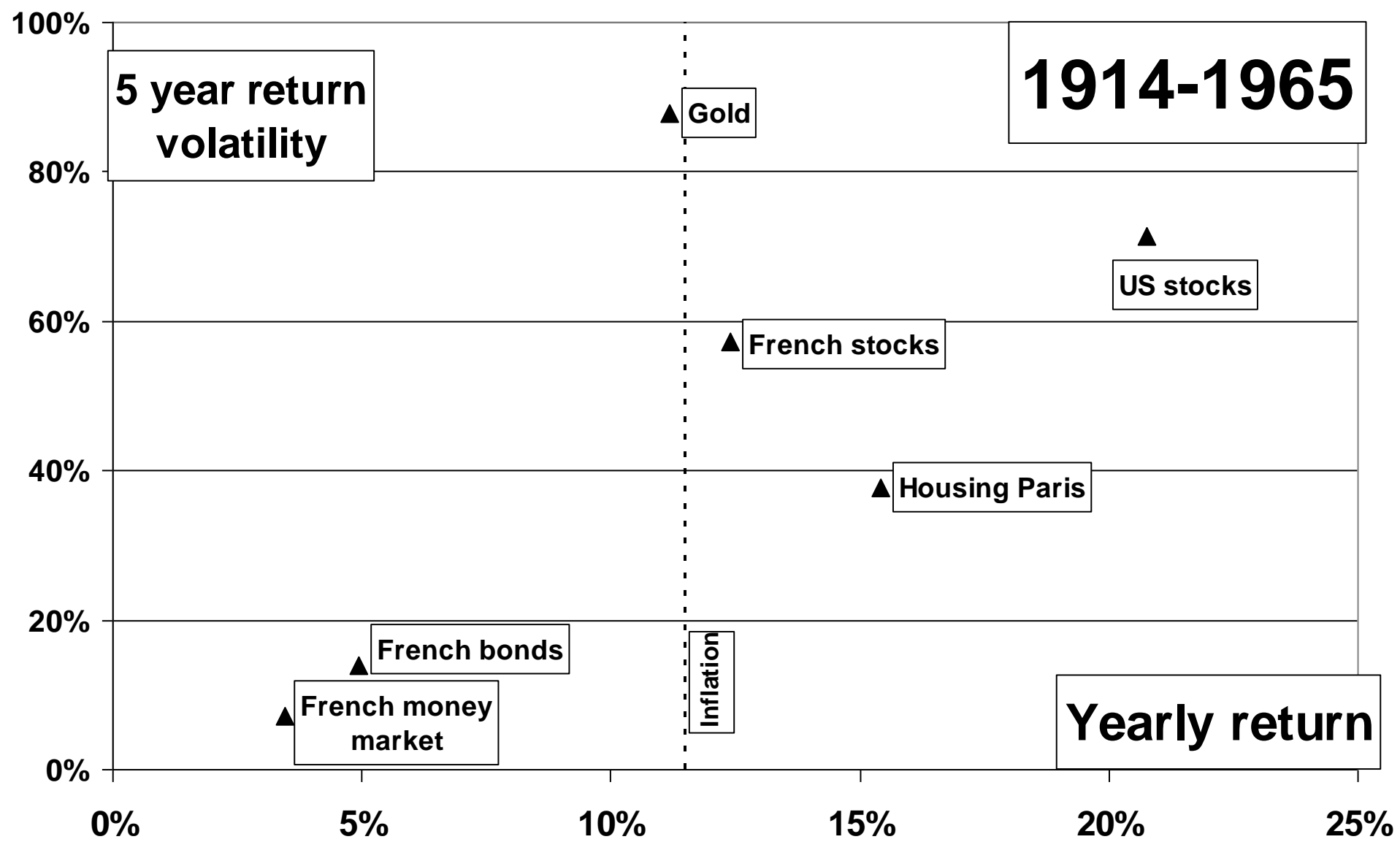
**80%**

**60%**

**40%**

**20%**

**0%**



**1914-1965**

**5 year return volatility**

**Yearly return**

Gold

US stocks

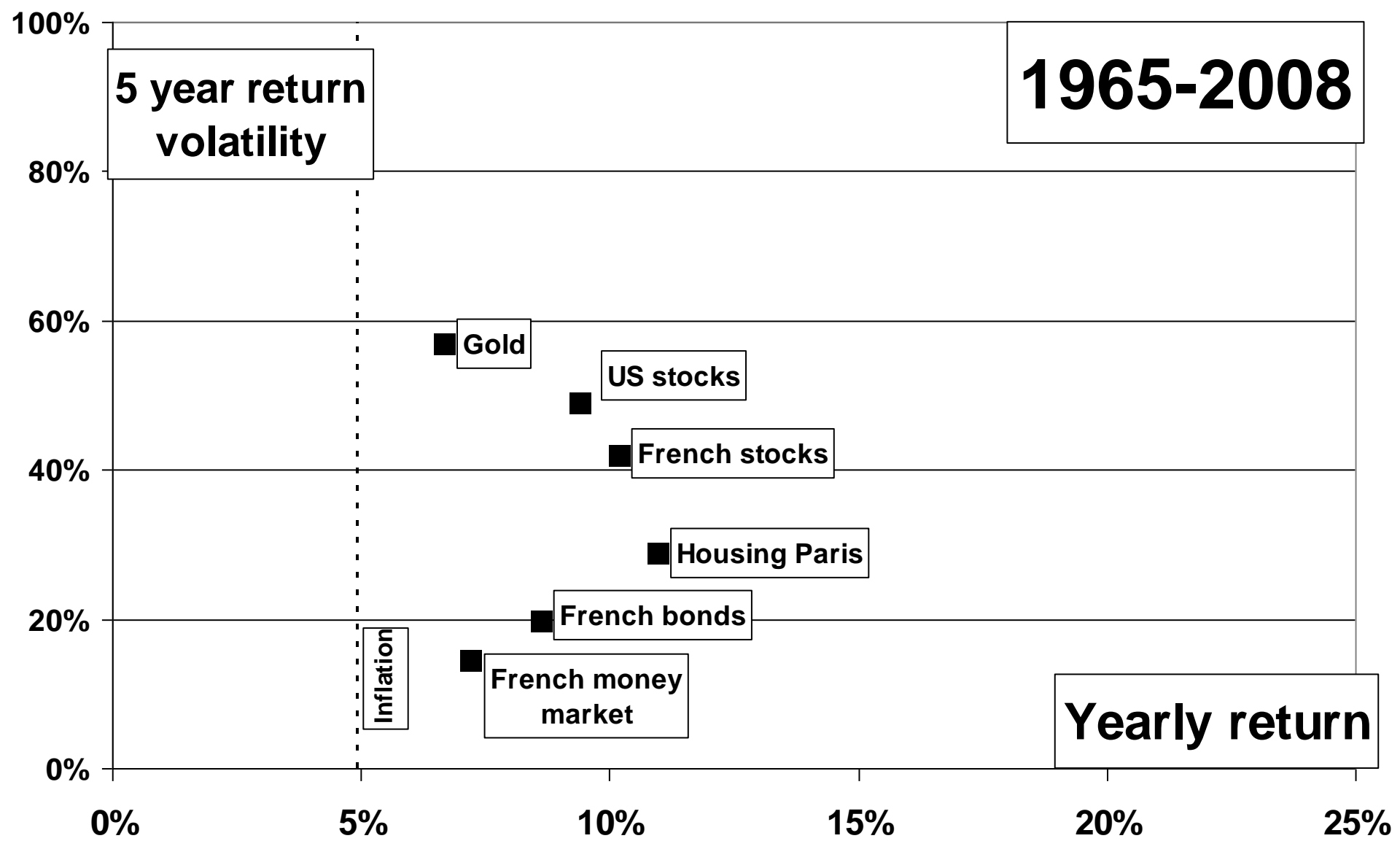
French stocks

Housing Paris

French bonds

French money market

Inflation



**1965-2008**

**5 year return volatility**

**Yearly return**

0%

5%

10%

15%

20%

