Diversity Strengthens Housing Finance in Hungary Especially in the FX Crisis

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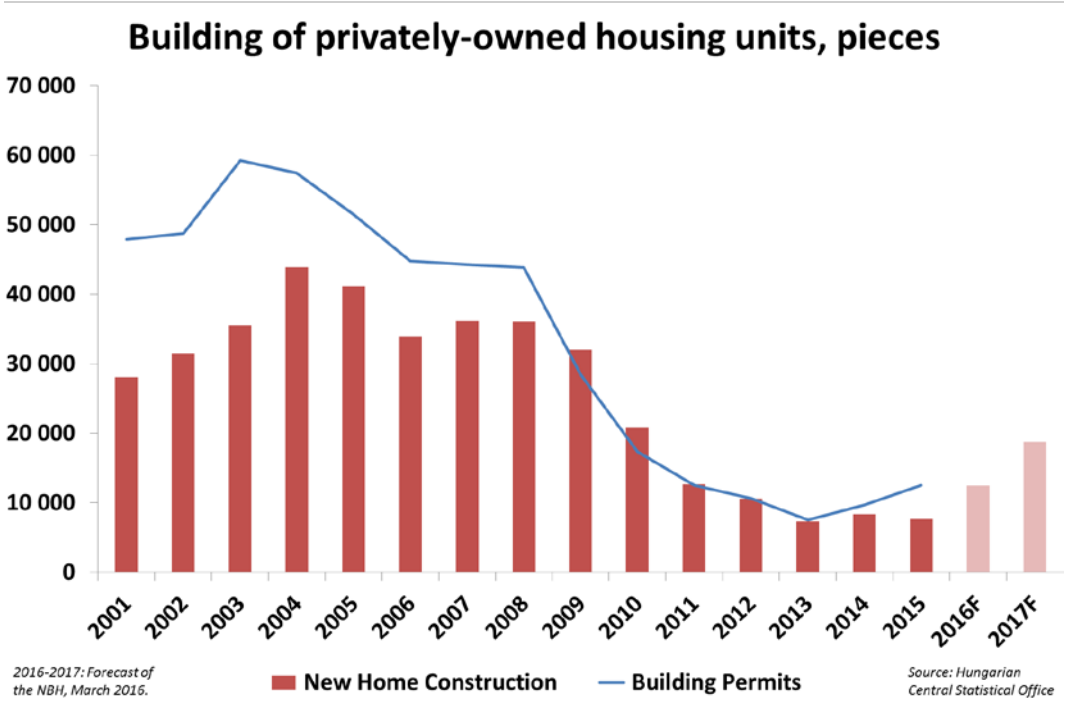
About Hungary

- **Population** — **9.9 million**
- **Land area** — **93,030 km²**
- **GDP (2015)** — **120,400 million USD**
- **Net income / household (2014)** — **9,240 USD / year**
- **No. of housing units:** — **3.9 million**
- **Privately owned: 96%**

- **Interest Rates (06.05.2016)**
  - National Bank Rate 1.05%
  - 1 year 0.93%
  - 5 years 2.30%
  - 10 years 3.24%



Note: 1 USD = 280 HUF

Source: Hungarian Central Statistical Office; National Bank of Hungary; EDP report (31.03.2016)

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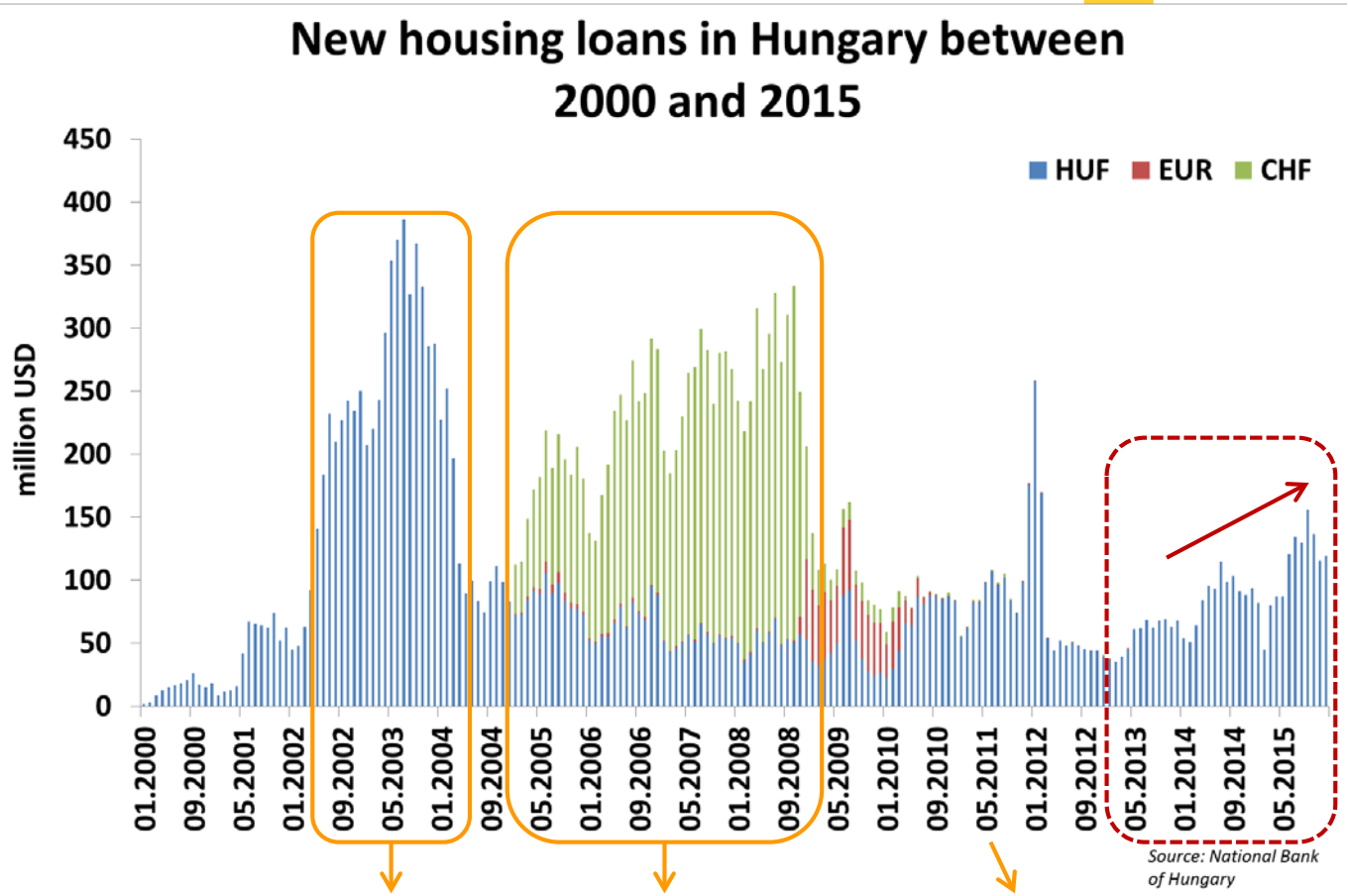
Housing Financing in the Last 15 Years



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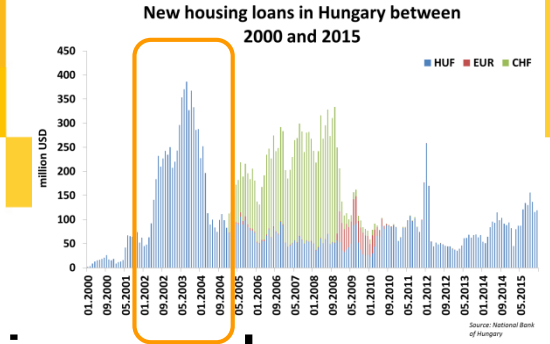
State Subsidized HUF Loans Between 2002-2004



- **The former levels of housing financing had to be increased drastically**
- **The Hungarian government introduced a new form of financing from 2002: state subsidized interest rate loans with personal tax advantages**
- **Practically a 0% interest rate loan due to the tax rebate**
- **A wide range of possible loan takers**
- **Increasing pressure on state budget leads to step-by-step aggravation of the conditions**
- **2004: product gradually disappears from the market**

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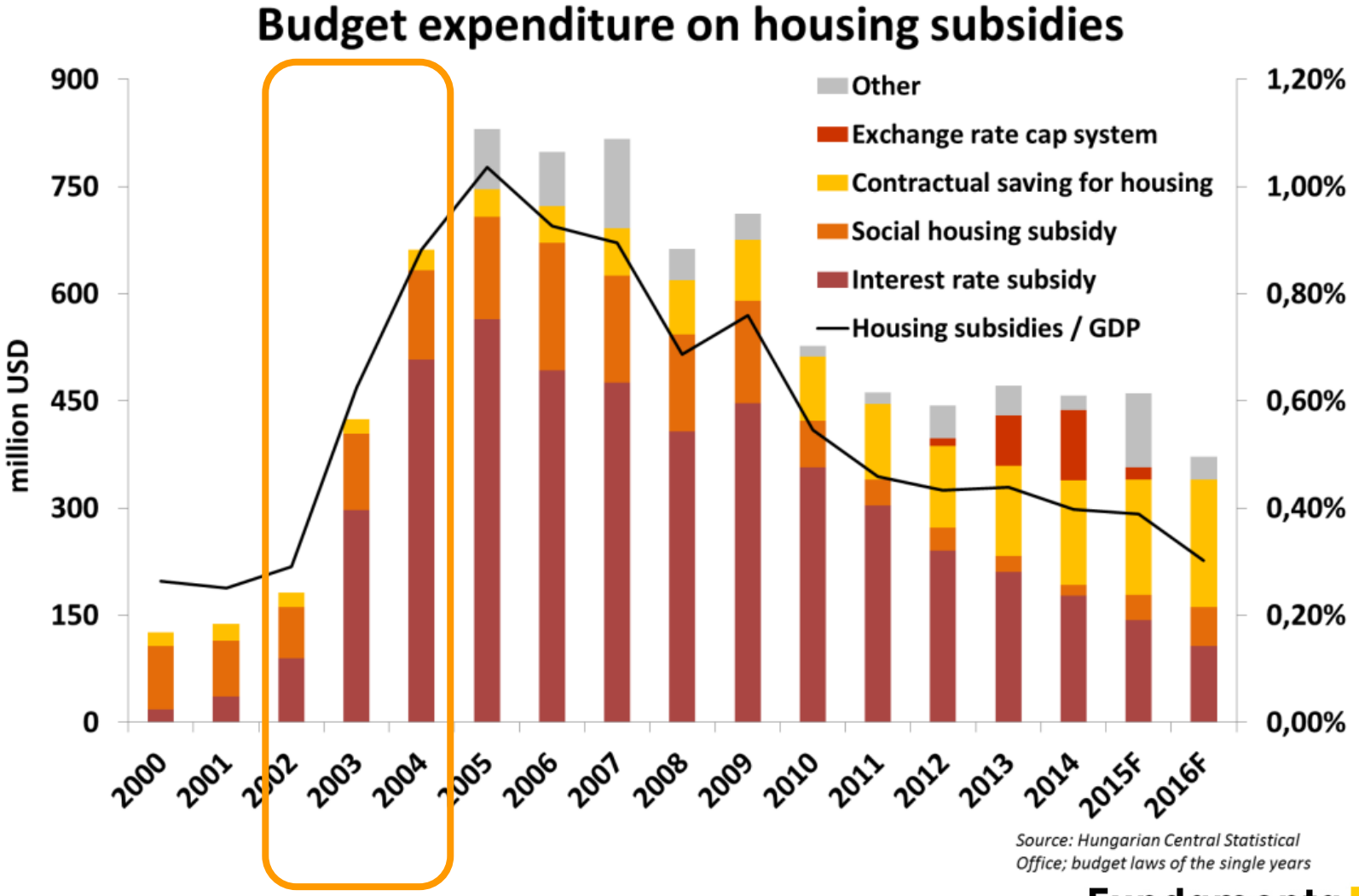
Not Sustainable Pressure on the Budget



Source: Hungarian Central Statistical Office; budget laws of the single years

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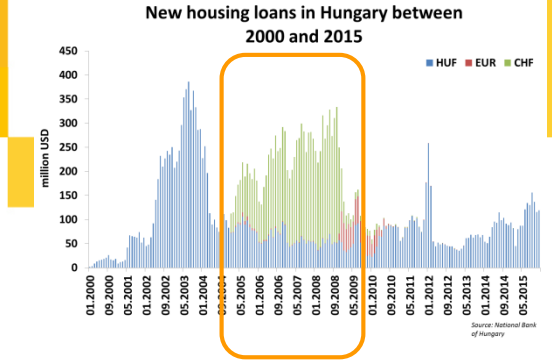
FX Loan Boom 2005-2008



- **FX loans take the place of the state subsidized HUF loans from 2005**
- **4-5% IR advantage compared to market priced HUF loans**
- **This means 50% lower monthly installment**
- **Misestimated risks (exchange rate, interest rate) – quite stable rates in the foregoing period**
- **With the financial crisis, the market collapses**

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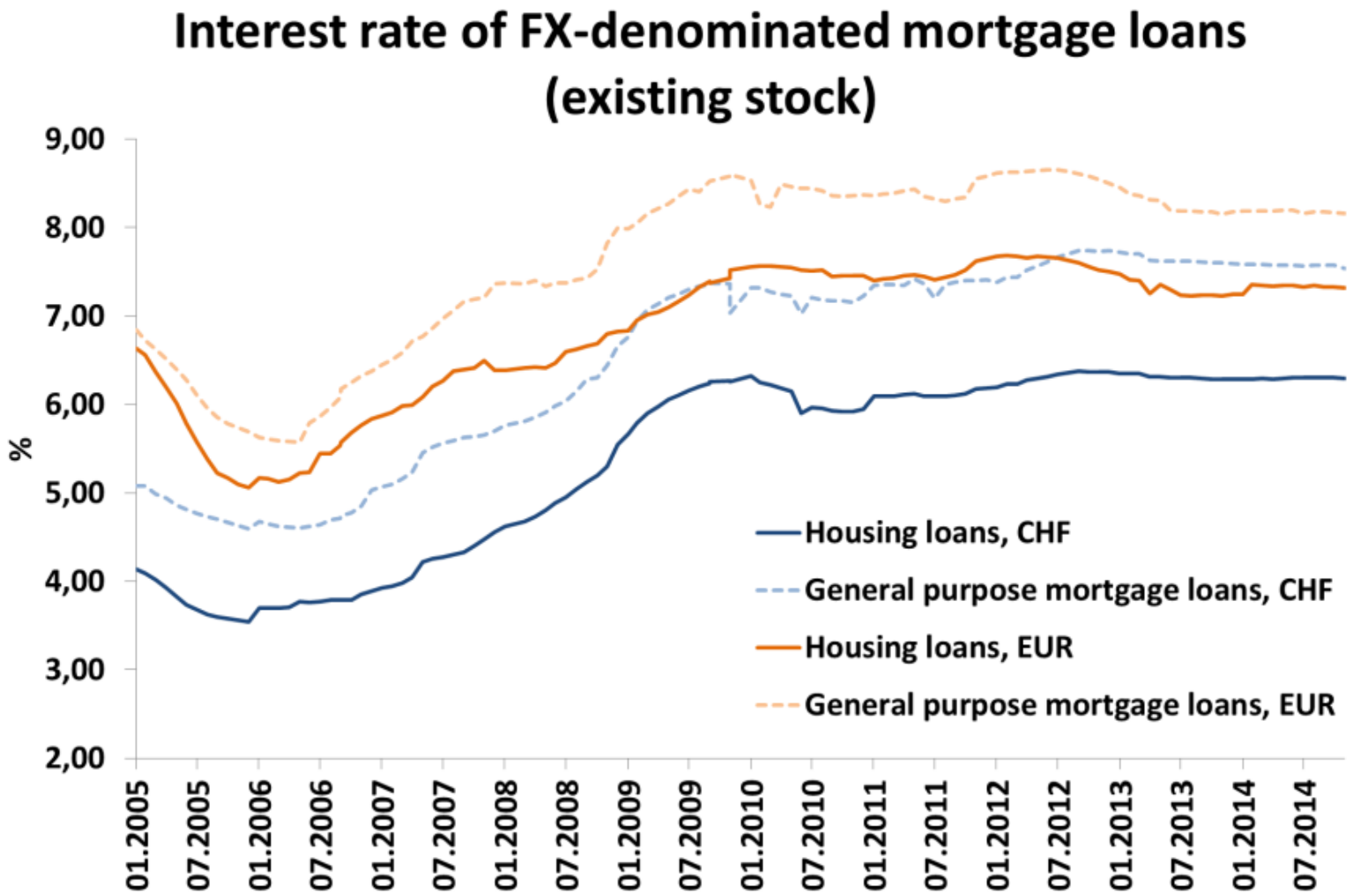
State Measures Taken to Help the FX Loans Clients

