Trade financing: challenges and practices and default models

June 13, 2011

Yildiray Yildirim

Whitman School of Management

Syracuse University

Risk Management

Risk management is done before the crises, not after

	Important	No important
Urgent	X	X
Not urgent		X

*It is the **important/not urgent** cases that separate success from average performance*

Risk Management

Risk management is done before the crises, not after

	Important	No important
Urgent	X	X
Not urgent		X

*It is the **important/not urgent** cases that separate success from average performance*

- The probability is small, but the consequences are huge.
- Blaise Pascal's bet (17^{th} century mathematician and physicist: pressure equals force divided by the area)
- The difference between gambling and investment is, in investment, you take calculated risk.

Agenda

- Overview of Trade financing
- Challenges for SMEs financing and some proposed solutions
- Credit risk model for SMEs

Overview

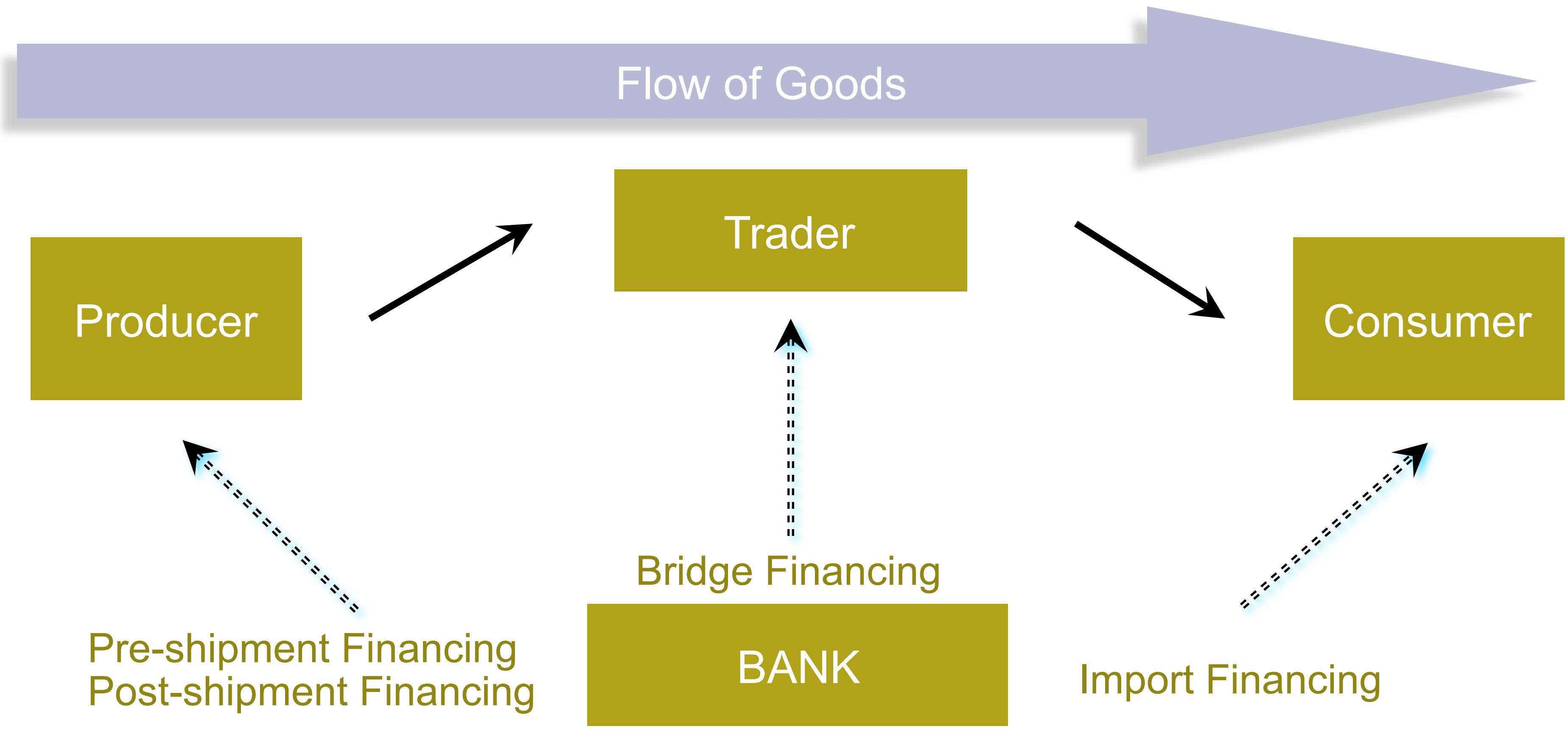
- Trade financing can be given directly to the supplier, to enable him produce items for immediate sale and/or for storage for future activities.

- It could also be provided to the buyer, to enable him meet contract obligations. Or it could be given to a trader, for on-lending to his suppliers.

- According to messaging data from SWIFT, a large share of trade finance occurs through inter-firm and open-account exchange.

- Among the intermediated trade finance products, the most commonly used for financing transactions are L/C.

Transaction Chain



Forms of Trade Finance

- Pre-Shipping
  - Prior to the shipment of goods.
  - To support pre-export activities like wages and overhead costs.

- Post-Shipping
  - The period following the shipment.
  - Ensures adequate liquidity until the purchaser receives the products and the exporter receives payment.

- Many types of assets can potentially be used to secure financing:
  - Assets: Cash, Account Receivables (factoring), Inventory/Stocks, Equipment, Buildings/Land…

EXAMPLE 1: *Short-term Pre-shipment Financing (L/C-Based)*

1. ***Purpose:*** *Financing to start production for US$50 million worth contracts signed.*

