CENTRALIZED MORTGAGE REFINANCING AND LOCAL CURRENCY BOND FUNDING

GOVERNANCE CASE STUDIES FROM DEVELOPED AND DEVELOPING MARKETS

Hans-Joachim Dübel
Finpolconsult, Berlin

National Bank of Georgia
Tbilisi, April 2019

REFINANCING INSTITUTION DEFINITION

- 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 CRI
  - Government / Central Bank controlled Ex. Algeria, Azerbaijan, India, Indonesia, Mexico
  - mixed (Cooperative + government or Central Bank stake) Ex. Egypt, Jordan, Nigeria, Malaysia, Pakistan, Tanzania

Source: O Hassler

DEVELOPED MARKETS REFINANCING INSTITUTIONS GOVERNANCE

Country	Name	Establ	Legal		Ownership	
			Charter	Bank regulation	Government	Corporate
Europe/US						
Switzerland	Pfandbriefzentrale schweizerischer Hypothekarkreditinstitute	1930	Corporation (JSC)	Yes		Private banks
	Pfandbriefzentrale schweizerischer Kantonalbanken	1931	Corporation (JSC)	Yes		Public banks
US	Federal Home Loan Banks	1932	Cooperative	Special regulator FHFA		Banks, non-bank borrowers
Austria	Pfandbriefstelle Pfandbriefbank	1939 2015	Cooperative, since 2015 Corporation (JSC) subsidiary	Yes		Public banks
France	Caisse de Refinancement de l'Habitat	1985	Specialized Credit Institution	Yes		Banks
Denmark	Totalkredit	1990s	Corporation	Yes		Single private bank (100%)

Organization: bank co-operatives.
Historic rationale: financial crisis response with significant government support.
Exception Totalkredit.

SWISS PFANDBRIEFBANK/ZENTRALE GOVERNANCE

1. Created as financial crisis response (1929-32) mechanism by Swiss government
2. Special bank with enabling legislation pre-empting competing single issuance by individual banks
3. De-facto all Swiss banks are members, systemically relevant largest CHF bond issuer and de-facto co-regulator of the mortgage finance system
4. Separate capital regulations (leverage ratio), only ca 50% of capital is paid-in
5. Access to central bank refinancing window, including with mortgage portfolio
6. 10% risk weight for investing banks, eligibility for Level 1b LCR
7. Stamp duty and income tax exemptions (not local property taxes)
8. Large exposure rules exemptions
9. Leverage ratio exemptions
10. Pfandbriefzentrale owned indirectly by Swiss states (Kantone)

CRH GOVERNANCE

1. Created as covered bond market crisis (mid-1980s) response measure under French MoF plan
2. Special bank with enabling legislation, reserving the product name for the institution only
3. Initial 3 years full government guarantees for bonds issued (1984-87)
4. CRH assets treated as covered bonds (secured interbank debt), with only 10% risk-weight (ECB decision 2019)
5. Bonds enjoy 10% risk weight for investing banks, eligibility for Level 1b LCR
6. Large exposure rules exemptions
7. Leverage ratio exemption

EMERGING MARKETS REFINANCING INSTITUTIONS GOVERNANCE

Country	Name	Establ	Legal Structure		Ownership	
			Charter	Bank regulation	Government	Corporate
Eastern Europe / Asia						
Malaysia	Cagamas Berhad	1986	Corporation Approved Interbank Institution	No, oversight by central bank[1]	Central bank (20%), initially full owner	Banks 80%
India	National Housing Bank	1988	Development Financial Institution	Yes	Ministry of Finance[2], initially central bank	
Kazakhstan	Kazakhstan Mortgage Corporation	2000	Corporation	Yes	Government holding, initially central bank	
Korea	Korea Housing Finance Corporation	2004	Corporation	Special oversight by government (as U.S. GSE)	Central bank (33.6%) and government (66.4%)	
Azerbaijan	Azerbaijan Mortgage Fund	2005	Not incorporated (reform under way)	No, oversight by central bank[3]	Central bank	
Armenia	National Mortgage Company	2007	Corporation	Yes	Central bank	
Kyrgyzstan	State Mortgage Company	2014	Corporation	No	Fund on State Property Management	

Mostly government/central bank-controlled or in partnership with banks.
Creation for developmental purposes (long-term local currency / bond market).

CAGAMAS MALAYSIA GOVERNANCE

1. Central bank shareholding, 20%, held since inception 1986
2. Under supervision and internal guidance of central bank
3. As non-bank, there is no minimum capital requirement.
4. Favorable treatment of bonds for banks (eligible for open market operations, liquidity requirements, 10% risk-weight)
5. De-facto true sales capital treatment of assets transferred for participating banks (even if with recourse)
6. Asset transfer exemption from stamp duties
7. Last resort central bank refinancing window access
8. Bond issuance exemption from SEC individual deal permission
9. Nevertheless can borrow / lend in the interbank market.
10. Ability to use the issuance infrastructure for government securities

KHFC KOREA GOVERNANCE

1. Central bank shareholding, 33.6%; remainder is government-owned
2. Non-bank with special enabling legislation
3. Under supervision of special oversight body (as U.S. Federal Housing Finance Board monitoring non-banks Fannie Mae / Freddie Mac)
4. Government provides maintenance guarantee, absorbs all losses
5. Funding with priority from the government, in addition can issue in the bond markets
6. Simplified mortgage title transfer from participating banks
7. Simplified issuance regulations for securitizations/mortgage bonds (no prospectus, no consent of borrower)
8. Investors in bonds enjoy government bond risk-weightings

NMC ARMENIA GOVERNANCE

1. Central bank shareholding, 100%
2. Initially non-bank, under supervision and internal guidance of central bank
3. In the meantime specialized credit organization charter (non-deposit-taking), with reduced minimum capital requirement
4. Special capital regulations: NMC refinancing assets require only 0.3% capital
5. Favorable treatment of bonds for banks (eligible for open market operations, liquidity requirements, 10% risk-weight)

REFINANCING MECHANISMS AND RISK PROFILE OF COMPARATORS

	Refinancing mechanism	Credit risk	Interest rate risk	Liquidity risk	Funding mechanism
Swiss Pfandbrief-zentrale/bank	Collateralized (mortgage-covered) refinancing loan	Substitution through banks 115% OC to protect against bank insolvency	With banks, e.g. prepayment risk. Bonds and refinancing loans have same cash flow	Remaining risk with banks (but long maturities) Member banks write credit lines to refinancing company	Bullet covered bonds
Totalkredit, Denmark	Private covered bond issued by PMI	Bank retains junior tranches of private covered bonds, ca 10%	Pass-throughs	Passed to investors	Pass-through covered bonds
NMC Armenia	Collateralized refinancing loan (specific loan pool)	Substitution through banks 0% or negative OC	Partly with banks, partly with refinancing company Prepayment fees for banks	Banks take liquidity risk > 9 years	Mix of unsecured bullet bonds, government and interna-tional agency loans
KMC Kazakhstan	Loan purchase with recourse	Recourse to bank (loan buyback or substitution) 0% OC	Initially pass-throughs, today mismatch risk is with MRC	Fully with refinancing company	Mix of unsecured bullet bonds and govern-ment loans
Federal Home Loan Banks USA	Collateralized refinancing loan and loan purchase	Substitution through and recourse to banks	With banks or transferred to FHLB/investors.	With banks or transferred to FHLB/investors.	Unsecured agency bonds with special legal status.

REFINANCING INSTITUTIONS: LIQUIDITY / INTEREST RATE RISK PROFILE

Liquidity risk

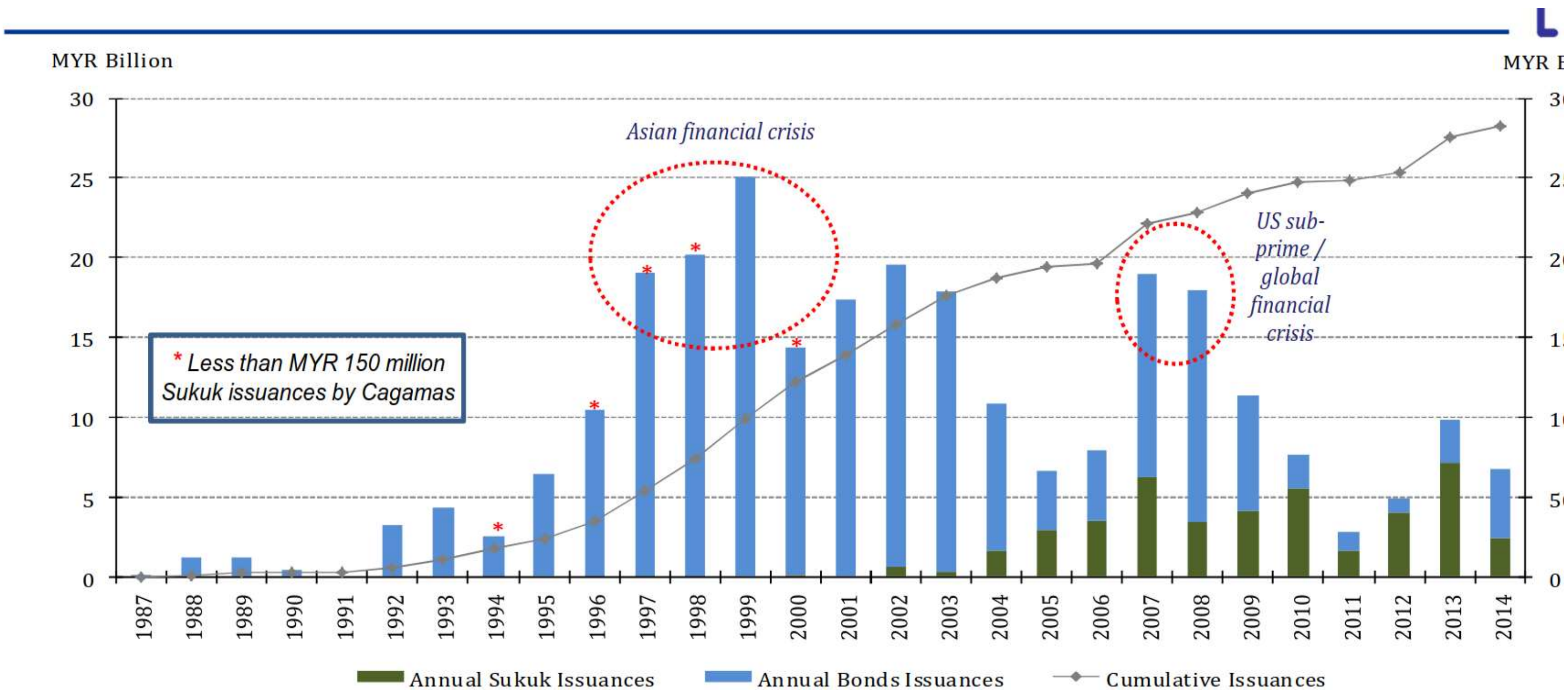
1. Overcollateralization
   - From negative to 25%
   - Depends on lender liquidity, credit standards and refinancing facility credit risk appetite
2. Maturity of refinancing loans
   - Full maturity or limited term
   - Lender liquidity risk when term is reached
3. Pass-through vs. portfolio refinancing
   - Pass-through: lender submits cash daily
   - Portfolio refinancing: eg. biweekly adjustment causes mismatch between refinancing loan and mortgage portfolio (minus OC)
4. Pass-through vs. portfolio bond issuance
   - Bonds issued by refinancing facilities are almost always short-term bullets
   - Facility must manage considerable liquidity risk.