- **altogether more than 15% of the population was somehow affected by the FX loans problem**
- **most loans were paid out in 2007-2008 when the exchange rates were at their lowest**
- **interest rate, exchange rate and the change of the starting conditions after the first years of the loans together resulted in many cases in the fact that the monthly installments doubled**

Rise of the Interest Rates from 4% to 6%



Source: National Bank of Hungary

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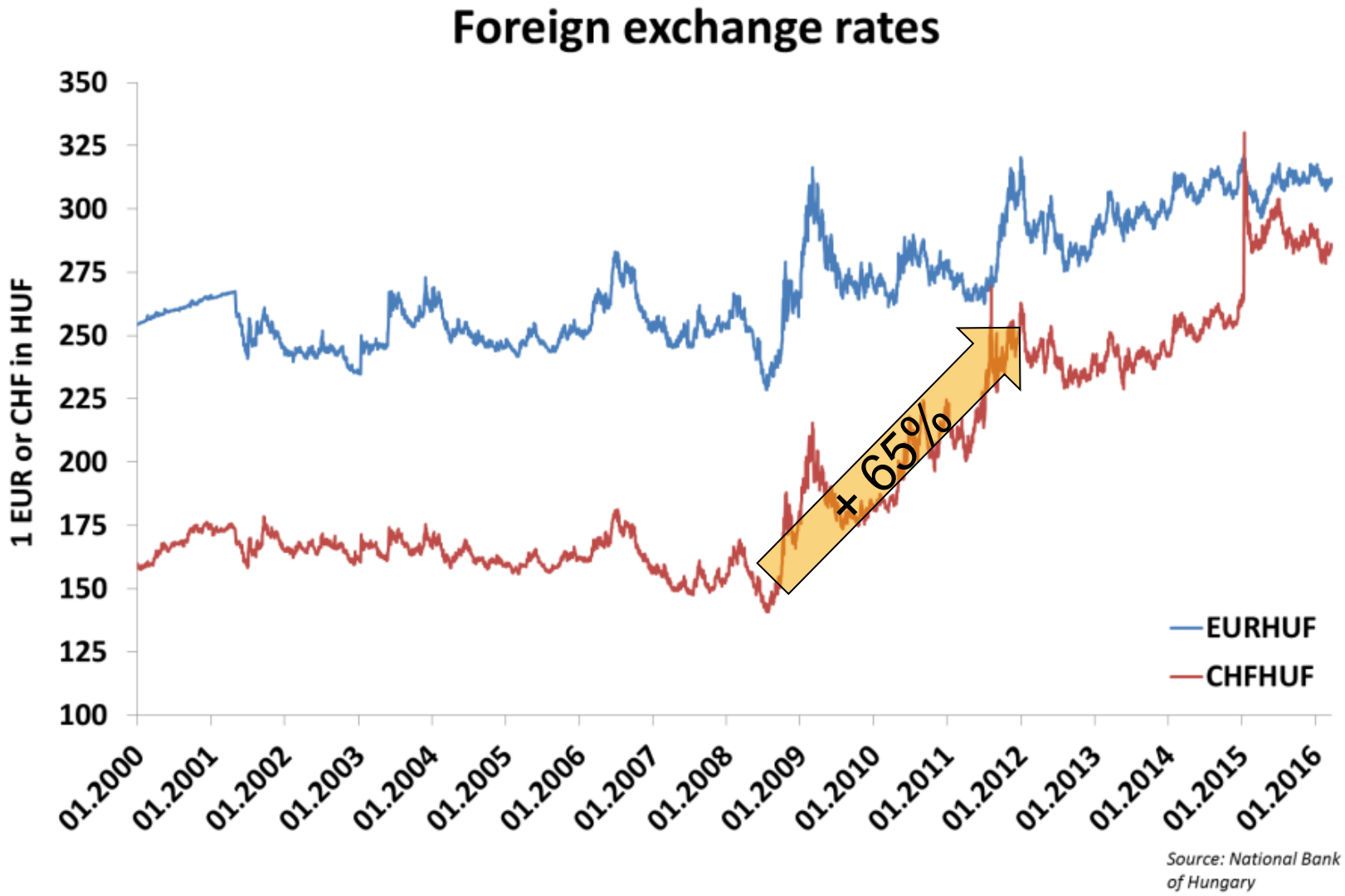
Explosion of the Exchange Rates



Source: National Bank of Hungary

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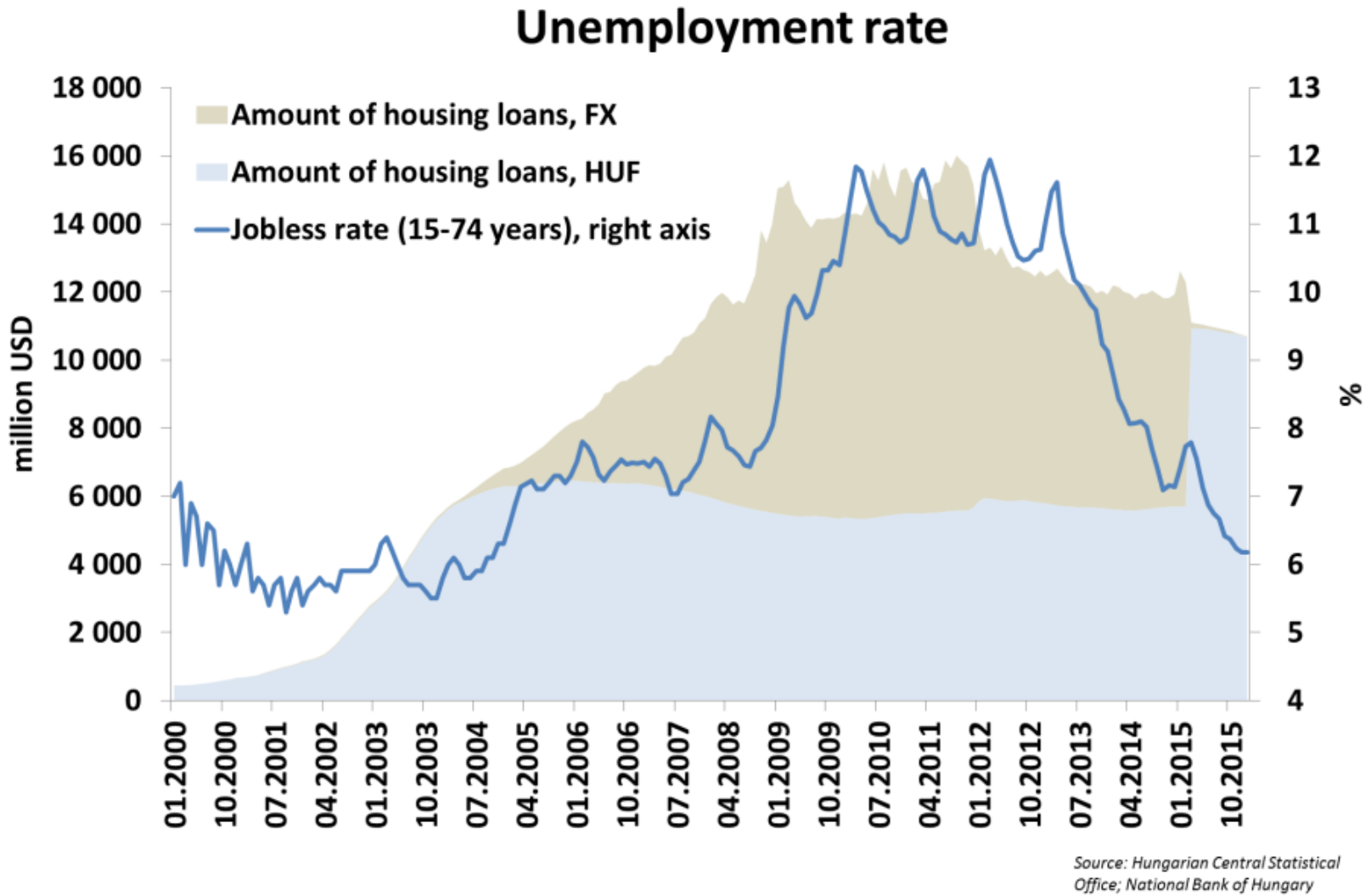
The Stabilization of Unemployment at a High Level



Source: Hungarian Central Statistical Office; National Bank of Hungary

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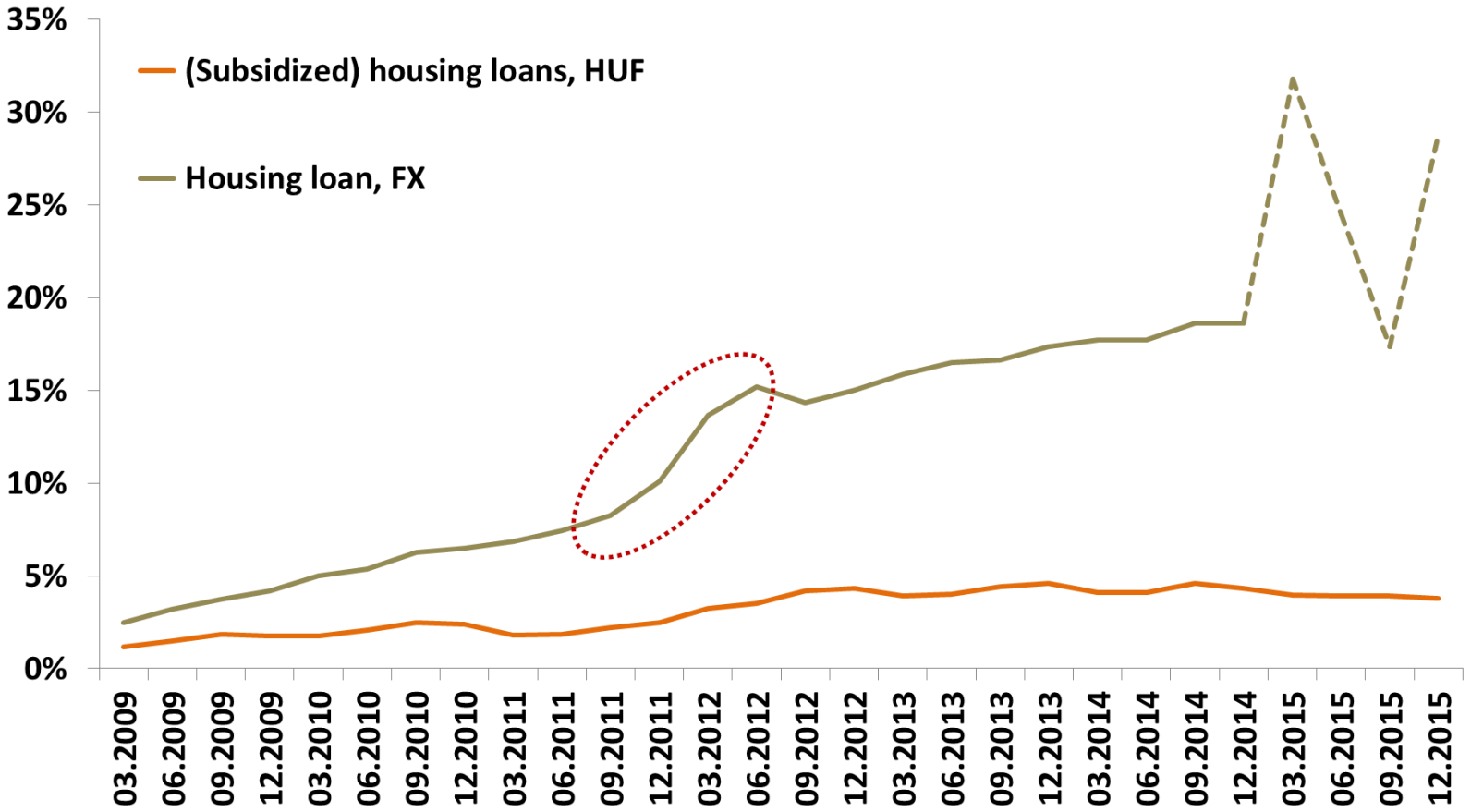
The Quality of the FX Loans Portfolio

NPL Ratio on the housing loan market



Source: National Bank of Hungary

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Regulatory Intervention and Their Costs

Measure	Eviction Moratorium	National Asset Mgmt Agency	Exchange Rate Cap System	Early Repayment Scheme	Compensating, Conversion
Short description	cold-season moratorium on foreclosure and eviction	purchases houses from FX debtor and rent them to these borrowers	repayment at a favorable FX rate for 5 years; difference goes to a pool account	opportunity for FX debtors for full prepayment at a favorable FX-rate	compensating the debtors for FX-rate margins and unilaterally raised interest rates; conversion the FX-loans to HUF
Date	**2009 Autumn**	**2011 Spring**	**2011 Summer**	**October 2011-February 2012**	**Beginning 2015**
Effects	only a few evictions in the warm-weather months	32K properties were bought till now	~ 180K debtors entered the programme, but was not a definitive solution	170K customers (in good econ. situation) repaid their loans; total debt decreased by 25%	FX loans disappeared; the average installment of affected loans decreased by 25%
Cost of the banks	no direct cost	no direct cost	net 125m USD	net 1.0bn USD	net 2.3bn USD

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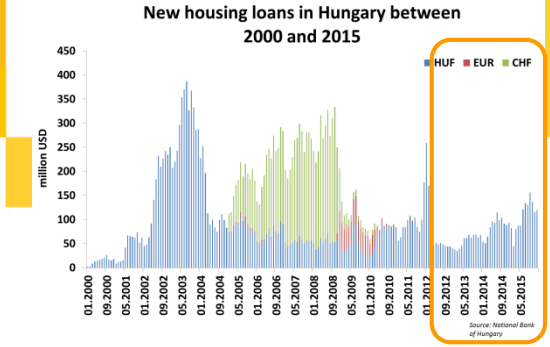
Housing Financing After the FX Loans Period

- The willingness of financing was lowered on the side of the bank system (partially driven by the foreign mother companies)
- Regulatory conditions were strenghtened (capital requirements, risk taking regulations, extra taxes, etc.)
- Overall dissatisfaction with banks

- The contractual savings for housing companies (Bausparkassen)
  - Had financial resources to take a stronger role in this situation
  - Were not affected with FX loans problems
  - Had a neutral image

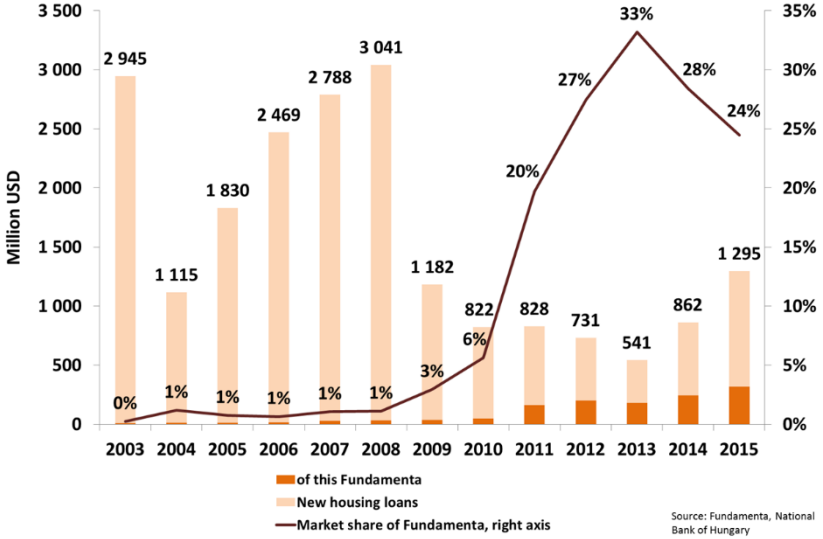
Advantages of Bausparen in the Crisis



Important role in the housing loans market from 2011:

- **With the financial crisis the volume of new loans dropped to 25% in 2010**
- **Refinancing possibilities and risk taking of the banks dropped**
- **The housing financing market needed a new impulse:**

Bausparen



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Advantages of Bausparen in the Crisis

Deposit/loan combination	Advantageous not only in increasing but also in decreasing interest rate phase
Stability	fix interest rates for the whole product life time (up to 18 years)
Sustainability	independent of the financial market (loans are refinanced from inside the system)
Counter-cyclicality	predictability of the maturing volumes, standing demand
Quality of loan portfolio	part of the household-budget, saving period, own contribution
Easy-to-access product	Wide range of the population can be approached, and made eligible for loans

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Summary

- **Hungary in the last 15 years had 3 different phases**
- **Housing financing needed strong impulses in every phase from governmental side**
- **Fast solutions had their negative consequences**
- **In the worst phase, efficient support was given by the contractual savings for housing companies**

Contact

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ROAD MAP FOR A ENERGY EFFICIENCY MORTGAGES INITIATIVE

Washington

26 May 2016

ECBC
European Covered Bond Council

EUROPEAN MORTGAGE FEDERATION

COP21 PARIS – THE OUTCOME

- COP21 is an international agreement to combat climate change by holding increase in global average temperature to **well below 2°C** above pre-industrial levels & to pursue efforts to limit temperature increase to 1.5°C above pre-industrial levels (1850-80) by 2050

- Agreement recognises that climate change represents an urgent & potentially irreversible threat to human societies and invites efforts of all **non-Party stakeholders** including private sector and financial institutions **to address** and **respond to climate change**

- International co-operation: **196 countries** have agreed to strengthen global response to climate change which constitute c. **95% of the global emission.**

- National governments have submitted comprehensive **Intended Nationally Determined Contributions** (INDC), which formulates & communicates their national climate change efforts in a transparent and comparable way.