2. ***Exporter:*** *A credit worthy company in country X.*

3. ***Importer:*** *Various credit-worthy buyers in safe country.*

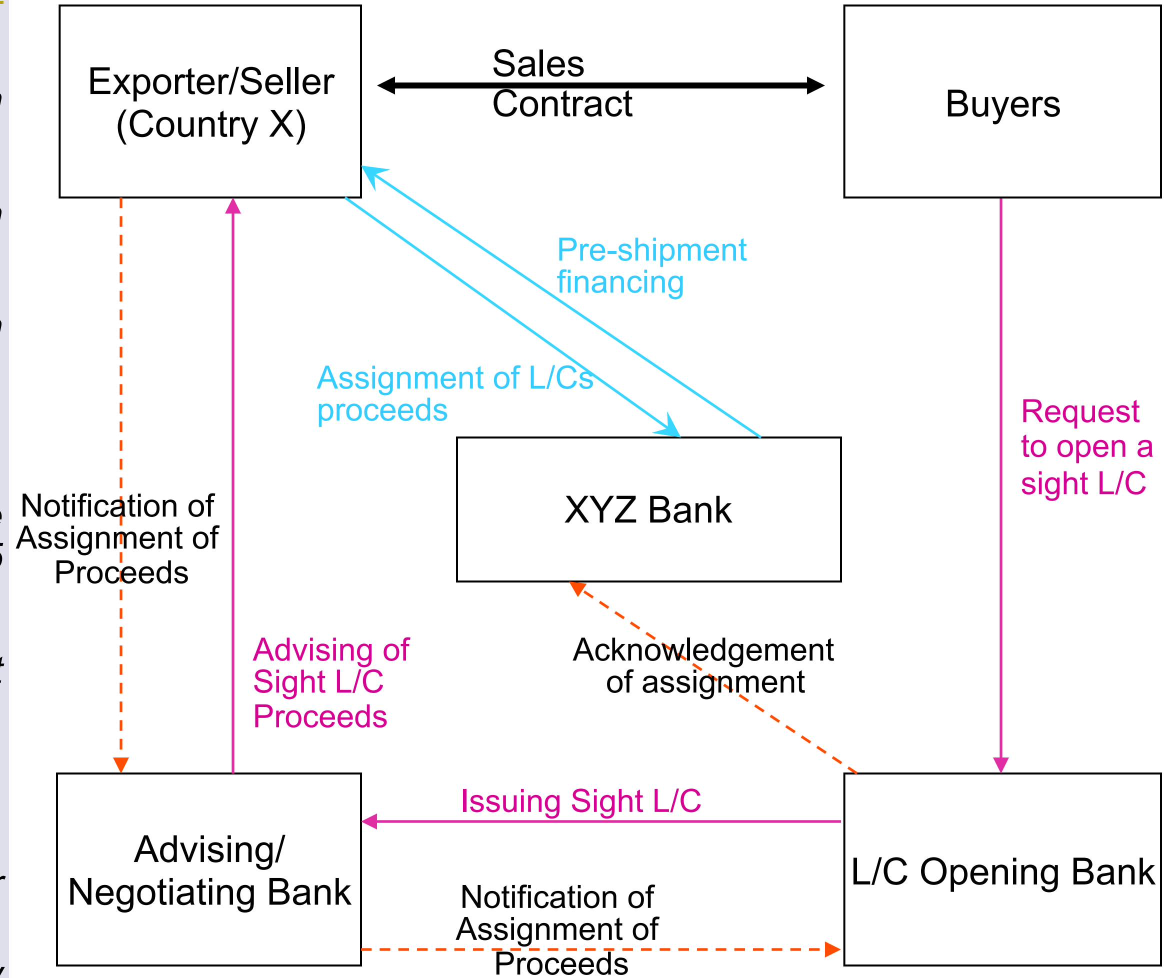
4. ***Lender:*** *XYZ Bank.*

5. ***Amount to be financed:*** *85% of the signed contracts value (i.e. US$ 42.5 million).*

6. ***Tenor:*** *6 months, representing shipment period.*

7. ***Documentation:***

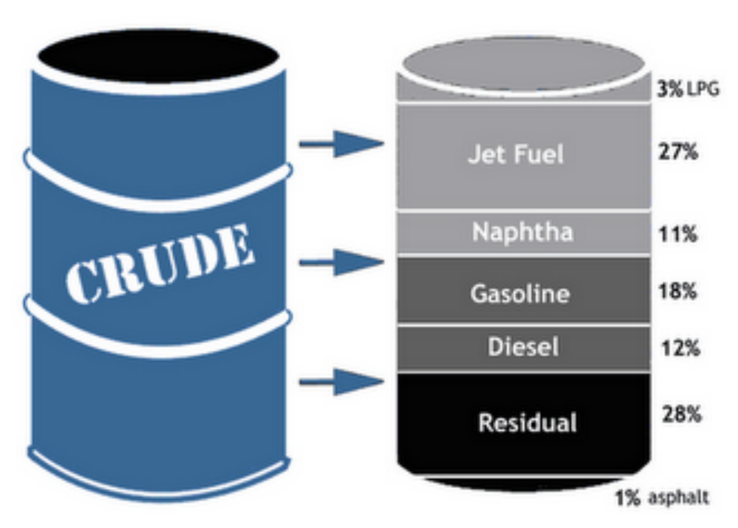
- *Confirmed copies of the L/Cs;*
- *Assignment of proceeds by the exporter to the bank;*
- *Notification of assignment proceeds by the exporter to the issuing bank as well as advising bank;*
- *Acknowledgment of assignment by the issuing bank.*