Interest rate risk

1. Interest rate fixing periods
   - Fixed-to-term or to maturity
   - In emerging markets bonds typically cannot be issued longer than 3-5 years
2. Prepayment risk management
   - May charge prepayment fee to lenders
   - In LC emerging market lending, prepayment for borrowers is usually without fees
3. Sensitivity of refinancing rates to bond market interest rates
   - Mixed funding with government / IFI, central bank backup, may lead to managed rates rather than pass-through of bond market conditions
4. Lender spread policies
   - Refi plus fixed lender spread or market lending rates

PERFORMANCE OF REFINANCING INSTITUTIONS IN STRESS SITUATIONS

Anti-cyclical bond issuance by Cagamas Berhad, Malaysia



NMC ARMENIA GENERAL REFINANCING INSTITUTION TO SUPPORT THE LOCAL CURRENCY MORTGAGE MARKET

National Mortgage Company

- Created in 2007 in response to the impact of the Global Financial Crisis on the Armenian local currency mortgage market
- Owned 100% by the Central Bank of Armenia
- Funded through Government of Armenia, bilateral agencies (KfW Germany, AfD France, initially Russia), bonds
- Issuance of 18 corporate bonds since 2011 with between 1 and 5 years maturity
- Used by all participants in the Armenian Dram mortgage market, banks and finance companies
- Operates on a liquidity/interest rate risk sharing basis (more below)
- Limited targeting: maximum loan limit USD 50K, total loan maximum USD 75K
- Recently expansion from purchase finance into renovation / modernization loans and energy efficiency loans
- [Website: http://www.nmc.am/en](http://www.nmc.am/en)

NMC ARMENIA: LIQUIDITY / INTEREST RATE RISK MANAGEMENT PROFILE

Liquidity risk

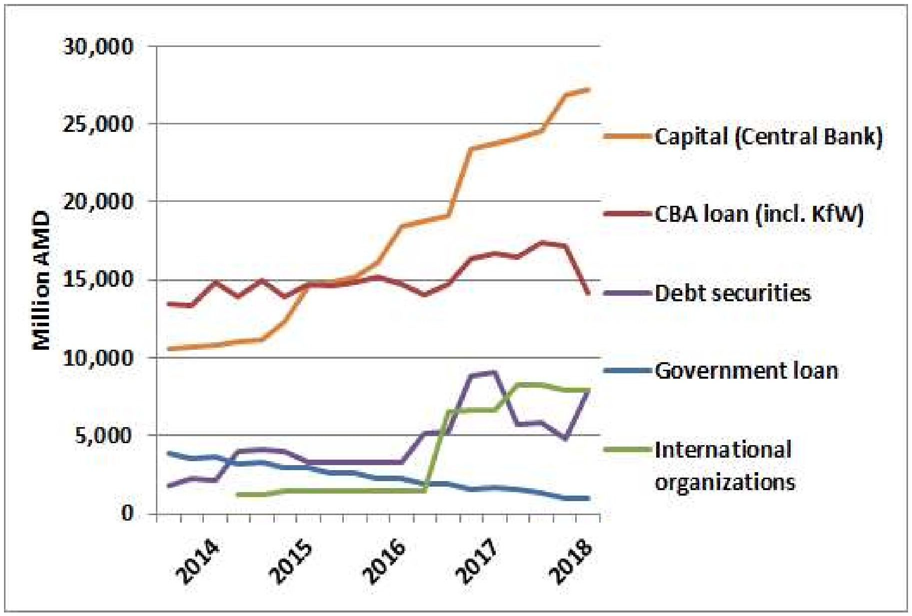
1. Overcollateralization
   - 0 or negative
   - Lenders in the past did not have stable LC funding sources
   - Facility owned by central bank with high leverage over banks
2. Maturity of refinancing loans
   - Limited to 9 years (3*3 years)
   - Loan maturities 5 – 35 years
   - First loan vintages have reached 9 year limit
3. Pass-through vs. portfolio refinancing
   - Portfolio refinancing with mismatch between refinancing loan and mortgage portfolio
   - Lenders are long in liquidity and thus demand for the facility is high

Interest rate risk

1. Interest rate fixing periods
   - Fixed-to-term for 3 years
   - Back book rates have in practice not been adjusted upwards/downwards
   - With bonds 1-3 years, very limited positive maturity transformation risk
2. Prepayment risk management
   - 1% prepayment fee for cancelling refi loan
   - Individual loan prepaymts passed through →negative maturity transformation risk
3. Sensitivity of refinancing rates to bond market interest rates
   - Mixed funding with government / IFI, central bank backup →managed refinancing rates
   - Only loan volume limit (USD 50,000)
4. Lender spread policies
   - Market lending rates leading to spread compression over time

NMC ARMENIA: PERFORMANCE

Funding

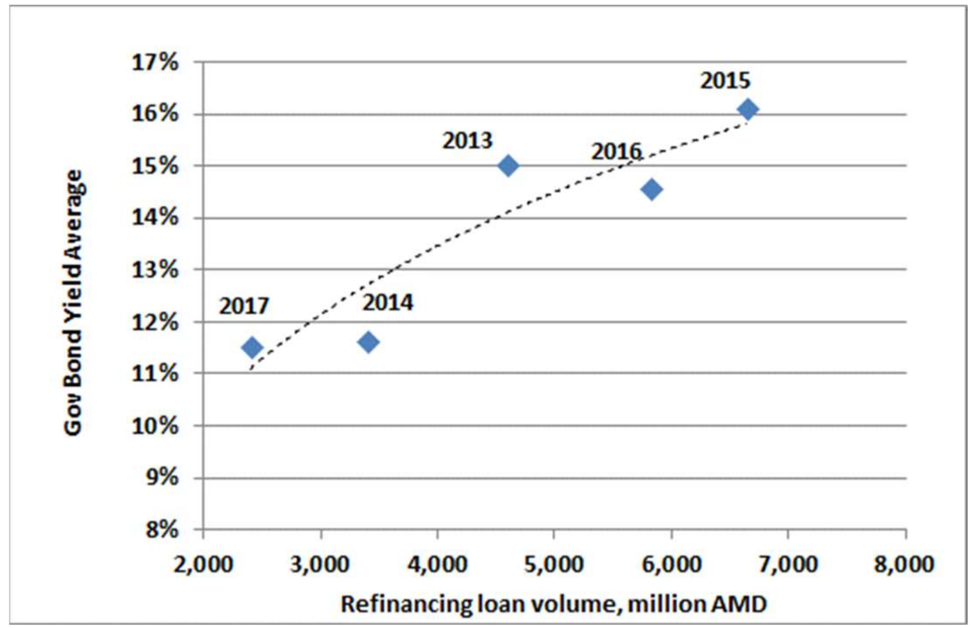


Blend of international/government and bond funding

Permits managed refinancing rates and limits duration gap

Debt issuance stalled with the Russian crisis in 2015, but picked up again in 2016

Lending

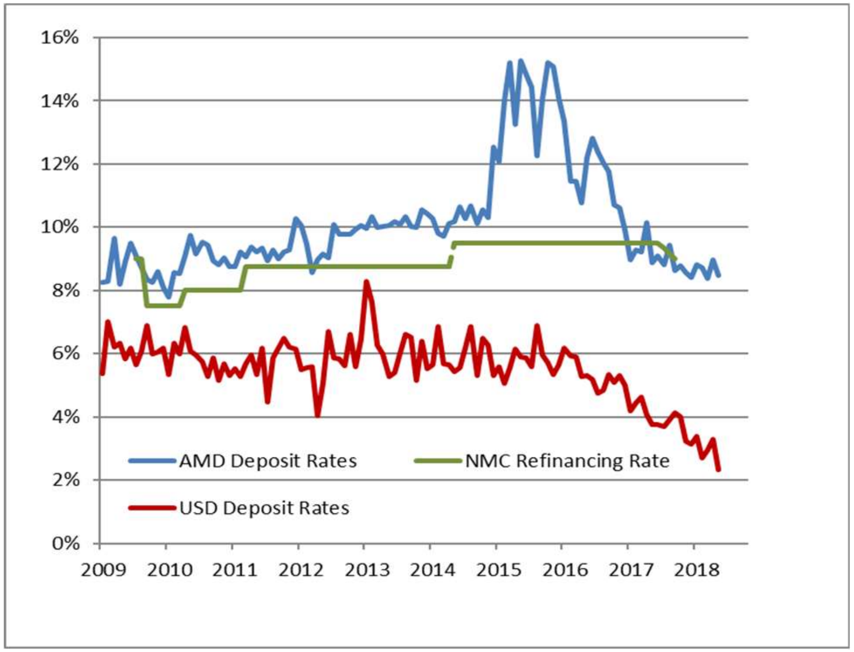


Demand fluctuations reflect quasi-fixed pricing of refinancing loans since 2011 (8.5-9.5%), 2017/18 strong prepayments

