HOFINET | Housing Finance Information Network

Wharton UNIVERSITY of PENNSYLVANIA

Affordable Housing, Climate Change and Capital Markets

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Workshop

33rd ECBC Meeting

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Core messages

- Housing affordability has worsened in most AE and EMDE in recent years
- Tough global macro-economic, geopolitical and climate change conditions impact housing in many ways
- As do demographic factors -- differently in AEs and EMDEs
- But housing is a large part of the economy and stimulus of economic growth
- Housing finance sector is an important catalyst to open affordable green housing markets even in stressful macro-economic times
- What are priority actions for public and private sector?
  - Advanced economies: focus on scale retrofitting of houses and new green construction through sustainable lending and capital market instruments
  - Emerging Market and Developing Economies: urgent expansion of housing finance system to build mass green housing through cap market funding and increased access by underserved households

Setting the Context: What Do we Mean by Housing Affordability?

- Affordability is **ability** to pay in relation to household income

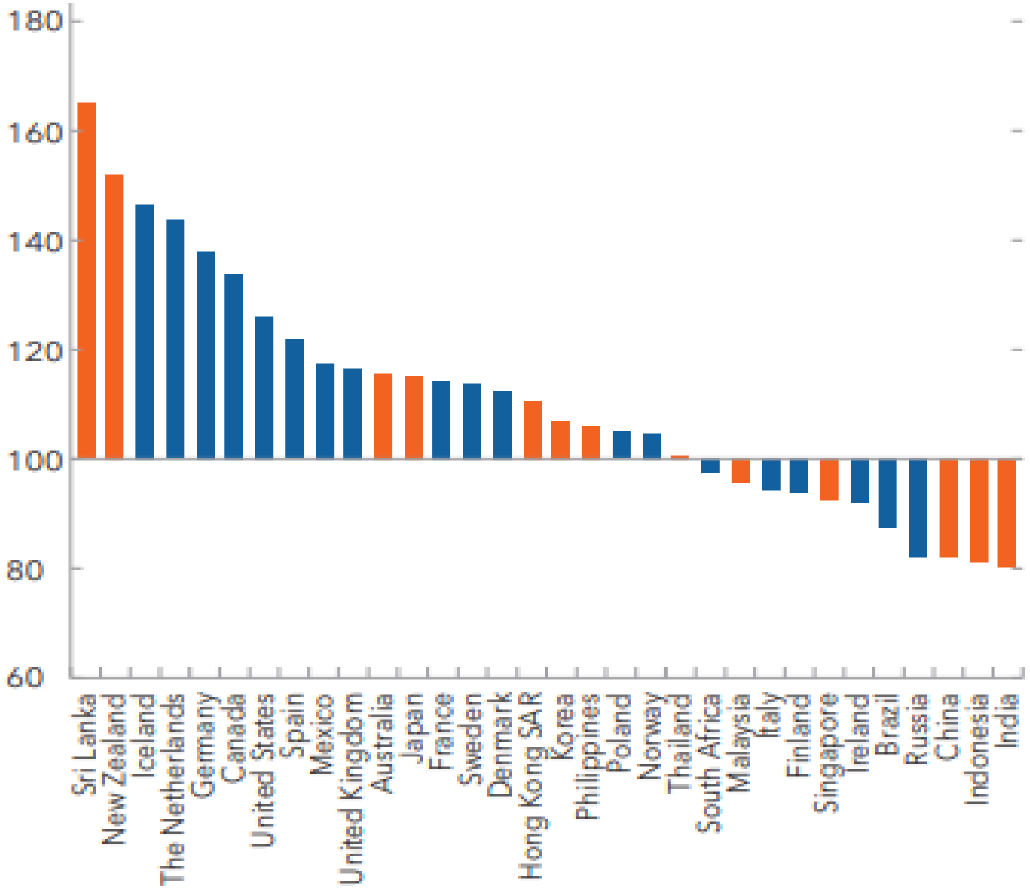
  = ratio of housing-related costs (mortgage payment or rent) to household disposable income

  = it is not demand, or willingness to pay!
- IMF takes 30% as approximate affordability measure
- …but ability to pay decreases with lower GDP/per capita levels since food and other essentials take increasing proportion of income
- Affordability of homeownership – house-price relative to incomes- has worsened since 2015 across countries
- See next slide: Q4 2021 data of the ~60 countries for which the IMF collects house price info

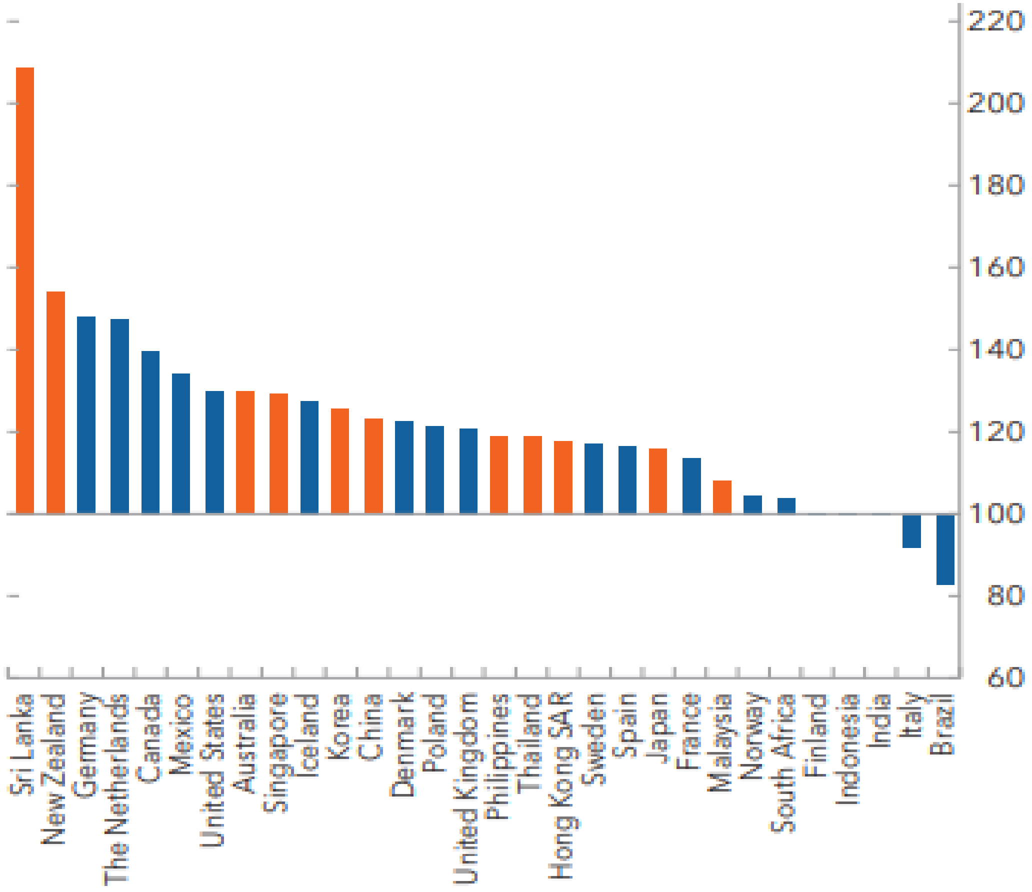
House-Price-to-Income and House-Price-to-Rent

Increased Significantly - 2015-2021 -- with some exceptions

1. Housing Price-to-Income
(2021:Q4, 2015 = 100)



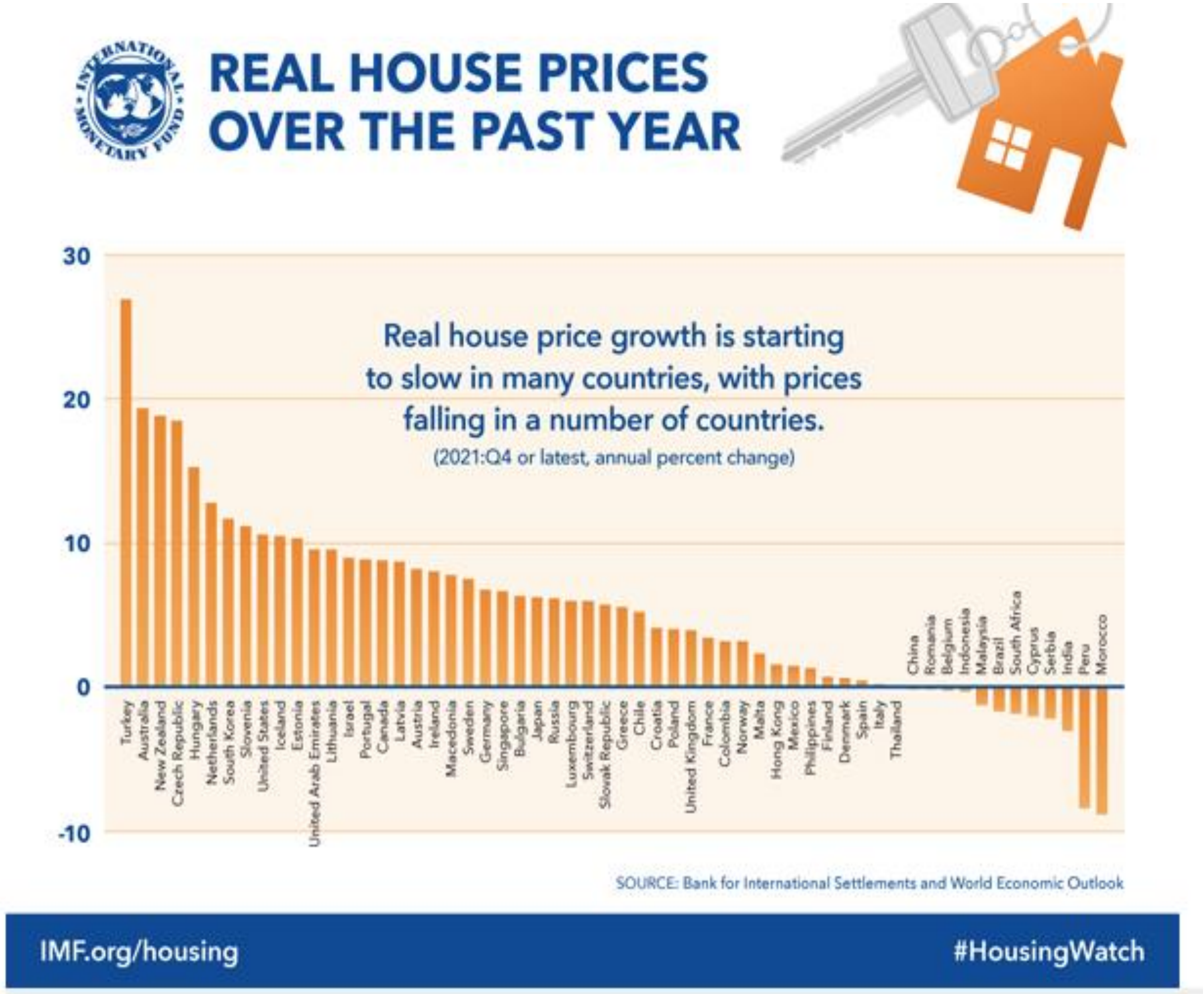
2. Housing Price-to-Rent
(2021:Q4, 2015 = 100)



Sources: OECD; and IMF staff calculations.
Note: Orange bars denote economies in the Asia-Pacific region.

Real House Price Growth Slowed in Many Advanced Economies Q42021 – Q32022

- But real house-prices are still increasing in many
- And interest rates have risen in the past year!
- Putting further stress on affordability
- In EMDEs, an even larger proportion of the population cannot afford formal adequate housing



Challenging Global Landscape:
Tough Marco-Economic, Financial, Trade Conditions

What impact on housing affordability?

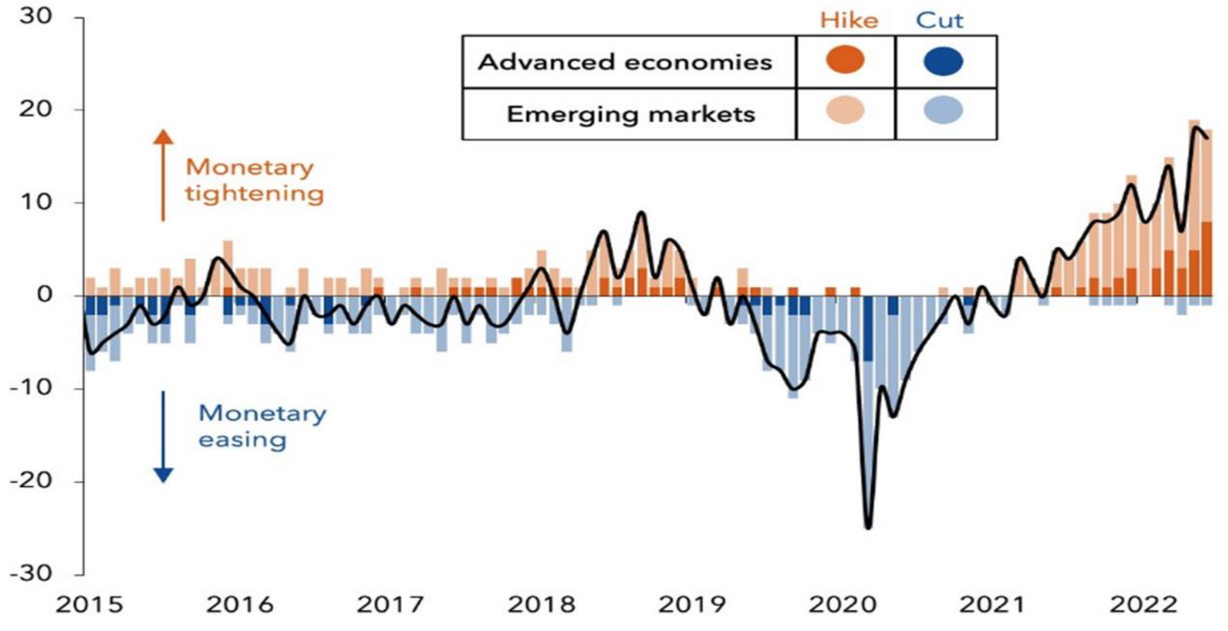
Through which channels?

Tough Marco-Economic and Financial Conditions – Inflation and Interest Rate Hikes

- Many Central Banks in Emerging and Advanced Economies Hiked Interest Rates to curb inflation in 2022
- Pressure on mortgage rates in both EMDEs and AEs

Hiking peak

The number of central banks hiking interest rates has increased dramatically in recent months as inflation rose to fresh highs.
(number of central banks, absolute value)



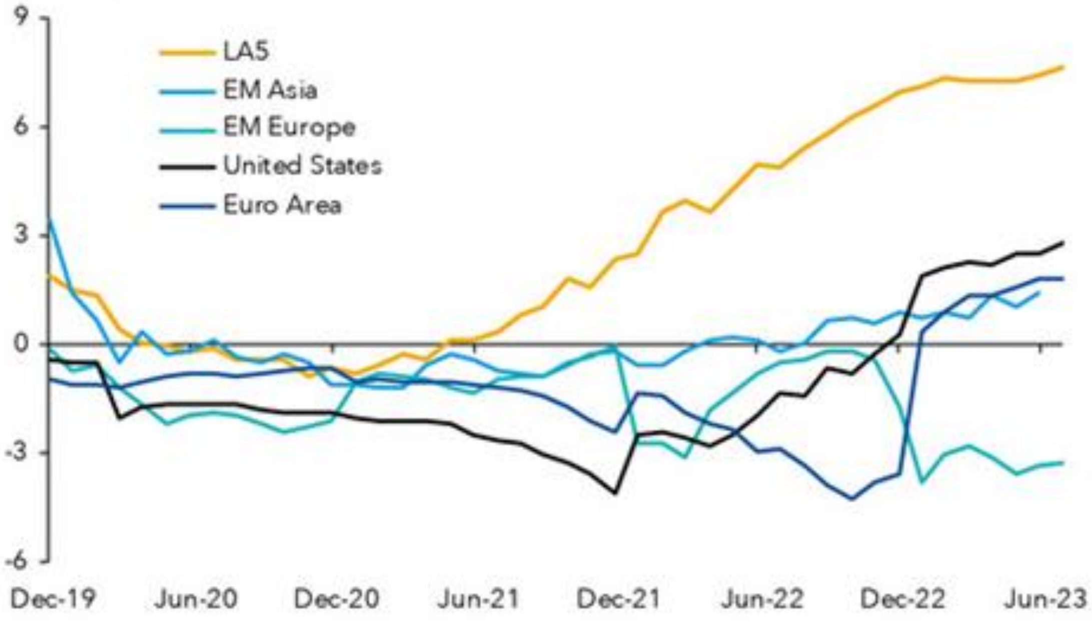
Sources: Bloomberg, and IMF staff calculations
Note: The AE sample consists of Australia, Canada, Czech Republic, Japan, New Zealand, Norway, Sweden, Switzerland, the United Kingdom, the United States, and the countries in the European Union (under ECB jurisdiction). The EM sample consists of Brazil, Chile, Colombia, Mexico, Peru, India, Indonesia, Malaysia, Philippines, Thailand, Hungary, Poland, Romania, South Africa, Turkey, Pakistan, Croatia, Russia, Ukraine, Egypt, and Ghana.