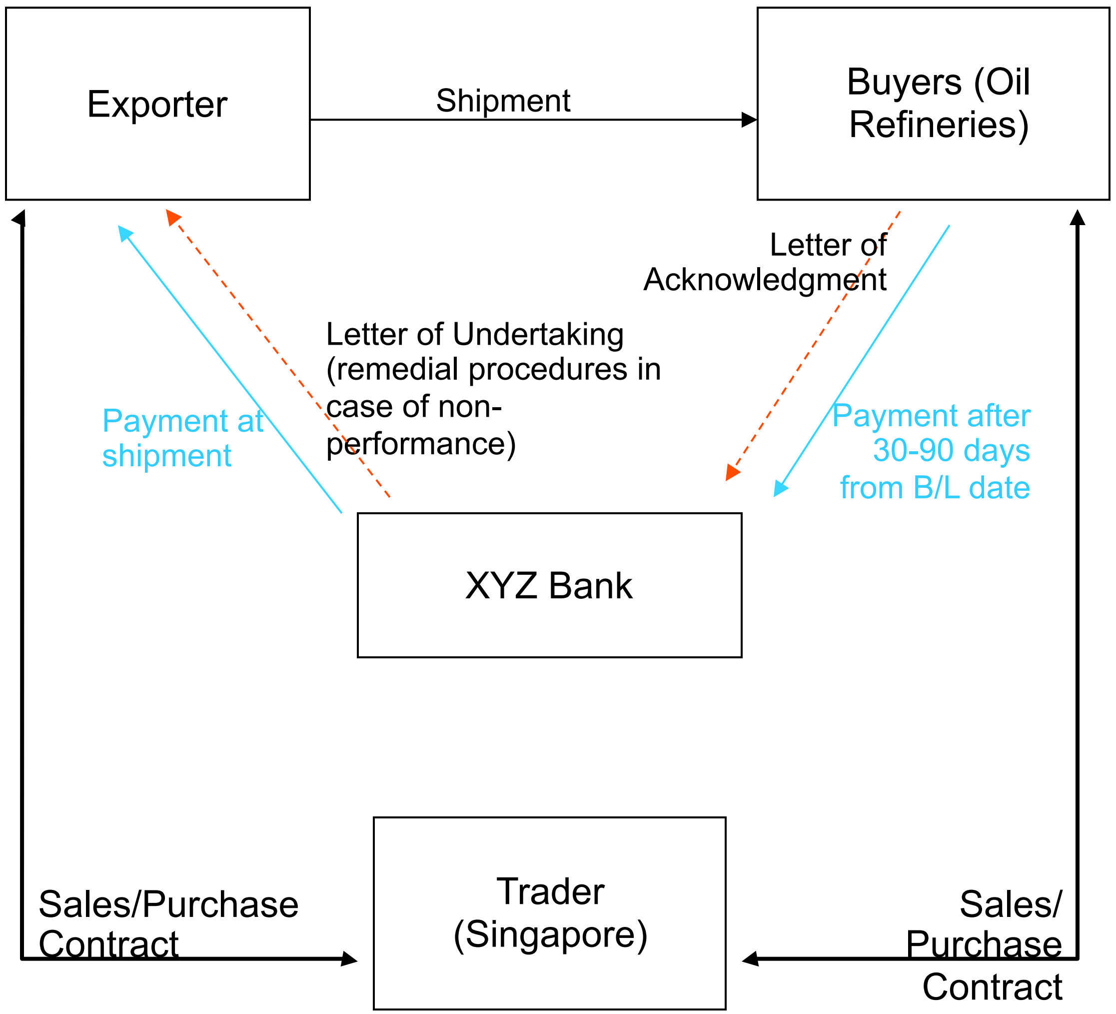


This is a simple pre-finance transaction where an L/C is issued from a reliable bank in a safe country and the tenor of the finance is limited to the shipment period only. The proceeds of the L/C are assigned to the financing bank.

EXAMPLE 2: *Account Receivable-Based Financing*

1. ***Underlying transaction:*** *To trade naphtha and crude oil.*
2. ***Lender:*** *XYZ Bank.*
3. ***Facility Amount:*** *US$ 50 million for credit facility.*
4. ***Exporter:*** *Major oil company in Kuwait.*
5. ***Trader:*** *Korea trading company in Singapore.*
6. ***Importers:*** *Major oil refineries worldwide.*
7. ***Tenor:*** *30-90 days from bill of lading date.*
8. ***Collateral:*** *Outstanding account receivables.*
9. ***Facility Period:*** *1 year.*





This financing is given to the exporter once goods are shipped and repayment is done automatically by importer through an escrow account.

EXAMPLE 3: *Structured Commodity Financing*

1. ***Underlying transaction:*** Aluminum billet.

2. ***Lender:*** XYZ Bank

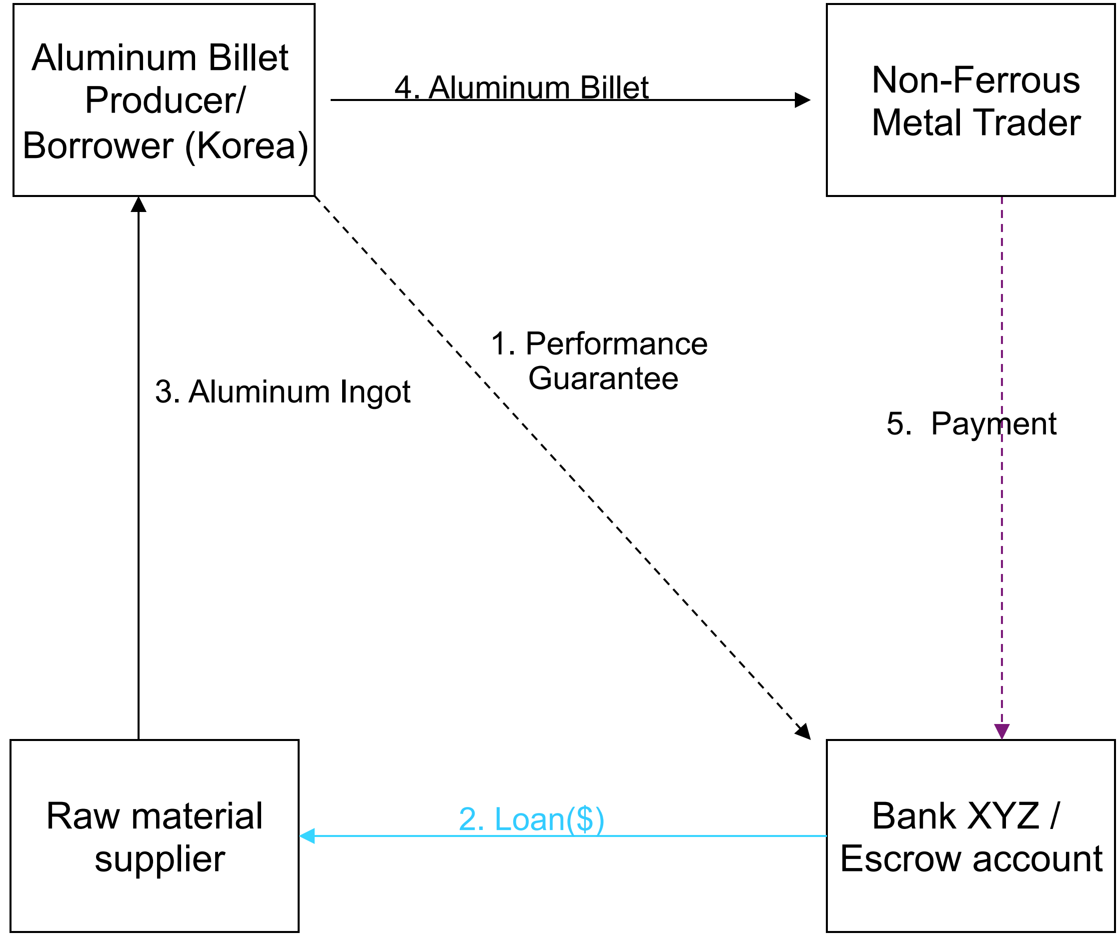
3. ***Borrower/Exporter:*** Aluminum billet producer, Korea.

4. ***Trader:*** Non-ferrous metal trader.

5. ***Tenor:*** 60 days.

6. ***Security:***

- 100% performance guarantee by the borrower.
- Assignment of receivables
- Payment into Escrow account



Structured finance mechanism through which the supplier is paid from the bank for the raw material sold to the exporter and repayment is made automatically by the importer to the bank through an escrow account