- However, sum of current pledged INDCs is more in line with total warming of 3°C than one of less than 2°C, **creating a need for private sector to scale up their efforts** & support actions to reduce emissions.

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CATALYST FOR CLIMATE FRIENDLY FINANCE

- 196 countries involved in COP21 sends universal strong signal to markets, creating some degree of **certainty** about future engagement in low carbon transformation
- Interest in climate friendly finance has increased in magnitude with the successful COP21.
- The UN, World Bank, European Investment Fund & ECB etc. have long recognised **growing link between finance & environmental challenges** & established green initiatives to bring about systemic change in **finance to support more sustainable world**
- Financial institutions have reported an **increased demand** for responsible investment products in recent years and expect this trend to continue parallel with increased divesting in high carbon investments
- 2015 represented the **highest yearly issuance** volume of green bonds, USD41.3bn
- COP21 aims to make finance flows consistent with a **pathway** towards low greenhouse gas emissions and climate resilient development
- Aggregated, more transparency and increased convergence of **what is eligible** for a 'green' label is needed across financial industry

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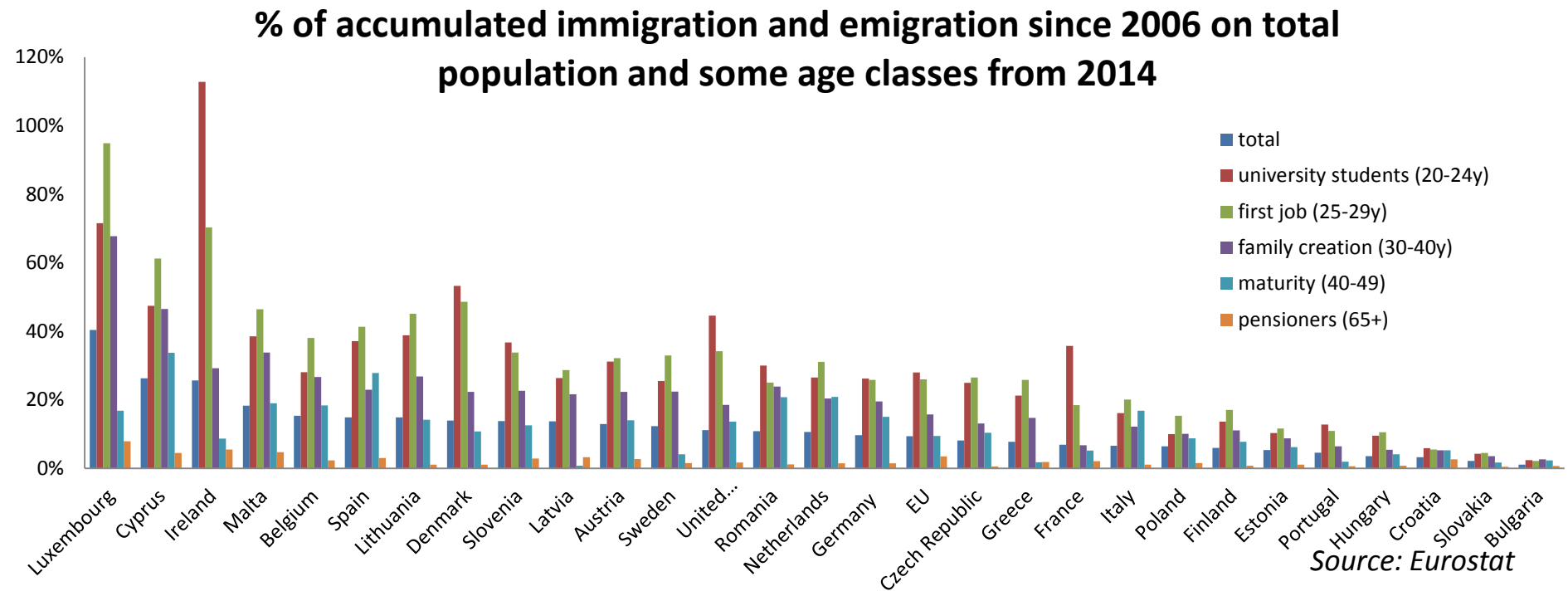
Why a pan-European approach?

Building a common Market?

EU CITIZENS: CROSS-BORDER MOBILITY



- Generally immigration and emigration flows are analysed on a yearly basis
- Here accumulated immigration and emigration since 2006 have been taken into account, in order to show size of population for which a cross border transaction such as a mortgage is relevant
- In this chart, individuals who have not moved from their country but who own or are interested in buying a dwelling abroad, are not taken into account.

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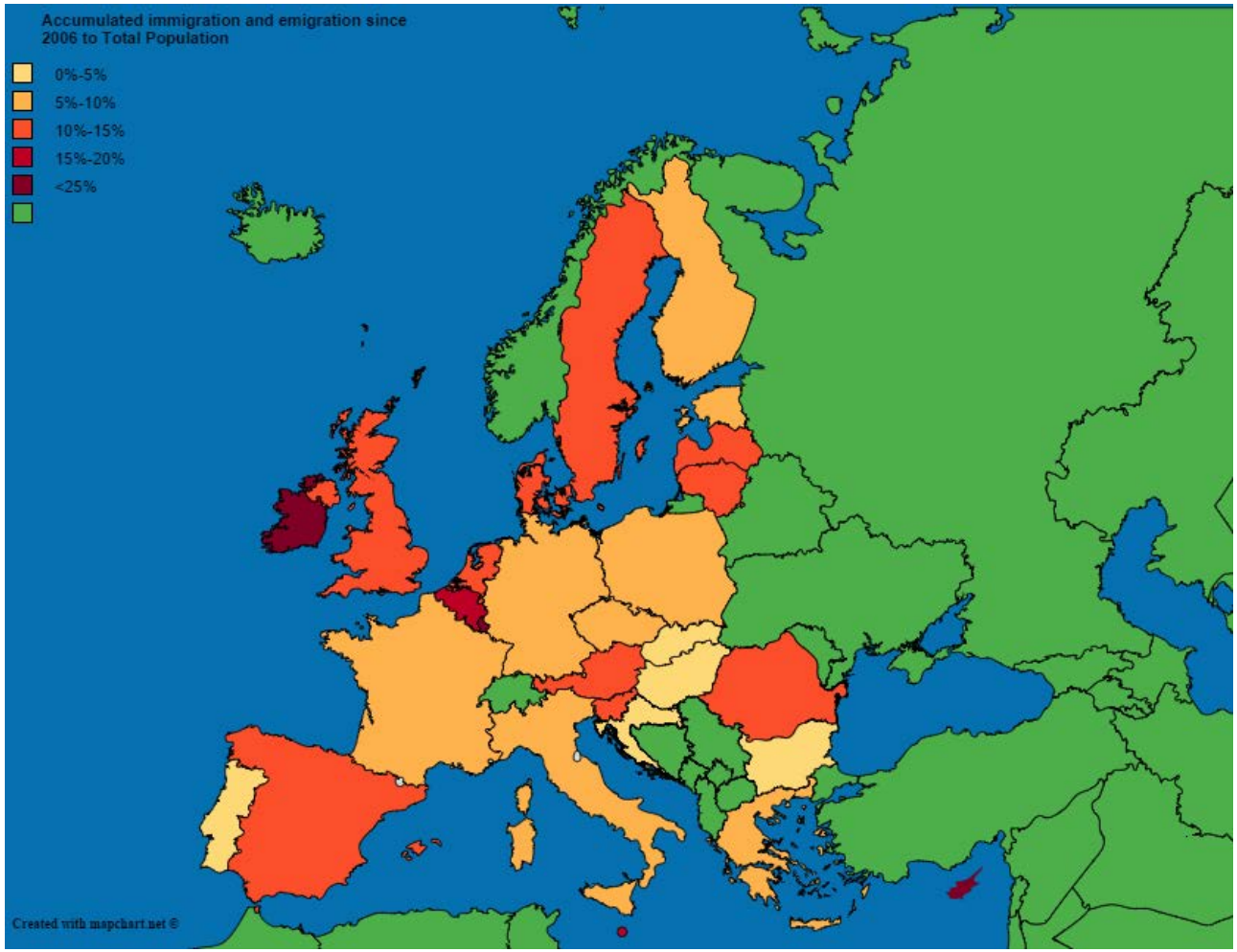
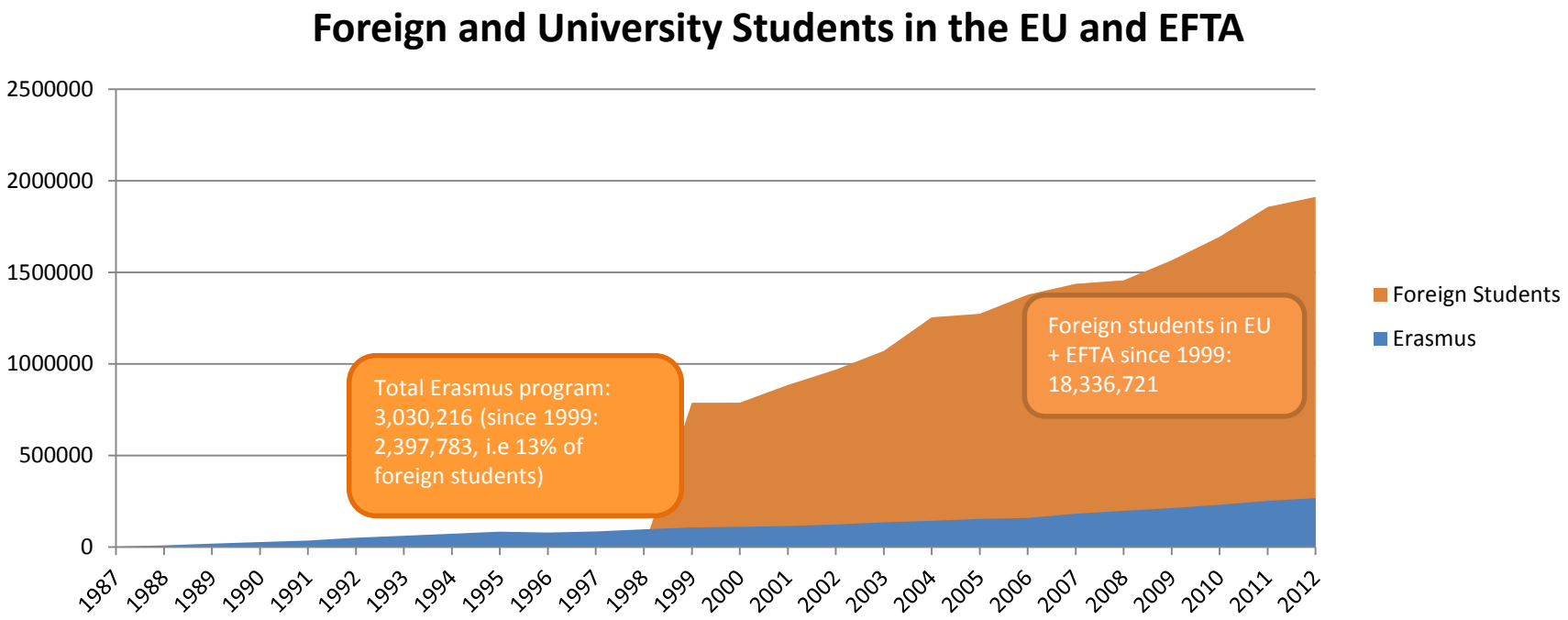
EU CITIZENS: CROSS-BORDER MOBILITY MAP



Source: Eurostat

EU EDUCATION DRIVER FOR FUTURE MOBILITY



Source: Eurostat, EC publications

- The Erasmus program brought the 3rd million of students abroad in 2012-2013
- In the last decade, this program accounted for between 12% and 14% of all foreign students at EU & EFTA universities
- In 2012, nearly 2 million students were foreign students in these universities

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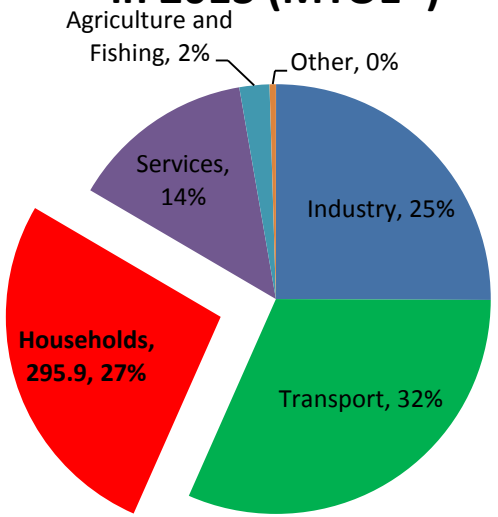
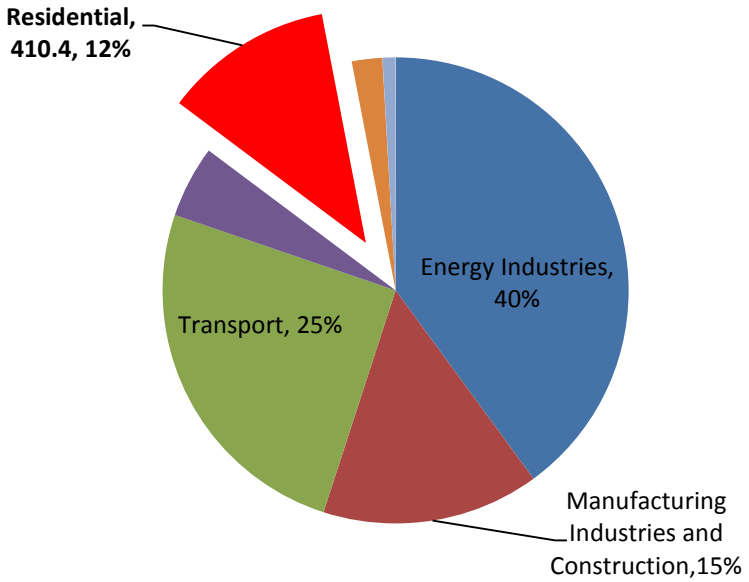
ENVIRONMENTAL IMPACT OF HOUSING IN THE EU (1)

Breakdown Energy Consumption in the EU in 2013 (MTOE*)



EU Total in 2013: 1103.8 Mtoe*
Source: Eurostat

Breakdown of CO2 Emissions in the EU Fuel Combustion Activities in 2012 (MT of CO2)**



EU Total Emission Fuel Combustion in 2012: 3495.2 Mt**
Source: Eurostat

*million tons of oil equivalent: a unit of energy defined as the amount of energy released by burning a tonne of crude oil
**million tons