IMF

Pandemic Easing of Interest Rates followed by Post- Pandemic Interest Rate Hikes

- Some countries (Latin America) started to raise rates early and higher
- LA now considering to lower IR
- Ahead of the curve (inflation experience!)

Ex-ante real monetary policy rates
(percent)

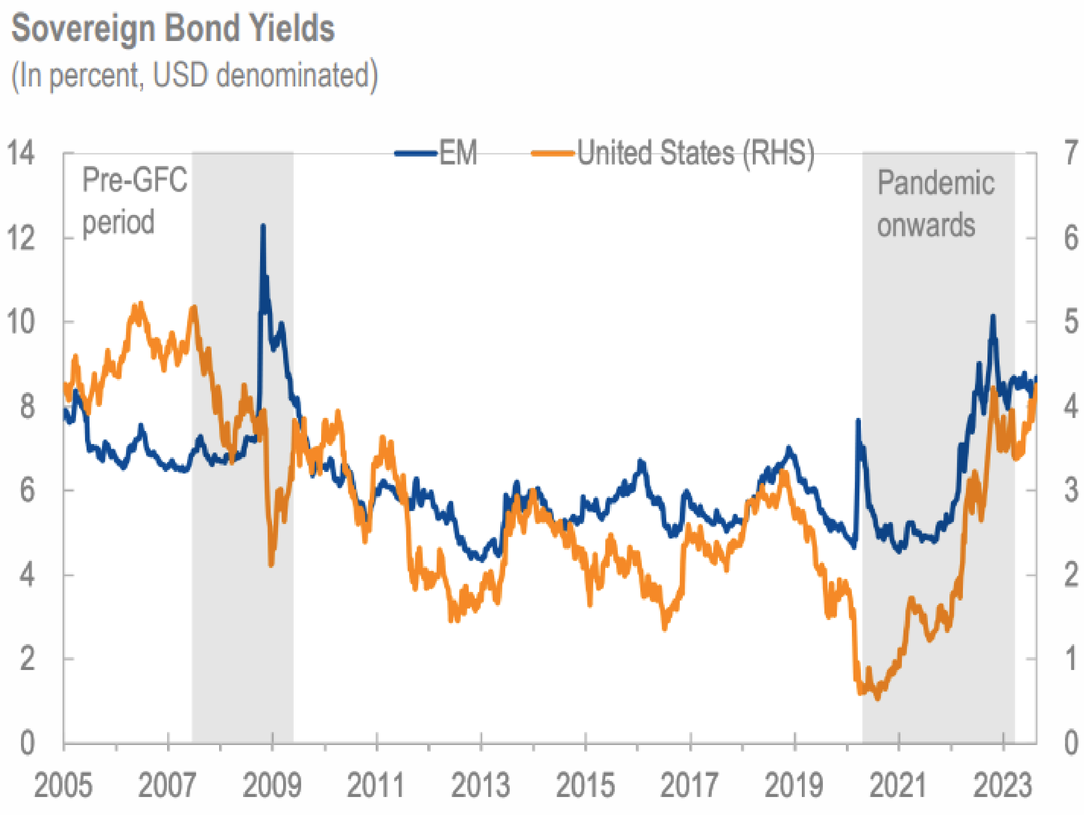


Sources: Consensus Economics; Haver Analytics; national authorities; and IMF staff calculations.
Note: Ex-ante real policy rate is the difference between nominal policy rate and one-year ahead inflation expectations. Aggregates are purchasing-power-parity GDP-weighted averages. EM Asia = emerging markets Asia (IND, IDN, MYS, PHL, THA, VNM); EM Europe = emerging markets Europe (BLR, HUN, POL, ROU, SRB); LA5 = Latin America 5 (Brazil, Chile, Colombia, Mexico, Peru).

IMF

Tough Marco-Economic and Financial Conditions – sovereign bond yields increased => fiscal stress

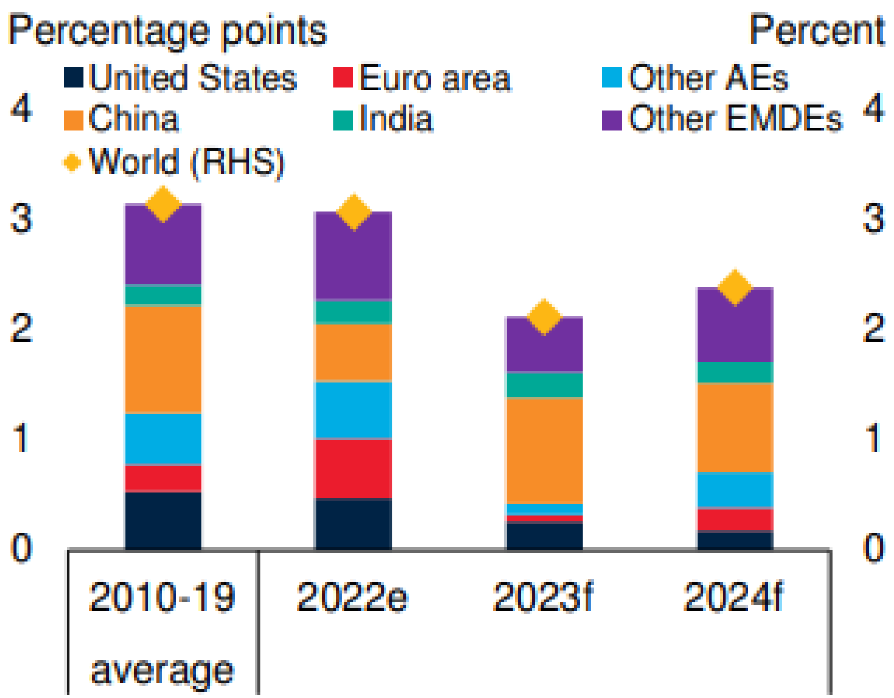
- 10-year US Treasury bond yields have surged to over 4 percent in nominal terms, the highest since the GFC
- High indebtedness of public + private sector after COVID
- EM sovereign bond yields increased, now stabilizing
- Higher debt servicing costs estimated to rise to 28% of revenue in 2028 for EMs
- Result: Fiscal stress + tightening –



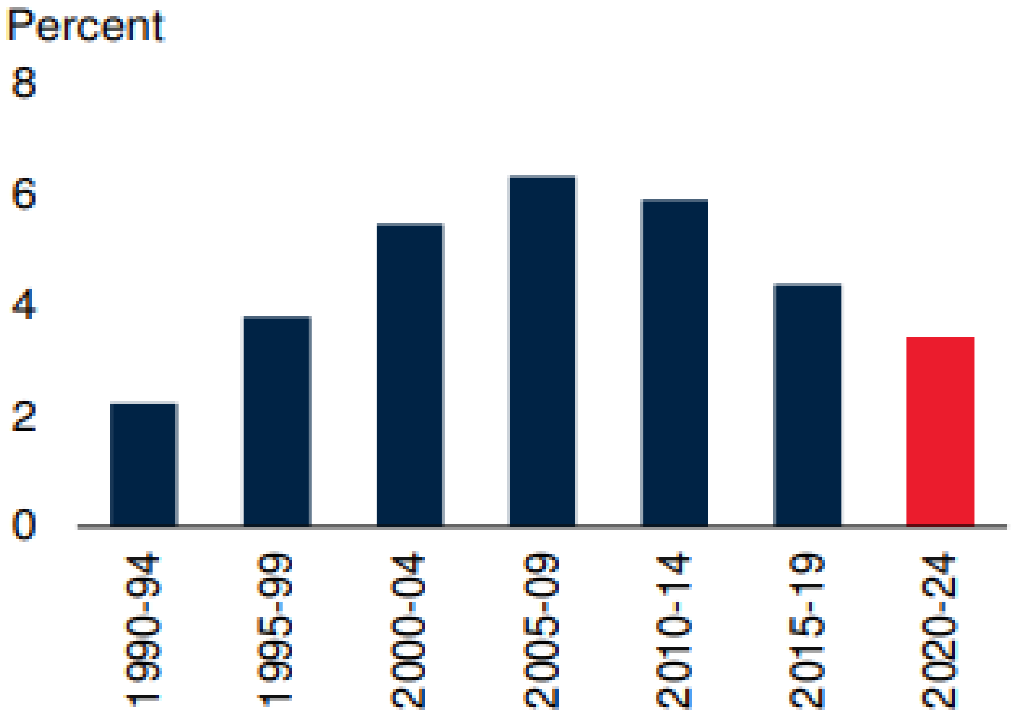
Sources: Bloomberg. Notes: For EMs, JPM Diversified EM Bond Index: blended yields on USD-denominated sovereign debt, with weighted latest maturity of 10.7 years.

Tough Marco-Economic and Financial Conditions – slow global growth in 2023, tepid recovery in 2024

Contributions to Global Economic Growth



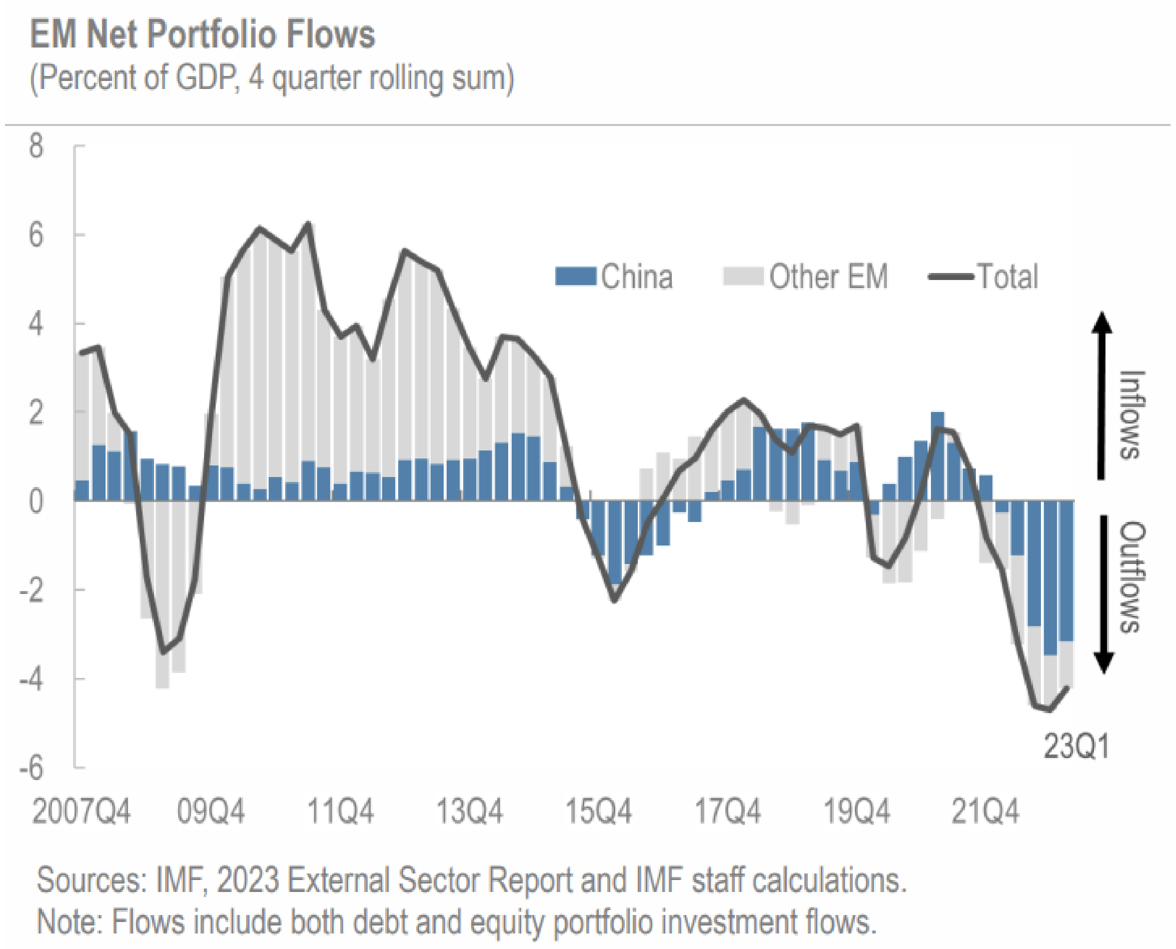
GDP Growth in EMDEs



Source: WE GEP June 2023

Tough Marco-Economic and Financial Conditions – geoeconomic fragmentation

- Net portfolio flows to EMDEs turned negative
- Trade restrictions (goods, investment, services) and related subsidies increased during past two years
- Negative supply shocks increase prices twice as much in fragmented world – effect on costs of construction



Sourced from IMF

Tough Marco-Economic and Financial Conditions – What Does this Mean for the Housing Sector?

- **Increase in mortgage interest rates/ interest rate volatility**:
  - **Reduces demand for loans** => lower demand for houses or home-improvement
  - **Impacts supply of loans –**
    - **Loss on existing FRM portfolio; reduction in long-term FRM loan originations** if kept on book- high interest rate risk
    - **Danger of default on exisiting or new ARMs when repriced**
  - **Banks hold high yield sovereign bonds** (risk free)- negative for mortgage market expansion (EMDE)
- **Effects on house-prices relative to incomes - affordability:**
  - **In advanced economies**: increasing interest rates often lead to **house-price decreases and related concerns for financial stability in banking sector - EU**
  - In FRM environments, mortgage holders will not sell property if possible =>short supply of existing houses => upward price effects ; supply constraints increase prices of new construction - US
  - **In EMDE**: mortgage sector is small; concerns focus on house **price increases** - building materials (imported) + higher interest rates - **impacting affordability if incomes lag inflation**
- **Effects on Fiscal Space:**
  - Increased debt servicing costs; lower tax revenue
  - **Limited ability to invest in basic infrastructure, services, subsidies**

Challenging Global Landscape: Increasing Climate Change Related Risks

What impact on housing affordability?

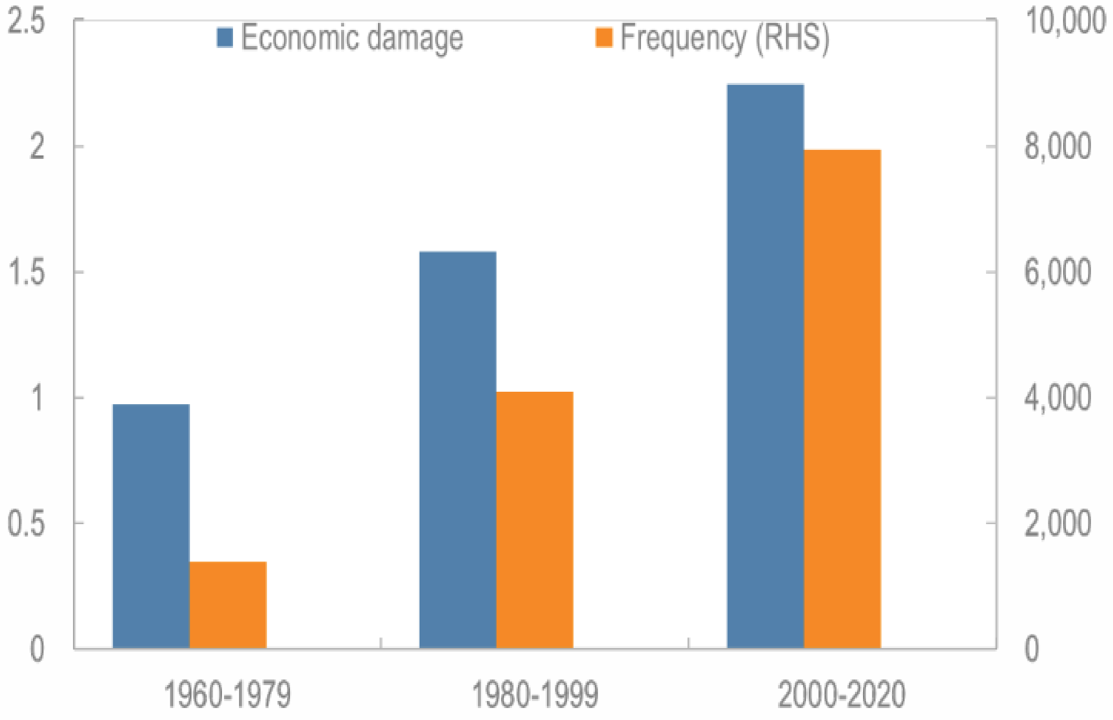
Can housing play a role in reducing climate risks?