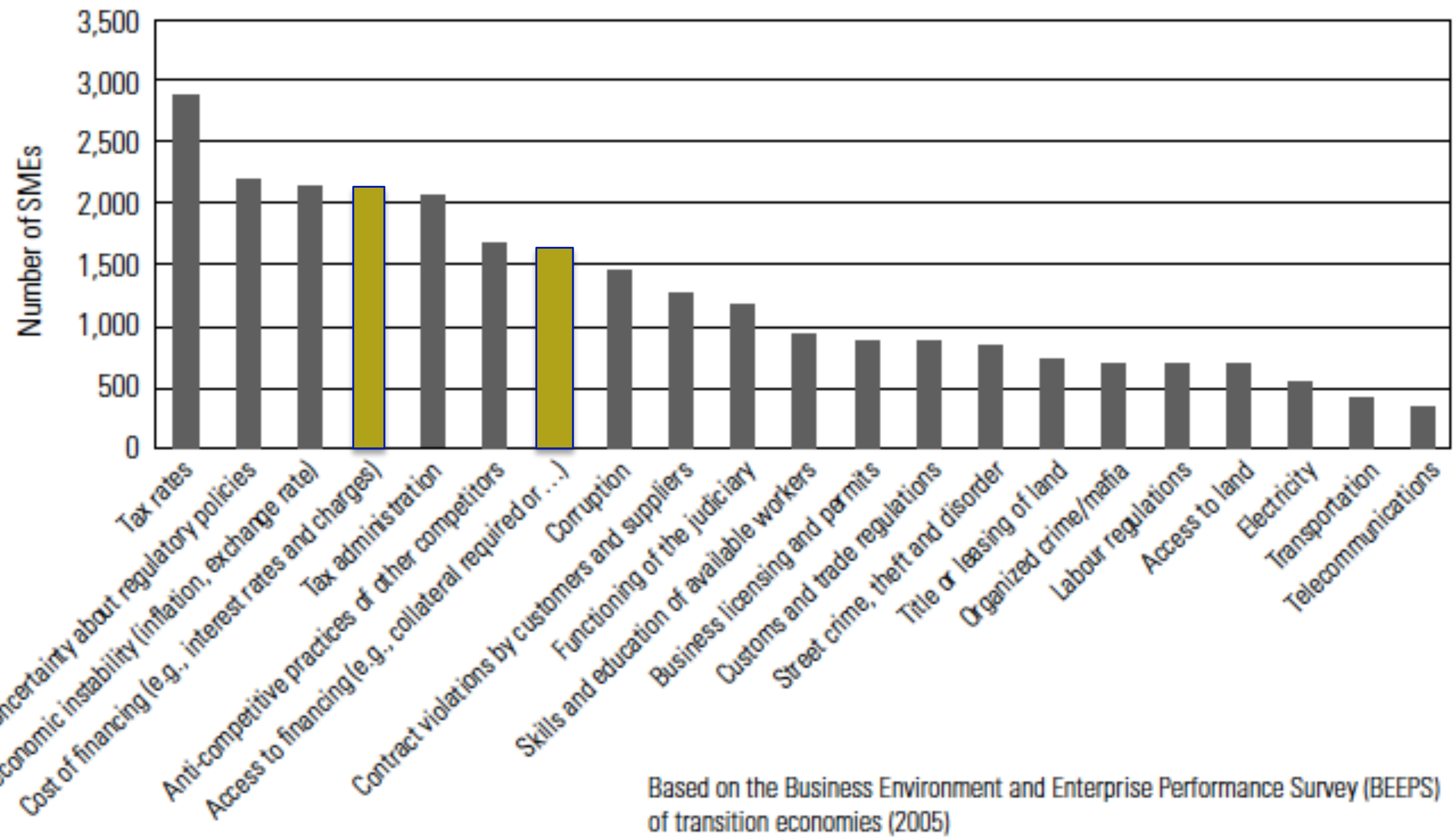
Challenges for SMEs and some proposed solutions

- The financial crisis has exacerbated SME's difficulties to access finance.

- SMEs are considered the backbone of the economy. For OECD members, the percentage of SMEs, out of the total number of firms, is greater than 97%. In the US, SMEs provide approximatly 75% of the net jobs added to the economy (yet, their systemic risk is ignored!!!.)

- The international Chamber of Commerce (ICC) survey indicate that it become more difficult to raise money to finance trade in the aftermath of the Lehman Brother collapse.

Figure 1.2 Perceived major growth obstacles by SMEs



Based on the Business Environment and Enterprise Performance Survey (BEEPS) of transition economies (2005)

Sources of SMEs financing

- Most SME financing comes from internally generated funds, supplemented by borrowings from family and friends as well as informal sources and moneylenders.

- Grey market funds are important for SMEs. They are more expensive (rates are between 5% and 10% a month for loans with a one year maturity obtained from loansharks) than the formal fund sources, but they are more flexible and quicker to obtain.

- SME loans are small percentage of total bank portfolios.
  - SME loans are high-cost lending transactions because they are typically small, compared to loans to big firms. They are often more time consuming to assess, monitor and manage. Many banker perceive that small businesses require much more handholding than mid-market or large corporate clients. SMEs are not so much technology driven to collect data needed for lenders.
  - Bank outreach to SMEs is also constrained by default risk. The lack of public information and credit histories, particularly in countries where credit bureaus do not exist, adds to the difficulty banks have distinguishing SMEs.
  - During economic downturns, SMEs tend to experience bankruptcies more than large firms.
  - SMEs may also not be interested in approaching banks because they do not want anyone looking over their shoulders.

SME financial constraints

- Absence of reliable information
- Weak accounting and unreliable financial statements
- Lack of sufficient market credibility
- Poor historical performance and high transaction cost
- High risk perception

Other challenges

- Unfavorablere gulatory environment
- Poor infrastructure
- Limited access to latest innovations

However, because SMEs are critical engines of job creation and economic growth, it is important to increase the availability of risk capital to these firms.

A number of steps may be taken to encourage SME lending

- Financial literacy
  - Greater awareness of SME lending as a profitable business through educational seminars and programs, because SMEs are under serviced market in terms of financial lending
- Development programs
  - SMEs will benefit through the establishment of development programs, funds and other initiatives.
    - Creating of SME fund
    - Introduce standardized credit appraisal systems and guidelines, especially for the SME sector. This includes credit rating and credit scoring tools.
    - Establishment of SME rating agency (by leading public sector and private banks, maybe with OIC members), increase the transparency and reducing risks and costs that arise from information asymmetries
    - improve business development services for SMEs and enhance market linkages of SMEs. Most don't even know how to draft a business plan
- Credit information infrastructure.
  - Establishment of credit information companies and bureaus, rating agencies, etc.
  - Introduction of effective risk assessment tools such as **credit scoring**

- SMEs are encouraged to give dividends and it can be tax deductable. They pay their profits as dividend.

"…one of the main objectives of the workshop is to come up with cooperation projects ideas to be implemented in the OIC member countries bilaterally or multilaterally…"

- Each one of the above steps could be a project proposal for OIC member countries, however, one could also start with a work force brought together investors, entrepreneurs, researchers and representatives from finance institutions and foundations to identify obstacles hindering emerging-market SMEs' access to capital and to explore potential solutions.

- Group participants would examine case studies of successful SME investments and exchange ideas through moderated round table discussions.

- Innovative financial instruments and structures can help bridge the funding gap and facilitate the flow of risk to emerging-market SMEs. Work force can also create a subcommittee for new product development.