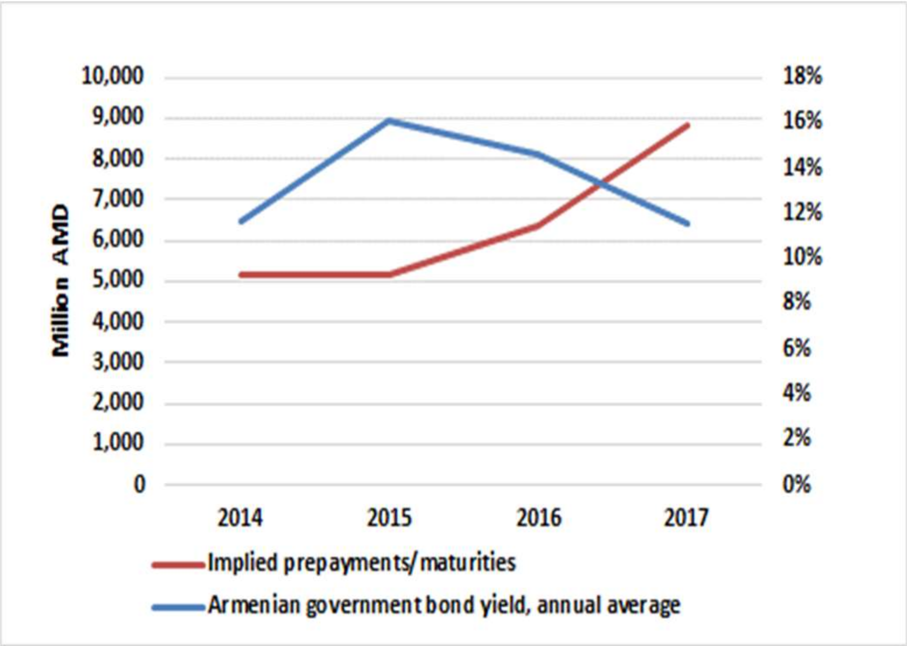
De-facto function as shock absorber

NMC ARMENIA: PERFORMANCE

NMC refinancing vs. deposit rates

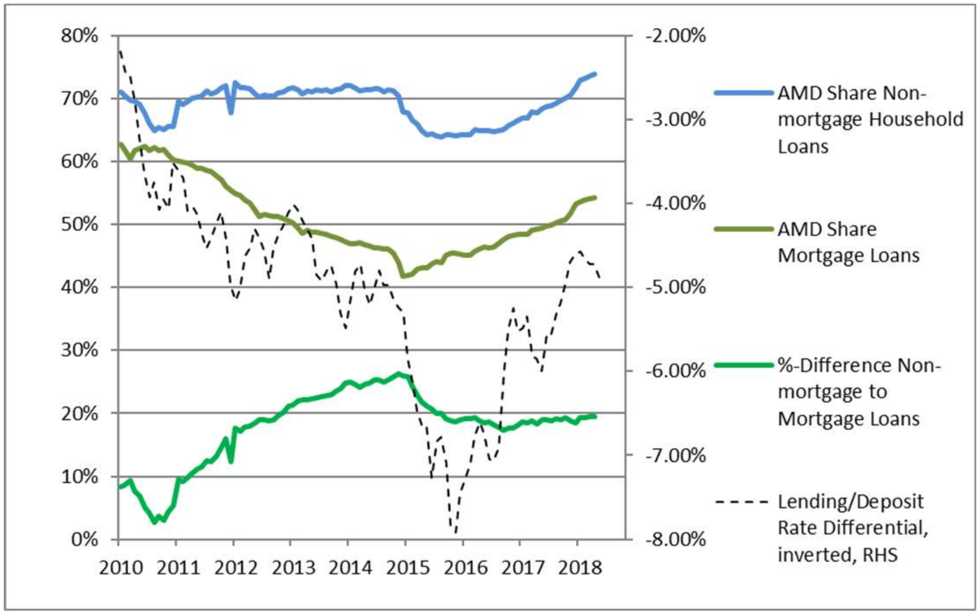


Implied prepayments/maturities



NMC ARMENIA: PERFORMANCE

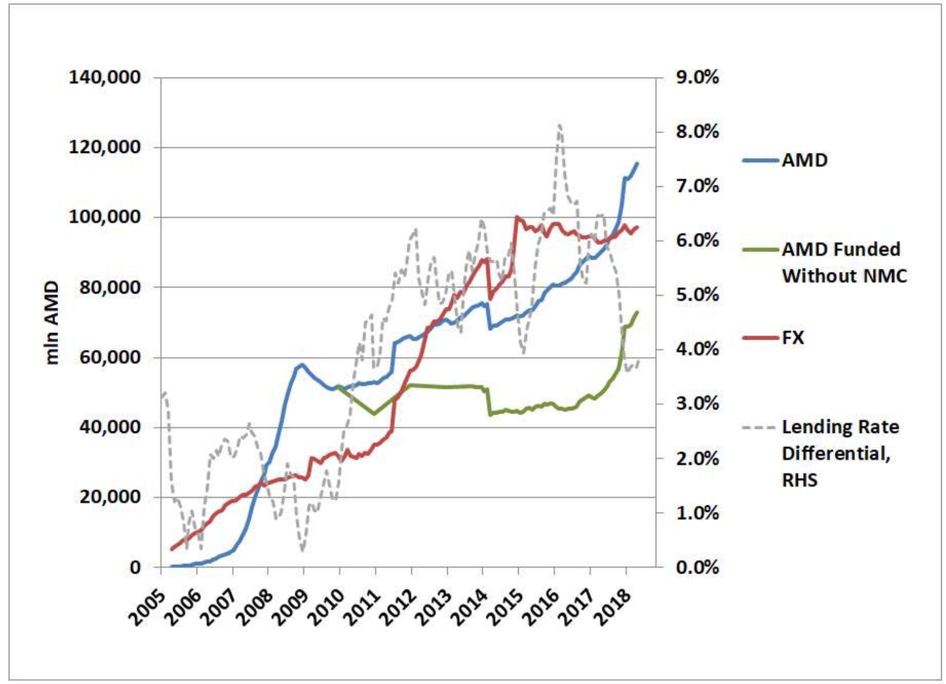
Dollarization by Household Loan Type



Differences in dollarization are caused by the "Tilt effect": for long-term loans (mortgages), the payment to income (and loan-to-value) profiles in the presence of high inflation are steeper than for short-term loans.

In acute crisis, dollarization in both cases rises.

NMC Role in the AMD Market

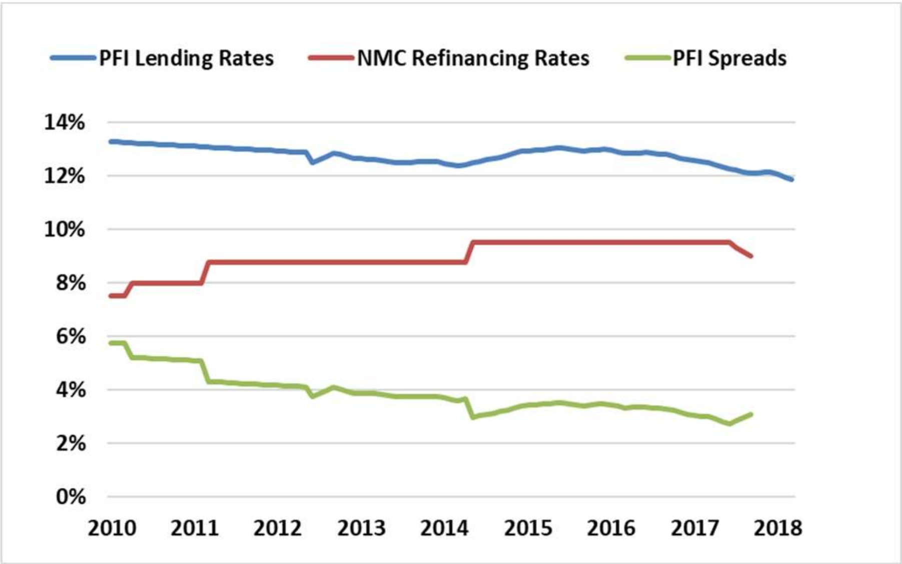


Without NMC the Armenian mortgage market would have been 2/3 dollarized instead of 1/2

De-facto long-term LC central bank facility (closed by IMF in other countries)

NMC ARMENIA: PERFORMANCE

Interest Rates and Spreads



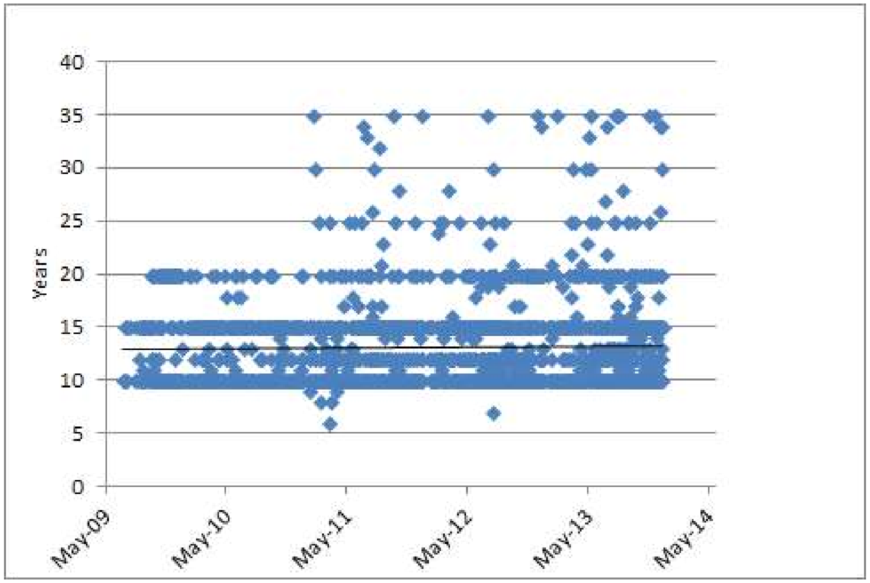
Lender spreads were squeezed out through intensifying competition over time

This permitted stable lending rates even as market rates were overshooting

KfW CoF post central bank swap ca 7%.

CBA return on equity ca 7-8%.

Loan Maturity Distribution



Increasingly long-term.

Leaves refinancing risk after the end of NMCs financing term (9yrs), depending on prepayments

NMC ARMENIA: INVESTORS

Banks: repo yield for bank investors ca 15%. (12% haircut). Ca 7-10 banks are regularly bidding.

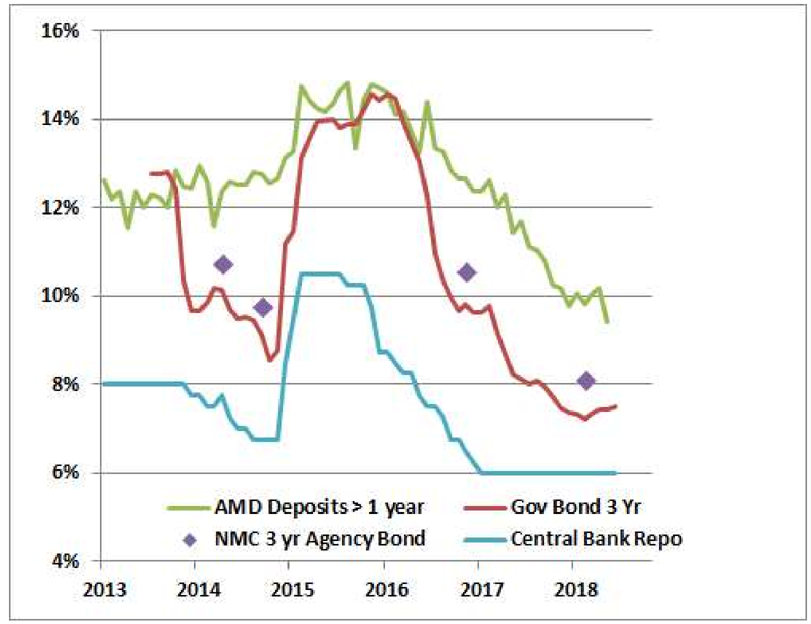
Insurance companies: insurers have limited investment capacity, but engage with banks in back-to-back repos. Infrequent bidding.