Climate Change Related Risks – frequency, scale and costs of disasters

- Natural disasters occur with greater frequency; major impact on housing sector
- Inflict growing economic costs
- And human suffering
- Global warming causes increasing population displacement
- Climate infrastructure investments: - estimated to be between 9% and 4% of GDP -- (IMF 2022)

Climate-related Disasters

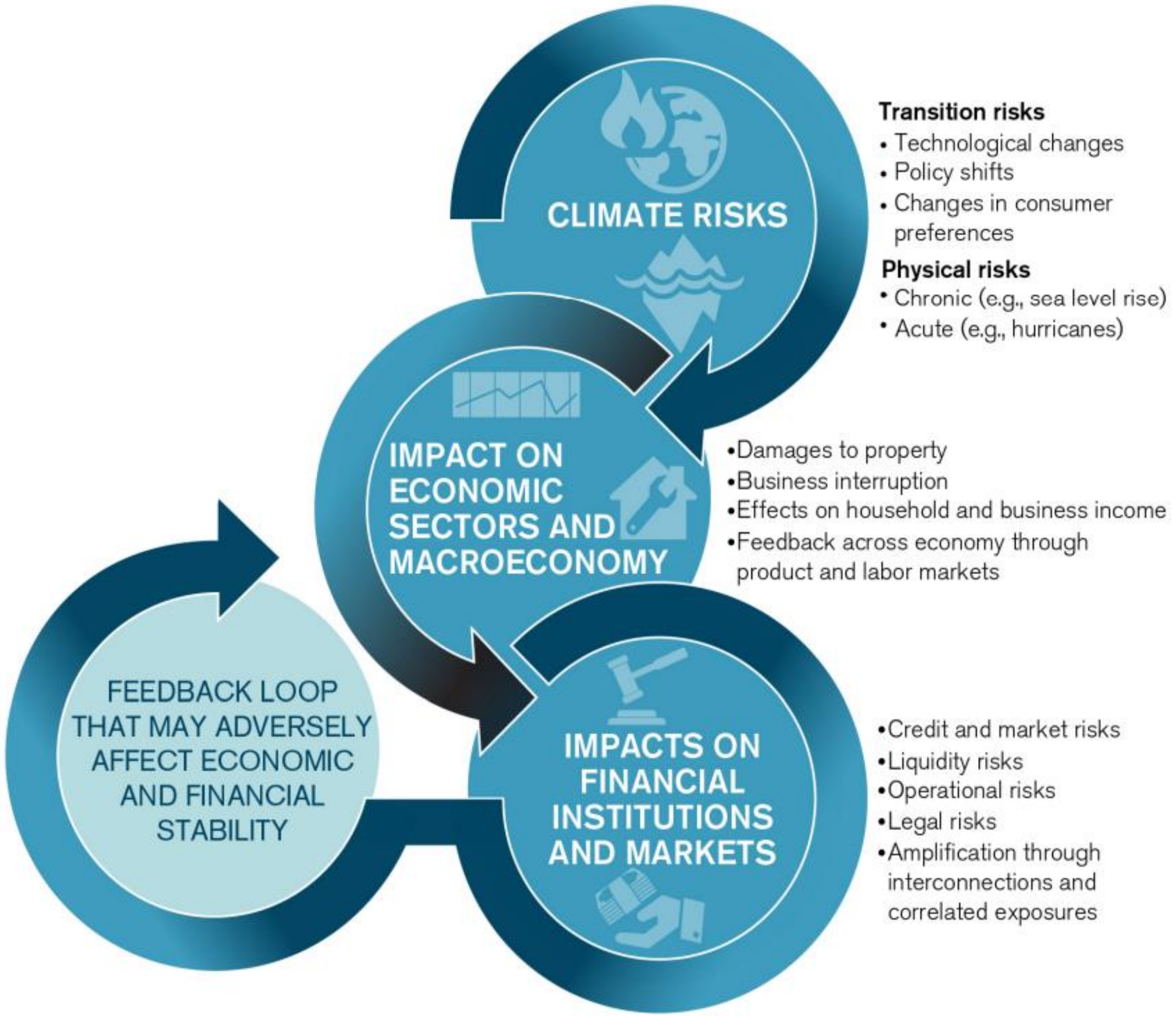
(Economic damage in percent of countries GDP (simple average), frequency in total number recorded)



Sources: Our World in Data based on raw disaster data published by EM-DAT, CRED / UCLouvain, Brussels, Belgium – www.emdat.be (D. Guha-Sapir).

Climate Change Related Risks – property + transition risks

- Physical risks and transition risks in housing sector have direct effects on households, communities, businesses, and other entities
- and lenders, insurers and investors to which they are linked
- Potential impact on economic sector and financial stability



Source: Figure created by FSOC.

Climate Change Related Risks –
financial institution risks, vulnerable groups

- “Climate related financial risks have placed capital markets and financial institutions in unparalleled state of vulnerability” Ceres (NGO)
- Climate risk needs to be integrated in supervision of financial sector
- Progress in AE; some in EMDE
- Minimal consideration of impact on financially vulnerable communities

Ceres
Ceres Accelerator
for Sustainable Capital Markets

2023 Climate Risk Scorecard

This table assesses the public actions that federal financial regulators have already implemented to address climate-related financial risk, including 100 new actions over the past 12 months, and displays the level of progress they have made in nine FSOC-recommended categories.

	Treasury	Fed	OCC	FDIC	NCUA	SEC	MSRB	PCAOB	CFTC	FHFA
1. Affirm publicly climate as a **systemic risk**	✓	✓	✓	✓	✓	✓	✓	X	✓	✓
2. Expand internal climate-related **capacities**	✓	✓	✓	–	–	✓	–	–	✓	✓
3. Increase **transparency** regarding climate-related risk management activities	✓	–	–	–	–	✓	–	X	–	✓
4. Assess climate risks on financially **vulnerable communities**	–	–	–	–	–	X	n/a	n/a	X	✓
5. Produce **research and data** on climate risk	✓	–	–	–	–	–	–	–	–	✓
6. Conduct climate-related **scenario analysis**	n/a	✓	X	X	X	n/a	n/a	n/a	n/a	–
7. Improve climate-related **disclosure**	✓	X	X	X	X	–	–	X	–	–
8. Include climate risk in **supervisory guidance**	–	–	–	–	–	✓	–	X	–	✓
9. Include climate risk in **regulation**	n/a	X	X	X	X	–	X	X	X	X

Notable progress
No progress
Some progress
Not applicable

For the latest version of this scorecard please visit ceres.org/scorecard. Information as of June 30, 2023.

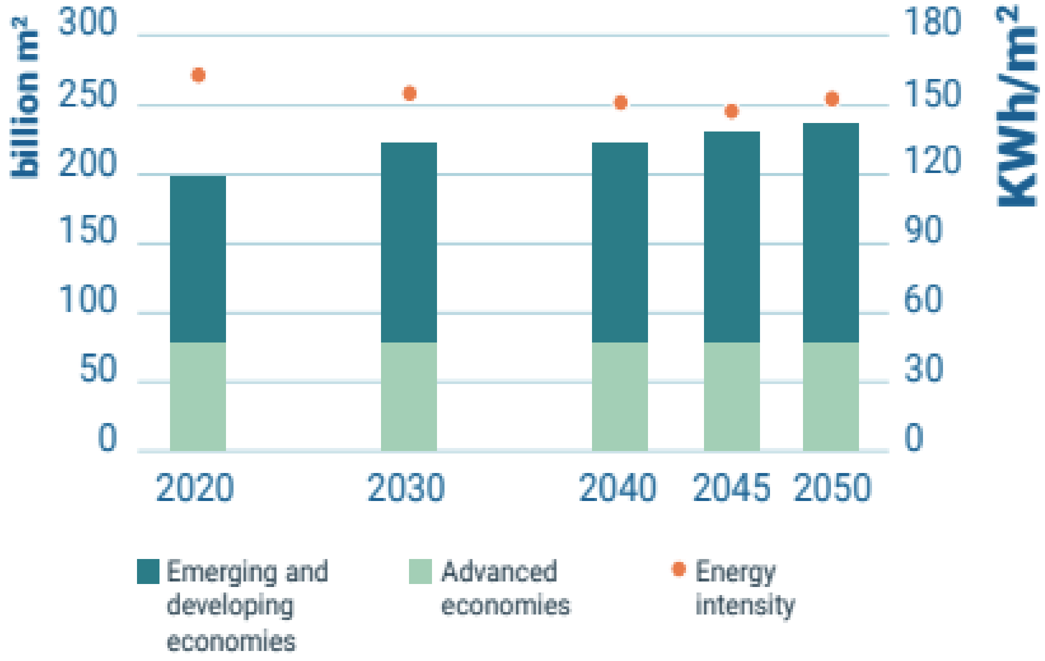
Agencies assessed by the 2023 Scorecard

Treasury U.S. Department of the Treasury
FED The Federal Reserve System
OCC Office of the Comptroller of the Currency
FDIC Federal Deposit Insurance Commission
NCUA National Credit Union Administration
CFTC Commodity Futures Trading Commission
SEC Securities and Exchange Commission
MSRB Municipal Securities Rulemaking Board
PCAOB The Public Company Accounting Oversight Board
FHFA Federal Housing Finance Agency

Climate Change Related Risks – concurrently --- residential buildings contribute to carbon-emission

- Buildings contribute ~37% of global energy consumption
- Residential buildings are largest part of total buildings – use 28% of total energy consumption and 17% of total CO2 emissions (OECD)
- Because of population size, growth and urbanization EMDE's floor area increases more than AE => increasing contribution to climate risk going forward

Global floor area and buildings energy intensity, 2010-2021

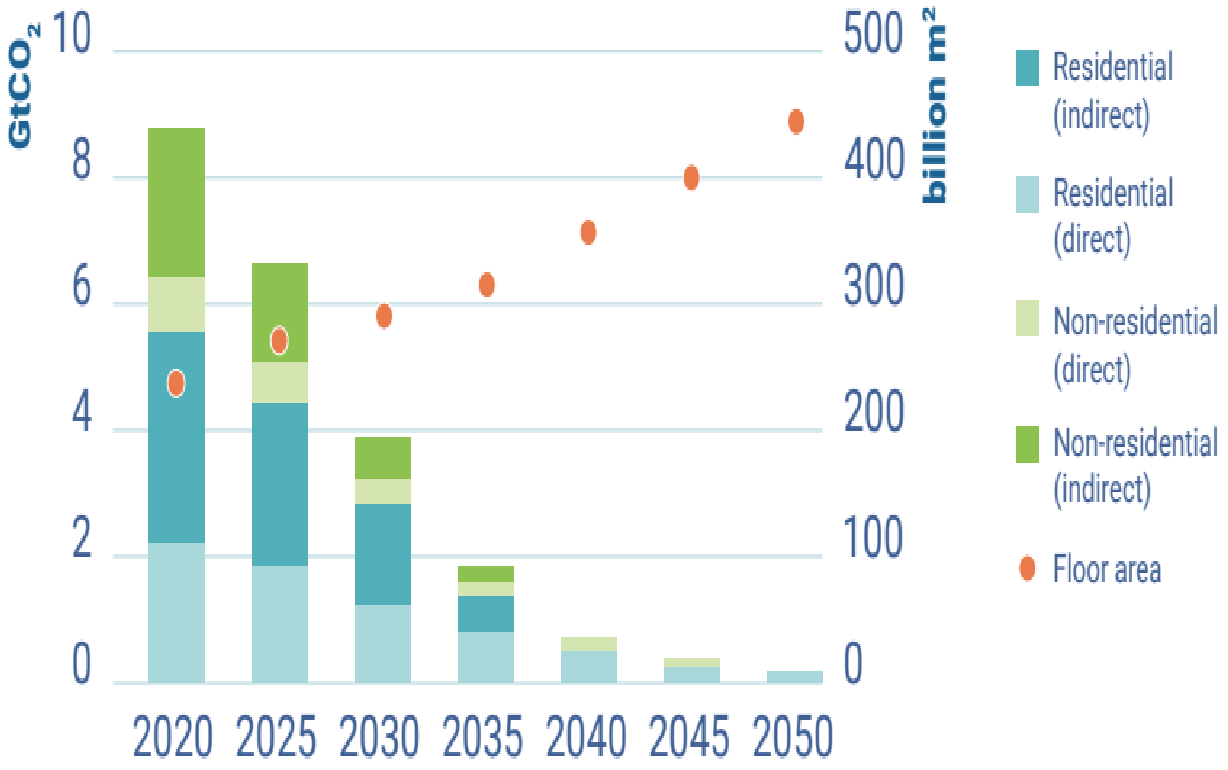


Source: IEA 2021. All rights reserved. Adapted from "Tracking Clean Energy Progress" (IEA 2021c).

Climate Change Related Risks – concurrently....

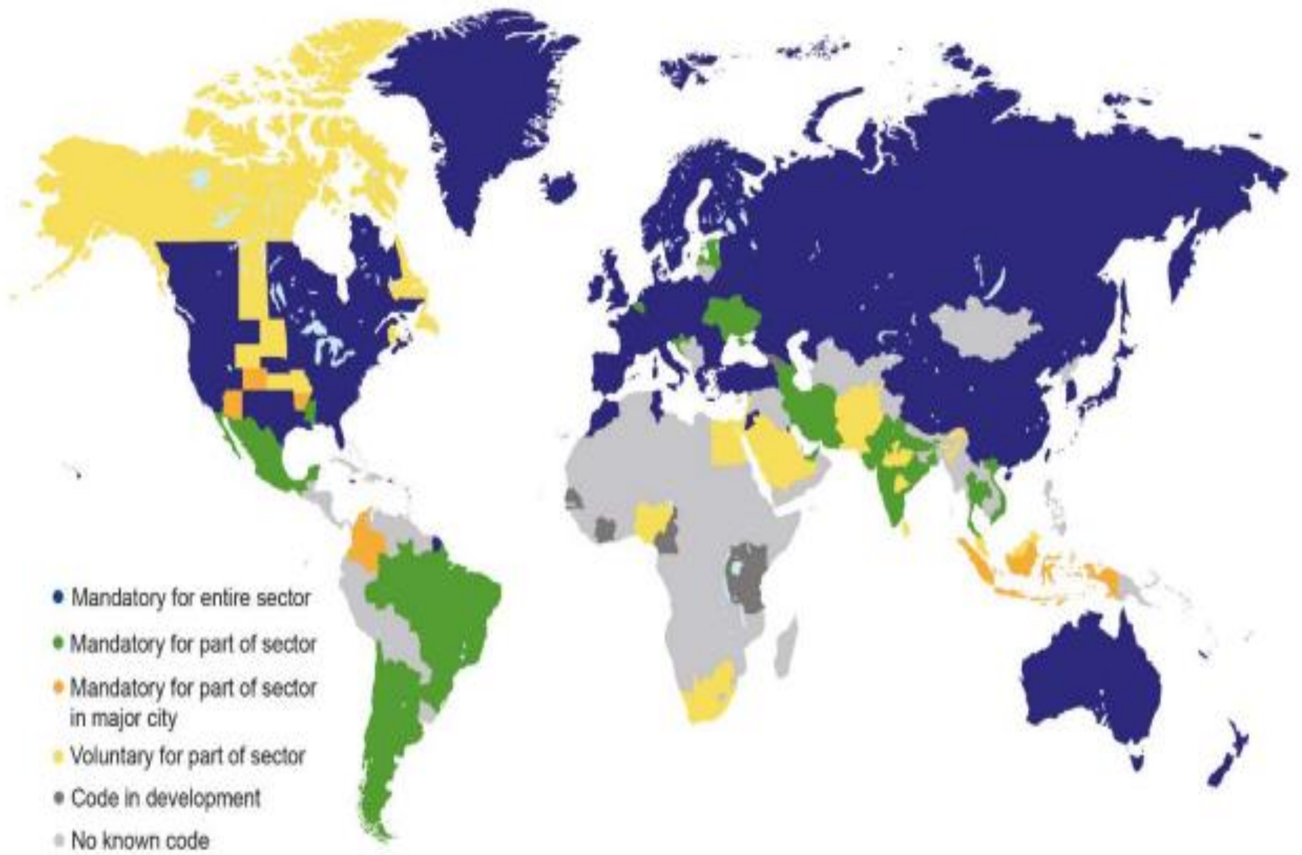
- Even under net zero assumptions by 2050, scale of increase in floor area causes GtCO2 emissions from residential buildings to increase
- Housing should be one of the priority sectors for policies on energy/CO2 and other harmful emission

Global Building Energy Demand and Floor Area Growth under IEA net-zero emissions by 2050



Climate Change Related Risks – supply-side is poorly regulated

- Building Energy Codes and Standards Vary in Stringency across the world
- Partial, weak or absent in regions with fastest growing population and highest climate risk



Source : https://www.iea.org/reports/building-envelopes.