Example

It is important to attract individual and institutional investors as a source of SME financing, besides banks and government institutions. Therefore, it is important first to understand investors needs (risk-return) and concerns. Below can be some solutions:

1. Exit strategies; it is difficult
   - Management buyout; sale of investors shares back to business owner; it can be a option to buyback at some time In the future.
   - IPO or trade sale (sale to a financial buyer)
2. SME investment returns are not fully risk adjusted: one of the important reason that flow of funds for financing to emerging market SME are insufficient due to returns that are not fully risk-adjusted. Administrative expense is very high, reducing the return.
   - Create regional fund funded locally; with a track record, it can attract foreign investor overtime.
   - Use technical assistance: consulting an individual or a group that has business or finance experience on how to improve various aspects of a business, which is critical to emerging-market SMEs and can help enhance a company's value which in turn increasing the return.
   - Use structured finance to broaden the investor base: Instead of offering identical shares to all investors, different types of investors with different tolerance for risk could invest in SME funds and receive varying levels of returns.
     - government, banks, individual investors, ect. They have different risk tolerance

Example of a structured finance: Using the water fall analysis, you can distribute the return.

Investor	Amount	Instrument	Risk	Return
International investor	$5,000,000	Common equity shares	Highest	Highest
Firm	$4,000,000	Preferred share with low cpn	Moderate	Moderate
National development bank	$4,000,000	Ten year loan	Low	Low
Foundation	$2,000,000	PRI (program related investment)	Lowest	Lowest
Total	$15,000,000			

3. Information gap between investors (PE, VC, AI, etc) and SME:
   - One way to match investors and entrepreneurs is for individual organizations to act as brokers, identifying and presenting potential deals to investors (internet base matching)
   - Collect aggregate level data on SME

Benefits of credit scoring

Scoring can help credit grantors providing the following benefits to impact their business

- Speed -- cut response time from days to minutes so that credit grantors can respond quickly to their customers
- Efficiency -- manage growth, manage staffing levels and automate their decision policy
- Minimize risk -- maintain high approval levels, reduce bad debt and better manage credit portfolios
- Consistency -- reduce training time, achieve consistent policy and provide consistent explanations
- Maximize sales -- identify those customers who have financial strength to handle increased credit limits

Using the appropriate scoring technique is key for success.

[redacted]

Credit Bureau provide required data quality and reliability

Consumers	SMEs	Lenders	Regulators
Faster and easier access to credit	Faster and easier access to credit	Enables scoring	Provides effective credit risk monitoring mechanism
Reduced cost of borrowing for applicants with good credit performance	Reduce SME high risk perception among lenders	Increaed market penetration	Facilitates credit expansion without increasing risk (*with Basel II, capital requirements for firms in Turkey would increase 8%*)
Increase transparency	Greater development	Operating efficiency	Reduces NPLs and default probability levels in economy
	Reduced cost of borrowing for applicants with good credit performance	Shift to information based banking	
	Increase transparency	Comprehensive risk review of clients	

Now I will show you two example for scoring different instruments, it is not just running a simple scoring (logistic regression):

Example 1: Turkish banking crises

- Banking data provided by Exim bank from 1994 to 2001 is used
- Only the bank financials with a statistical scoring model is used
- Statistical model performs very well 1 year prior to default for the dataset provided. *It only couldn't predict Ulusal Bank out of 18 defaulted banks.* Later, I learn that they did shadow banking.
- The model can be improved further
  - By adding the soft (qualitative) factors. You need to know your bank bank/client information.
  - By adding more data into estimation including market data.

Miles Stones: U.S. mortgage market

1933: The Glass-Steagall ve FDIC.

1938: Fannie Mae (GSE)

1968: Fannie Mae, private

1970: Freddie Mac (GSE) and
Securitization Act: 10% of loans

1999: Glass-Steagall repealed
Non-agency issues allowed

2000: Interest rate declined, new products
Esoteric securities (CDS, RMBS, CMBS,..)

Reprinted by permission from *The Economist*, May 19, 1990.

Example 2: Securitization and financial crises

Originators	Investors	Capital Market
• Transforming illiquid asset → liquid asset • Risk diversification → credit enhancement → reduce financing cost • Removal of asset from balance sheet	• Bond buyers, insurance companies, pension funds, state funds, money managers • Enjoys the tailored product for their risk-return relationship for the same asset	• Provides liquidity • Deepens secondary debt market • Provides market efficiency • Provides policy and monetary management

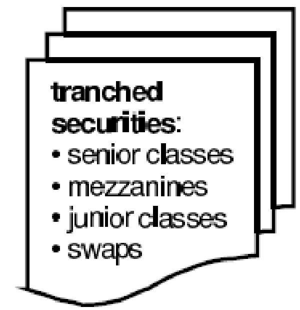
CMO (Collateralized mortgage obligation) is a type of mortgage-backed security where a pool of mortgages is used as collateral for several different classes of securities. (RMBS, CMBS)

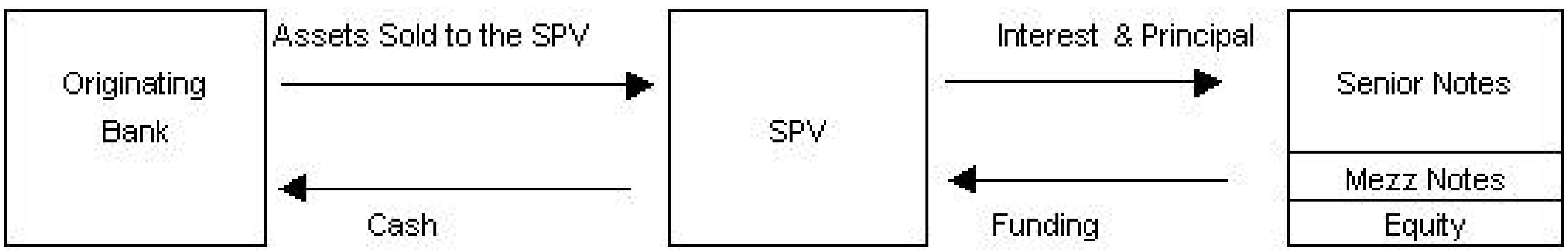
CDO (Collateralized Debt Obligations) is an asset backed security whose underlying collateral is typically a portfolio of bonds (corporate or sovereign) or bank loans. CDO are used as a way for banks to pass on the credit risk in their loans to secondary markets.