Pension funds (2): USD 250 mln investment portfolio: bank deposits (32.8%), government bonds (30%), foreign investment funds (28%), corporate bonds, mortgage bonds and IFI bonds (8.3%).

Demand revelation: Bonds are sold via auctions with guaranteed underwriter (ArmSwiss bank, Ararat bank).

February 2018 bid-to-cover was ca 1.2, including guaranteed underwriting 2.2.

NMC Bond Pricing



Pricing

3 yr NMC 64-90bp over 3 yr gov bonds

SMC KYRGYZSTAN HOUSING FINANCE AGENCY WITH REFINANCING OPERATIONS

State Mortgage Company

- Created in 2015 as a response to the prohibition of USD lending and unfulfilled government housing promises for state employees
- Owned 100% by the Kyrgyzian government (State Property Fund)
- Funded through Government of Kyrgyzstan (Russian-Kyrgyzian Fund), KfW grant (1 negotiated, 1 in pipeline), going forward bonds
- Issuance of 1 mortgage bond in preparation
- Used by 9 banks (except two largest)
- Assumes all liquidity and interest rate risk (more below)
- Strict targeting of government funds to waiting list, KfW program to expand to private sector (rural only)
- Additional windows: public housing leasing program, contract savings for housing institution (in preparation)

- Website: http://gik.kg/en/

SMC KYRGYZSTAN: LIQUIDITY / INTEREST RATE RISK MANAGEMENT FEATURES

Liquidity risk

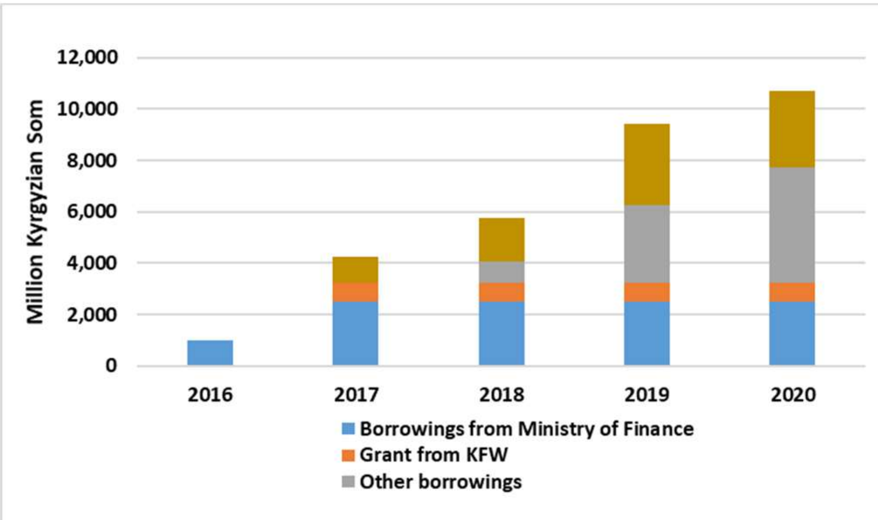
1. Overcollateralization
   - 0
   - Lenders do have very limited stable LC funding sources
2. Maturity of refinancing loans
   - Full loan maturity, up to 15 years
   - Lenders are <u>not permitted to issue longer</u> maturities
   - Lenders adjust maturities to steer borrower payment burden
3. Pass-through vs. portfolio refinancing
   - Pass-through, i.e. cash reconciliation with lenders is made on a daily basis
   - Lenders are neutral in liquidity

Interest rate risk

1. Interest rate fixing periods
   - Fixed-to-maturity for up to 15 years
   - Significant positive maturity transformation risk (when bond funding share rises)
2. Prepayment risk management
   - No prepayment fees for lenders, borrowers
   - Significant negative maturity transformation risk (reduced via deeply discounted rates)
3. Sensitivity of refinancing rates to bond market interest rates
   - Deeply concessionary government refinancing rates
   - KfW program with higher rates fixed to 3 year term will increase sensitivity
4. Lender spread policies
   - Fixed spread over SMC refinancing (5/4%)
   - SMC charges own margin of 2%

SMC KYRGYZSTAN: PERFORMANCE

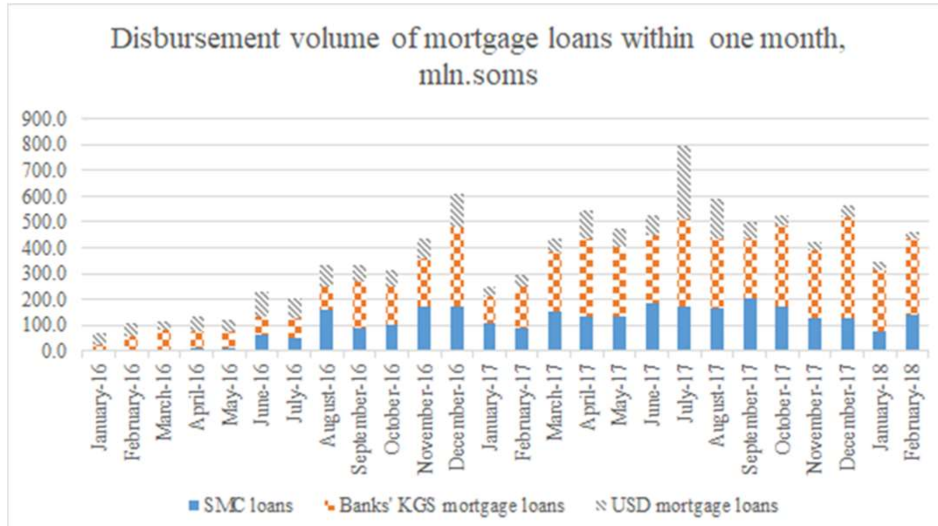
Funding (plan)



Initially government funding, to be substituted by bond funding

Numerous obstacles to bond funding under ‘mortgage backed securities’ law and government restrictions

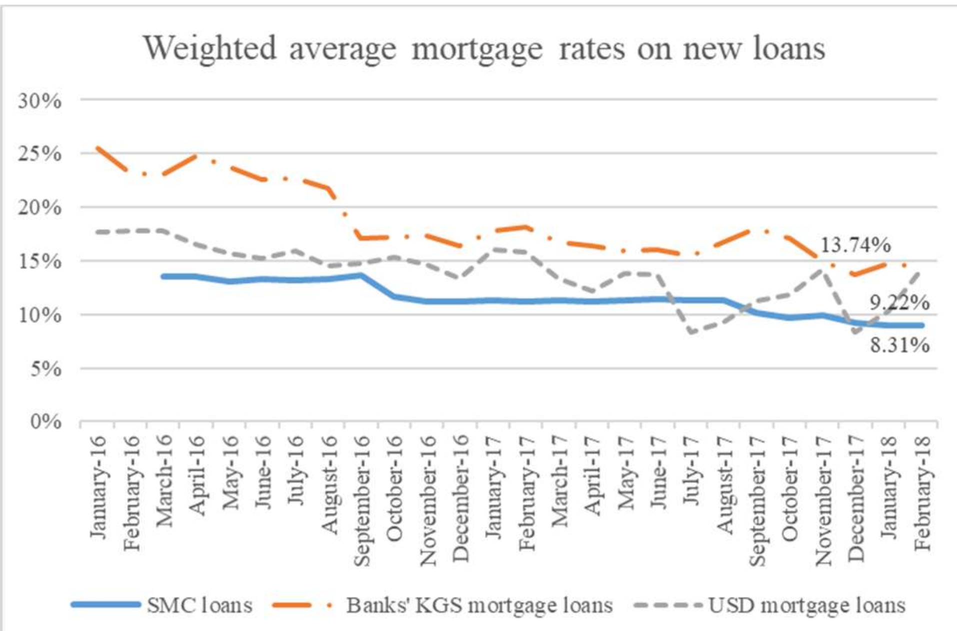
Lending



Because of the social targeting and non-participation of large banks, SMC captures only a share of 20-40% of the total Kyrgyzian Som (KGS) market

SMC KYRGYZSTAN: PERFORMANCE

Interest Rates



CoF (government loan) of 3% + Fixed SMC spread of 2% = 5%, plus 5% bank spread = 10% lending rate (government decree) Later reduced to 8%, 'Social housing'

Government funding of SMC at 3% is not sustainable (Gov bd 2 yr 8.3%, 10 yr 15%)!

KfW program targets 14% lending rate, i.e. implicit lending at 7% after swap as in Armenia, 4% spread.

Ideally lower rates since both bank and SMC spreads are high.

SMC KYRGYZSTAN: POTENTIAL INVESTORS

Investor structure in government bonds

Table 1. Structure of State Bonds Holders (by nominal value) Million Soms

Date	Total	Including									
		Commercial Banks		Institutional Investors		Legal Entities - Residents		Legal Entities - Non-Residents		Individuals - Residents	
		Value	Share in Total	Value	Share in Total	Value	Share in Total	Value	Share in Total	Value	Share in Total
Jun-15	7977.15	3475.79	43.6%	4494.61	56.3%	6.70	0.1%			0.05	0.0%
Jun-16	10412.06	4544.49	43.6%	5826.56	56.0%	40.97	0.4%			0.05	0.0%
Growth rate	30.5%	30.7%		29.6%		511.4%				0.0%	

Banks: can be expected to invest pro-rata to their government bond engagements, provided repo ability and sufficient liquidity.

Insurance companies (17): 2014 72% deposits in commercial banks, 12% in government bonds, 13% in securities of corporations and 3 % in direct loans. Cross-selling of insurance contracts through banks.

Pension funds (2): State Fund with ca USD 200 mln in assets.

Demand revelation: SMC initial strategy to place bond exclusively with the State Fund failed. Now placement arranged by a broker to discover universe of potential investors (plus listing).

SMC KYRGYZSTAN: FIRST BOND OFFER

Terms of mortgage bonds:

- Volume 3 million USD (200 million KGS)
- Coupon rate 8.3% per annum
- Term of securities - 24 months, bullet
- Term of placement period - 6 months
- Early repayment - permitted in accordance with paragraph 4 of Article 16 of the Law of the Kyrgyz Republic "On Mortgage Securities"
- Overcollateralization - mortgage coverage in the amount of 120% of the nominal value of mortgage securities
- Mortgage coverage consists entirely of “Zakladnaya”, transferable mortgage certificates.