StatLink https://stat.link/2urxj1

Source: 2018 IEA data

Climate Change Related Risks-
What does this mean for the housing sector?

- **Increase in housing stock at risk:**
  - High public and private costs of frequent disasters; disruptions in employment, education
  - High cost or unavailability of home insurance in vulnerable areas => decreasing property values (10% US FL)
  - Global carbon pricing likely to lower prices of CO_2 inefficient real estate (transition risk)
  - Leads to financial sector risk in case of mortgaged property
  - Yet lack of prudential supervision of this risk in financial sector
- **High cost of retrofitting existing stock – to reduce CO_2 + other emissions**
  - Who pays, timeline, incentives? Even if offset by lower operational costs downstream
- **High upfront cost of CO_2 efficient new construction/location**
  - Major issue in rapidly growing/urbanizing countries
  - Impact on affordable sector, may force more households into informal housing; risk of increasing inequity
  - Even if offset by operational costs downstream
- **Complex enforcement of CO_2 efficient building and planning standards**
  - Standardization issue - codes set by **local authorities; conflicting + politization**
  - **Scarcity of well-located land; location more important than building standards for CO_2 efficiency**
  - Private developers profit driven – need for checks and balances
  - What incentives are needed from lenders, investors, insurers, regulators?

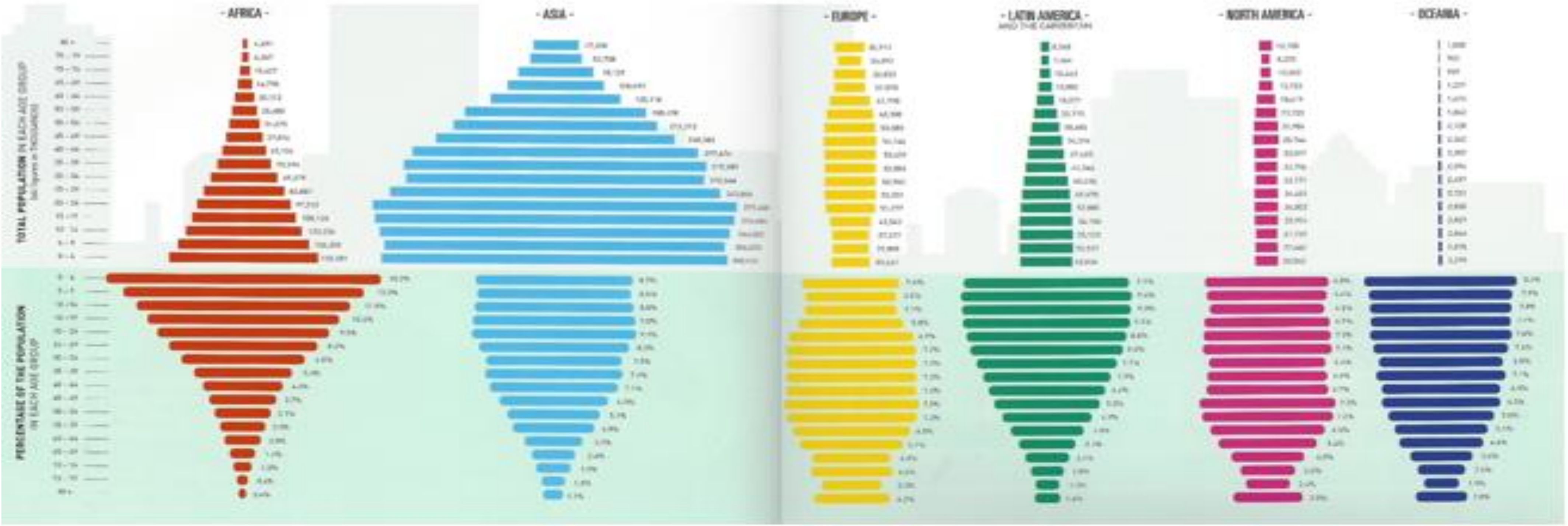
Demographic Factors Worsen Challenges in EMDEs

Who pays for unequal impact?

Demographic Trends

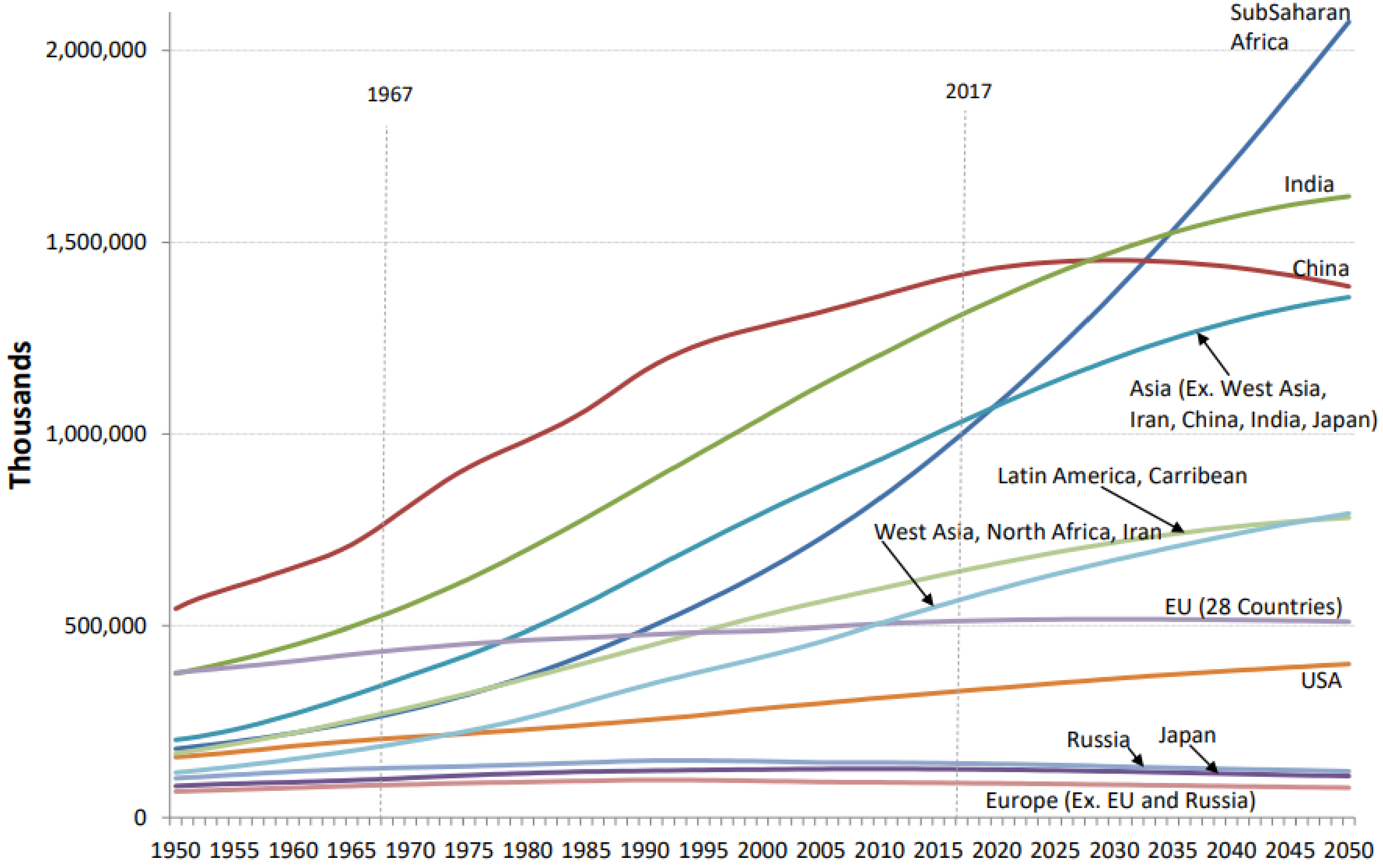
Population Pyramids by Region; total population (top)
Population Pyramids as a percentage of Region’s Population (bottom)

Africa Asia Europe Latin America North America Oceania

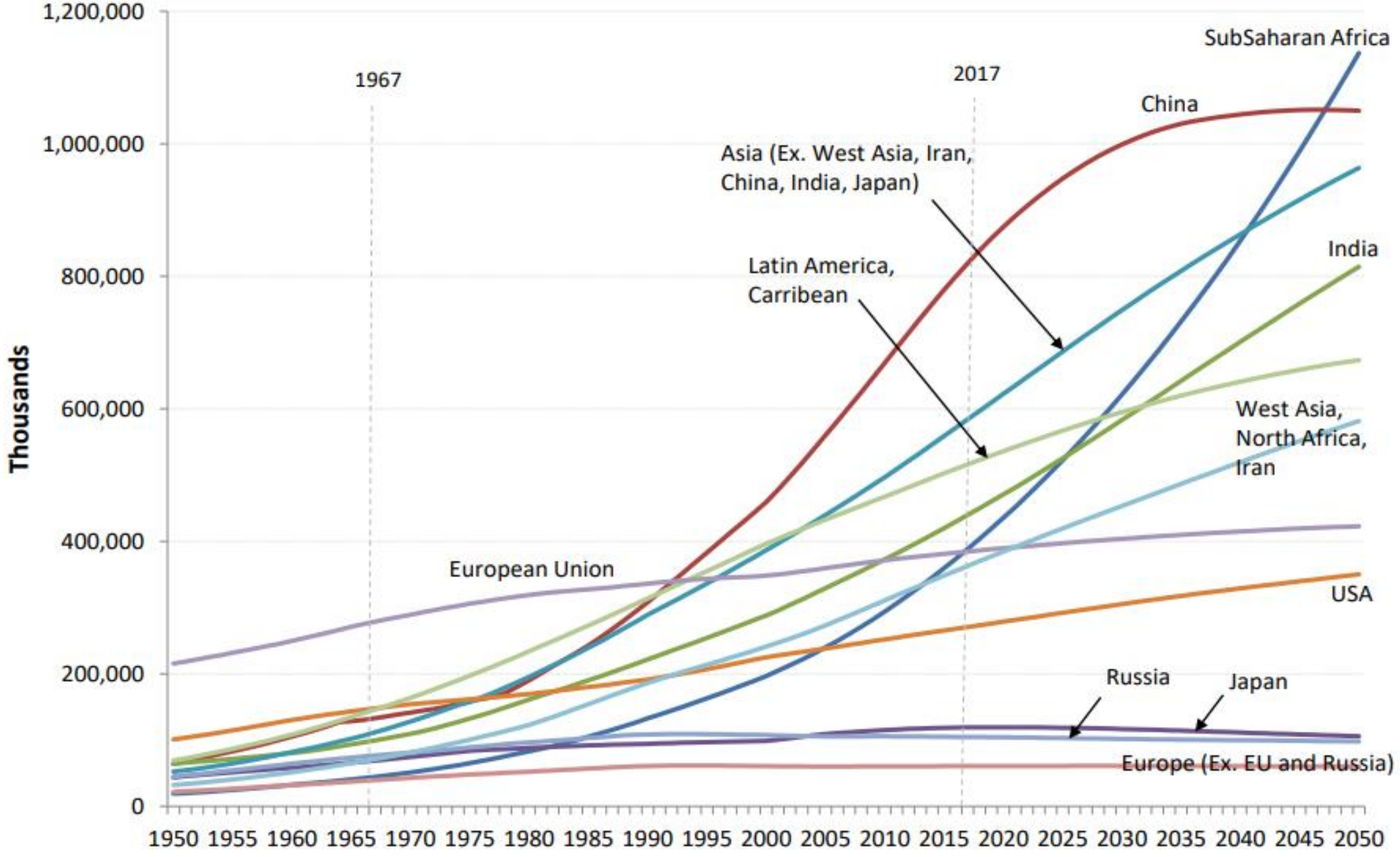


Source: D’Efilippo and Ball

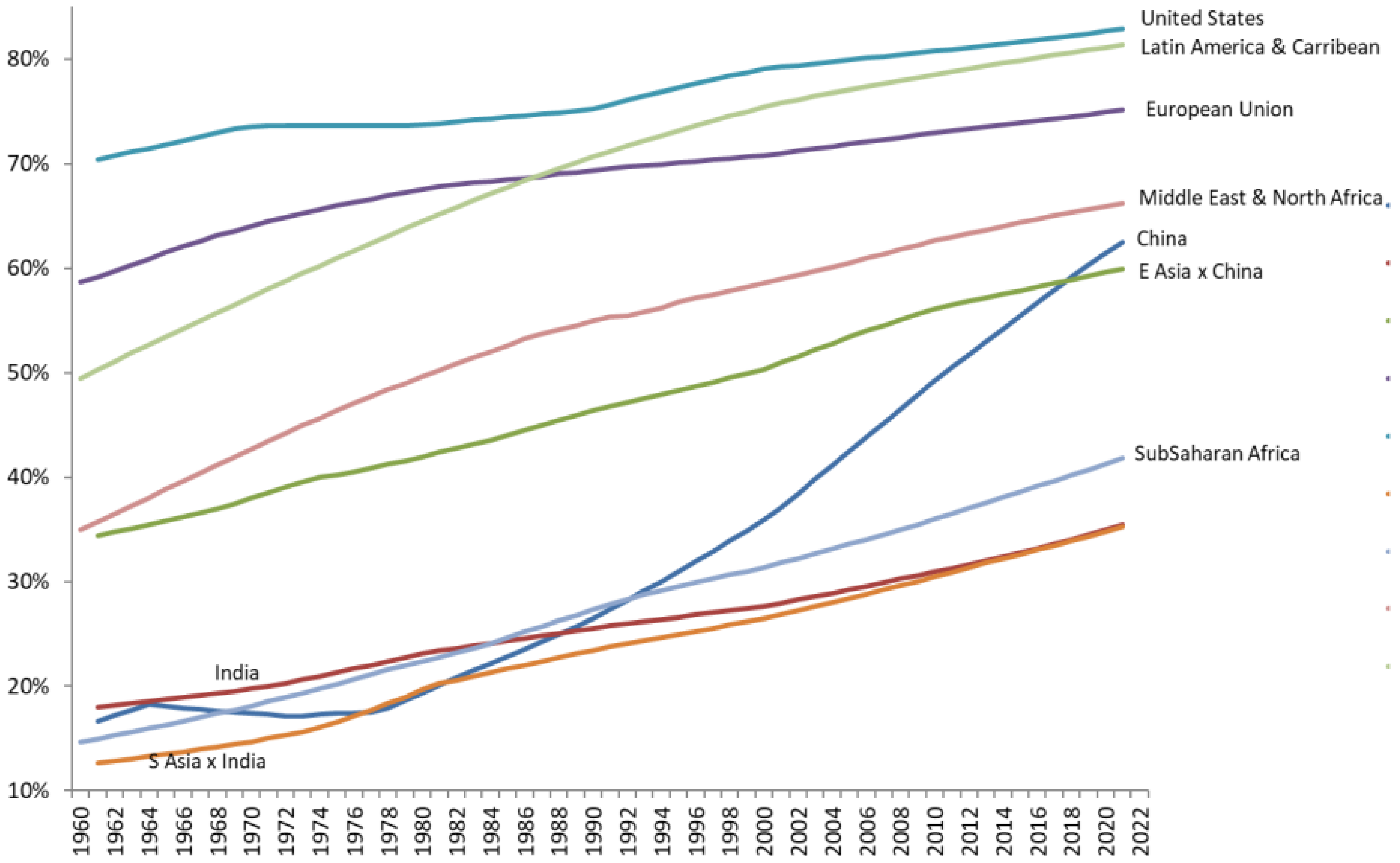
Total Population of Selected Countries/Regions, with UN Projections to 2050