Securitization

CMO, CDO Structure: over 80% of securitized loans are mortgages

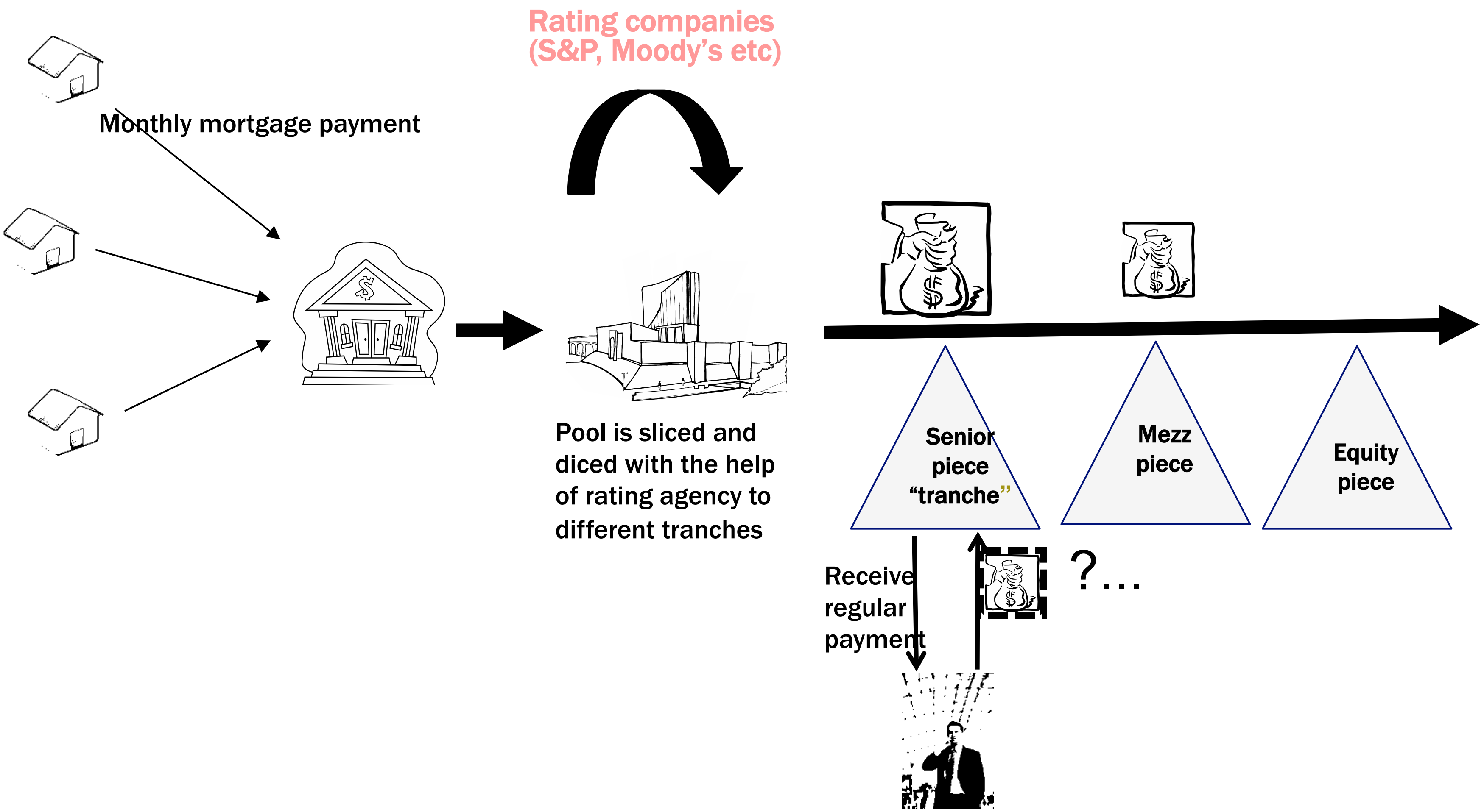
Assets are transferred from originating Bank to **SPV** (Special Purpose Vehicle). SPV funds these assets from cash proceeds of the notes it has issued. SPV issues CDO and hold the underlying asset. CDO structure allocates interest income and principal repayment from a pool of different debt instruments to a prioritized collection of security notes called Tranches.



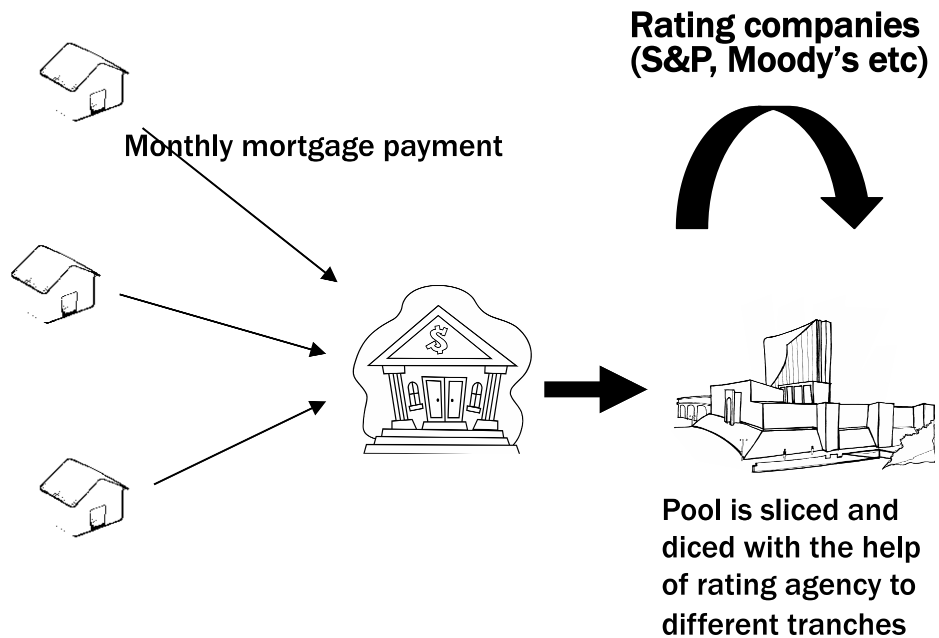


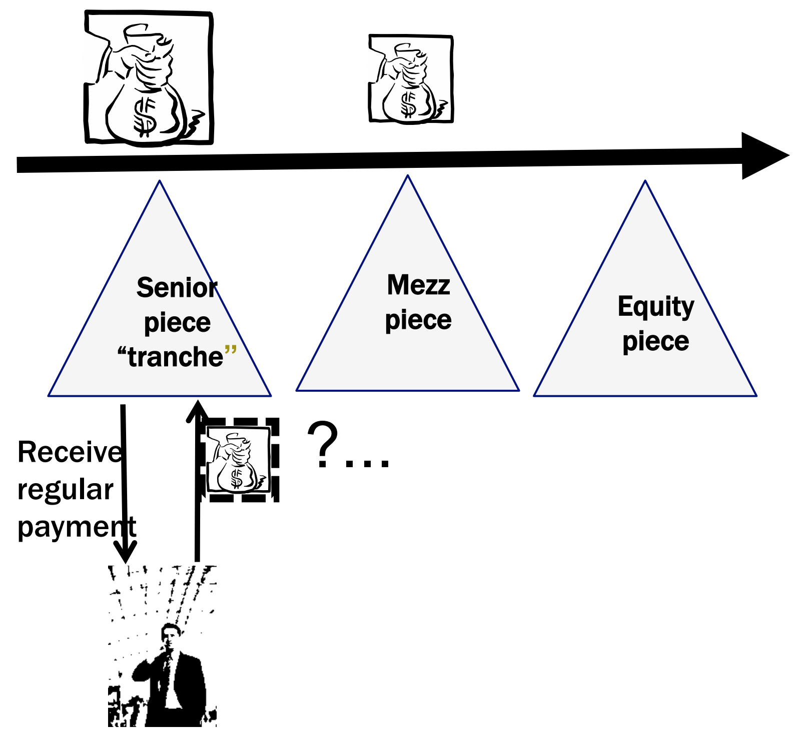
- In order to develop strong securitization and secondary market, significant market debt is needed.
- In US, Government and GSEs have acted as regulators, issuers and purchasers such securities with profound effect on capital and secondary markets.