25%

100%

80%

60%

40%

20%

0%

**Gold**

**US stocks**

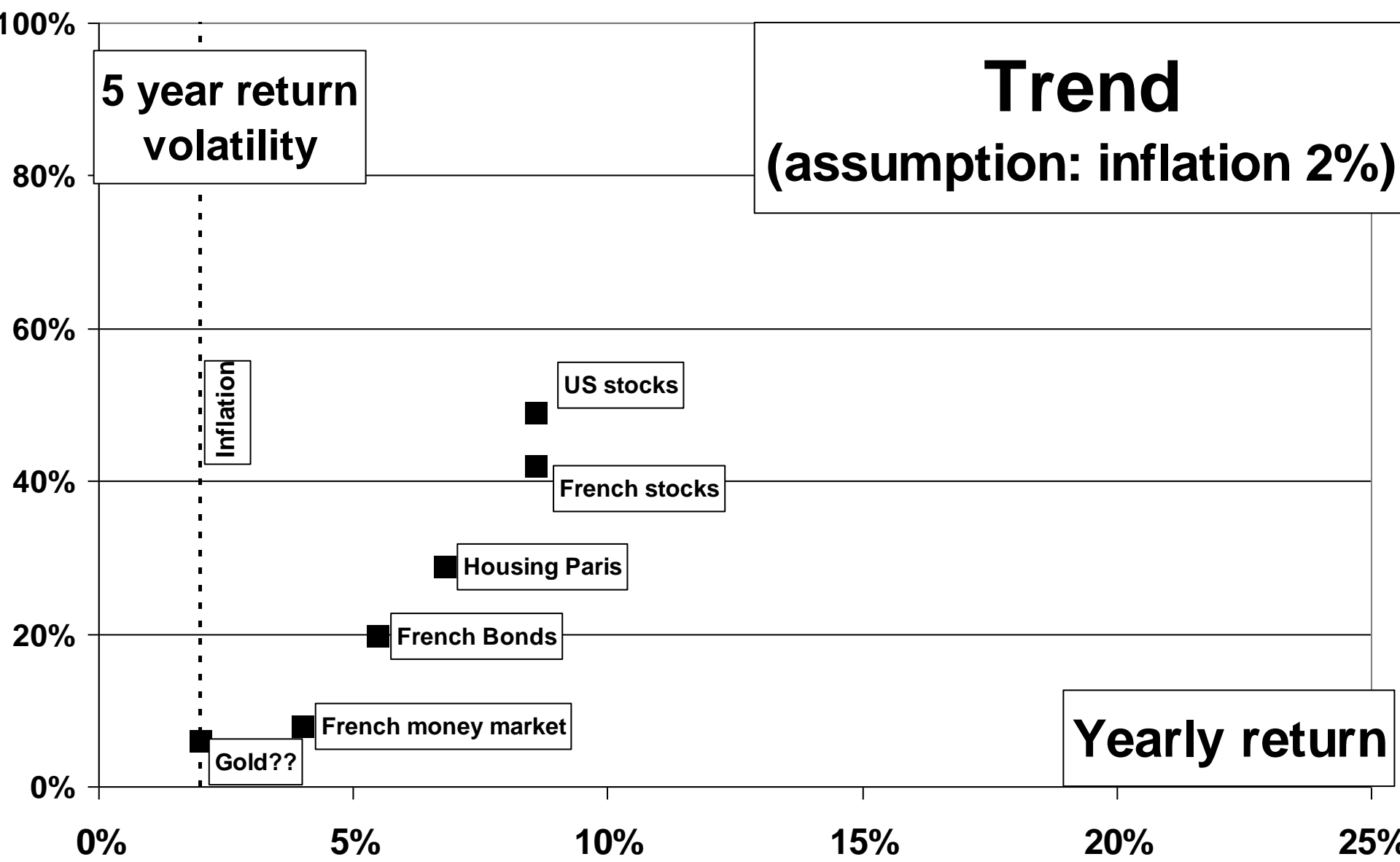
**French stocks**

**Housing Paris**

**French bonds**

**French money market**

**Inflation**



# Investment in housing (in Paris) compared to other investments

- Not visible on charts: (physical) housing diversifies portfolios out of stocks (intuitive) and bonds (linked to absence of significant correlation with interest rates)

# CONCLUSION

- Having a long term perspective helps spot risks
- The data series are public, available to anybody wishing to explore their properties, **but**
  - be careful about their limitations (not fit for any use)
  - be careful about the historical context (ex: the very special 1914-1965 period in France)