Reflections on
Data Science for Finance (DSfin)

Louiqa Raschid

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DSfin Challenges

- DSfin supply chains and technical challenges:
  - Lack of ontologies and standards including identifiers!
  - Absence of OPEN datasets.
  - Time-series longitudinal datasets versus graphs or semi-structured datasets.

- Unique to the DSfin domain:
  - Structural: Financial markets operate in silos.
  - Cultural: Awash in $$$; information asymmetry; lack of benchmarks; etc.

(Toxic) Financial Entities
and Impact on resMBS Securities

Louiqa Raschid

Zheng Xu and and Elena Zotkina

Outline

- Motivation
- Supply chain for residential mortgage backed securities.
- Latent "Financial Community" model using LDA based probabilistic model.
- Examples of "toxic" financial entities / communities / securities.
- Impact of upstream toxicity along the supply chain on downstream securities: ratings and performance.
- Ongoing work …

Mortgages

Mortgage
Pool

Mortgage Backed Security
a.k.a. "Collateralized Debt Obligation"
(divided into "tranches"
and sold at dif. levels of risk)

Risk

Unsecured	→	12%
Mezzanine	→	9%
Sr. Secured	→	7%

Expected
Return

a.k.a. "Derivatives"
(broken up into groups and 'derived'
from the original pool)

Mortgages

upstream

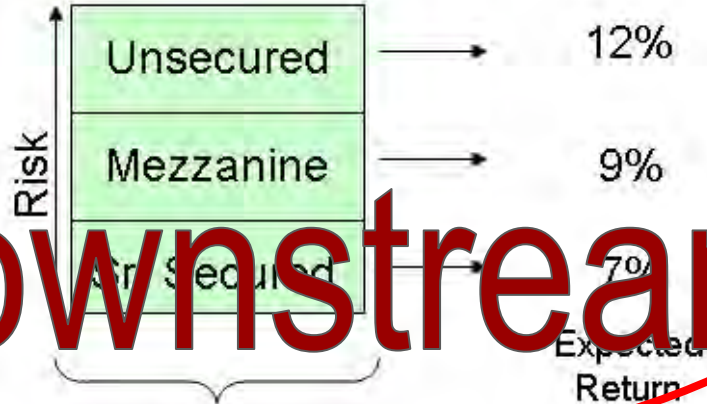Mortgage Pool

Mortgage Backed Security
a.k.a. "Collateralized Debt Obligation"
(divided into "tranches"
and sold at dif. levels of risk)

Risk

Unsecured	→	12%
Mezzanine	→	9%
Secured	→	7%

Expected Return

downstream

a.k.a. "Derivatives"
(broken up into groups and 'derived'
from the original pool)

Constructing the upstream resMBS supply chain

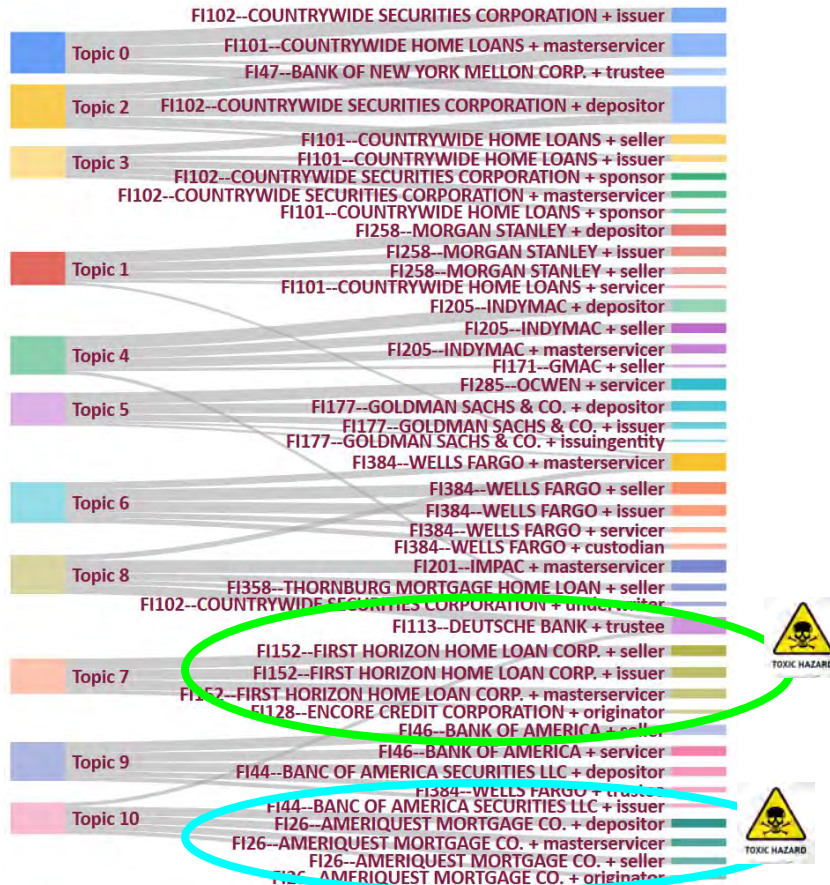Title of Series....................................Wachovia Mortgage Loan Trust, LLC Mortgage Pass-Through
                                                  Certificates, Series 2007-A.