Securitization: What went wrong? Could it be prevented?



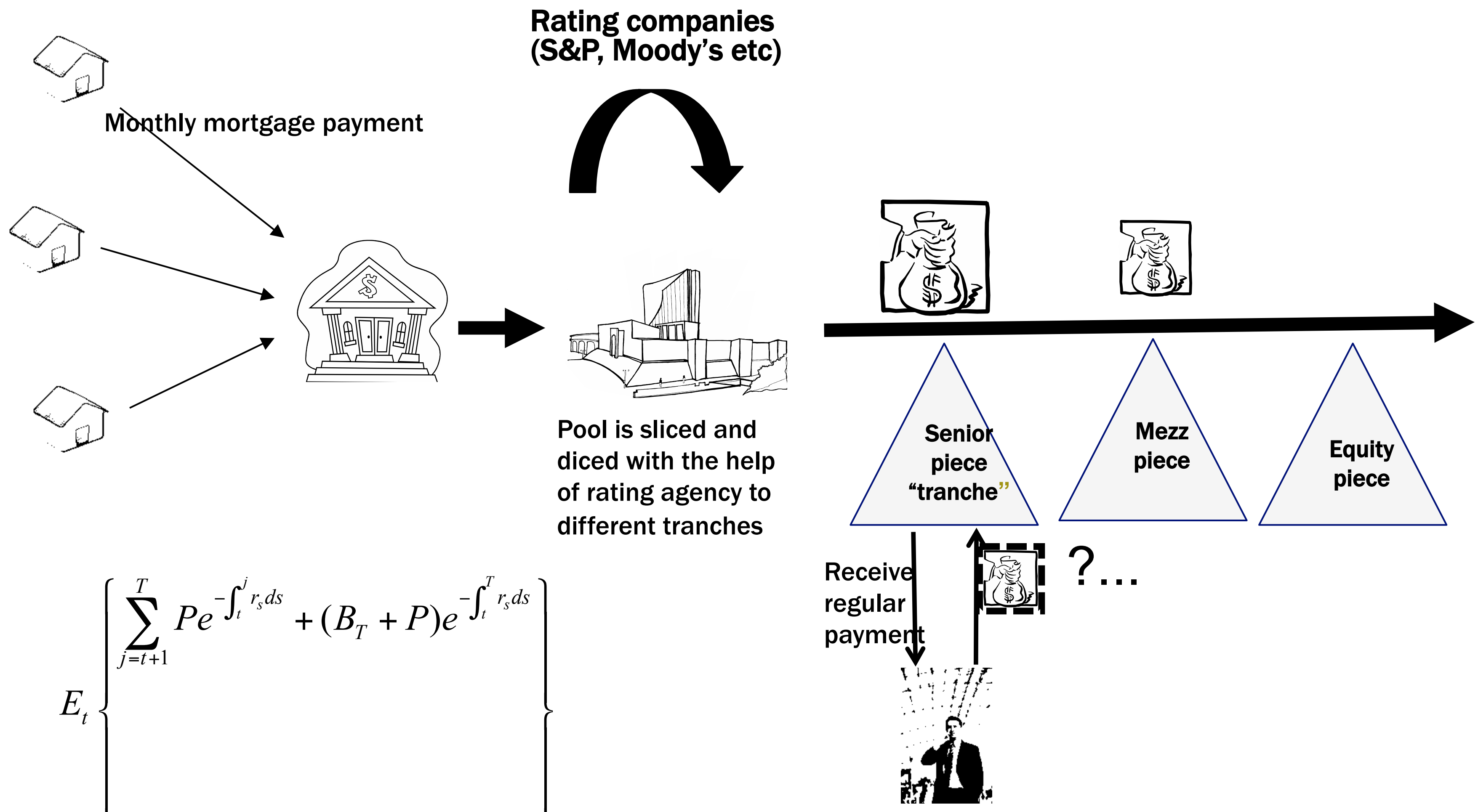
Securitization: What went wrong? Could it be prevented?





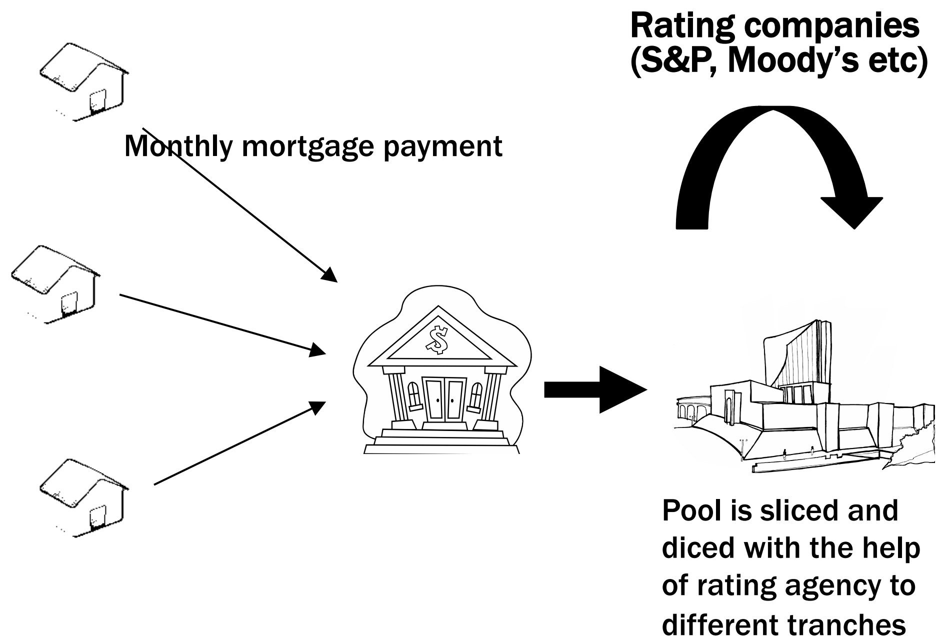
$$Bond\ \ Value_t = \sum_{j=t+1}^{T} \frac{P}{(1+r)^j} + \frac{\left(B_T + P\right)}{(1+r)^T}$$