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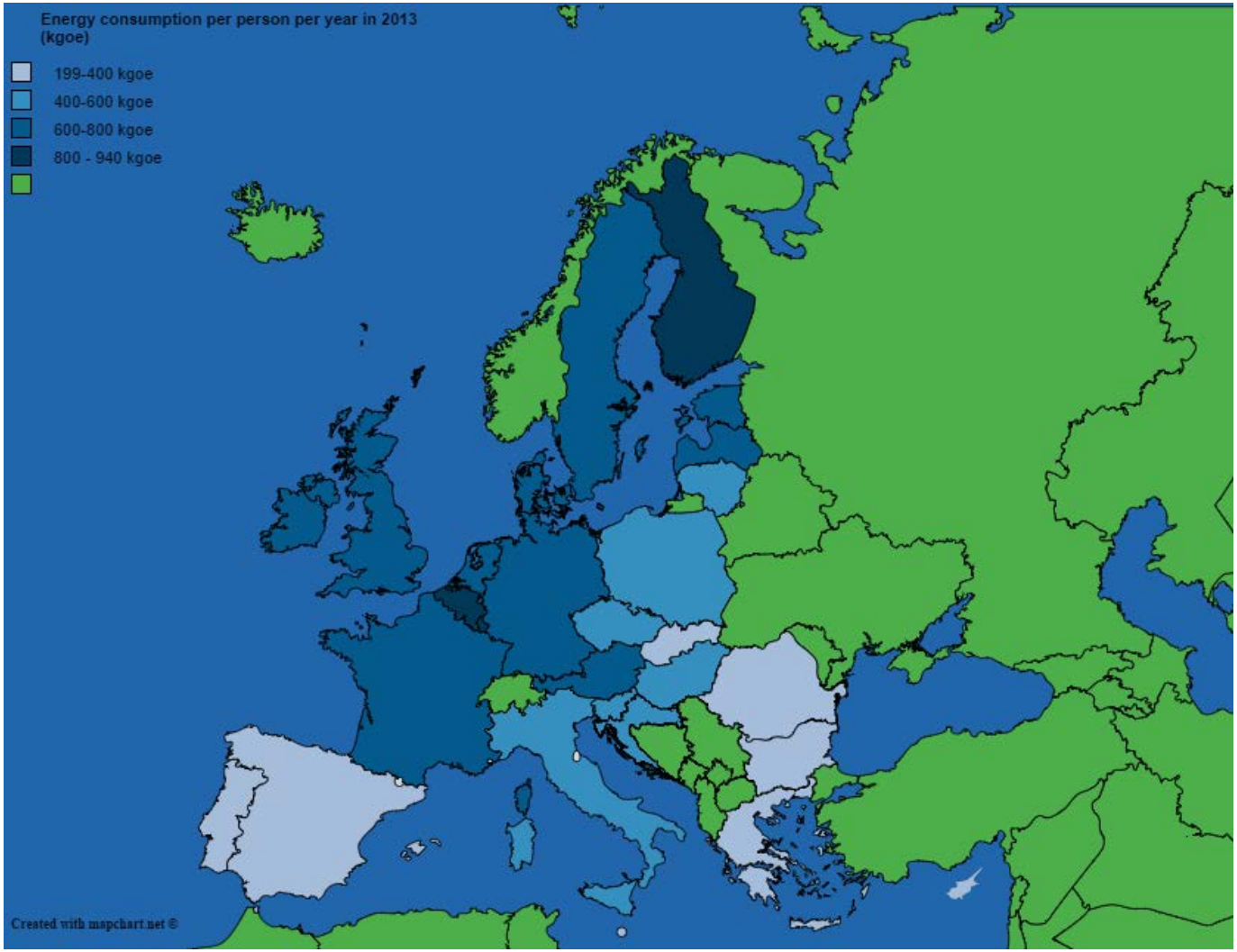
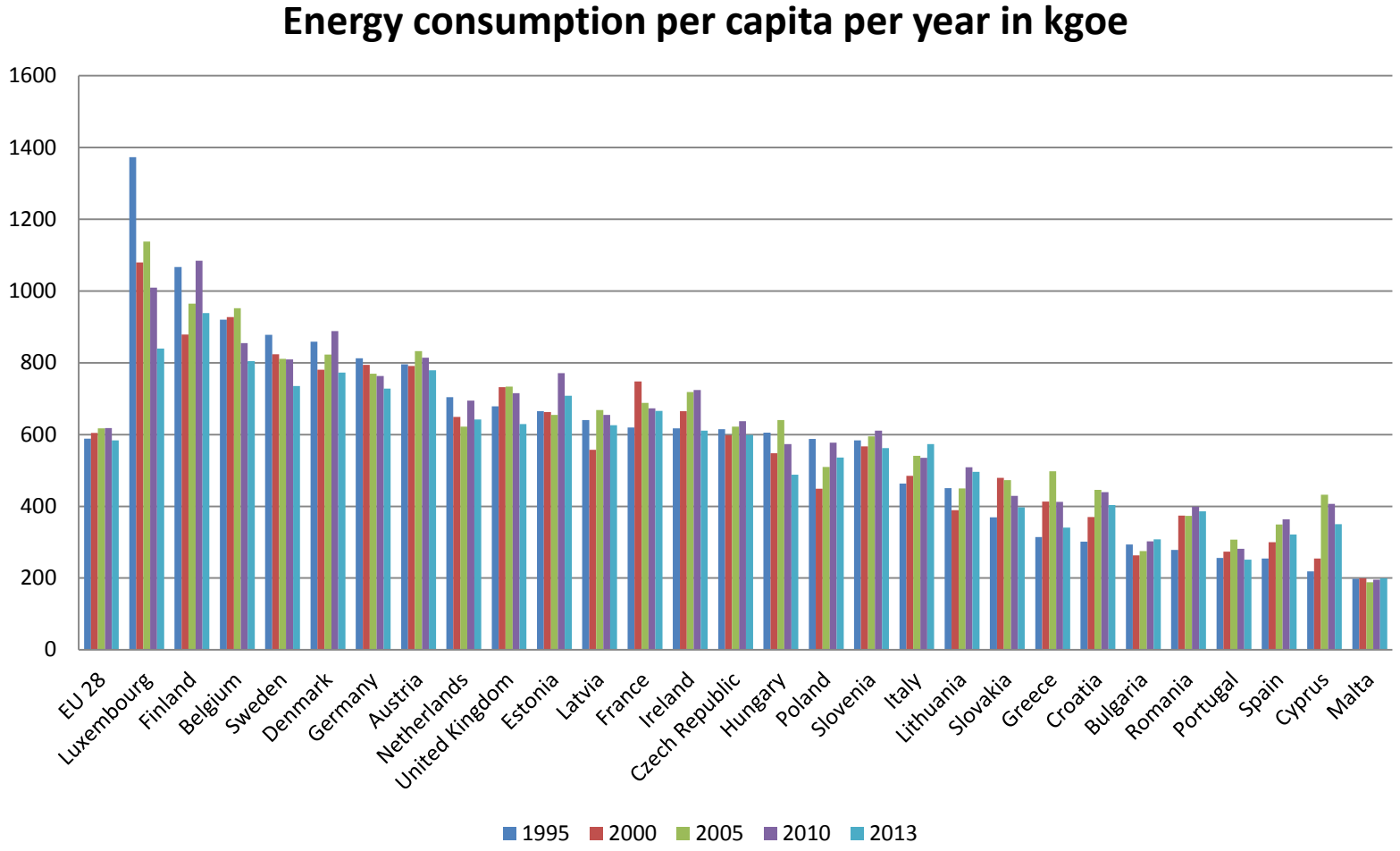
ENVIRONMENTAL IMPACT OF HOUSING IN THE EU (2)
ENERGY CONSUMPTION - MAP