KMC KAZAHKSTAN SPECIALIZED REFINANCING INSTITUTION AT THE END OF ITS LIFECYCLE?

Kazkahstan Mortgage Company

- Created in 2000 as a development tool for the Kazakh Tenge mortgage market
- Owned initially by the National Bank of Kazakhstan, today by the Government of Kazakhstan (via Baiterek Holding)
- Funded through bond issuance (80% held by state-owned institutions), Government of Kazakhstan and state-owned institutions.
- 15 bonds issued since 2005, with maturities between 5 and 12 years,
- Initial phase: strong growth, by mid-2004 14 banks
- Assumes all liquidity and interest rate risk (more below)
- Very limited targeting: by 2004 the loan volume limit was USD 164,000
- Additional windows: after being hit by the Kazakh FX crisis, KMC in 2015 was comprehensively re-positioned as a rental / leasing housing finance lender
- Website: http://kmc.kz/en/

KMC KAZAKHSTAN: PERFORMANCE *INITIAL PHASE*

Successful initial lending..

..and innovative funding

Main Achievements Over 3 Years

	2001	2004
Value of mortgage lending, bln. tenge	2.6	63.2
Interest rates (on loans in the national currency)	28%	13%
Loan terms	3 years	20 years
Initial instalment	50 %	10-30%
Number of KMC partner banks	4	12

KMC Bonds

# of issue	Amount	Tenor	Fixed margin over inflation	Total coupon
1	1,5	3 years	4,75 %	12,25 %
2	3,0	10 years	1,80 %	9,50 %
3	5,0	10 years	1,00 %	8,70 %
4	5,0	10 years	0,50 %	8,20 %
5	5,0	4 years	0,39 %	8,09 %
6	5,0	6 years	0,39 %	8,09 %

KMC helped to jump-start the Kazakh mortgage market

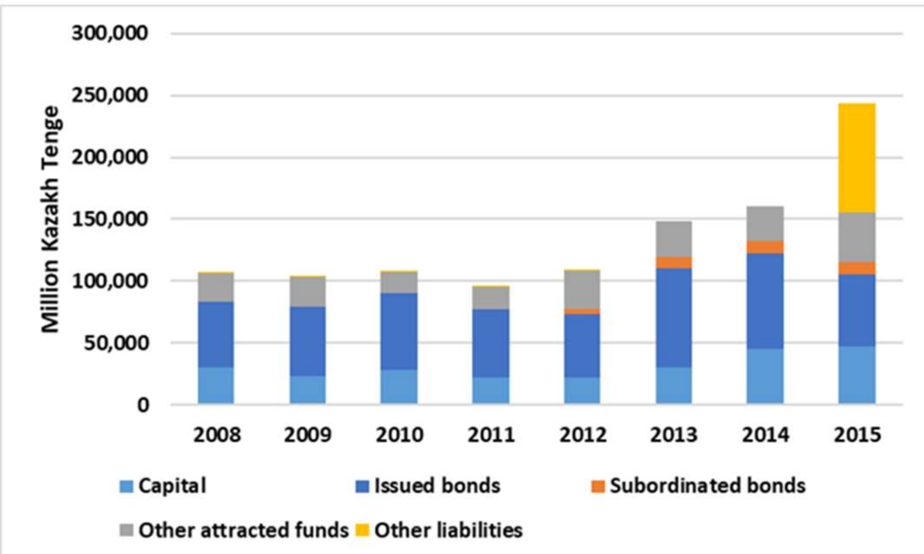
Bonds are mainly fixed-rate and inflation-linked (with semiannual adjustment, stopped in 2009)

Inflation-linked variable-rate interest formula is not to be confused with inflation-linked outstandings (Latin America)

Source: F. Roy, A. Mananbaev, M Yuldasev.

KMC KAZAKHSTAN: PERFORMANCE

Funding

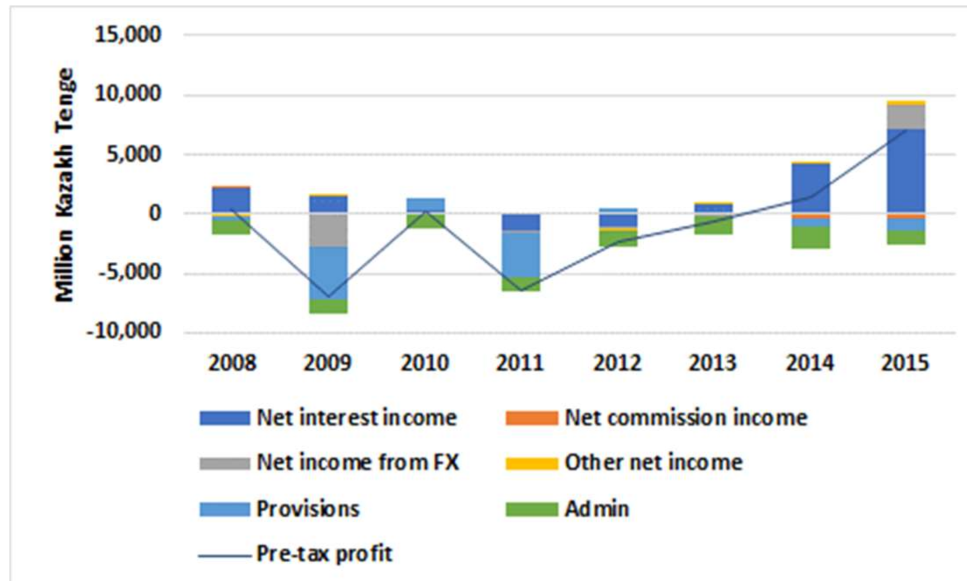


Bond funding remains strong, driven by income tax exemption, regulatory privileges

Main buyers: Integrated Accumulative Pension Fund, Development Bank of Kazakhstan and Zhilstroysberbank

Since 2015 conduit for rental housing finance

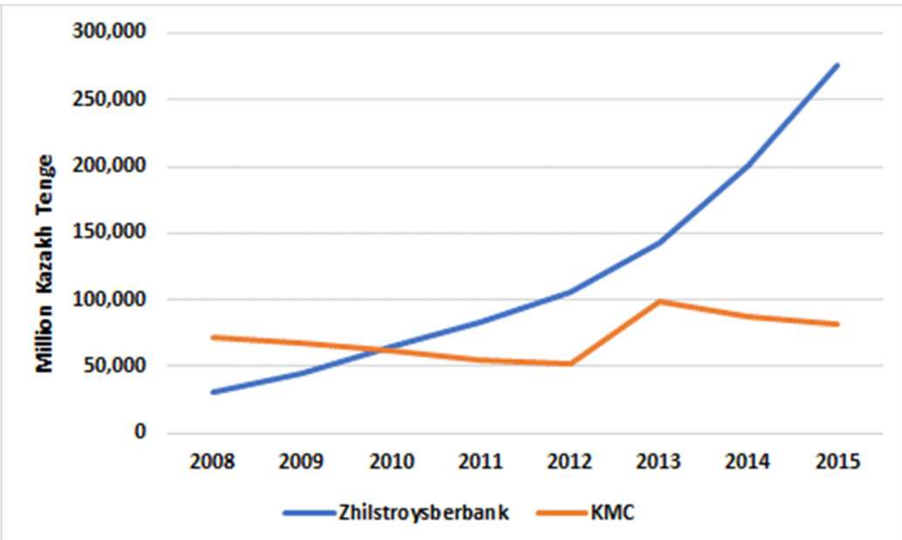
Unsatisfactory corporate performance



KMC has been in crisis 2008-2015 due to direct FX losses and FX-related credit provisions

KMC KAZAHKSTAN: PERFORMANCE

Lending



Note: both Zhilstroysberbank and KMC data (since 2013) include state funds channeled through the institutions.

KMC in mortgage finance became marginalized by Zhilstroysberbank, the public Bausparkasse,

Zhilstroysberbank is more deeply subsidized and self-regulating

Also, bond financing became more expensive after the crisis and lenders preferred own funding sources

The repositioning as rental housing financier can be seen as an attempt to regain market share and justify the institution

The National Bank of Kazakhstan shows interest in reviving the historic model and cutting back the role of Zhilstroysberbank and short-term funding of bank portfolios
(author interviews 2016)

KMC KAZAKHSTAN: LIQUIDITY / INTEREST RATE RISK MANAGEMENT FEATURES *(INITIAL PHASE 2000-2004)*

Liquidity risk

1. Overcollateralization
   - 0
   - Lenders around 2000 and after the crisis 2008 did not have stable LC funding sources
2. Maturity of refinancing loans
   - Full maturity, 3 – 20 years
3. Pass-through vs. portfolio refinancing
   - Purchase <u>with recourse</u>, i.e. pass-through by the servicing bank to KMC

Interest rate risk

1. Interest rate fixing periods
   - Initially adjustable-rate following the bond pricing formula
   - Since mid-2000s fixed-rate (increasing government intervention), i.e. positive maturity transformation risk
2. Prepayment risk management
   - 6 months moratorium, 2% prepayment fees, minimum amounts mitigate prepayment, negative maturity transformation risk
3. Sensitivity of refinancing rates to bond market interest rates
   - Initially very strong with loan pricing derived from bond pricing
   - During the crisis delinking as a result of government decisions.
4. Lender spread policies
   - Lenders receive a servicing margin
   - No total interest rate limits

REFINANCING INSTITUTIONS: DEVELOPED MARKET CASES

Swiss Pfandbriefzentrale or *Pfandbriefbank*

- Established in 1931/32, copied by the U.S. and others
- Provides bullet (non-amortizing) portfolio loans to their members that exactly match the cash flow profile of the bullet bonds issued.
- As a result, PMIs are required to manage the mismatch between their amortizing and prepaying mortgage assets and the bullet financing they receive from the MRC.
- While the funding that the Swiss PMI receive from the MRC is long-term, and thus they are protected against liquidity risk, they take a certain amount of interest rate risk.

https://www.pfandbriefzentrale.ch/en/

An important model with great similarities to the Swiss is the French Caisse de Refinancement Hypothecaire.

Both institutions played a major role in the Global Financial Crisis, when global banks such as UBS and BNP Paribas chose to issue via the institutions rather than on a stand-alone basis.