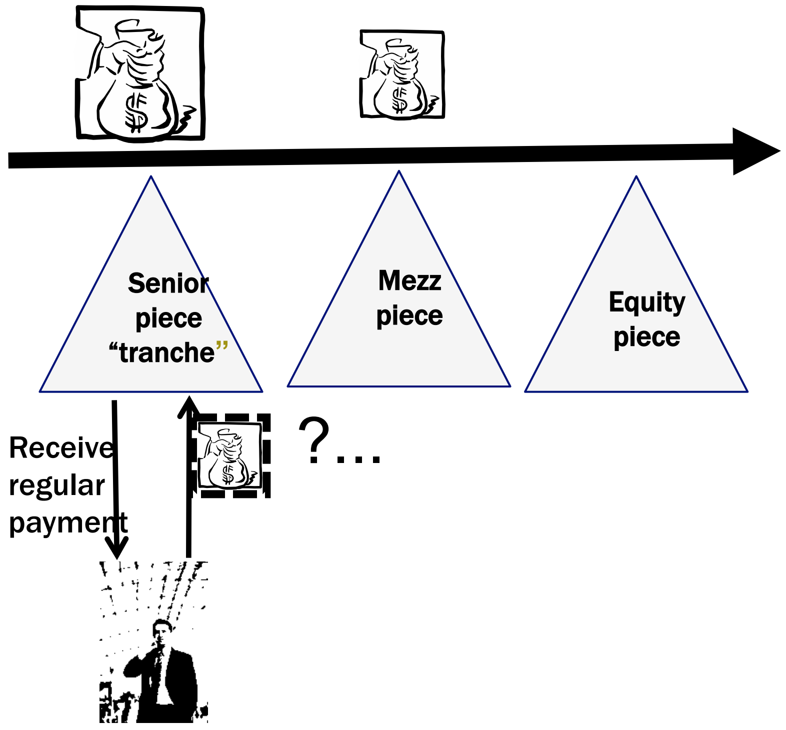
Securitization: What went wrong? Could it be prevented?



$$E_t\left\{\sum_{j=t+1}^{T} P e^{-\int_t^j r_s ds} + (B_T + P) e^{-\int_t^T r_s ds}\right\}$$

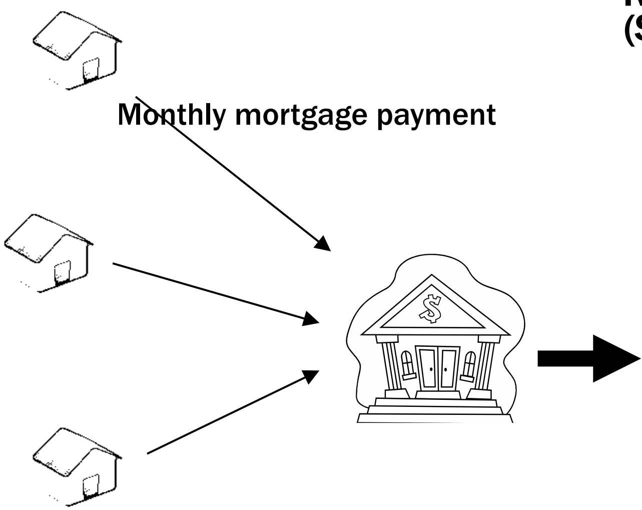
Securitization: What went wrong? Could it be prevented?



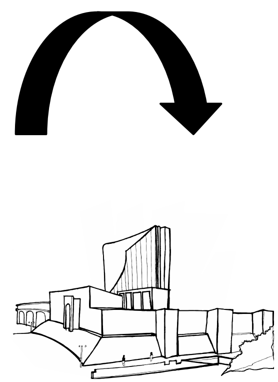


$$E_t \left\{ \begin{array}{l} \displaystyle\sum_{j=t+1}^{T} P 1_{\{j<\tau_d\}} 1_{\{j<\tau_p\}} e^{-\int_t^j r_s ds} + (B_T + P) 1_{\{T<\tau_d\}} 1_{\{T<\tau_p\}} e^{-\int_t^T r_s ds} \\ + \\ + \\ \end{array} \right\}$$

Securitization: What went wrong? Could it be prevented?



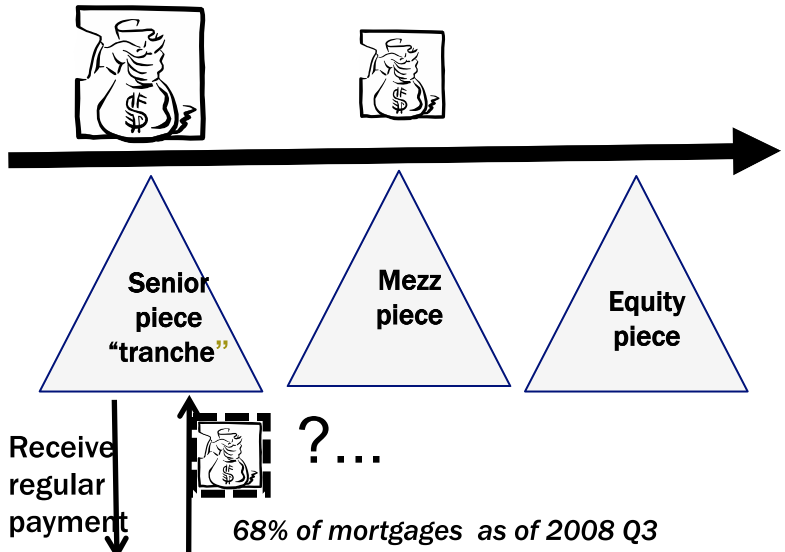
Rating companies (S&P, Moody's etc)



Pool is sliced and diced with the help of rating agency to different tranches

•In 2009, IMF reports **4.1 trillion dollars** loss

http://current.com/items/89993634_imf-estimates-4-1-trillion-loss-during-financial-crisis.htm



68% of mortgages as of 2008 Q3

Rough estimation (based on CJY'05 model):

*$12Tr*68%=$8.16Trill*

%33 of this = $2.8Trill loss

If included CDO, CMBS, and others=$3-$4Tri

%33 of this = $1.2 Trill loss

*Total : **$4 Trillion losses***

$$E_t\left\{\begin{array}{l}\displaystyle\sum_{j=t+1}^{T} P 1_{\{j<\tau_d\}} 1_{\{j<\tau_p\}} e^{-\int_t^j r_s ds} + (B_T + P) 1_{\{T<\tau_d\}} 1_{\{T<\tau_p\}} e^{-\int_t^T r_s ds} \\ +\delta_{\tau_d}(B_{\tau_d} + P) 1_{\{\tau_d<T\}} 1_{\{\tau_d<\tau_p\}} e^{-\int_t^{\tau_d} r_d ds} \\ +B_{\tau_p}(1+Y_{\tau_p}) 1_{\{T_L<t\}} 1_{\{\tau_p<T\}} 1_{\{\tau_p<\tau_d\}} e^{-\int_t^{\tau_d} r_d ds} \end{array}\right\}$$

Comments

- Uncertainty about the true quality of securitized assets exacerbated the impact of asymmetric information, causing the market failure.

- We have to re-establish the securitization market for an healthy economy. However, credit crises has eroded the market confidence.

- This may give a window of opportunity to increase the new issues of Islamic asset backed securities for all investors around the world seeking Islamic investment as a means of diversification.

- SME loans can used for this purpose.