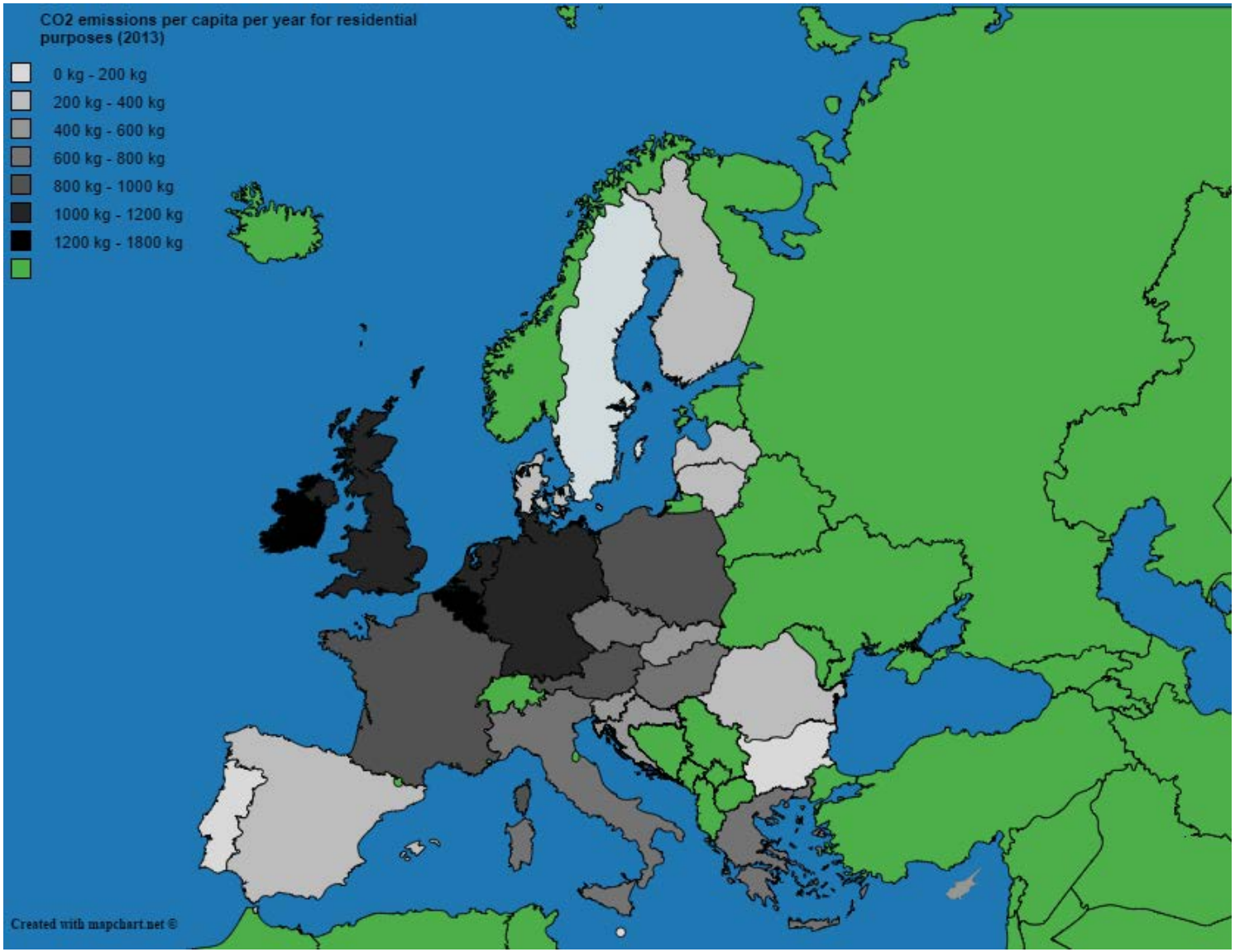
Source: Eurostat

ENVIRONMENTAL IMPACT OF HOUSING IN THE EU (2)
ENERGY CONSUMPTION - CHARTS



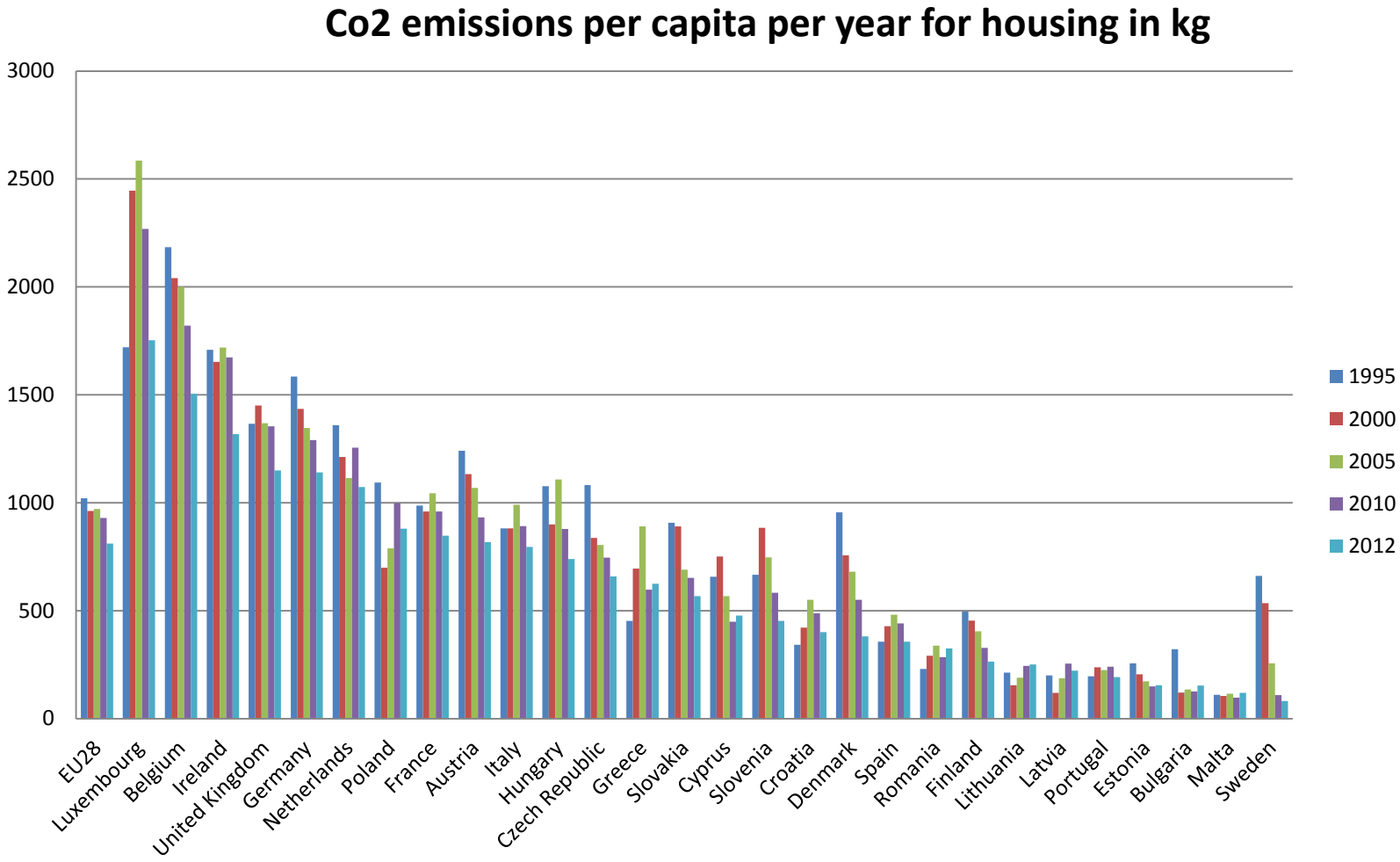
Source: Eurostat

ENVIRONMENTAL IMPACT OF HOUSING IN THE EU (3)
ENERGY CONSUMPTION - MAPS



Source: Eurostat

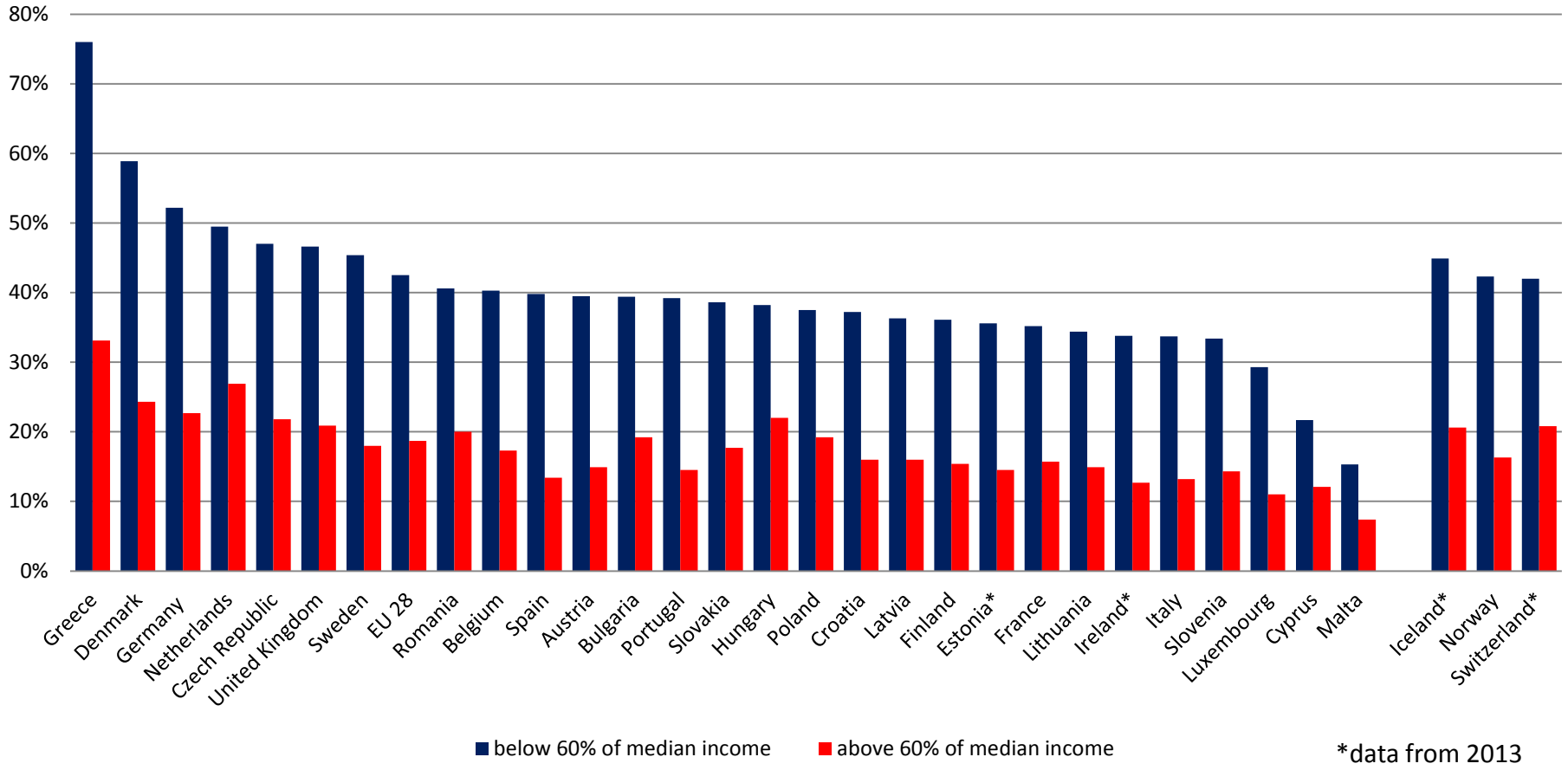
ENVIRONMENTAL IMPACT OF HOUSING IN THE EU (3)
ENERGY CONSUMPTION - CHARTS



Source: Eurostat

HOUSING COST IN DISPOSABLE INCOME

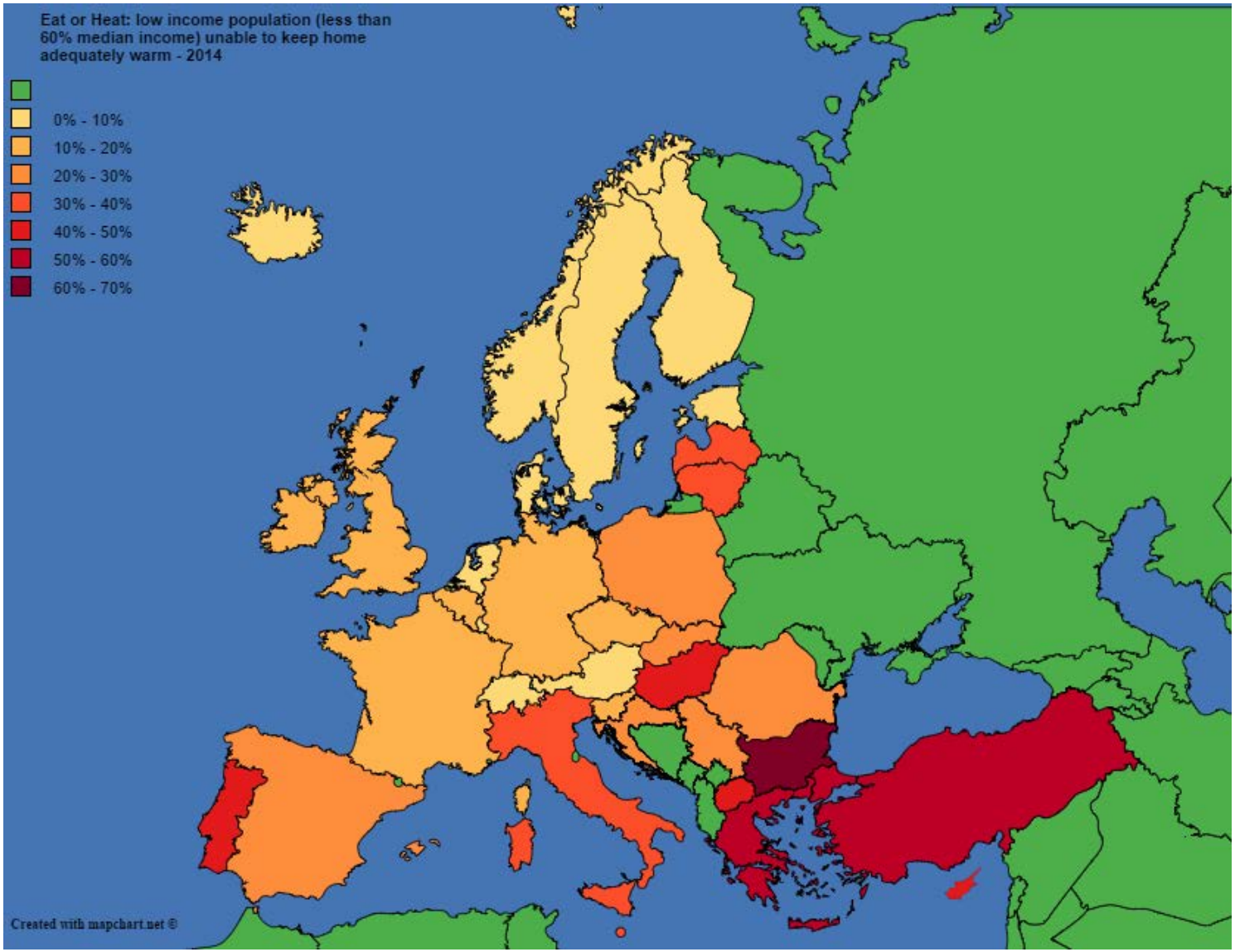
Share of housing costs in disposable income, by income group (2014)



*data from 2013

Source: Eurostat

HEAT OR EAT DILEMMA



Source: SILC Eurostat

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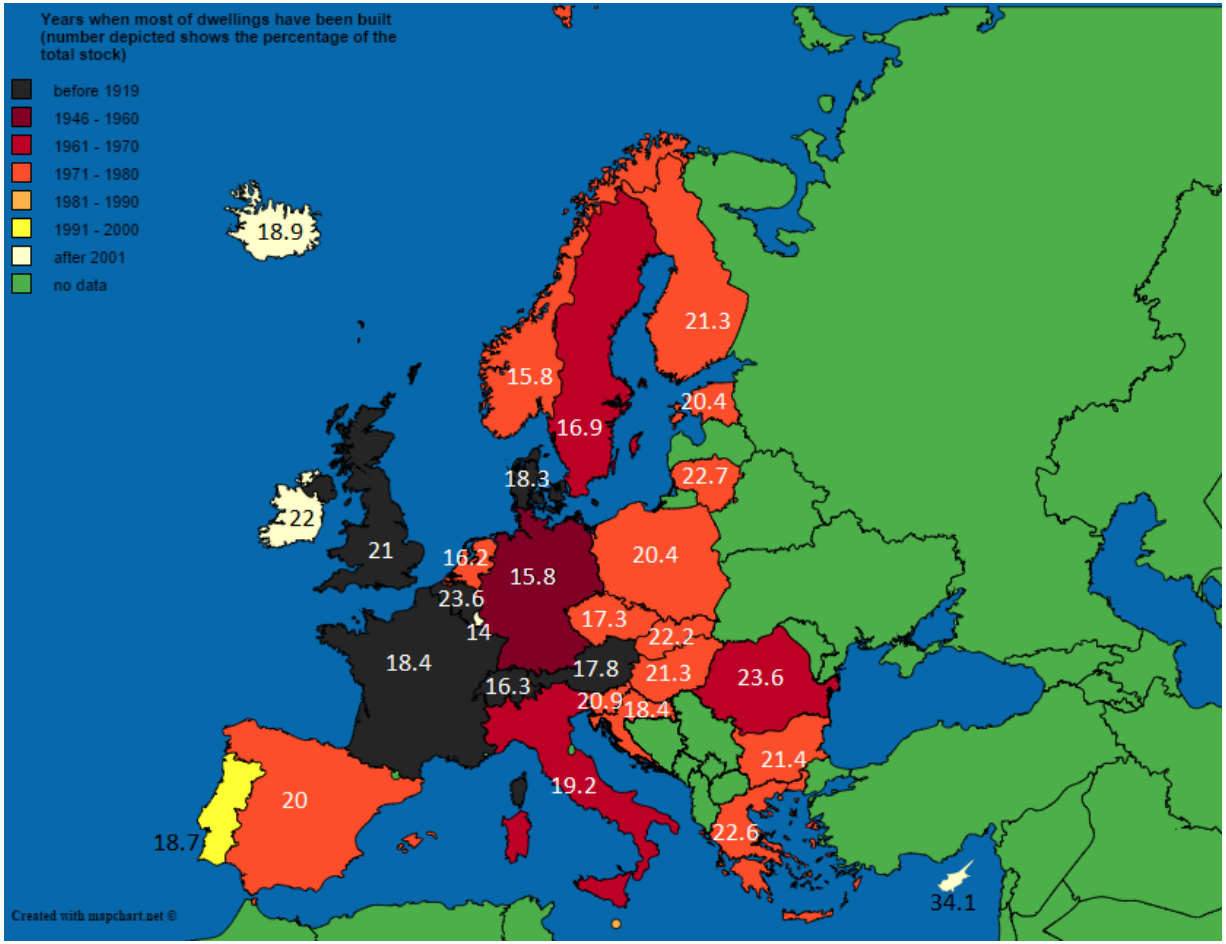
AGE STRUCTURE OF DWELLINGS IN EUROPE (1)



Source: Eurostat, Census 2011

- The housing stock age structure in Europe is varied and it is impossible to identify common traits.
- This map depicts decades during which most constructions were built in each MS together with % built in that period with respect to the total stock

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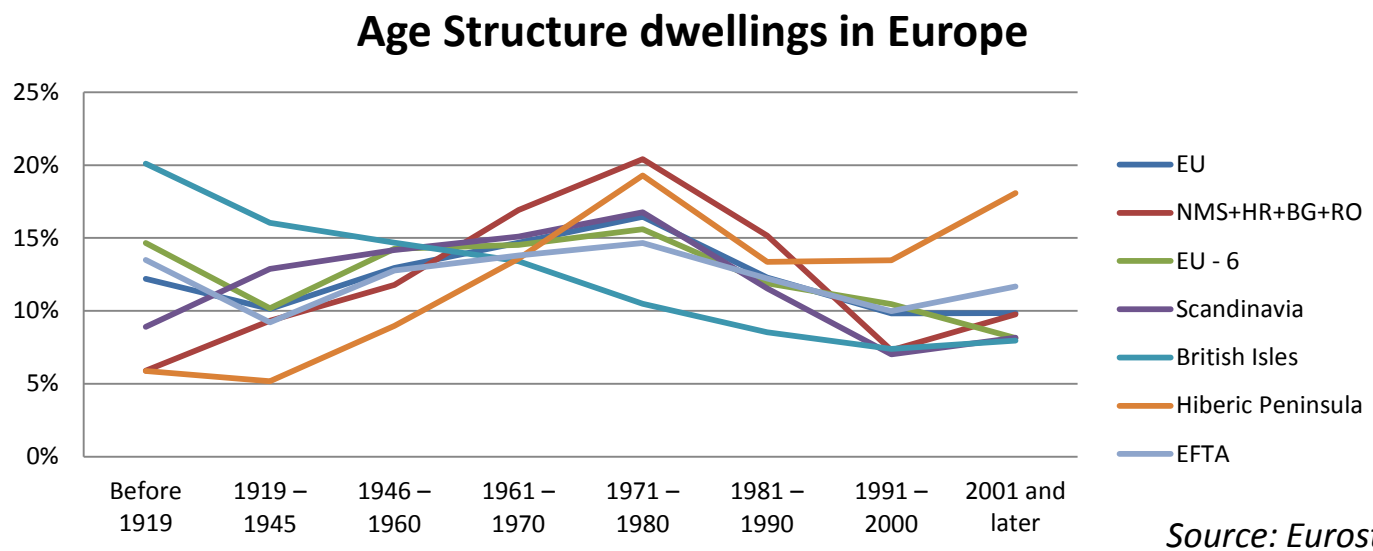
AGE STRUCTURE OF DWELLINGS IN EUROPE (2)



Source: Eurostat, Census 2011

- In most EU Member States, considerable share of total number of dwellings was built during post-war period, between 1946 and 1980
- In Italy, nearly 60% of existing dwellings were built during that period, 45-50% in Germany, the Baltics, Greece, Hungary, Finland and Sweden
- Post 2000, several new dwellings were built in Ireland, Greece, Poland, Portugal and Spain
- In Belgium and in the UK between 20% and 25% of dwellings were built before 1919

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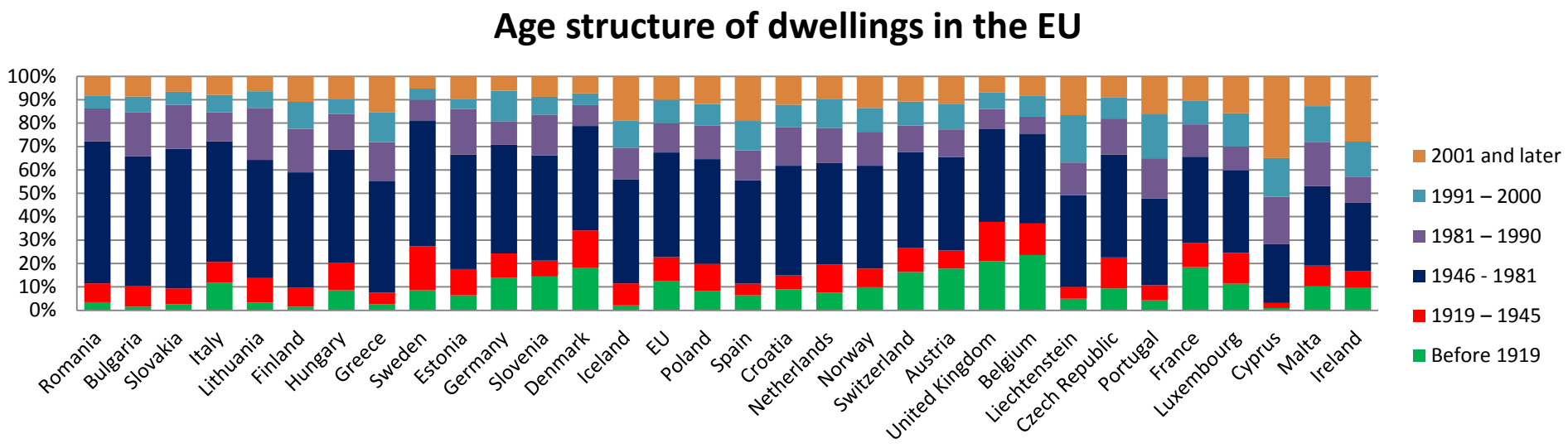
AGE STRUCTURE OF DWELLINGS IN EUROPE (3)



Source: Eurostat, Census 2011

- This graph highlights stock of dwellings built between 1946 and 1981.
- Countries have been ordered from those with highest share of dwellings built in that period of time to smallest.
- Romania leads ranking with nearly 60% of its building stock coming from that period.
- Also 51% of Italian dwellings were built in the 35 years after WW2.
- Overall in the EU, dwellings in this period count for 44% of the total.
- From the larger countries, France has smallest amount of dwellings from this period, only 37%.