REFINANCING INSTITUTIONS: DEVELOPED MARKET CASES

Totalkredit Danmark

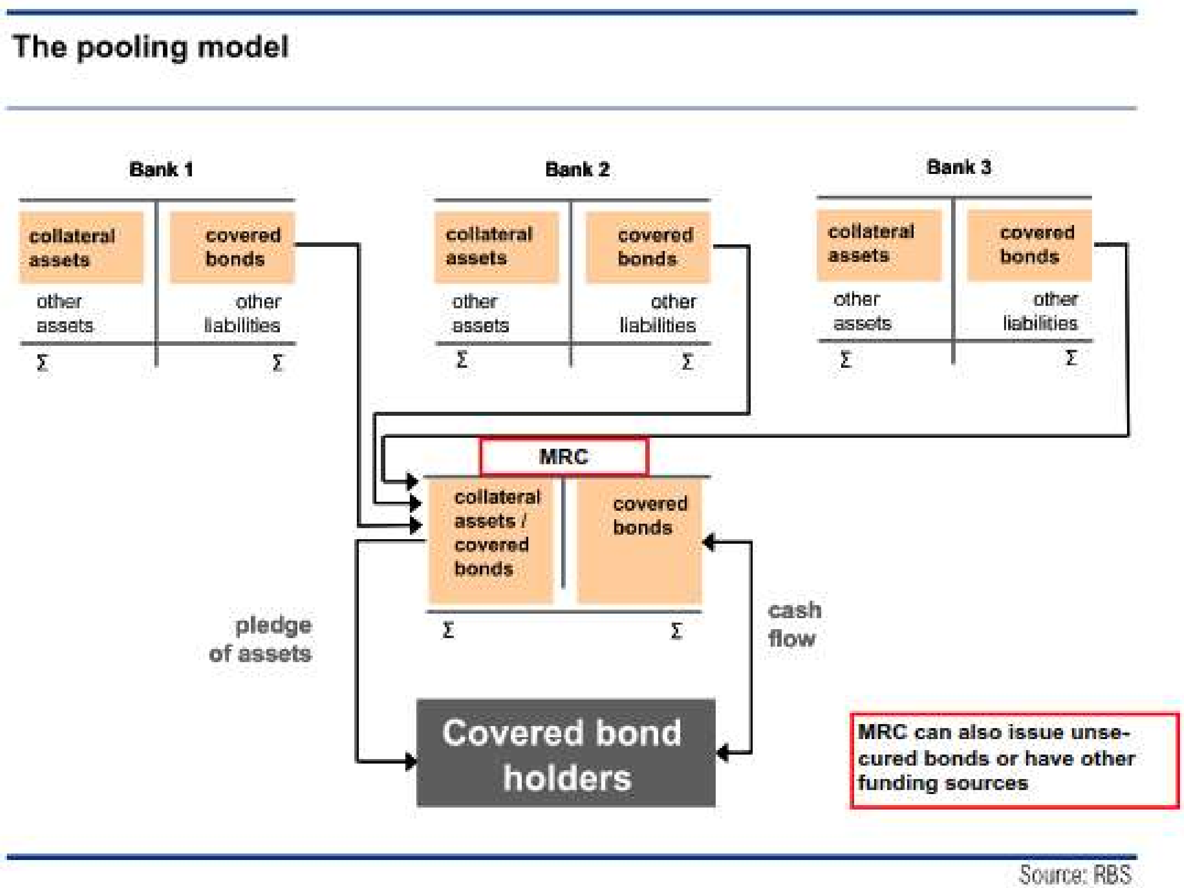
- Bonds are sold to investors that exactly match the cash flow profile of the refinancing lending to members, which in turn exactly matches the cash flow profile of the loans to sub-borrowers, the mortgagors.

- In this case, the investors are taking both the interest rate and liquidity risk of the underlying mortgage portfolio and both the banks and the MRC are protected.

- the key legal vehicle used is 'private covered bonds' issued by the PFIs and sold to the MRC. The MRC issues public covered bonds while asking PFIs to retain junior debt backed by the private covered bonds as a credit enhancement.

https://www.totalkredit.dk/investor/investor-english-version/

CENTRALIZED REFINANCING OF COVERED (MORTGAGE) BONDS: POOLING MODEL



Two main models of collateralization:

- Pledge of mortgage portfolio ('collateral assets'),
- Sale of private covered bonds.

REFINANCING INSTITUTION RISK MANAGEMENT: DEVELOPED ECONOMY CONTEXT

	Refinancing mechanism	Credit risk	Interest rate risk	Liquidity risk	Funding mechanism
Swiss Pfandbrief-zentrale/bank	Collateralized (mortgage-covered) refinancing loan	Substitution through banks 115% OC to protect against bank insolvency	With banks, e.g. prepayment risk. Bonds and refinancing loans have same cash flow	Remaining risk with banks (but long maturities) Member banks write credit lines to refinancing company	Bullet covered bonds
Totalkredit, Denmark	Private covered bond issued by PMI	Bank retains junior tranches of private covered bonds, ca 10%	Pass-throughs	Passed to investors	Pass-through covered bonds
NMC Armenia	Collateralized refinancing loan (specific loan pool)	Substitution through banks 0% or negative OC	Partly with banks, partly with refinancing company Prepayment fees for banks	Banks take liquidity risk > 9 years	Mix of unsecured bullet bonds, government and interna-tional agency loans
KMC Kazakhstan	Loan purchase with recourse	Recourse to bank (loan buyback or substitution) 0% OC	Initially pass-throughs, today mismatch risk is with MRC	Fully with refinancing company	Mix of unsecured bullet bonds and govern-ment loans
Federal Home Loan Banks USA	Collateralized refinancing loan and loan purchase	Substitution through and recourse to banks	With banks or transferred to FHLB/investors.	With banks or transferred to FHLB/investors.	Unsecured agency bonds with special legal status.

REFINANCING INSTITUTIONS: LESSONS LEARNED

Multi-issuer facilities can create access and stabilize in crisis

- competition between banks will increase
  - in the presence of dominant domestic and foreign banks (which tend to lend in FX) mid-sized lenders will be incentivized (Kazakhstan, Kyrgyzstan, Armenia)
  - Do not fix bank spreads, incentivize competition over spreads.

- small local currency mortgage markets would have been wiped out or be much smaller without LC liquidity facilities
  - E.g. Ukraine or Georgia vs. Armenia

- refinancing facilities helped even large banks to issue during the Global Financial Crisis:
  - In the fall of 2008, the German covered bond market shut down, French and Swiss markets remained open. Global banks like UBS issued through refinancing facilities.

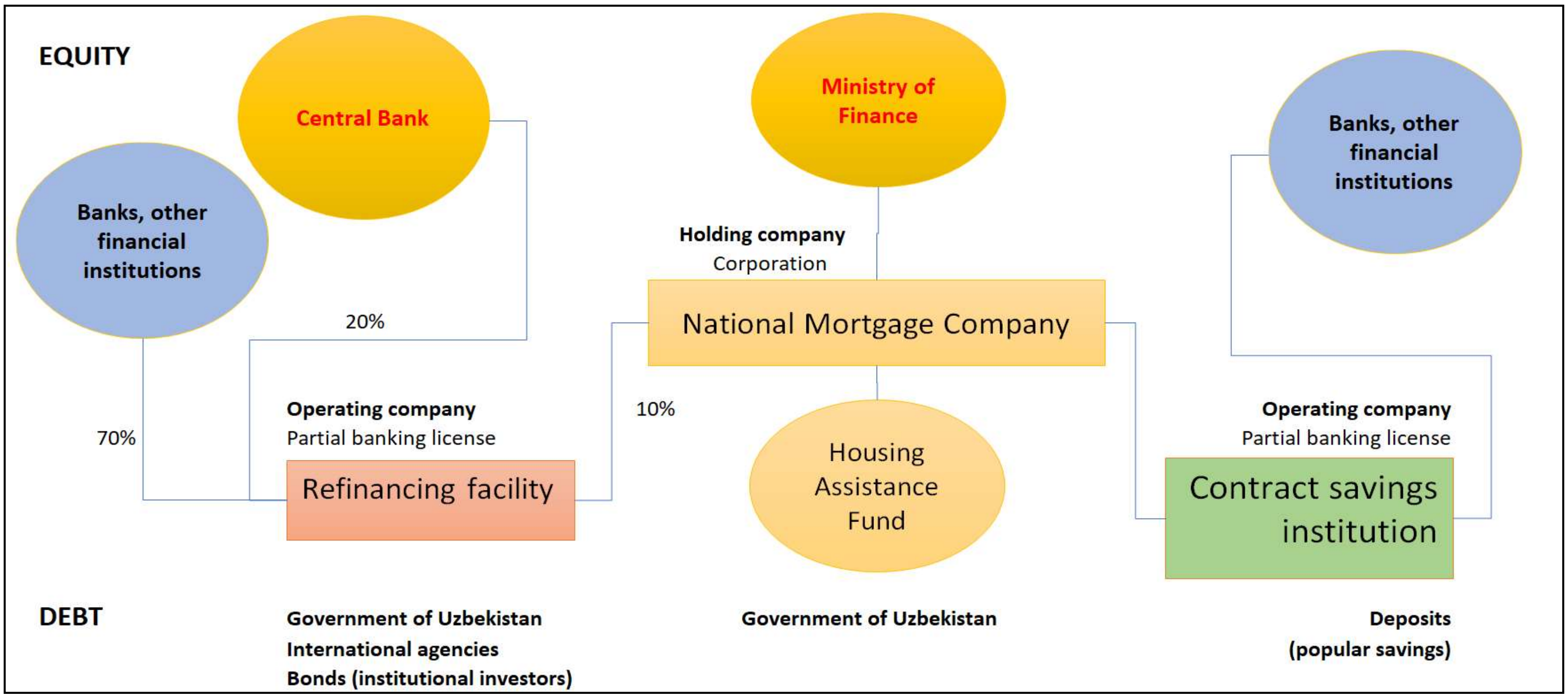
Ownership

- Purely private solutions may be unstable, some public ownership or facilitation
  - Liquidity support by members is essential (failed in Austria / Hypo Alpe Adria case)

- Government ownership may lead to restrictive targeting and slow-down of decision making
  - Examples KMC Kazakhstan, SMC Kyrgyzstan

- Joint bank-central bank ownership preferable in an emerging market context.

REFINANCING COMPANY AS AN ELEMENT OF HOUSING FINANCE INSTITUTIONAL DEVELOPMENT



Note: Authors proposal to ADB.