Urban Population of Selected Countries/Regions, with UN Projections to 2050

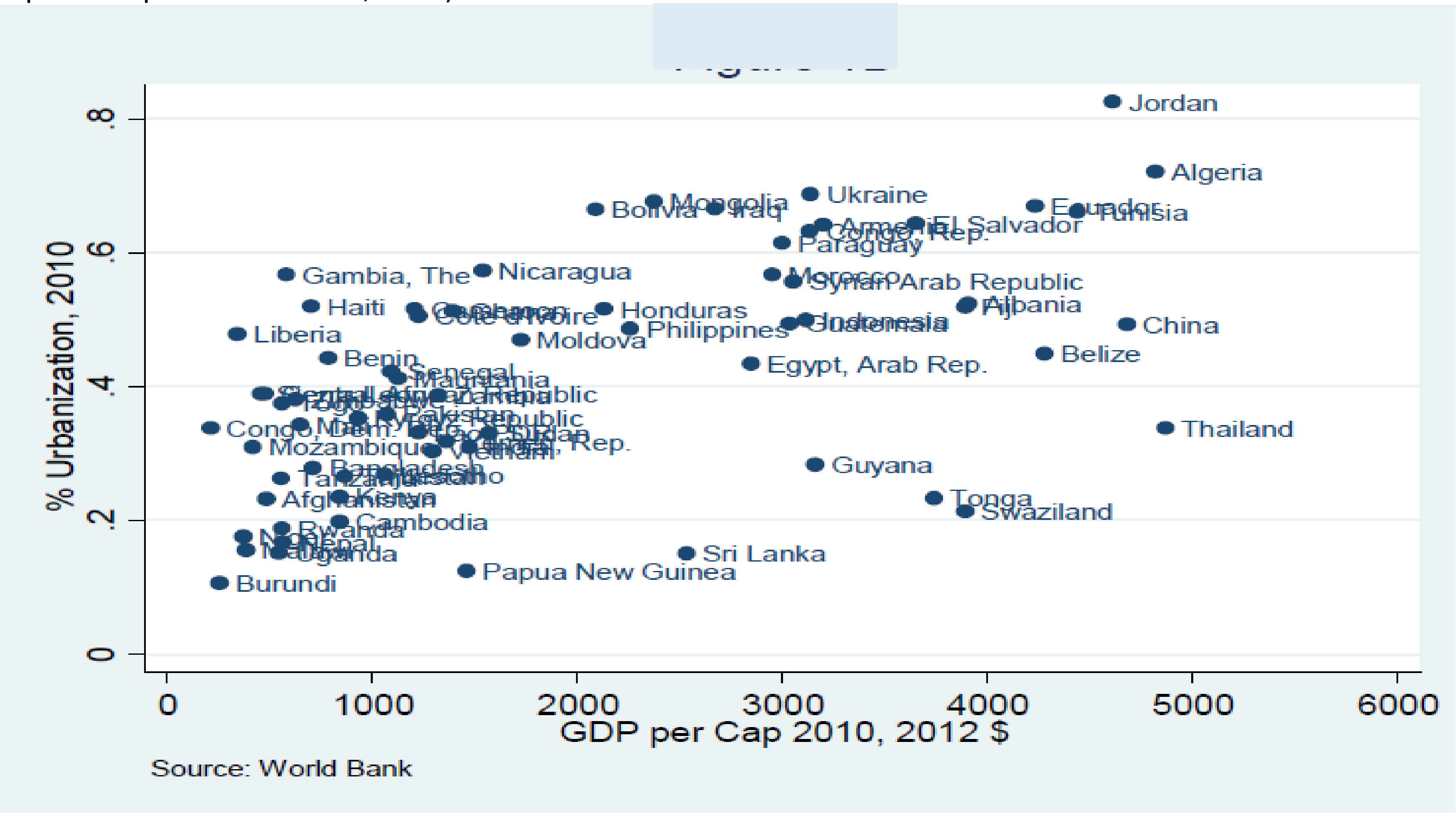


Percent Population Urban, Selected Countries/Regions, 1960-2021



Challenge: Urbanization Happens at Lower Per Capita Income Levels then in the Past

(GDP per Capita < USD 5,000)



From: Glaeser, E. A World of Cities, NBER 2013

Demographic Factors Worsen Housing Challenges in EMDE

- Young population and rapid household formation in Africa and (parts of) Asia; still urbanizing rapidly from low base
- Europe, parts of Asia aging; US and LA fairly stable demography
- US, Latin America, Europe mostly urban – low rural-urban migration

Consequences for the Housing Sector – new construction v upgrading:

- Need for large scale, **new urban green** housing in Africa and South Asia – but low affordability levels – requires IFI transfers
- Focus on Upgrading/**retrofitting** in stable, slow growing, highly urbanized regions; most advanced economies – but also Latin America

But Housing is a Large Part of the Economy Can Stimulate Economic Growth

Housing Finance as Catalyst.....

Housing as a Major Economic Opportunity

- Housing is 10 to 30% of consumption
- Gross fixed capital formation 4.5 to > 9.4 percent of GDP in past 45 years in OECD countries (see next 2 slides)
- Large part of savings; Large part of household wealth (50 to 90 %)
- Housing sector creates domestic jobs; 5 to 10% in building industry + spill-over in other sectors
- Resource for local government revenue (property taxation- source to pay for green/social land and housing costs)
- Efficient housing finance stimulates financial sector development

Example: US Housing Related Entries in the National Income Account Show Total Contribution of Housing To GDP of 19% in 2019

	US $ billion	% of GDP	US$/person
Gross Domestic Product	21,433	100	65,305
Consumption			
Housing Services	2,331	**10.9**	7,101
Rental amount, Imputed rent of owner-occupied housing			
Household Operation	969	**4.5**	2,953
Electricity, gas, furnishing, maintenance, other			
Investment			
Residential **Structures-single family;-multifamily;-other**	801	**3.7**	2,442
Total of Housing Related Entries	4,101	**19.1**	12,496

Source: OECD (202(

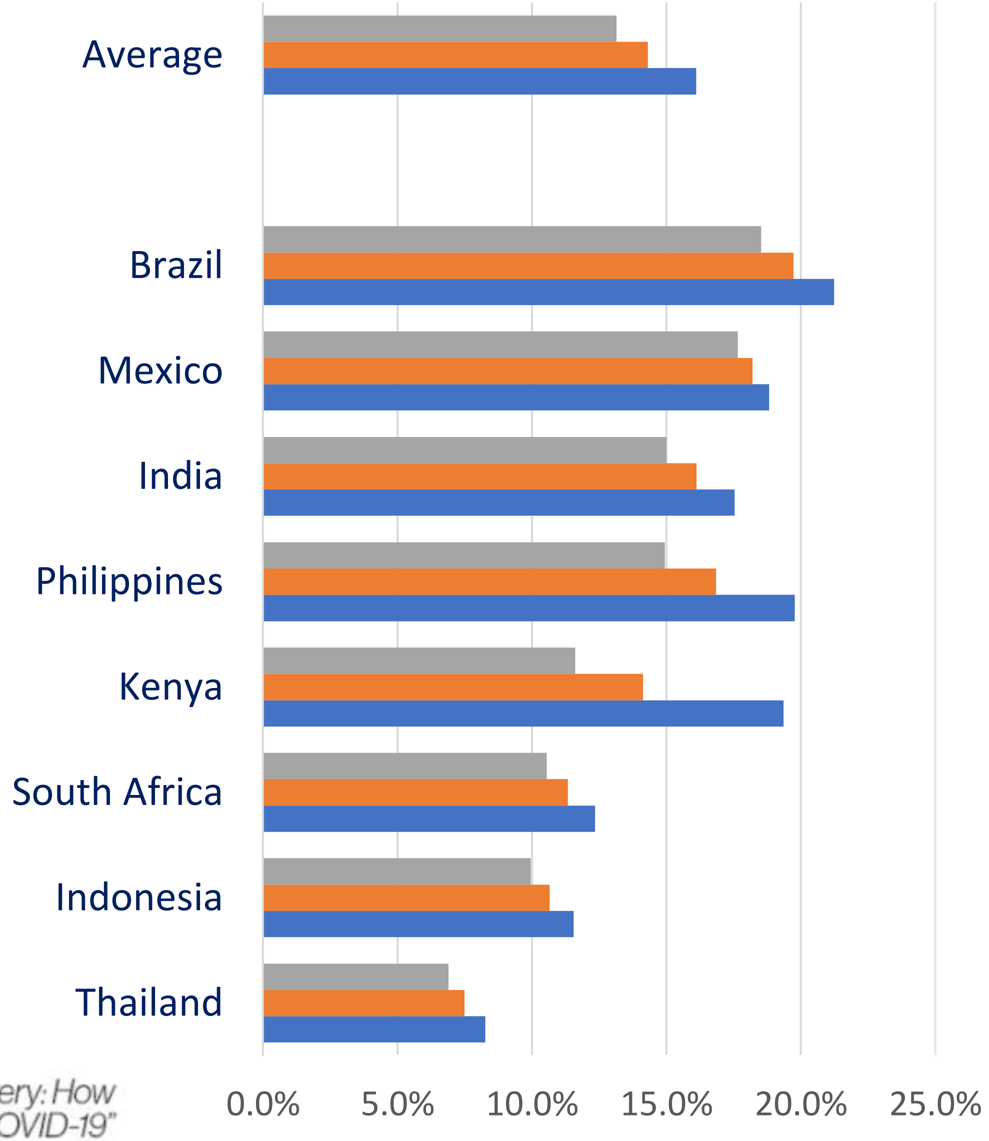
Housing's Contribution to GDP in Emerging Markets

Habitat for Humanity Study 2020 (11 countries) - System of National Accounts

- **Housing investments: 2% - 7% of GDP**
  - Gross Fixed Capital Formation: Dwellings
  - Capture expenditures on capital assets and transfer costs
  - Require surveys on housing construction: generally assembled from firm surveys rather than household surveys (likely to miss production for own account
- **Housing services/consumption: 7% - 19% of GDP**
  - Includes expenditures on rents and imputed rents for owners (owner-equivalent rents)+ maintenance and repair costs
  - Requires detailed (and updated) household consumption and housing surveys or ability to estimate user-cost
  - Difficult to impute rent for owners if limited and segmented rental market
- **Need for data improvement:**
  - Informal activity (investments & consumption) largely missed by existing surveys
  - Potential to use alternative sources of data (remote sensing imagery, scraped for sale and for rent listings) to estimate production, rent, owner-equivalent rent?

Total contribution of housing to GDP 14.3% to 16.1% in sample countries if Informal Housing is Included

- **Informal housing alone, could contribute an additional 1.5% to 3% to GDP on average**, if informal sector activity is captured
- Estimates with and w/o informal housing adjustment



Source: Habitat for Humanity report: "Cornerstone of Recovery: How Housing Can Help Emerging Market Economies Rebound from COVID-19"

Housing Finance Sector as Catalyst to Develop a Green Affordable Housing Market

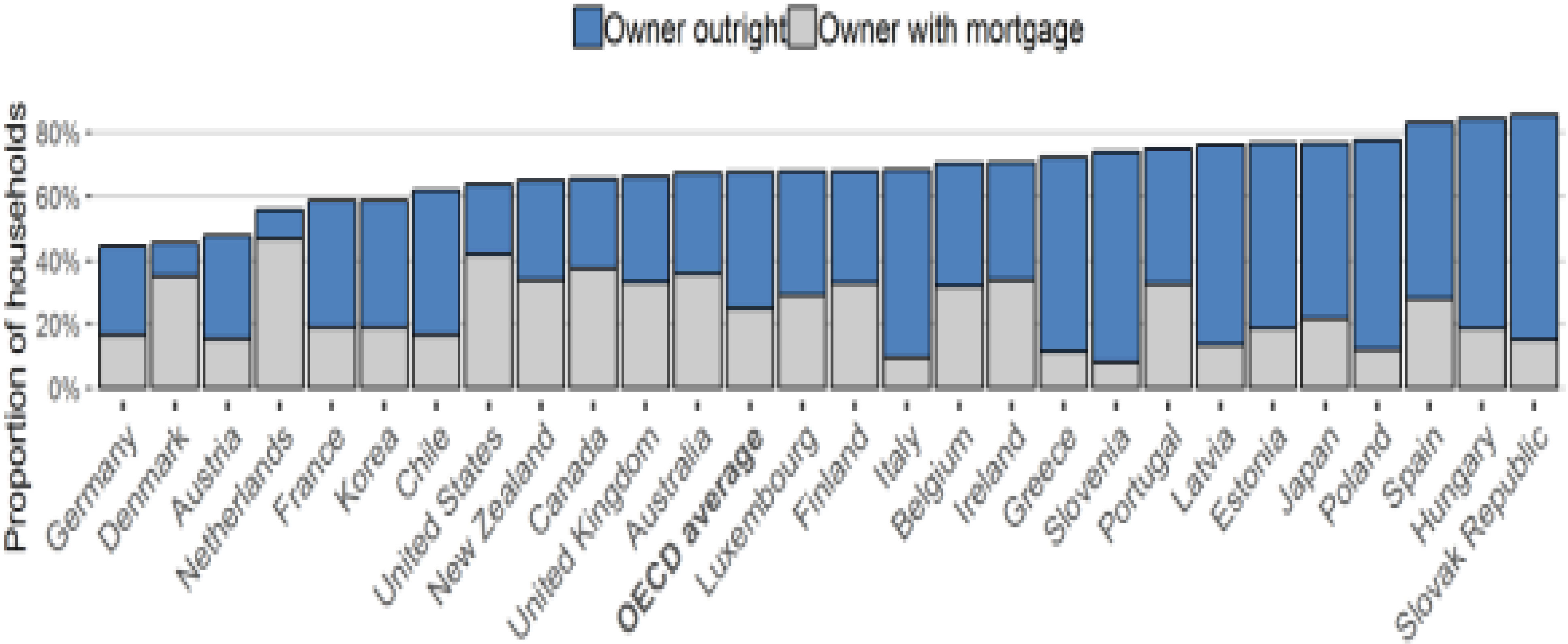
- Housing finance sector can apply instruments to deal with macro-econ and climate risks for housing sector
  - -- e.g., interest rate risk, liquidity risk, credit risk, green lending and investment products, etc.
- Developers build for market segments that can be financed–
- both project finance + off-take finance/end-user finance
  - Large housing deficits alone do not guarantee there is a market for affordable housing; only when there is ability to pay => finance
  - Green standards alone do not create a market; green standards tied to finance & investment do
  - **=>Create green/social lending and investment instruments for global application**
  - **=>Critical to expand access to housing finance in EMDEs**

Advanced Economies

Housing Finance Sector as Catalyst– advanced economies

- AE: sound housing finance infrastructure to deal with current volatile macro environment –
  - Lessons from GFC, stricter underwriting (LTV, DTI), stress for first time owners
  - Mortgages outstanding ~ 60% of GDP
  - ~40 % of homeowners carry a mortgage
- Response to macro challenges linked to type of funding of mortgage portfolios
  - Predominant capital market funding => use of fixed/medium fixed rate mortgages or adjustable mortgages with a cap – protection of mortgage holders, limits credit risks + house-price effects
  - Predominant deposit funding => use of adjustable mortgages, interest rate risk carried by mortgage holder, increased credit risk + house price effects
- Funding mix for mortgages is increasing in most AE

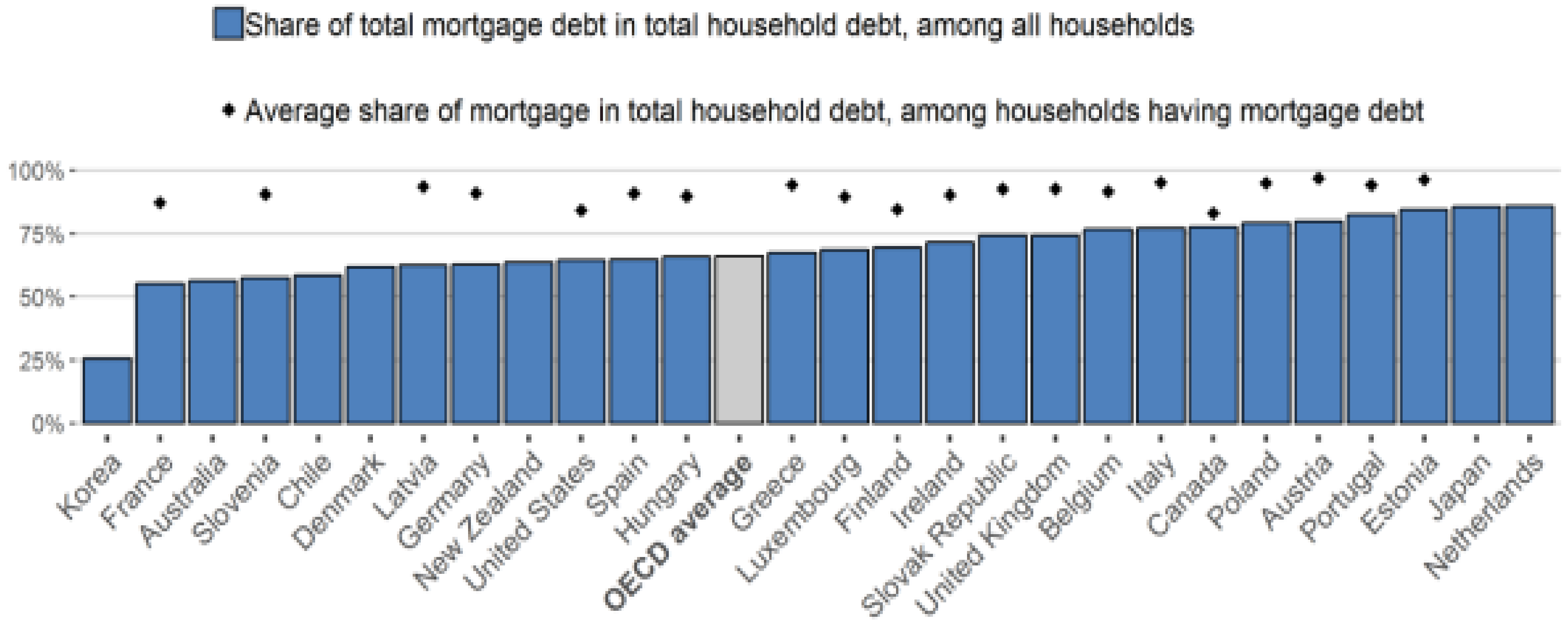
OECD Countries Exhibit Great Variation in Housing Tenure Mix and Proportion of Home-owners with a Mortgage



Source: OECD Wealth Distribution Database (oe.cd/wealth)

Source: Causa et al OECD

At the Macro and Household Level, Mortgage Debt is the Largest Part of Household Debt



Note: How to read this figure: in France, at the macro level, that is, summing among all households whether indebted or not, mortgage debt represents 55% of total household debt; at the micro level, that is, among households having mortgage debt, mortgage debt represents on average 87% of their total debt. The numbers refer to principal residence debt only.
Source: OECD Wealth Distribution Database (oe.cd/wealth), HFCS database.