Depositor..Wachovia Mortgage Loan Trust, LLC.

Issuing entity.....................................Wachovia Mortgage Loan Trust, LLC Series 2007-A Trust.

Seller and Sponsor.................................Wachovia Bank, National Association.

Originators..National City Mortgage, Fifth Third Mortgage Company, SunTrust
                                                  Mortgage, Inc. and Wells Fargo Bank, N.A.

Servicers..National City Mortgage Co., or National City, Fifth Third Mortgage
                                                  Company, SunTrust Mortgage, Inc. and Wells Fargo Bank, N.A.

Trustee..HSBC Bank USA, National Association.

Master Servicer and
Certificate Administrator..........................U.S. Bank National Association.

Berkeley Haas

IBM

Role+Financial Entity Communities

Securities (2004) from a "non-toxic" community

| | 95) Options | | | | | View All Classes |

MSM 2004-5 MORGAN STANLEY MORTGAGE LOAN TRUST   21 Classes

Template   DSMM2017

	SSA	CF Class	Orig(000)	Curr(000)	MDY (Orig)	MDY	S&P (Orig)	S&P
1)	Y	1A	77,785	1,312	Aaa	Baa2	AAA	AA+
2)	Y	1AX	3,501	50	Aaa	Ba3	AAA	AA+
3)	Y	1AP	1,478	30	Aaa	Baa2	AAA	AA-
4)	Y	2A1	26,000	369	Aaa	Baa3	AAA	AA
5)	Y	2A2	121,556	2,565	Aaa	Baa1	AAA	AA
6)	Y	2A3	273	241	Aaa	Ba3	AAA	AA
7)	Y	2A4	13,215	13,215	Aaa	Ba3	AAA	AA
8)	Y	2A5	2,300	681	Aaa	Ba2	AAA	AA
9)	Y	2A6	1,250	370	Aa1	Ba3	AAA	AA
10)	Y	2A7	27,000	951	Aaa	Baa1	AAA	AA+
11)	Y	3A	149,099	11,203	Aaa	Baa2	AAA	AA-
12)	Y	4A	300,272	34,605	Aaa	Ba1	AAA	AA+
13)	Y	CAX	9,602	818	Aaa	Ba3	AAA	AA+
14)	Y	CAP	2,186	320	Aaa	Ba3	AAA	AA-
15)	Y	B1	12,121	3,675	Aa2	Caa2	AA	B+
16)	Y	B2	7,575	2,337	A2	C	A	CCC
17)	Y	B3	4,924	1,075	Baa2	C	BBB	NR
18)		AR	0	0	Aaa	WR	AAA	NR
19)		B4	4,167	0			BB	NR
20)		B5	2,651	0			B	NR
21)		B6	1,894	0				

Securities issued in 2004 associated with a "toxic" financial community "FIRST HORIZON" ...

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