HOUSING FINANCE INSTITUTIONAL FRAMEWORK IN KAZAKHSTAN

Refinancing institution (KMC)

Financial institution

- MoF, international agency, institutional funding
- Bond funding

Second-tier institution assisting banks (multi-issuer facility)

Contract savings for housing (ZSSB)

Financial institution

- Retail borrower funding

Correspondent of banks

Housing leasing company (Baitarek Development)

Commercial investor offering leasing (rental) with purchase option

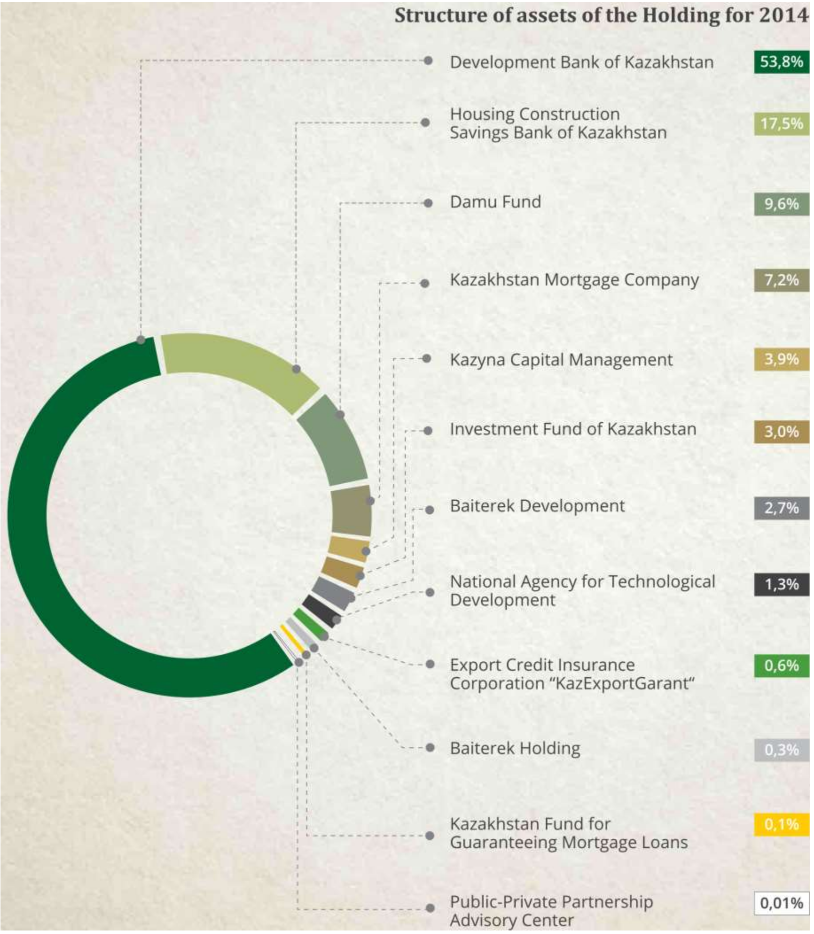
Mortgage insurance

Financial institution

- Bank funding (risk premia)

Correspondent of banks

Baitarek Holding



INTRODUCING REFINANCING INSTITUTIONS
HISTORIC LESSONS LEARNED

Maximize system benefit of the facility

-Get commercial banks involved from the start
(Egypt, Palestine: developers, finance companies with moral hazard)

- Tighten liquidity and interest rate risk regulations of banks
- Incentivize banks as possible investors

-Promote fixed-rate (fixed-to-term) lending
(Jordan: remained adjustable-rate, limits market share)

Do not subsidize lenders

- Lenders should take credit risk
  - The facility may in exchange ease restructurings (e.g. loan maturities)
- Lenders should post overcollateralization 10-25%
- Lenders should contribute to prepayment risk management
- Lenders should be seen as issuers from the start, e.g. under a covered bond framework
  - This facilitates later transition from multi- to single-issuer bond issuance

Develop the legal framework

- Mortgage consumer protection: prepayment, assignment, inflation-proof (fixed-rate) products
- Covered bond law including section regulating multi-issuer facilities

REGULATION ISSUES

ENCOURAGE BANKS TO ISSUE BONDS / USE REFINANCING INSTITUTIONS

Loan-to-deposit ratio limits are potentially toxic in the context of mortgages

- Increased solvency risk
  - encourages lender mismatch,
  - discourages use of bonds.
- Encourages variable-rate products
  - increases pass-through of monetary policy signals on credit, prices.

A funding stability concept is preferable →net stable funding ratio (NSFR)

The NSFR needs refinement for mortgages

- ‘Stable’ vs. truly long-term deposits/bonds
- NSFR with a 1 year horizon cuts duration gap only minimally
- Prepayment models required
  - often consumer protection regulation complicates

Liquidity risk protection should receive regulatory preference

- Pass-throughs carry zero liquidity risk !
- Fixed-term refinancing with some penalty
- Short-term refinancing with large penalty

Rating agencies observe this risk closely

REGULATION ISSUES

REGULATION OF REFINANCING INSTITUTIONS

Legal configuration

- 2 page enabling law or part of covered bond law

Supervision

- Ideally under partial (special) banking license
- Capital: does intermediation by a wholesale intermediary reduce or increase system credit risk?
- Avoid capital arbitrage as in the United States (also Malaysia, others) but give credit to lenders for liquidity and interest rate risk mitigation.

Liquidity

- Liquidity backup arrangement with central bank, e.g. repo of refinancing loans
- Access to central bank refinancing window for refinancing facility bonds held by banks

Capital Requirements with U.S. GSE vs Covered Bond Issuer as Intermediaries

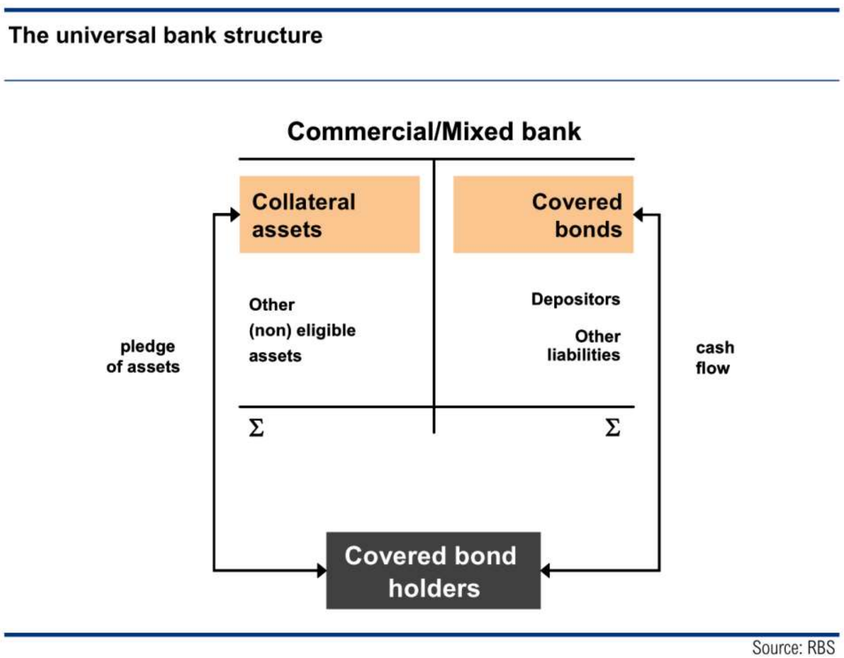
	Bank Intermed	GSE Intermed	Bank Investor	System
	Regulatory capital required in cents/US$			
UNITED STATES				
Bank swapping portfolio into GSE MBS		0.45	1.60	**2.05**
Bank keeping loan pool on balance, Basel I	4.00			**4.00**
.. as above, Basel II	3.20			**3.20**
EUROPE				
Bank issuing a covered bond, Basel II	3.20		1.60	**4.80**
.. As above, EU UCITS-compliant	3.20		0.80	**4.00**

Note: Basel II - standardized approach

Source: Lea, Duebel/Finpolconsult.

MORTGAGE REFINANCING THROUGH COVERED (MORTGAGE) BONDS

Simple Covered Bond Issuance Scheme, Universal Bank

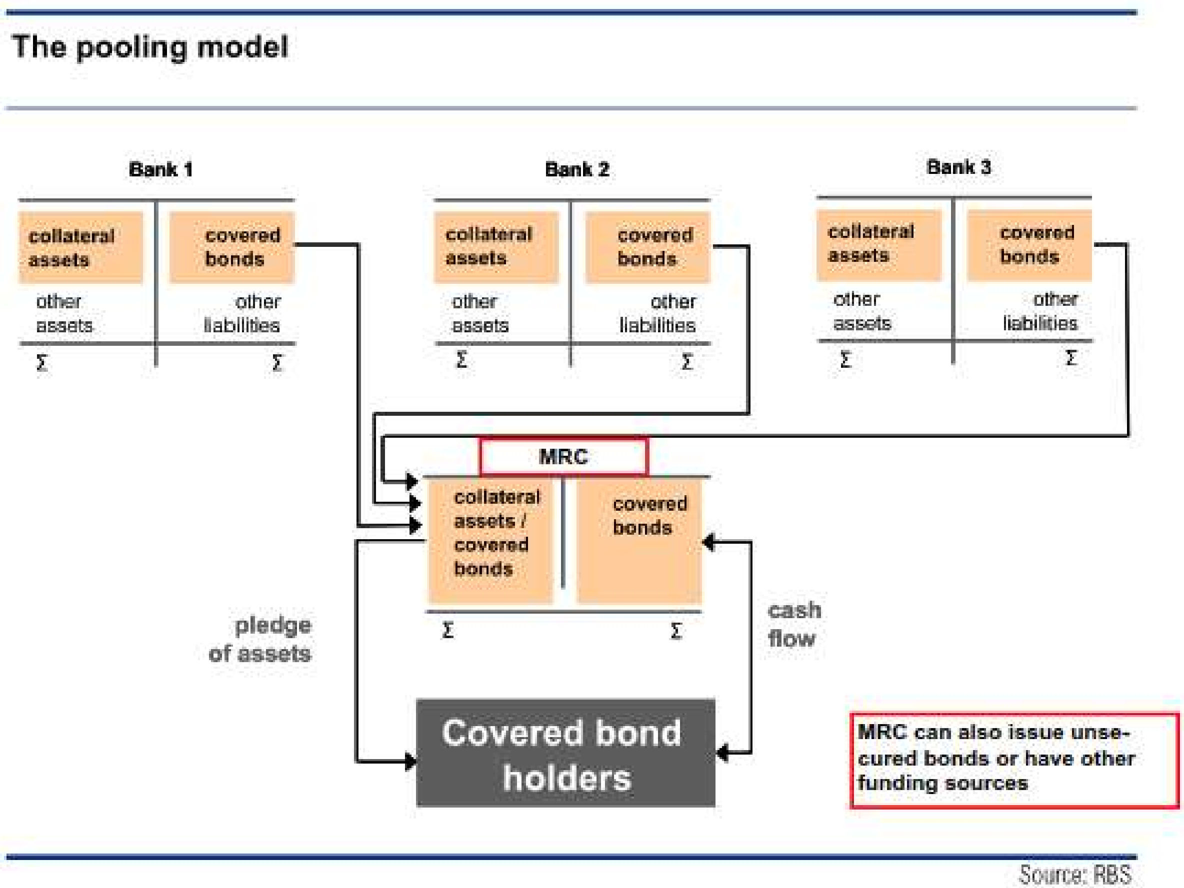


Source: RBS

Covered bonds:

- On balance sheet (dual guarantee of bank credit and mortgages, bankruptcy segregation), substitution of loans→credit risk intermediation,
- Low-cost permanent ('shelf') issuance program (no individual deals, one prospectus for several bonds issued, simple cover pool monitor instead of depositories, trustees),
- Usually bullet bonds (non-amortizing, no prepayments) → market risk intermediation.