Source: Causa et al OECD

Housing Finance Sector as Catalyst– advanced economies

Focus of innovations in housing finance in AE is on climate related lending and investment!

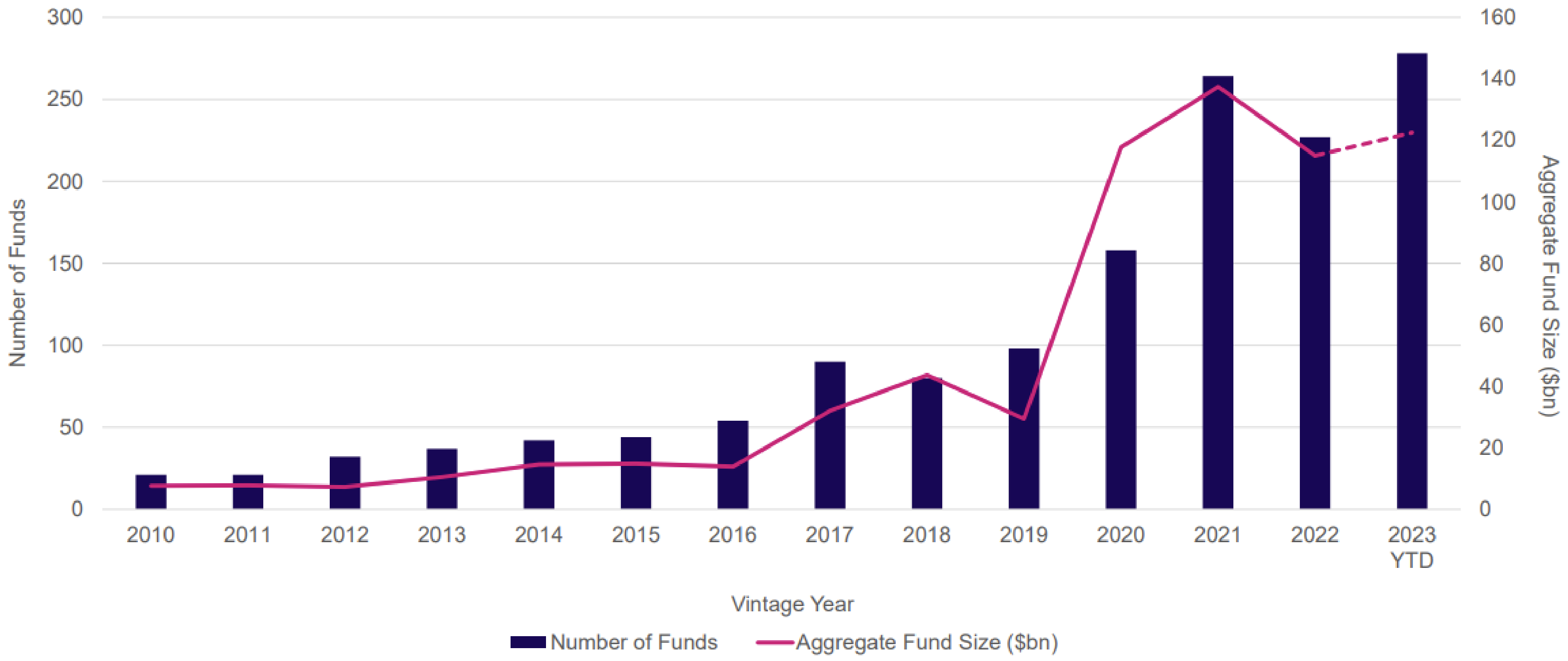
- For both CO2 (+other emissions) efficient retrofitting and new construction
- New CO2 efficient lending and investment instruments
- Growing appetite by investors

- Progress towards climate policy for **finance** generally–
  - Gradual standardization in principles and guidelines: i) Use of proceeds; ii) Process for project evaluation & selection; iii) Management of proceeds; and iv) Reporting –
  - Increasing transparency: EU “New Taxonomy” and “Sustainable Financial Disclosure Requirements”; USA SEC framework
  - Data requirements are main concern
  - Pushback and Politization of ESG investing in US and some other AEs

Housing Finance Sector as Catalyst– advanced economies
Standardized guidelines for green construction – **real side**

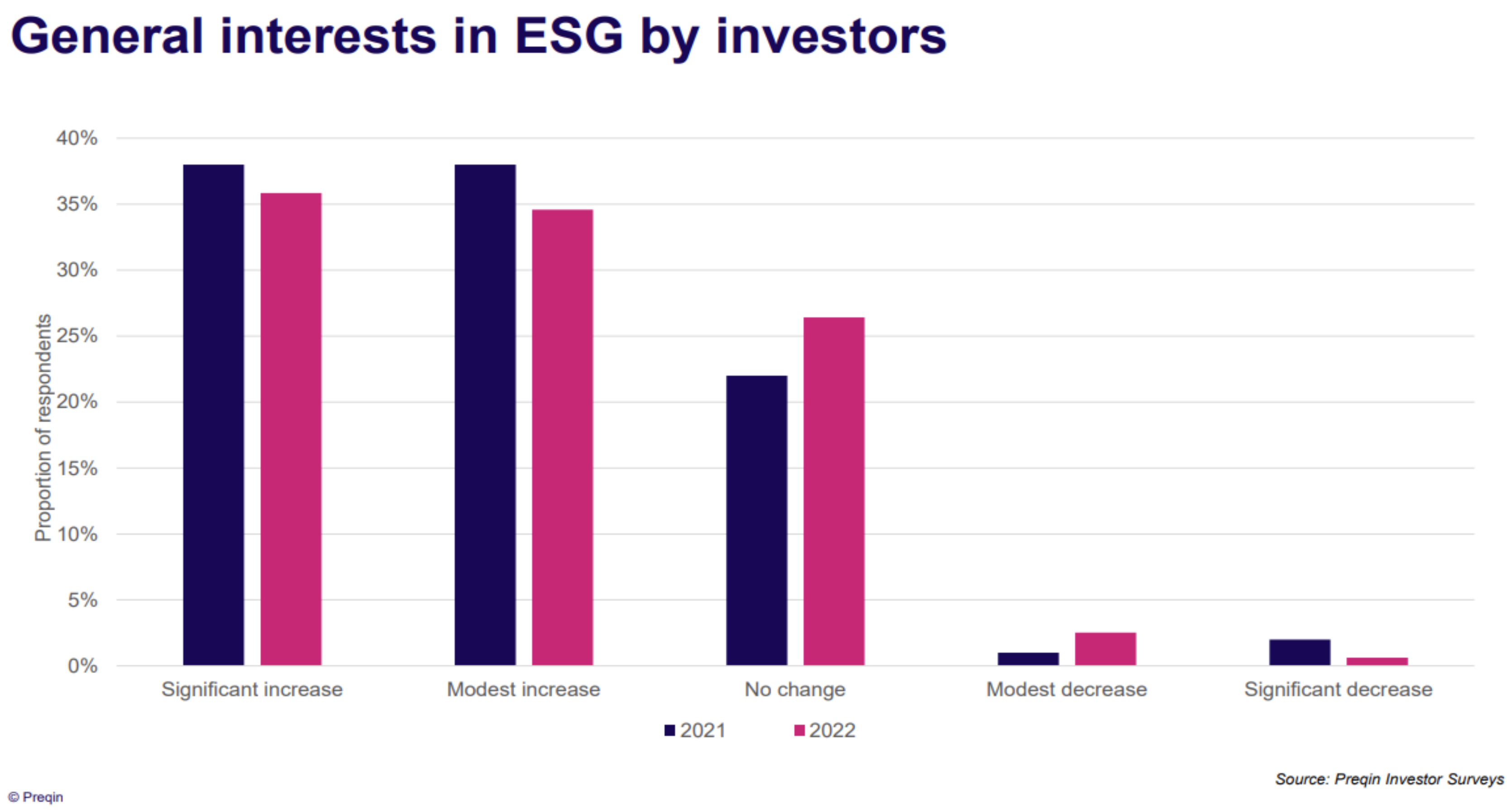
- ICMA, EDGE, LEED, others have issued global guidelines for green, social, sustainable construction/housing
- Many jurisdictions have issued their own (NSEE, NZEECS, India, Egypt) – need for standardization, but with local nuance
- Lenders and Investors apply those guidelines when they issue
  - Energy Efficient Mortgages (EMF initiative started in 2018), green mortgages or social mortgages (mostly for affordable housing)
  - Secondary market instruments: green, social and sustainable covered bonds (ECBC product) or securitizations (all have their own standards)
  - Sustainable securitizations: important in bringing funding to smaller sustainable projects like retrofitting – opening up pool of investors
- Transparency and disclosure by financial institutions are critical drivers to guard against greenwashing - regulated

Growing Interest by Investors;
A Record Number of ESG-labeled Funds Globally – private markets – Preqin Aug 2023



Source: Preqin ESG Solutions

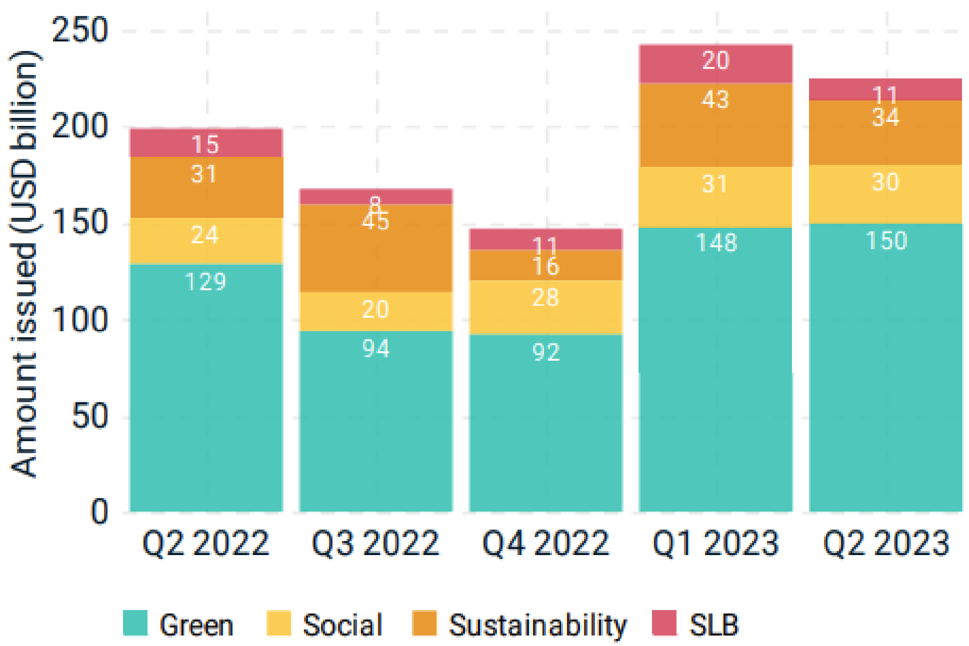
Growing Interest by Investors;
Investor sentiment remains strong

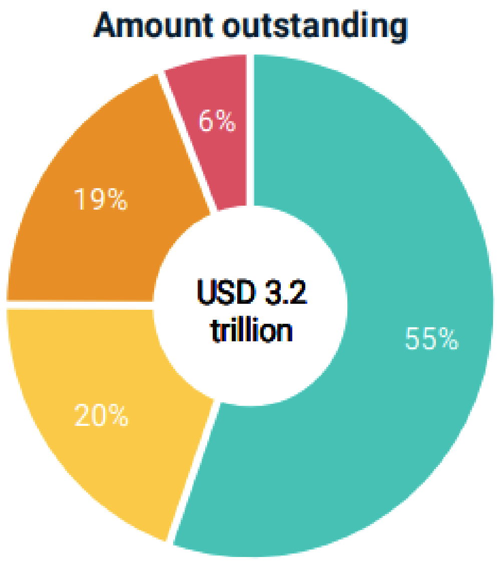


Growing Interest by Investors --

Issuance Trends and Market Breakdown by Label – Labelled Bond Market; MSCI, June 30, 2023

- Green bonds remain most frequent issued label ; 55% of outstanding
- 67% of all labelled funds in Q2 2023
- Green, Social, Sustainable all use-of-proceeds bonds
- New Sustainability-linked bonds (SLB) label requires issuer sustainability performance indicators (KPI)
- Predominantly issued by AE, China and some large EM





Data as of June 30, 2023. Source: Refinitiv, MSCI ESG Research

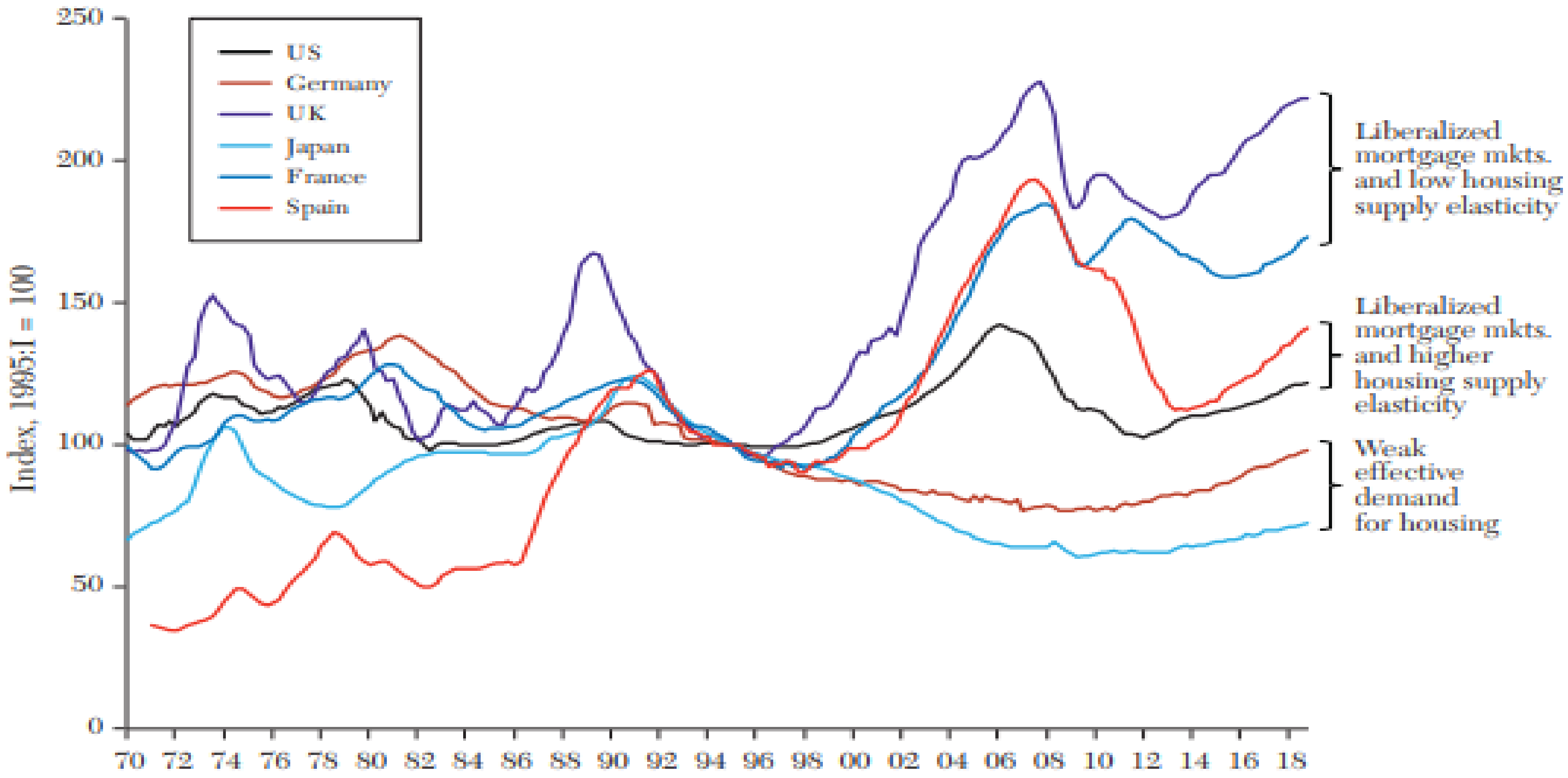
Housing Finance Sector as Catalyst– advanced economies - challenges remain