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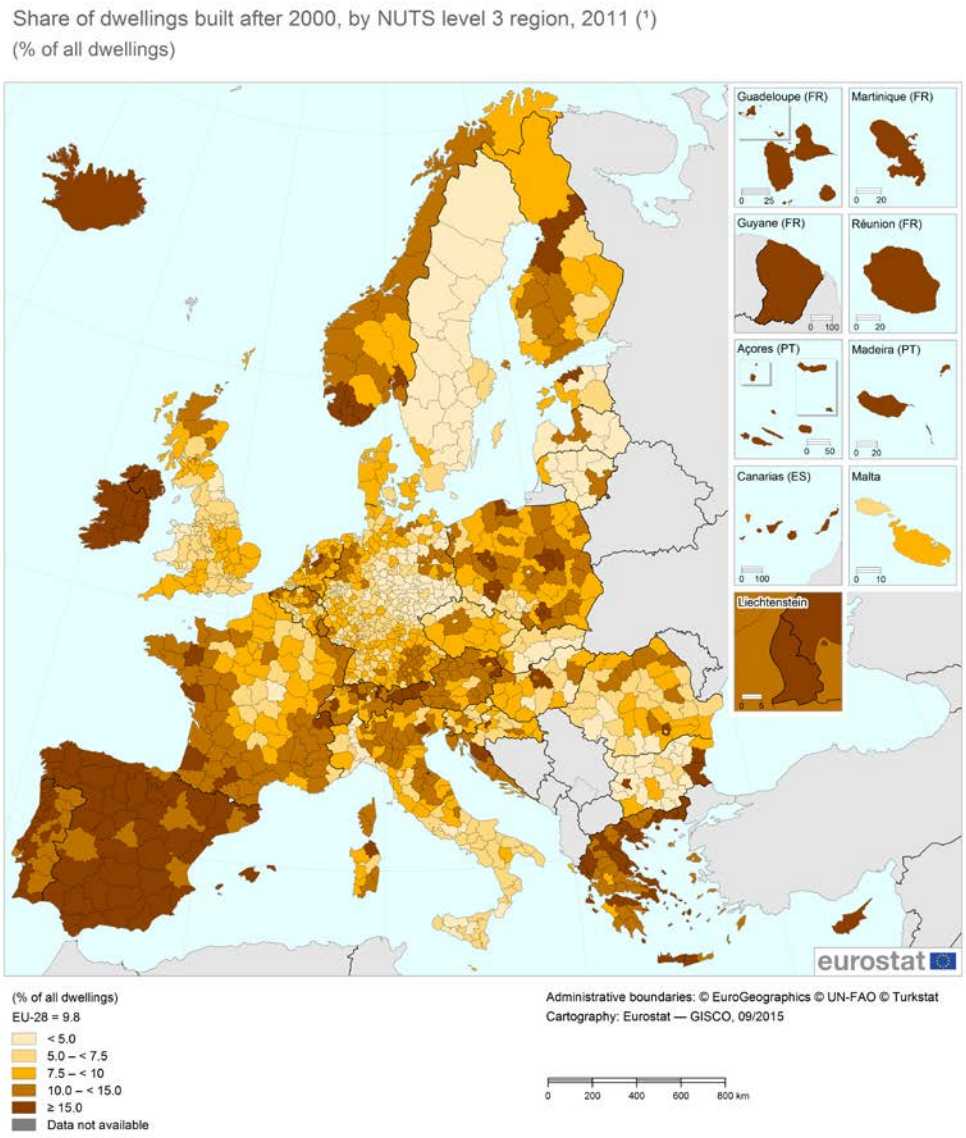
AGE STRUCTURE OF DWELLINGS IN EUROPE (4)

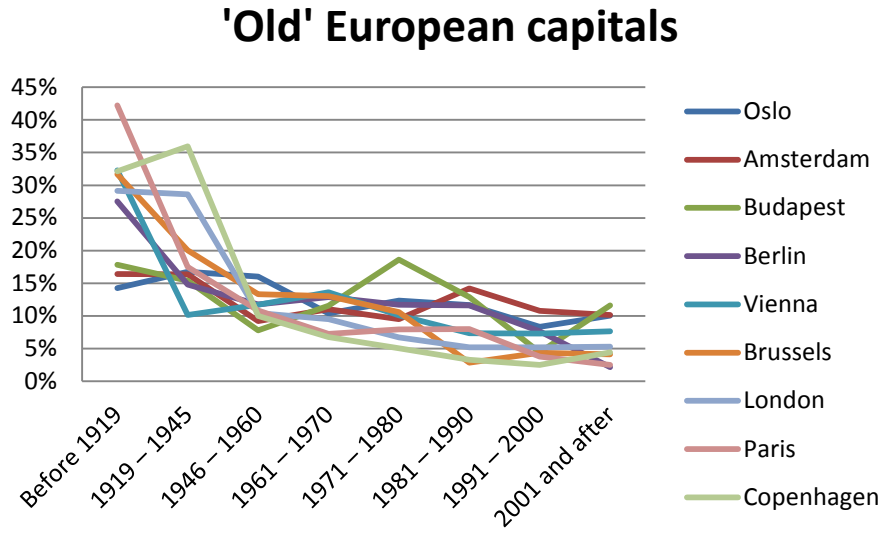


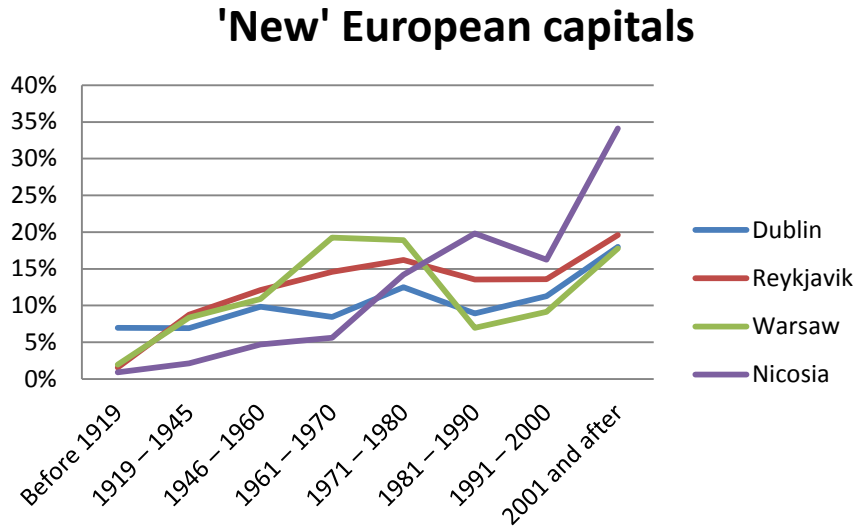
- This graph shows building boom of first decade of new century especially in the Iberian peninsula, in some parts of Eastern Europe, in Ireland, Iceland, Greece & Cyprus.
- In core Europe, especially in Germany, there has been no building frenzy as in most of regions less than 5% of the building stock was built after 2000.

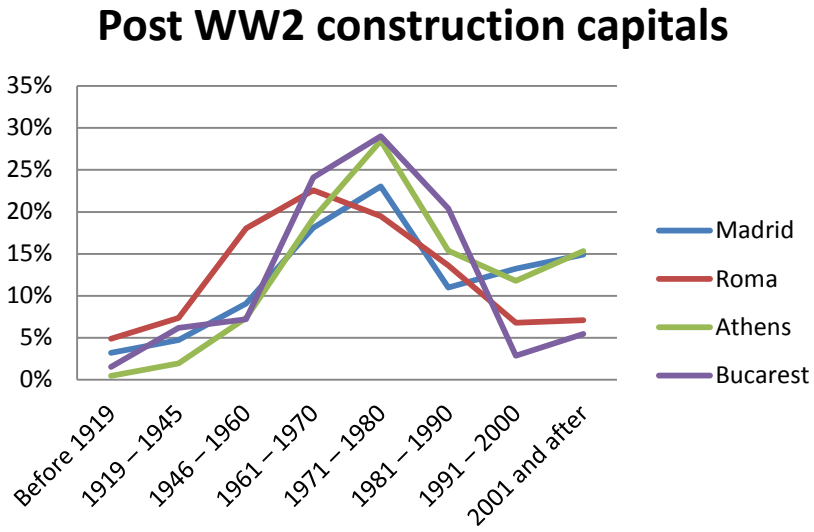
Source: Eurostat, Census 2011

(¹) Regions in the United Kingdom: low reliability.
Source: Eurostat (Census hub HC53)

AGE STRUCTURE OF DWELLINGS IN SOME CAPITALS







Source: Eurostat, Census 2011

Capital cities where more than 50% of existing dwellings have been built between 1946 and 1981

EMF-ECBC Ideas for an Energy Efficiency Market Initiative

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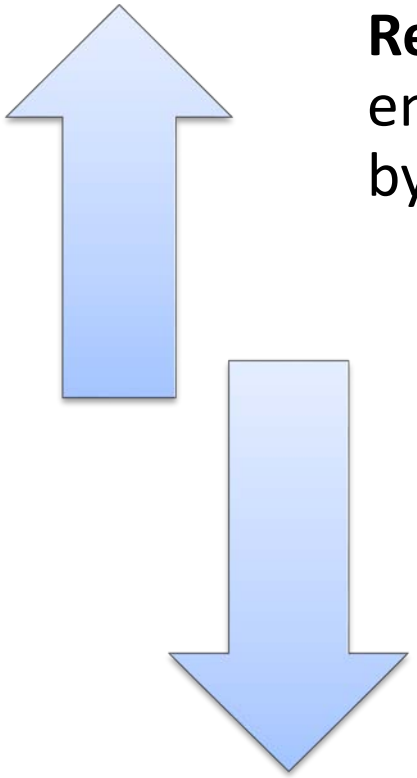
ENERGY EFFICIENCY DRIVERS IMPACTING MARKET CHARACTERISTICS:



Retrofitting impacts positively on property value ensuring **wealth conservation** & **loss mitigation** by preventing "brown discount"

Energy efficiency leads to a reduction in the impact of energy costs to income, reducing borrowers' **probability of default**

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PAN-EUROPEAN INITIATIVE: GOALS

- Approach to financing energy efficiency based on triggering a microeconomic advantage for every citizen/stakeholder
- Energy efficiency as leverage for enhancing qualitative standards of housing markets
- Incentive to ensure continuous qualitative improvement of housing stock, preventing negative impact of brown discount & ensuring citizens' wealth conservation
- Energy efficiency as leverage for reducing energy costs & reducing borrowers' probability of default
- Enhanced access to retrofit finance & support for SMEs active in retrofit industry
- Not based on fiscal support but a purely capital markets based initiative with clear citizen/stakeholder incentive chain

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PAN-EUROPEAN INITIATIVE: SIMPLICITY IS KEY

- EMF-ECBC well placed to act as market catalyst & ensure coordinated development of pan European initiative in the area of financing energy efficiency

- EMF-ECBC keen to explore potential for development of “energy efficient” label for mortgages & covered bonds with common European definition and IT platform

- Simplicity is key to enable lender/issuers, investors & other stakeholders to carry out their due diligence and implement an harmonised framework

- One potential approach could be to trigger an incentive chain for stakeholders & identify a way of rating property **(“A, B, C Approach”)** to determine an energy efficiency discount in mortgage interest rate

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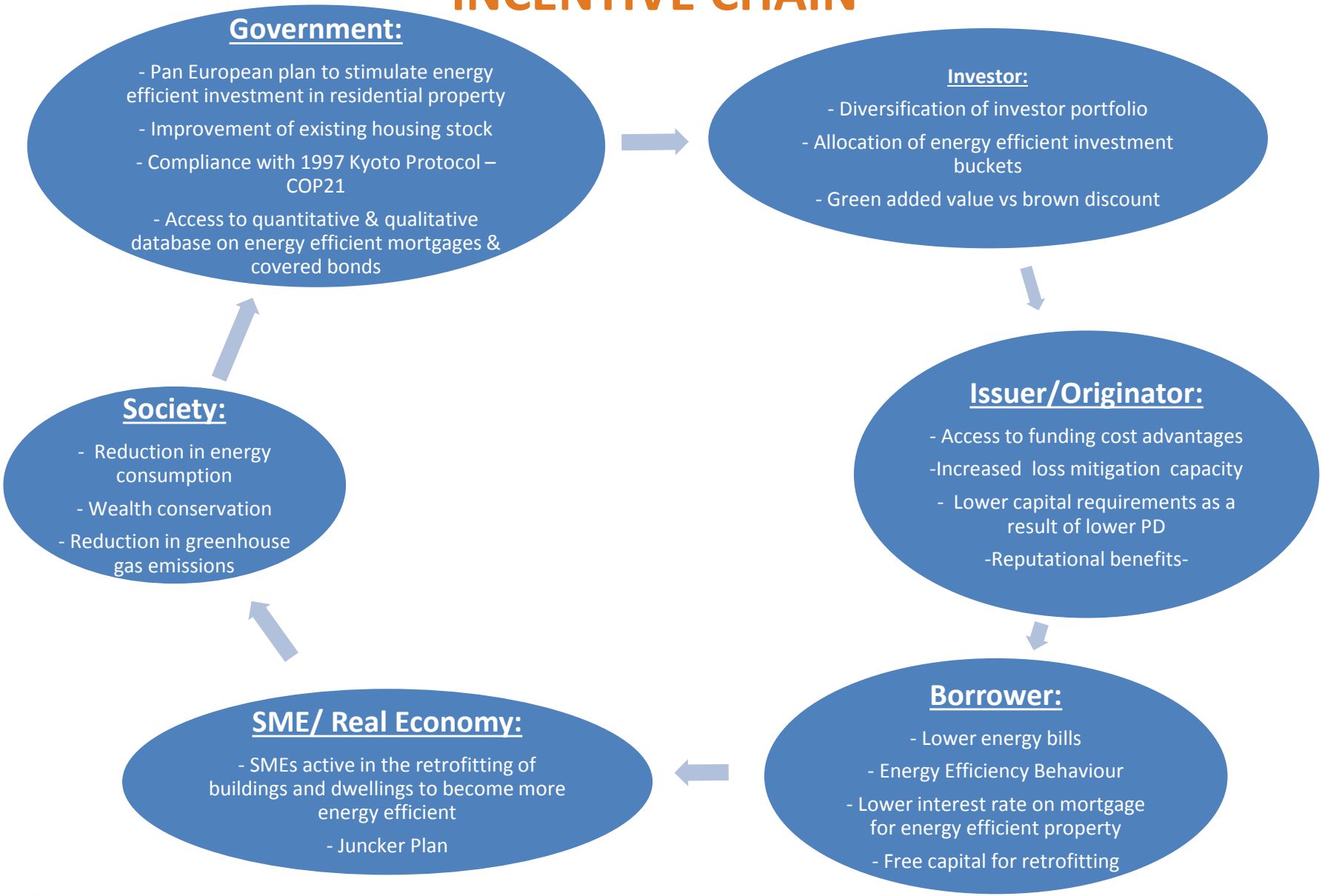
INCENTIVE CHAIN