CENTRALIZED REFINANCING OF COVERED (MORTGAGE) BONDS: POOLING MODEL



Two main models of collateralization:

- Pledge of mortgage portfolio ('collateral assets'),
- Sale of private covered bonds.

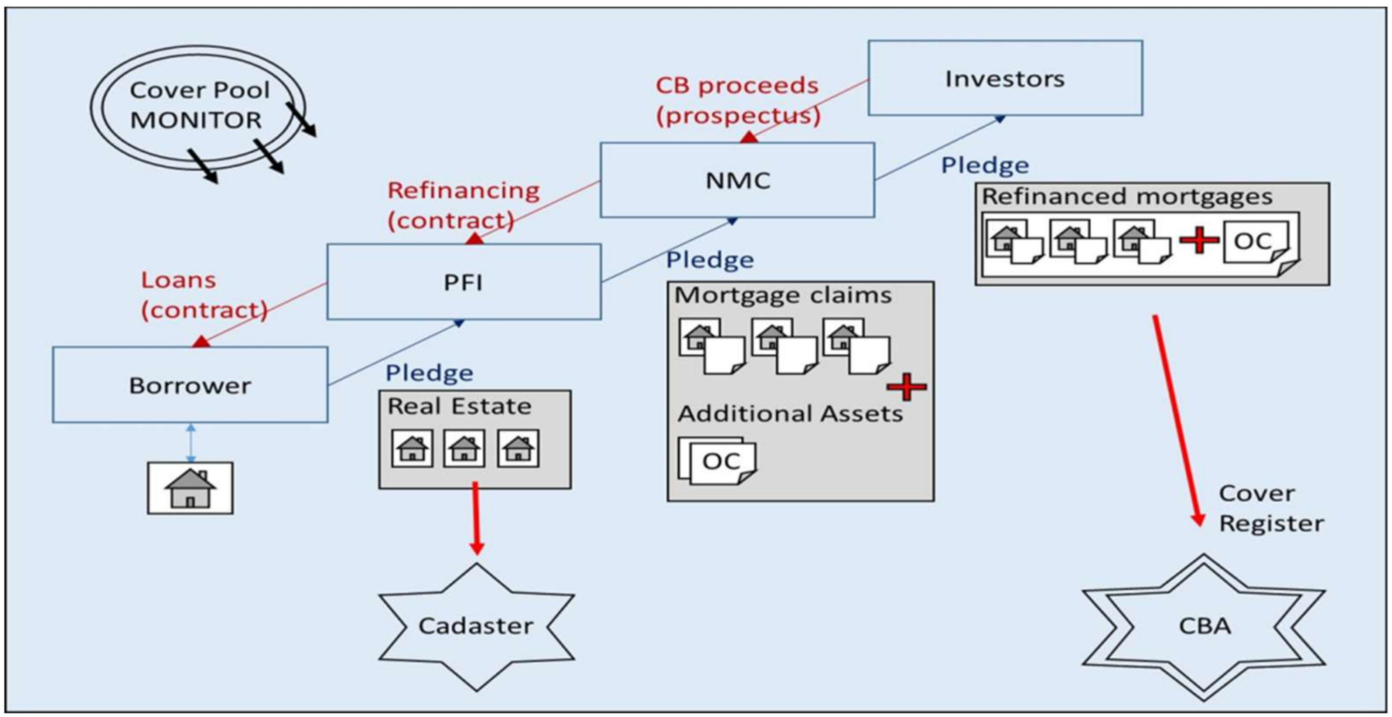
ARMENIA: CONCEPT FOR A MULTI-ISSUER REFINANCING COMPANY FOR COVERED BONDS

Covered bond law

- A mortgage cover pool is created on balance sheet of every Primary Financial Institution (PFI).
- The PFI issue pass-through covered bonds, e.g. every three months. These bonds are private (not-traded).

Multi-issuer facility

- The National Mortgage Company (NMC) provides refinancing loans to lenders backed by the pass-through covered bonds.
- The refinancing loans form a new cover pool against which the NMC issues a menu of public bonds.



Multi-Issuer Facility Flow Diagram

Source: Finpolconsult NMC Armenia.

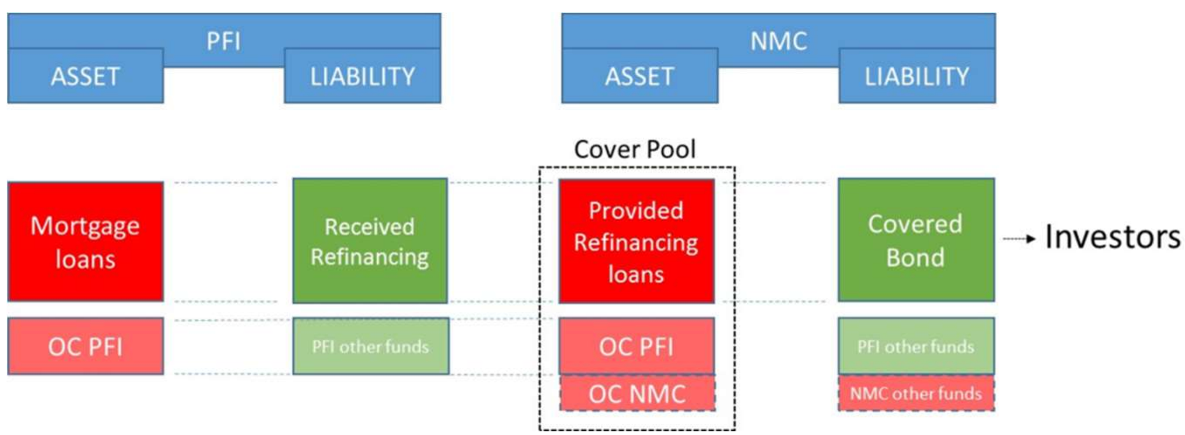
ARMENIA: CONCEPT FOR A MULTI-ISSUER COMPANY FOR COVERED BONDS

Multi-issuer facility

- The NMC will do asset-liability management between pass-through private covered bonds and bullet public covered bonds.
- Banks provide overcollateralization to protect the NMC, investors against credit risk.
- The NMC provides overcollateralization to protect investors against interest rate risk.

Going forward, lenders may issue their own covered bonds (separate mortgage pools)

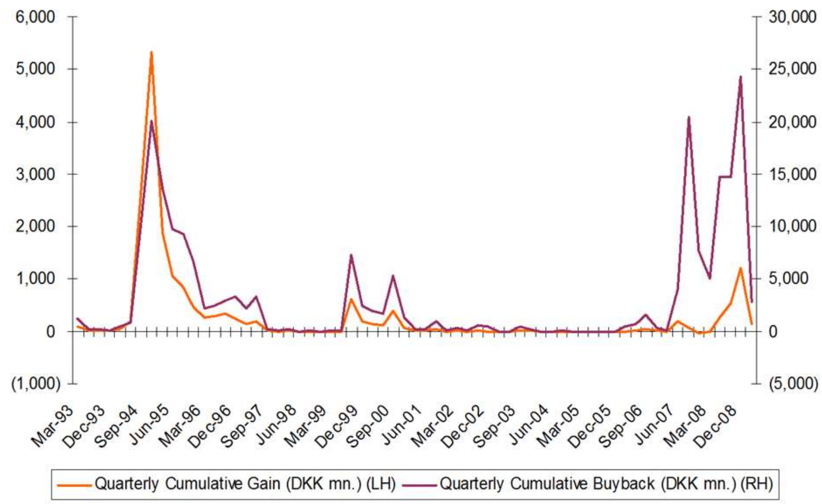
Relations between Lenders (PFI) and Multi-Issuer Facility



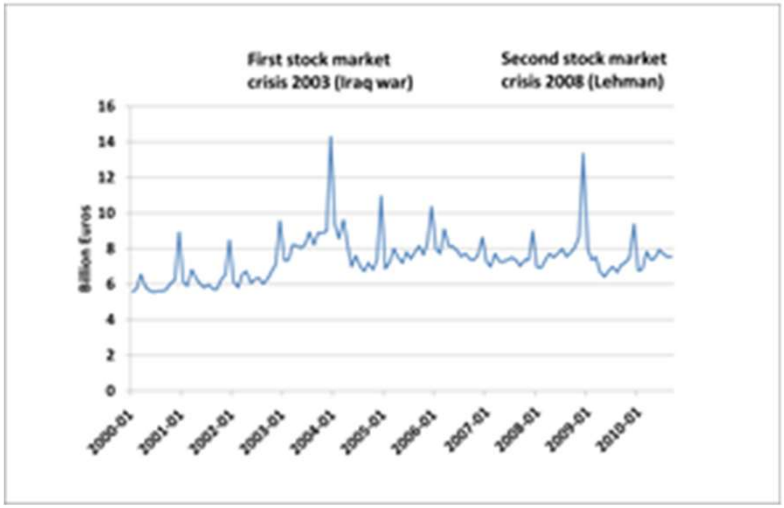
Source: Finpolconsult NMC Armenia.

OTHER SUCCESSFUL SPECIALIST MODELS

Danish Mortgage Bonds – Consumer Buybacks During Crises (Rate Increases)



German Contract Savings for Housing – New Deposits and Capital Market Crises



Sources: Central banks, Boyce, Duebel/Finpolconsult.

Danish MCIs

- Issues hybrid covered bond/MBS
- Fixed-rate loans issued under balance principle, i.e. lender is long in liquidity, no interest rate risk
- Buyback option reduces lock-in risk
- Lender can adjust credit risk premium ex-post
- Caveat: requires sophisticated investor base

Bausparkassen / Contract Savings

- Winner of flight to safety
- In CEE stabilizes via local currency credit (e.g. Czech, Hungary, Kazakhstan)
- No credit risk differentiation for borrowers, due to equity accumulation→no credit crunch
- Liquidity management via waiting periods
- Caveat: subsidy issues.