- AE’s housing finance systems have the tools and investment frameworks in place to address the need for affordable sustainable housing
- Main challenges:
  - ESG: Further standardization of guidelines and enforcement
  - ESG: Deter political backlash on ESG investment (USA)
  - Supply strategies: Implement strategies for large-scale retrofitting, particularly for social/ affordable housing
  - Supply constraints: Overcoming supply side constraints for new affordable green housing – problem of inelastic supply which drives up house prices (beyond cost of green construction)
  - Demand constraints:
    - support households who cannot afford the retrofitting of their homes
    - through lending and subsidy support/incentives – education
    - concern about growing housing inequality

House Price-to-Rent Ratios in Major Advanced Economies by Supply Elasticity and Mortgage Lending Standards-

House Prices and Price-to-Rent ratios are impacted by:

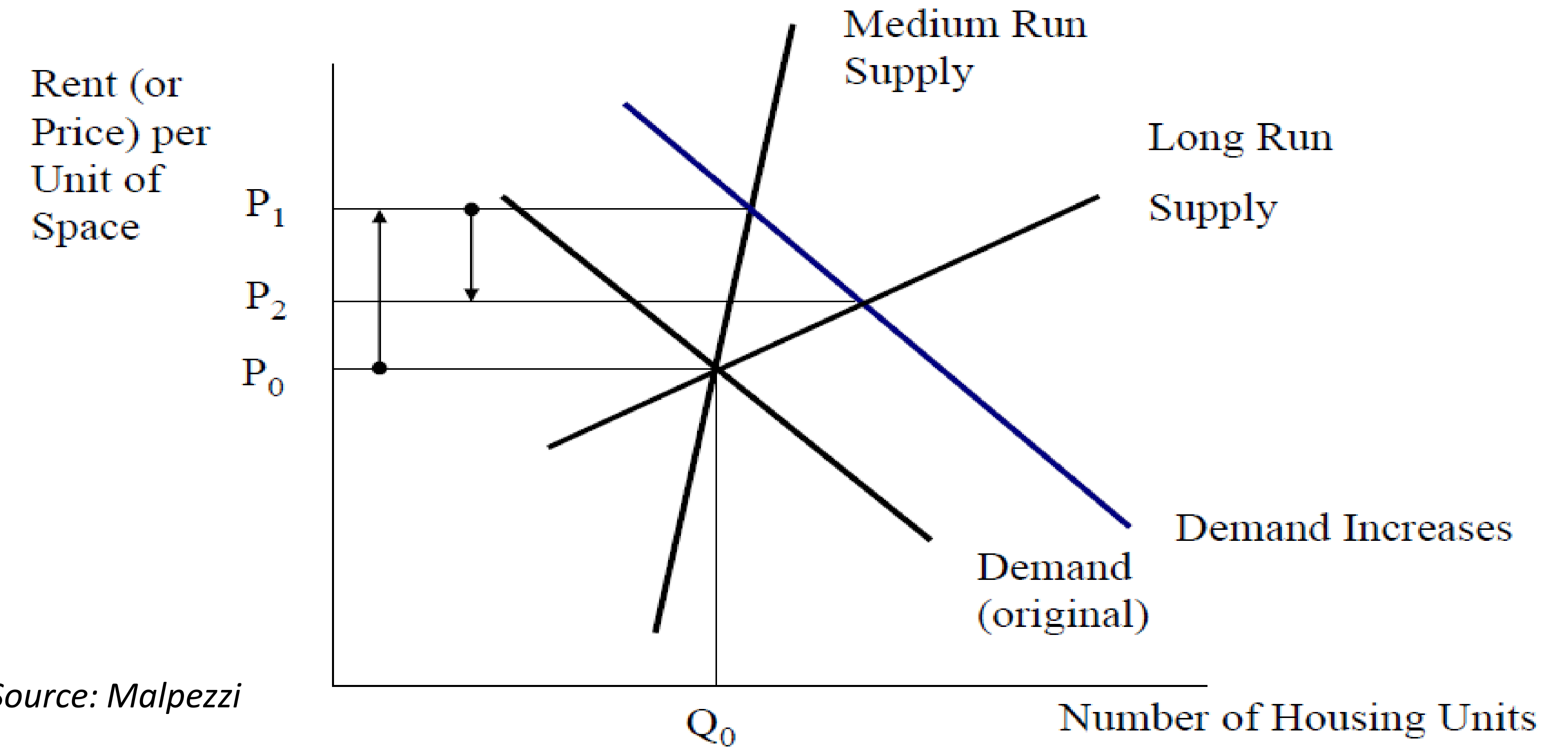
- Differences in Supply Elasticities
- Changing mortgage lending standards
- Longer-Term Demand



Source: Duca et al   Authors' rebasing of OECD data

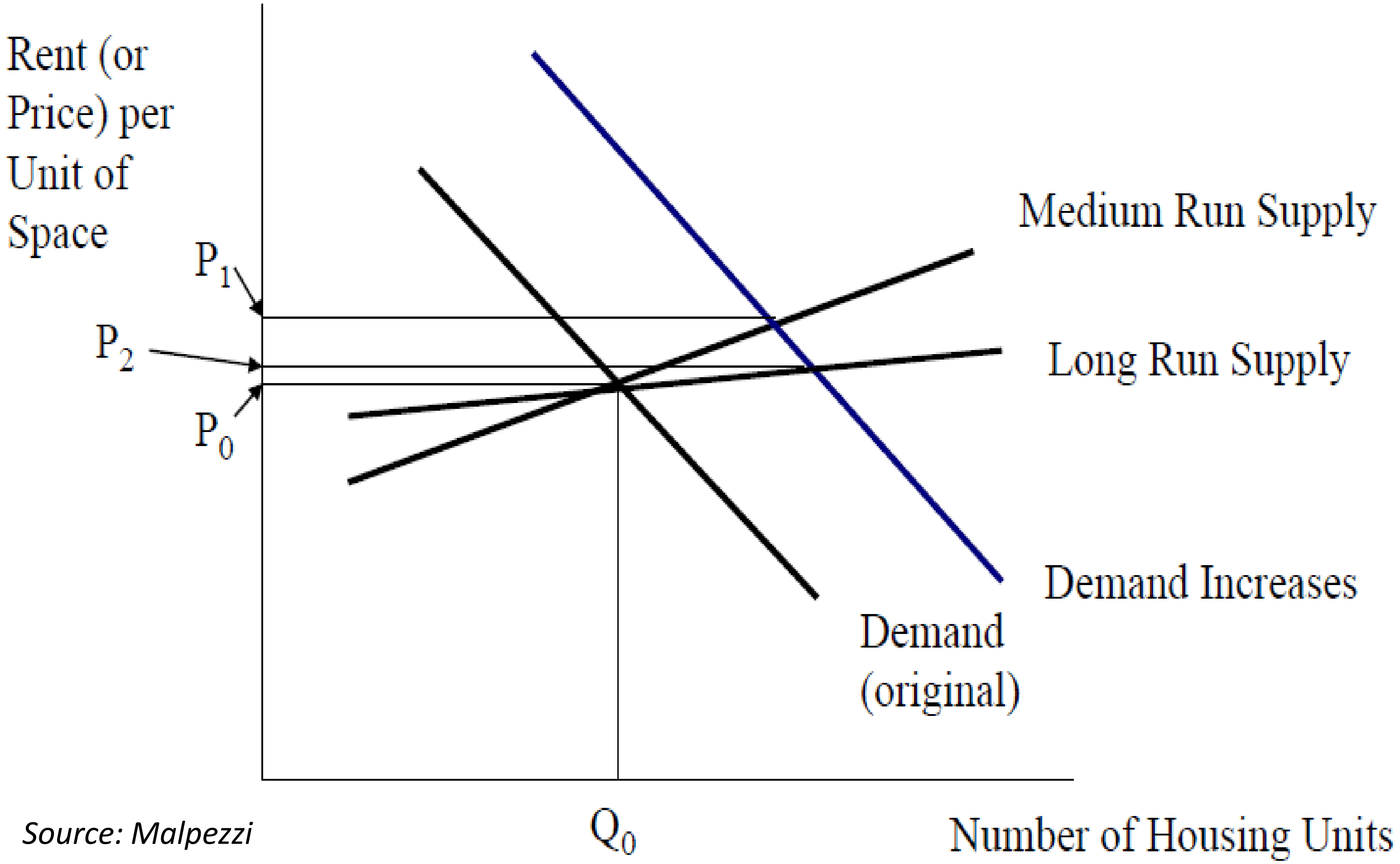
Annex: What Drives Housing Supply?

- Housing supply is not correlated with income or city size
- Variation in supply across countries is explained better by supply constraints (physical geography and man-made - NIMBY)
- Below a demand shock with inelastic supply



Source: Malpezzi

Annex: Demand Shocks with Elastic Supply: Lower price shocks, less volatility



Source: Malpezzi

Summary: Advanced Economies

- Current macro-economic volatility felt in housing markets of AE
- Through the mortgage market and the supply-side
- Impact on housing affordability
- Added burden of climate change related losses, energy and insurance costs and need for large-scale retrofitting of homes
- The housing finance sector is positioning itself as a catalyst in stimulating financing for greening and the construction of green/social housing
- Regulatory framework for green, social, sustainable building and financing is coming together
- Cost is high but with long-term downstream savings+ $CO2$ /+other reductions
- Subsidies needed to complement loans for those who cannot afford costs of energy conversions

Emerging Market and Developing Economies

For Housing Finance to Play the same Catalytic Role the Size of and Access to the Housing Finance System has to Increase

Housing Finance Sector as Catalyst – EMDE

-- Decade(s) Long Improvement in Housing Finance Systems

- During past period of macro-economic stability => lower interest rates, expansion of commercial banks and non-banks' participation in housing finance => growth of mortgage sector
- New loan products in primary market – not just mortgages but micro-mortgages, tenant-purchase loans, micro-finance products by private and non-profit sector
- Policy/subsidy reforms -- mortgage laws and enforcement, consumer protection, reforms in subsidy systems, reforms of state housing finance institutions
- Institutional innovations/risk mitigation measures -- guarantee schemes to reduce credit risk, liquidity facilities to access medium term funds from cap markets, gradual development of capital market instruments
- ESG innovations -- Green housing standards in some, timid Sustainability and Governance innovations; – potential for green energy enormous but underutilized

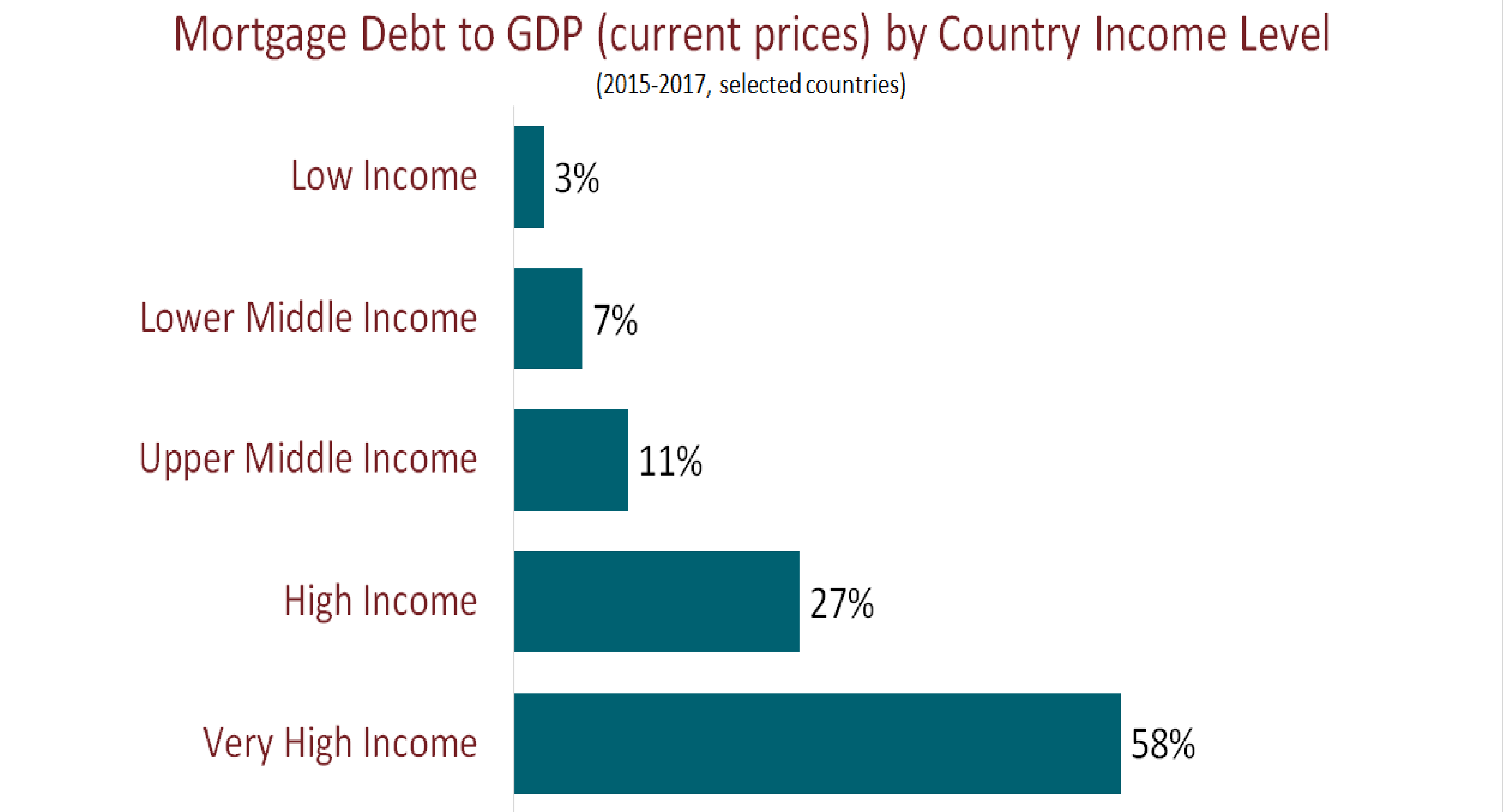
Housing Finance Sector as Catalyst – EMDE

Mortgage Systems are Still Small as % of GDP

- Mortgages outstanding as % of GDP is <10% for most EMDCs; wide range
- **Top Priority:** Expansion of housing finance system for it to play catalytic role in large-scale green affordable housing developments
- What are Main Constraints in scaling up housing finance:
  - Limited access to medium/long term funding/mostly deposit-based
    - => A/L mismatch, liquidity risk, and interest rate risk;
    - => limits use of fixed rate mortgages, only ARMs that reprice with cost of funds
  - Access to mortgage finance for mid/low-income households
    - =>smaller loans, higher origination costs relative to loan size
    - =>Large % of households working in informal sector; higher risk
  - Large unauthorized housing sector (rental) competes with formal housing
    - high cost to the environment, productivity of cities, community health

Mortgage Markets Grow with GDP/capita;

Small in Most EMDC (2017 data! Great variability within each group)



Source: www.hofinet.org; 111 countries included; Mortgage debt to GDP defined by total amount of home mortgage loans outstanding at the end of year as % of GDP (current);
Low to High income categories based on 2017 World Bank classifications; Very high income where GNI per capita > $30,000 (Atlas method, 2017);