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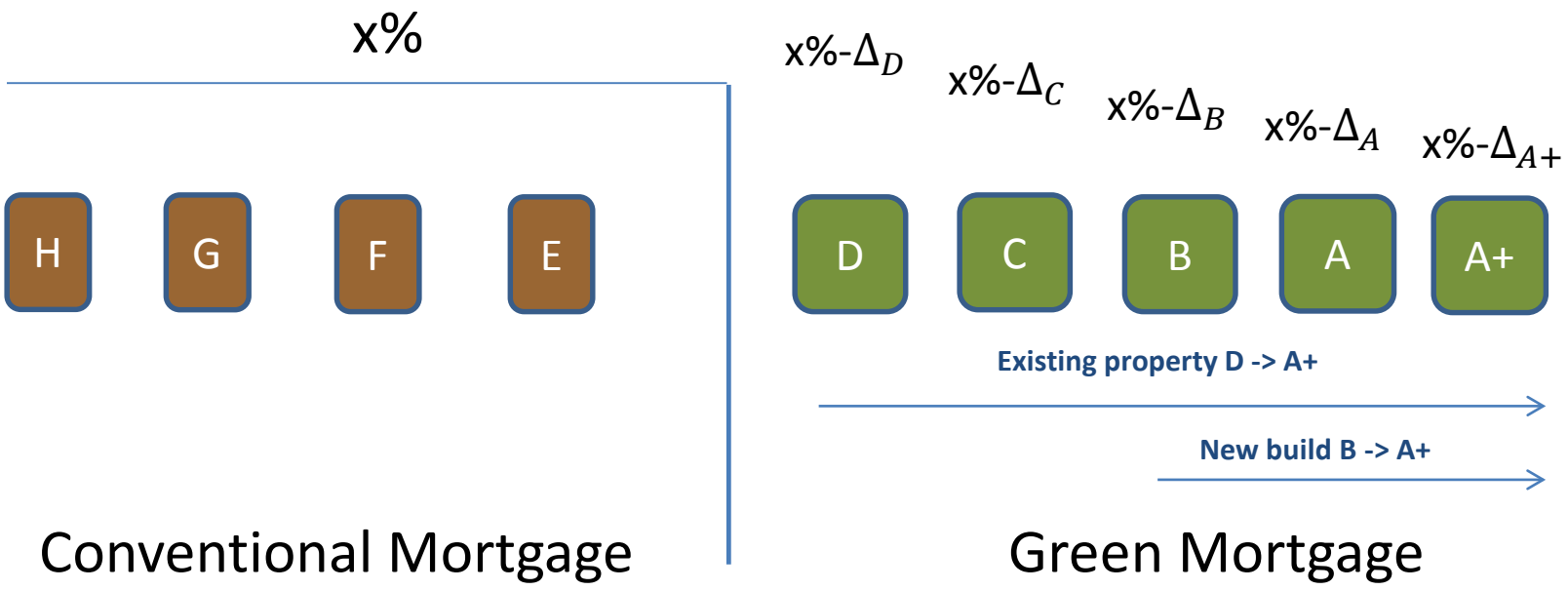
ENERGY EFFICIENCY DELTA

- Key challenge: **<u>to incentivise energy efficient investment in existing dwellings</u>**, which constitute bulk of EU housing stock

- Based on a **set of energy efficiency indicators**, lenders could offer:
  - *New Builds:* Discount in interest rate for new builds with energy rating A+/A or B;
  - *Existing property:* Discount in interest rate according to improvement in energy rating of property between D and A/A+ => **energy efficiency Δ**



x%: mortgage interest rate

Energy efficiency delta: $\Delta_{A+} > \Delta_A > \Delta_B > \Delta_C$

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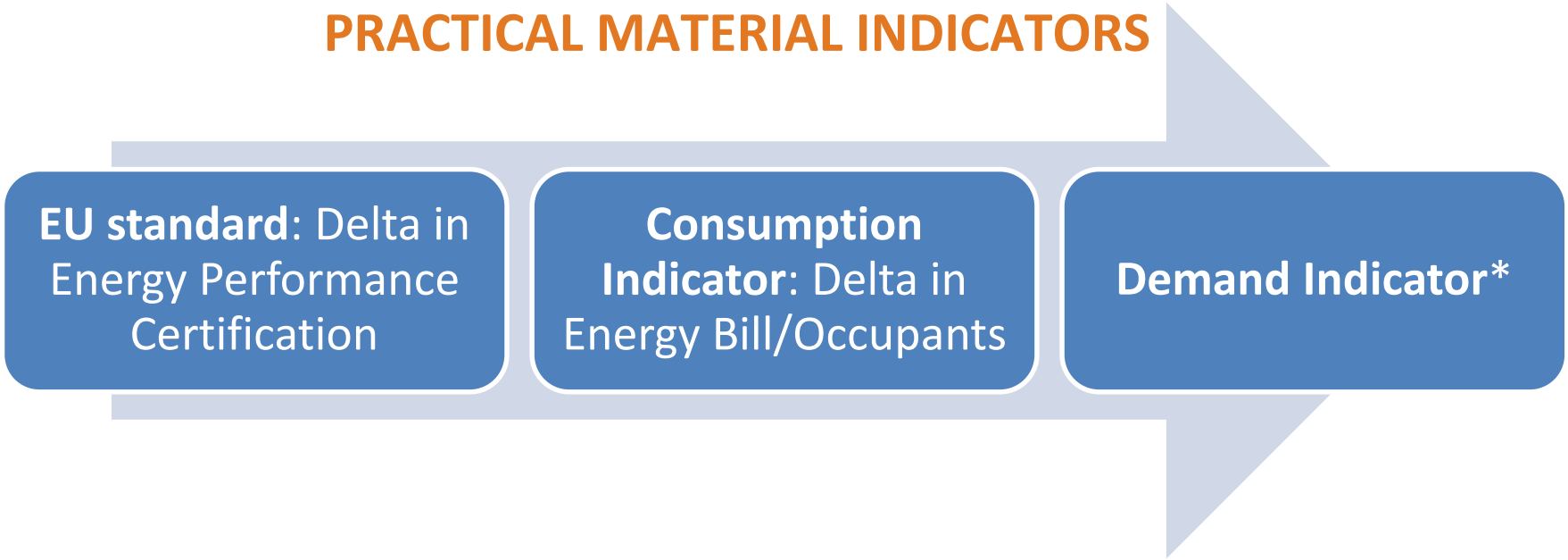
WHAT KIND OF METRICS CAN BE ADOPTED TO DEFINE A GREEN MORTGAGE LABEL? SOLUTION COMBINING 3 DELTAS IN RELATION TO KEY PRACTICAL MATERIAL INDICATORS



***One possibility:** The Energy Efficiency Directive (2012/27/EU) foresees an 'energy performance contracting' which is a contractual arrangement between the beneficiary and the provider of an energy efficiency improvement measure, verified and monitored during the whole term of the contract, where investments (work, supply or service) in that measure are paid for in relation to a contractually agreed level of energy efficiency improvement or other agreed energy performance criterion, such as financial savings.

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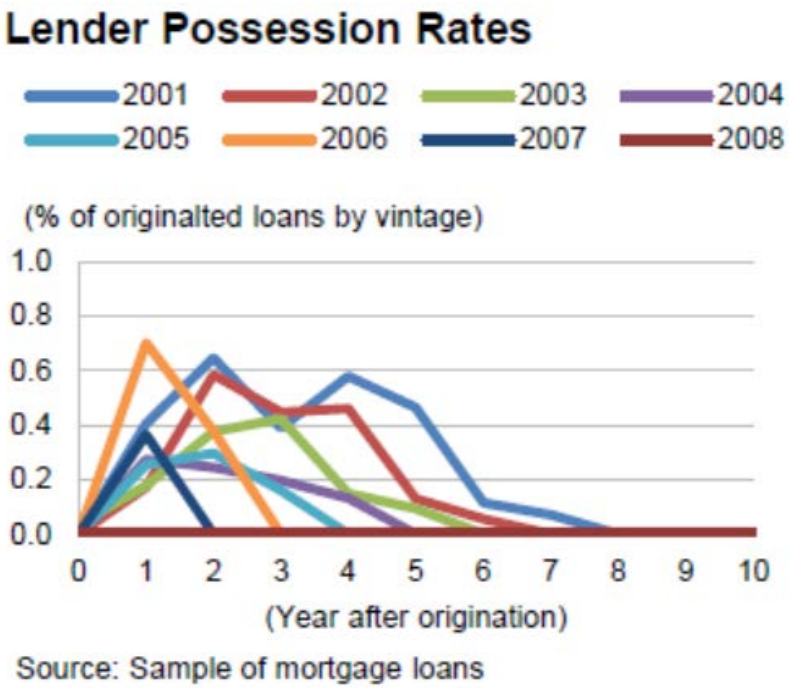
IMPACT OF ENERGY EFFICIENCY ON POSSESSIONS OF MORTGAGES



Source: Fitch Ratings

- Available data show that rate at which properties are taken into possession - one reason for repossession may be default on mortgage loan - rises during the first 3 to 4 years after origination, peaking in years 4 to 5
- This is because it takes time for personal circumstances of borrower to deteriorate to degree that he/she is no longer able to service loan
- Once this critical period has passed, main factors for default are principally personal events, such as illness or divorce

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IMPACT OF THE CHANGE IN ENERGY EFFICIENCY ON LTV ?

Origination

After one year

Part of the loan is paid down

Value increases due to improvements in the energy efficiency

$$LTV_0 = \frac{80}{100} = 80\%$$

$$LTV_1 = \frac{77}{110} = 70\%$$

$$LTV = \frac{Loan\ granted\ for\ the\ mortgage}{Value\ of\ the\ real\ estate}$$

- In example below, instead of considering an LTV at 70% at time 1, a cash advance is factored in which keeps original level of LTV at time of origination but also takes into account increased value of property due to retrofitting at time 0.
- This allows: (1) increase in value due to retrofitting to be to factored in at origination, (2) the borrower to carry out retrofitting works & (3) capital to be freed up, triggering an enhancement in terms of energy efficiency

$$LTV_0 = \frac{80 + 8}{110} = 80\%$$

The Juncker Factor

Freed funds to be used for paying the retrofitting

FROM A REGULATORY PERSPECTIVE, CAN ENERGY EFFICIENCY ADDED VALUE BE FACTORED INTO LTV AT ORIGINATION?

- It is key that improvement in LTV, due to increase in energy efficiency, can be factored into credit risk assessment of bank => bank's capital charge can be reduced
- BCBS is reviewing SA for credit risk
- Point 52 on page 35 of BCBS December 2015 Consultation states: ***"Modifications made to the property that unequivocally increase its value could also be considered in the LTV"***
- Transparency & soundness of analysis of increase in value due to retrofitting is paramount for success of "Junker Factor"

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WHAT KIND OF TRANSPARENCY CAN BE CONSIDERED IN ORDER TO FACILITATE ISSUERS AND INVESTORS DUE DILIGENCES?

IT Data warehouse Platform

- Mortgage data line by line
- Energy efficiency data levels unit by unit
- Funding instruments adopted
- enhanced asset liabilities management

Energy Efficient passport for buildings

- For building owners
- Recognised throughout the EU
- Value and clarity of the improvements installed in the building
- NPL mitigant

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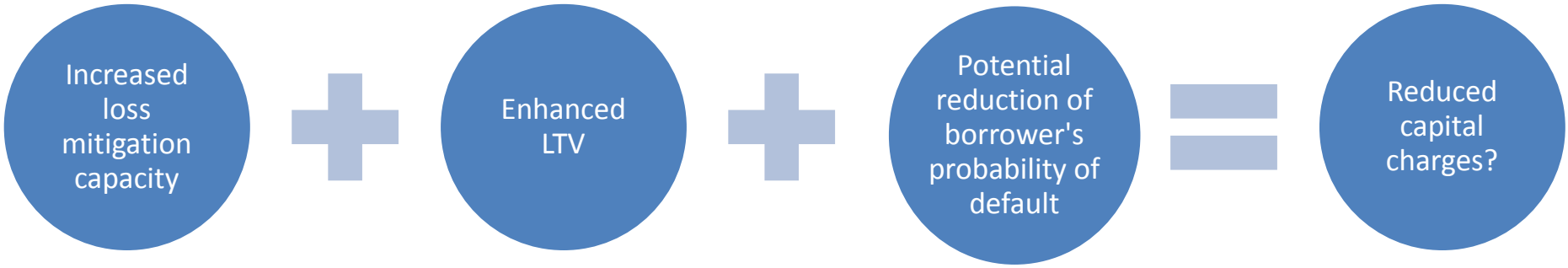
CAN ENERGY EFFICIENCY LEAD TO REDUCE CAPITAL CHARGES FOR REGULATORY PURPOSES?



PAN-EUROPEAN INITIATIVE: NEXT STEPS

- Capital markets solution leveraging fiscal support: tax subsidies, grants, rebates, loan guarantees and other mechanisms
- Necessary to identify robust, material & cost efficient metrics according to which energy consumption should be measured
- Energy efficiency label for mortgages: governance, definition & data warehouse
- Analysis of energy efficiency savings and impact on borrowers' probability of default & prepayment speed
- Industry platform is needed to access EU funding & Institutional support

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PAN-EUROPEAN INITIATIVE: NEXT STEPS

Issues for discussion:

- Selection & involvement of key stakeholders for first test phase
- Potential to create market initiative, by way of a stakeholders platform able to apply for Horizon 2020 funding opportunities?
  - *EE-24-2016-2017:* ***"Making the energy efficiency market investible":*** Opens 15 March 2016 & closes 15 September 2016 link

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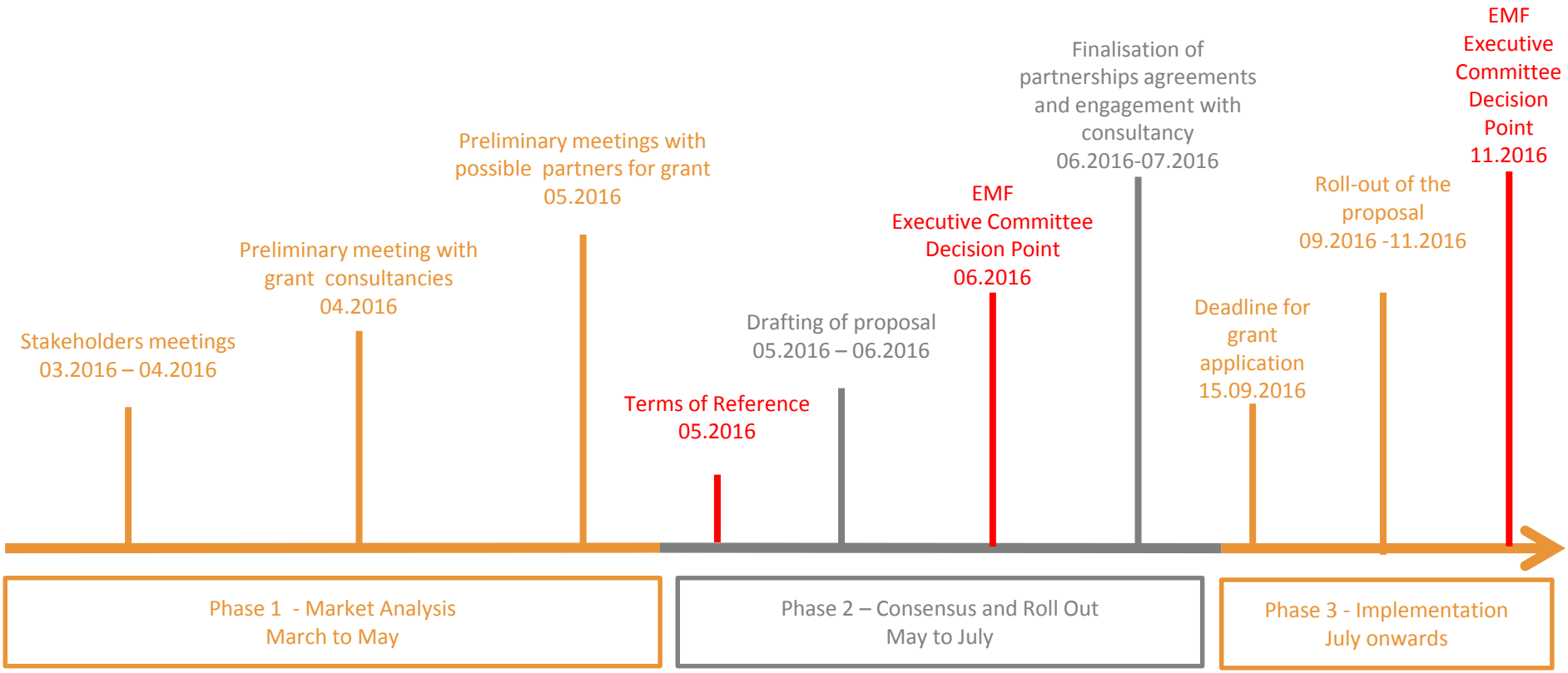
GREEN MORTGAGES ROADMAP - TIMELINE



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ECBC
European Covered Bond Council