Housing Finance Sector as Catalyst – EMDE–

Access to longer term funds (1)

Accessing domestic resources and capital markets – no FX risk, foreign debt

Some models; but hybrid models common:

1. Refinancing of mortgage portfolios by central bank
   - Permit direct repo operations; requires good quality mortgage portfolio
   - Negative side is great dependency on CB balance sheet
2. Central bank or MOF operated mortgage refinancing institution
   - Central bank sets up a refinancing institution (equity)
   - Provides collateralized term (2-5y) finance backed by mortgages
   - Refi institution provides collateralized term finance to lenders (2-5 years)
   - Refi institution issues debt with repo options (pension-funds, mutual funds, insurance co)
   - Common model: Ex *Cagamas* / Malaysia, much of Asia, Caucasus
   - Alternative model: public ownership under Ministry of Finance with CB backup, e.g. SRC Saudi Arabia

Housing Finance Sector as Catalyst – EMDE– Access to longer term funds (2)

3. Public/private mutual refinancing institutions (most common)

- Lenders establish refinancing institution (special charter) -shareholding proportional to usage
- Refi institution issues debt to the capital markets and provides term finance to members collateralized by mortgage portfolios
- CB/regulators support -allow repo eligibility of debt, suitable regulations
- Ex. *Caisse de Refinancement Hypothecaire* France, *Federal Home Loan Banks* United States, *Pfandbriefzentralen/banken* Switzerland, (hybrid: Tanzania, Kenya, Egypt)
- Expand into issuing of covered bonds; can later be issued by individual lenders
- Requires information sharing / co-ordination between lenders

4. Securitization-

- sale of asset/cashflow => no interest rate risk or liquidity risk left with lender
- Mostly by individual lenders; US has commercial secondary market institution

Housing Finance Sector as Catalyst – EMDE–
Access to longer term funds (3)

Some additional comments

- All systems reduce liquidity risk, some interest rate risk and expand access to funds => critical for the expansion of the mortgage sector
  - But not all successful in accessing capital markets and reaching scale
  - Insufficient government support impacts ratings => cost of funds may be unattractive relative to member banks' own corporate bonds
  - Inadequate governance and regulations may impair investor trust
- Some countries have established housing funds capitalized by government
  - Directly fund the supply of affordable housing and/or the mortgage (can be shared with private lenders- e.g., Nigeria); subsidized
  - Effective when market does not work for affordable segment
  - But: no market is created that generates a continuous supply of affordable housing

Housing Finance Sector as Catalyst – EMDE–

Access to longer term funds (4)

- Liquidity facilities, covered bond and securitization institutions can all play a critical role in the development of green investment instruments => greening of the underlying real housing asset and mortgage instrument
- Climate related instruments, guidelines and regulations developed in AE are used globally and expand the investor pool for EMDEs

Housing Finance Sector as Catalyst – EMDE–
Expansion of Housing Finance to lower-income segment

- "Formal" homeownership preferred by majority of lower income urban households in EMDE (savings, wealth, security…)
- **Requires access to finance!**
- Commercial lenders face risks and costs to move down-market
- How can these risks be addressed?
- What roles for government? What can commercial lenders do?

Housing Finance Sector as Catalyst – EMDE–
Expansion of Housing Finance to lower-income segment

Low-income households are not a homogenous group

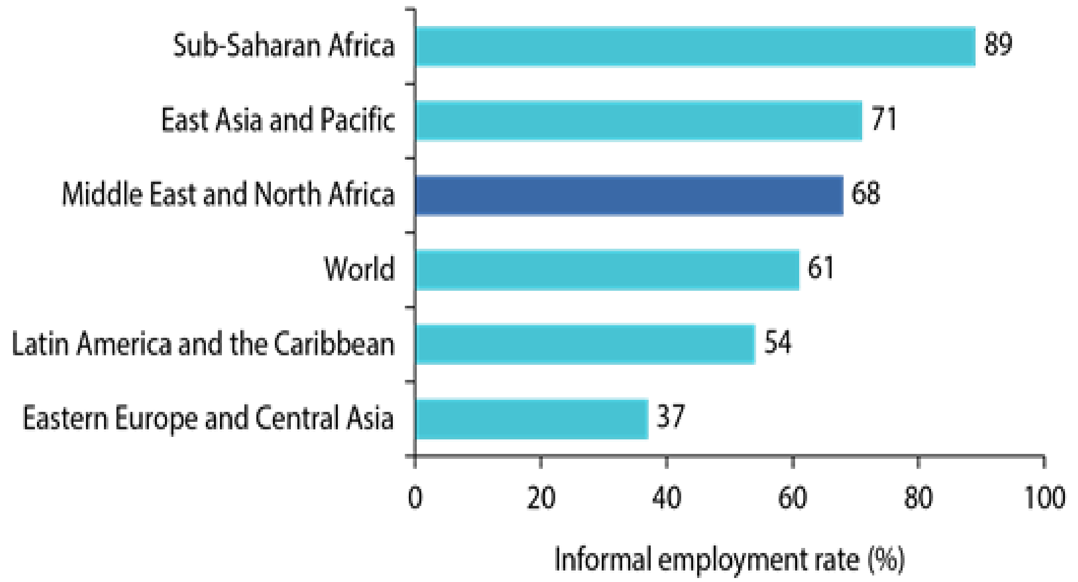
Face different constraints to access finance (housing)

- Non-verifiable Incomes
- Low savings
- No or negative credit history/ over-indebtedness
- Non-Lienable House/ Land Collateral
- Fear of long/medium-term credit

Often multiple risks for the same household

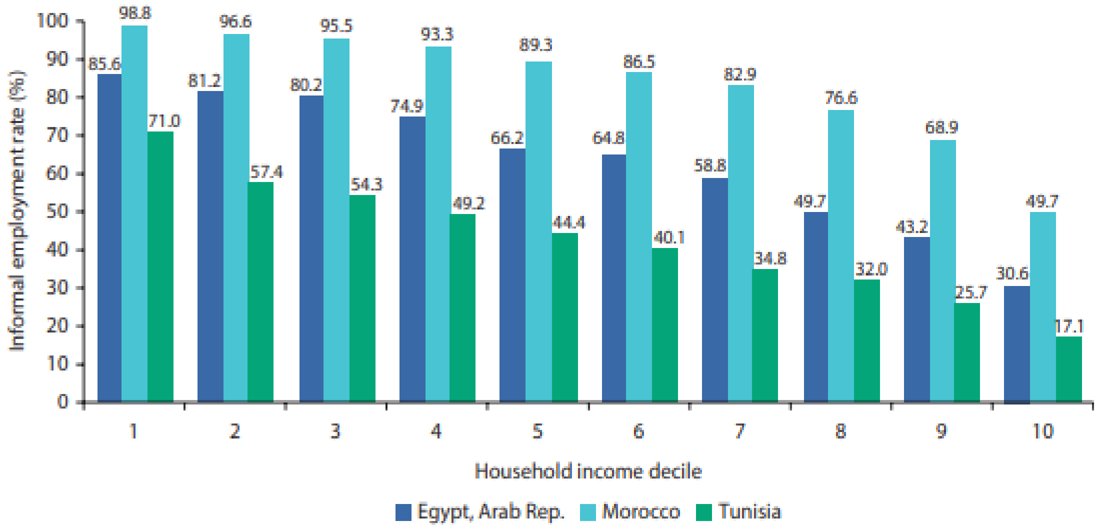
Informal Employment and Income are Prevalent in many EMDEs – across income groups!

Informal Employment Rates, by Region, 2019



Source: Based on data from ILO 2019.

Informality Rates, by Income Decile Levels, Arab Republic of Egypt, Morocco, and Tunisia



Sources: Based on data from CAPMAS 2018 for the Arab Republic of Egypt; HCP 2015 for Morocco; NIS 2015 for Tunisia.
Note: Due to data limitations in the case of the Arab Republic of Egypt, it was not possible to use deciles of per capita household expenditures—alternatively, wealth deciles were constructed based on a factor analysis approach using household ownership and durable assets and housing conditions.

Housing Finance Sector as Catalyst – EMDE–

Expansion of Housing Finance to lower-income segment

What Are Lender Constraints to Serve Lower and Lower-Middle-Income Markets?

- Credit risk – most important!
  - Can borrower repay over the life of the loan?
  - Can loan be recovered in case of non-payment?
- Political risks
  - In case of government programs or subsidies
- Transaction costs
  - Costs of underwriting, originating and servicing small loans and less financially sophisticated clients
- Regulatory costs –
  - Higher capital and provisioning requirements for more risky loans

How can these risks and higher costs be addressed? What lessons?

Housing Finance Sector as Catalyst – EMDE–

Expansion of Housing Finance to lower-income segment

Known measures to alleviate household constraints + reduced lender risks:

1. Suitable housing loan products – flexible repayment mortgages, rent-to-own, mortgages for incremental construction, micro-loans
2. Savings program for down-pmt for approved borrowers
3. Fair and accurate credit-information + scoring models (much innovation)
4. Lower taxation and other costs born by *borrower*
5. Consumer education and disclosure –fair competition

   Cartoon strips, short movies --

6. Subsidies – to address affordability constraint under climate change scenarios
   - target by locational & CO2 efficiency (Mexico)-
   - Focus on scale to substantially reduce number of people living in slums/squatter
   - Increase subsidies with decreasing incomes
   - Limit market distortions (e.g., upfront demand subsidies rather than subsidies to interest rate); calculate budgetary costs

Housing Finance Sector as Catalyst – EMDE–

Expansion of Housing Finance to lower-income segment

Innovative measures to alleviate lender constraints:

1. New Ways to reduce default risk ex ante:
   - Old way: Low LTV and DtI loans; but consequence for affordability
   - Underwriting of informally employed – India's HFC's (Central Bank support)
   - Improved credit information and scoring systems (Central Bank support)
   - Closed savings (escrow) account; lender can access in case of missed payment
   - GPS-based technology to support valuing/ appraisal of property
2. New technology to service loans:
   - Central Bank to support digital procedures -- legal and infrastructure (connectivity, digital IDs, KYC/protocols, digital payment systems, interoperable platforms)
   - Easy / prompt action once a payment is missed - rescheduling

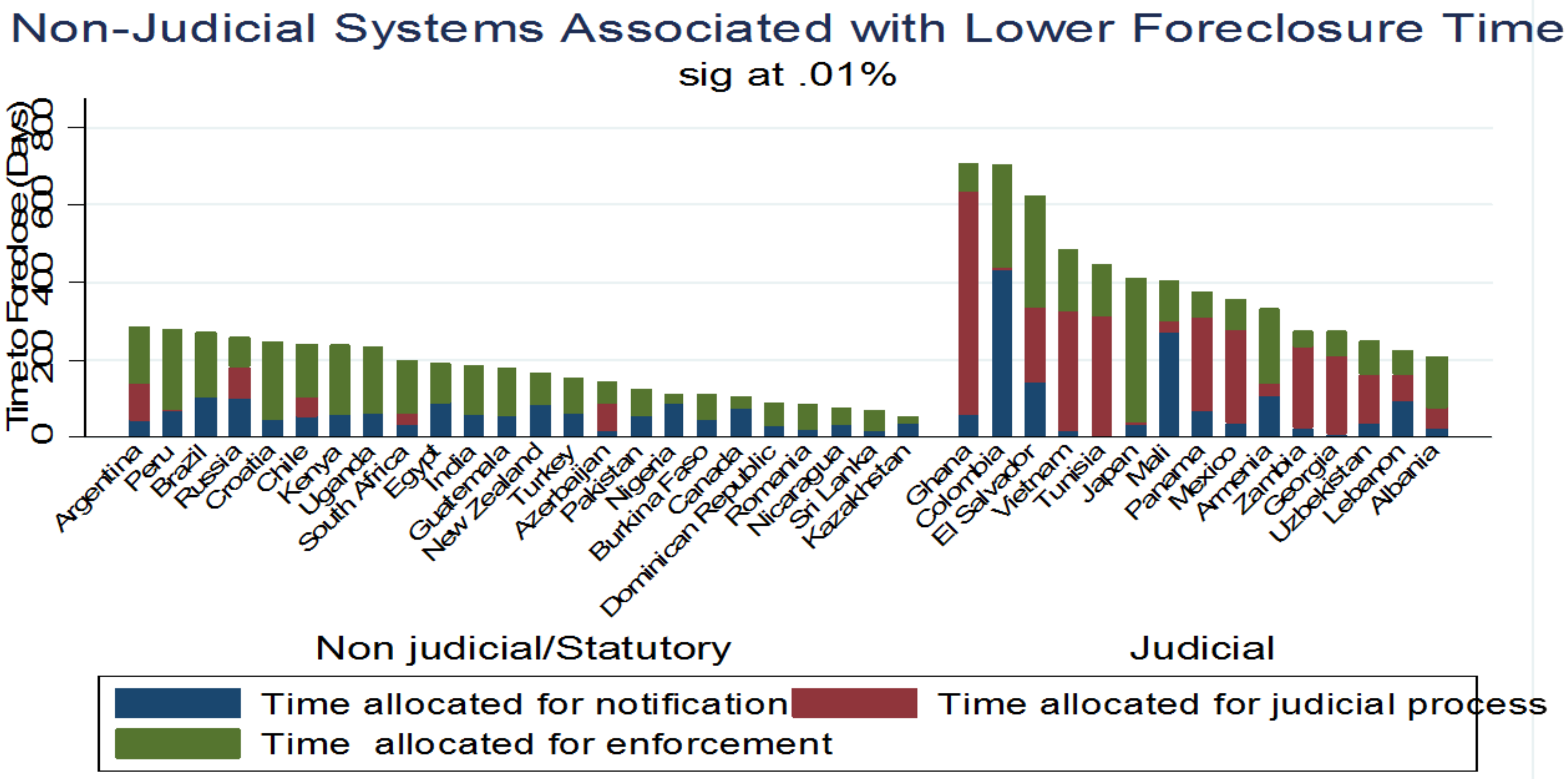
Housing Finance Sector as Catalyst – EMDE–

Expansion of Housing Finance to lower-income segment

3. Measures to reduce losses when defaults occur

- Non-judicial systems of collateral enforcement (Min of Justice or Public Adm)
  - Reduces cost and time of foreclosure - see countries
- "Trust-deed" mortgages (Min of Justice)
  - Deed is held by third party; transferred to owner when loan is fully repaid
  - Brazil's mortgage market took off only after trust-deed innovation
- Government credit guarantees, or mortgage insurance – pari-passu (MoFinance, Central Bank)
  - Morocco case; Columbia, India, etc.
  - But: Egypt's mortgage insurance not utilized - considered unnecessary /expensive
- Facilitate foreclosure by participating lenders (partic. in govt programs)
  - Possibly with govt as intermediary; use of community
  - Provide cash-flow insurance for missed payments

Non-Judicial Process Reduces Cost and Time of Foreclosure



Source: Safavian, Mehnaz, Maximilien Heimann and Mariya Kravkova. (2008) Financing Homes: Comparing Regulation in 42 Countries. World Bank

Housing Finance Sector as Catalyst – EMDE–
Expansion of Housing Finance to lower-income segment

4. Lower transaction costs – Ministry of Finance

- Review taxation and other costs
- Govt can compensate lenders for higher costs of servicing lower-income households/ build the technology platforms, e.g. $5 per servicing, for 3 years

5. Regulatory costs; Reserve and provisioning requirements- Central Banks

- Base on actual risk profile of lower income loans
- Acknowledge mortgage insurance in assessing risk

Summary: Emerging Markets and Developing Economies

- EMDE’s housing markets severely impacted by macro-economic and geo-political volatility
- Formal housing is even less affordable; while need is enormous
- Top priority is to expand the scale of the housing finance system
- And its depth in reaching underserved segments of the population
- To create the basis for **scale affordable green housing markets** to develop
- This agenda is urgent; growth of informal settlements has high environmental and human costs
- Key: access to longer-term funds for lenders and de-risking the inclusion of underserved households
- Resources will have to be made available (constrained gvnt budgets) – IFI and climate tax fund?

Concluding

- Confluence of tough shocks to the housing eco system globally
- Impacting housing affordability – consequences for human health and well-being
- Housing is a critically important sector
    - Large part of economy and household wealth
    - Greatly impacted by climate change and related risks for financial system
    - Important source/cause of CO_2/other harmful emissions, particularly if built in poor locations
- Housing finance can play a catalytic role to open up markets for green and affordable housing in both AEs and EMDEs
- Lending and investment products and systems geared to green and sustainable housing exist and the regulatory framework is gradually coming together
- Major challenges remain – the scaling up of the housing finance system in many EMDE and the resource allocation needed to make the transition affordable for all

Thank You

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