EUROPEAN MORTGAGE FEDERATION

7th World Bank Global Housing Conference

Washington May24- 26, 2016

The Regulation of Mortgage Refinancing Facilities :

A Key Factor of Success -

under certain conditions

Olivier Hassler

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Introduction

- One of the instruments linking mortgage lenders to capital market
- Exists in numerous countries, in co-existence with other instruments in developed markets- Examples:
  - USA the pioneer (1932) – Federal Home Loan Banks
  - In the MENA Region: Algeria (SRH), Egypt (EMRC), Jordan (JMRC), Palestine (PMHC), KSA in preparation
  - In Asia / central Asia: India (NHB), Indonesia (SMF), Malaysia (Cagamas), Mongolia, Pakistan (on-going), Armenia, Azerbaijan
  - In Europe: Switzerland, France, Ukraine
  - In Latin America: Mexico, Jamaica, Eastern Caribbean Federation
  - In Sub Saharan Africa: Nigeria, West African Economic and Monetary Union, Tanzania
- Actual achievements (unequal) show the importance of customized regulatory framework

Structure of the Presentation

I. The Model and its Benefits

II. Specific regulatory provisions

III. Conditions needed

THE MODEL and its POTENTIAL BENEFITS

Definition of a MRC

- A second tier institution that provides funding to housing finance lenders
- Acts as intermediary between lenders and capital markets
- Issues bonds to raise long term resources
- Lends against collateralized portfolios
- Corporate structure:
  - cooperative (borrowing institutions = shareholders) Ex. US FLHB, France CRH
  - Government / Central Bank controlled Ex. Algeria, Azerbaijan, India, Indonesia, Mexico
  - mixed (Cooperative + government or Central Bank stake) Ex. Egypt, Jordan, Nigeria, Malaysia, Pakistan, Tanzania

MRCs must not be confused with other models

- Centralized Credit Enhancers: Securitization conduit with a guarantor function

Ex.: Fannie Mae / Freddie Mac, Japan JHF, Colombia TC, Russia AHLM, part of Indonesia SMF

- Central Intra-group apex funding entities

Ex: Spain Ahorro y Titulos for savings and loans , Austria Pfandbriedstelle, France 3CIF

- The defining characteristics of a MRC:
  - Provision of liquidity
  - Through secured refinance loans
  - Without credit risk transfer (recourse to borrowing institutions)

Benefits of MRCs for individual institutions

1. Efficiency: lower funding cost vs issues by individual lenders

- scale effect
- prime standing (typically low risk profile)
- ability to extend maturities
- limited intermediation cost

2. Market diversity and competition

- Support to non-deposit taking specialized lenders
- Support to small FIs that have difficulties accessing capital market

Example: US FHLBs and community banks / credit unions, Egypt and MFCs

3. A simple and safe asset class for capital market investors

- Straightforward securities , simple to value
- Secured (collateralized lending, solidarity between users, sometimes government or central bank support)
- Simplicity + security+ size = better market liquidity

Benefits of MRCs – systemic level

4. Addition of a security layer in the mortgage value chain :

- First layer : secured, granular portfolios
- second layer: lenders' capital
- Third layer: MRC's capital and shareholders' support

⇒ a "super covered bond"

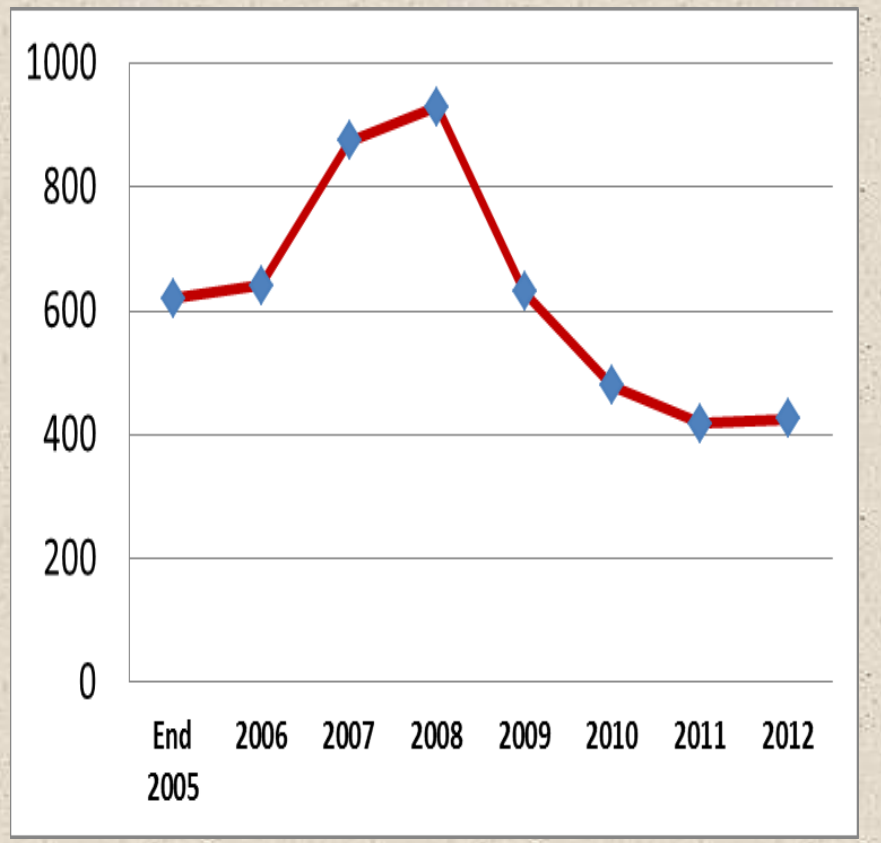
5. Systemic liquidity management

- Source of liquidity beyond funding at origination:
  - Lending institutions should be able to use it during the life of long term loans in case of liquidity shortage
  - MRCs must accept to refinance existing portfolios, even temporarily
- Counter-cyclical role – little sensitivity to confidence crises
  - Quality of the assets
  - Support of participating lenders , & governments/ central banks

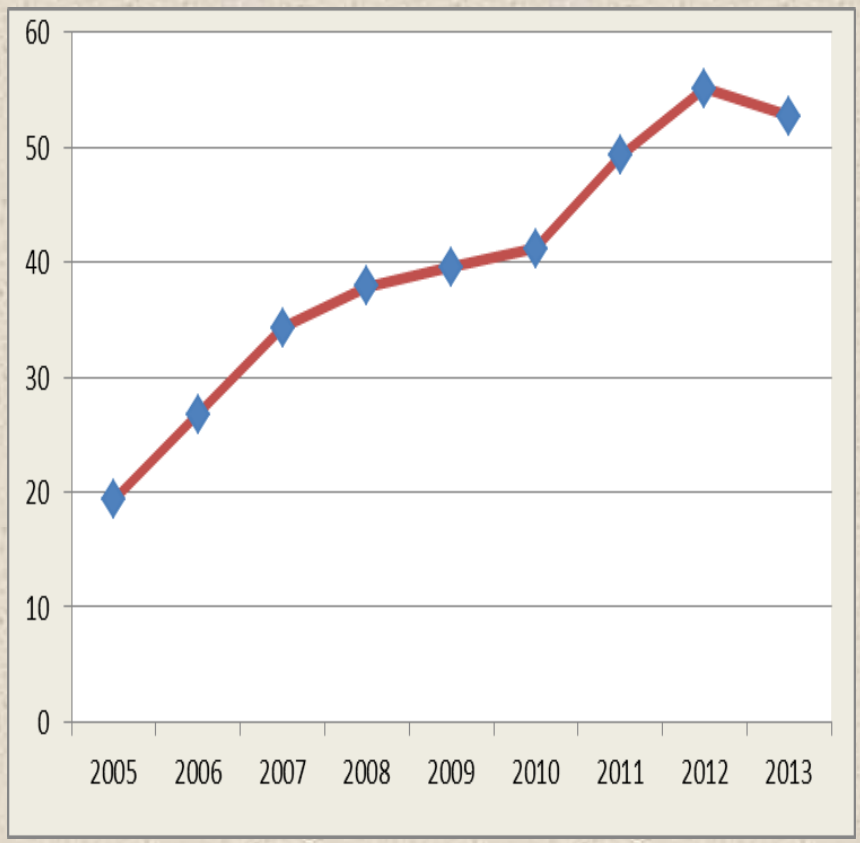
→ capacity to issue bonds even in disrupted markets

A counter-cyclical Instrument

FHLBs Advances outstanding – Billions $

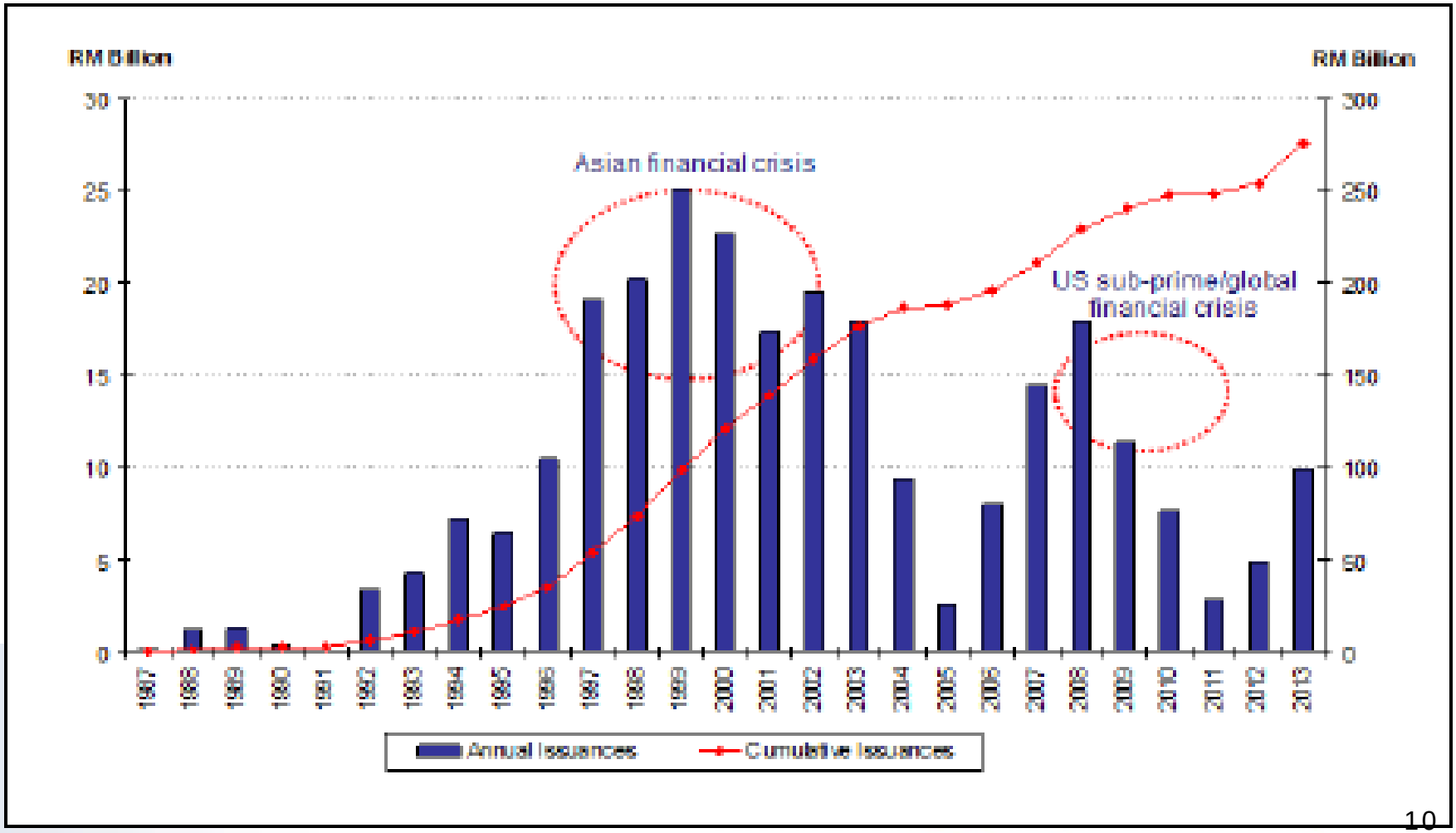


French CRH Refi. Loans outstanding – Billions €



A counter-cyclical Instrument: Malaysia Cagamas

Source: Cagamas Berhad



Customizing prudential regulation

Regulation : the features allowing a systemic role must be recognized - 1) MRC

- Prudential regulation & supervision required
  - A condition for bond market confidence
  - A condition of eligibility of MRCs' bonds to Central Bank's repo operations (of utmost importance)
  - Requires to be treated as a credit institution (MRCs are lenders, potentially directly)
  - Hence MRC's access to interbank market, Central bank support
- Capital adequacy requirement needed
  - The additional security layer to be anchored in regulation
  - But should be proportionate to the low risk profile of a MRC – adding too much capital in the consolidated value chain for the same loans would be a killer →refinance loans (secured) to be low risk weighted
- Concentration limits to be lifted
  - A wholesale business with a limited number of borrowers
  - Actual exposures: on collateralized portfolios, highly granular
  - Also limiting loans to shareholders not suited (exemption ex. WAEMU CRRH)

1) MRC regulation, Ctd – Basle III prudential ratios

- Liquidity ratios should apply
  - Critical for a liquidity provider to withstand market disruptions
  - LCR
  - NSFR - automatically complied with in MRCs based on a pass through model
- Leverage ratio (Basle III: >3%): ?
  - Rationale for the new (except in the US and Canada) ratio:
    - complexity and some arbitrary hypotheses of risk-based capital requirements
    - Objective to increase ROE through leverage can lead to risky behaviors
  - MRCs:
    - very simple model- risk of assets transparent and easy to assess
    - Leverage ratio detrimental to low-margin activities, especially monolines
    - Profitability generally not a major goal (exception ex.: US FHLBs' investments)

Regulation, 2) Investors

- Competitive funding of the essence
  - MRCs should be an attractive funding option to lenders
  - Should aim to lower the cost of the housing finance system
  - A tool to increase availability of fixed rate mortgages
  - Minimal spread on MRCs' bonds economically justified by the extreme safety they offer to investors
- Institutional investors
  - Larger investments buckets to be allowed

  (ex. EU regulation for covered bonds – investment limit =25% instead of 5%)
  - MRCs bonds not bail-in able in resolution mechanisms
- Banks as investors
  - Low risk weight of MRCs bonds held for capital adequacy calculation (EU covered bond regime: 10%)
  - Eligibility to liquidity ratios, especially LCR - linked to repo- ability

Conditions to support a specific treatment

Condition : Quality of MRCs' assets

- Soundness of refinanced portfolios
  - Underwriting standards
  - Dynamic pool (recourse to the borrowing institution)
- Robustness of the collateralization mechanism
  - Legal certainty of bankruptcy insulation - depends of legal system. Ex:
    - EU 2002 Financial Collateral Directive: direct transfer of full portfolio ownership with no formality, judicial process or cost
    - If needed: purchase of portfolios by MRCs, with recourse (ex. Cagamas)
  - Overcollateralization - in particular to cover delays in NPLs replacement
- Back up servicing arrangements – to increase the operational credibility of collateralization

Condition , Ctd

- Monitoring and checking critical
  - Regular reporting requirement
  - Strong inspection capacity
  - Stress tests (fair value)
    - Coverage of bonds by refinance loans
    - Coverage of refinance loans by underlying portfolios

- Final remark : different MRC business models require different prudential regulation
  - cooperative, pass-through vehicle, or provider of a commercial financial service
  - Capital Adequacy Requirement: depends on the degree of risk appetite

Annex - Basle III liquidity ratios

- Liquidity Coverage Ratio -LCR: ensuring that estimated monthly cash out-flows are covered by liquid or easily monetizable assets

$$\frac{\text{High Quality Liquid Assets (HQLAs)}}{\text{Est. cash outflows within 30 days (stress situation)}} > 100\%$$

HQLAs are classified in 3 tiers, depending on their quality /rating and market liquidity

- Net Stable Funding Ratio -NSFR: ensuring that a FI can function without mobilizing market funds for illiquid assets for a year:

$$\frac{\text{Available Stable Funding (ASF, liability side)}}{\text{Required Stable Funding (RSF, asset side)}} > 100\%$$

Each item weighted from 0 to 100%, based, for the assets on their quality/ possible monetization (in line with LCR), and for liabilities, on their stability profile