

Extraction Report: 03_financial_portfolio

Property	Value
Domain	Financial
Format	.xlsx
Text length	3,495 chars
Sentences	10

Entities

Spacy NER: 97 entities (193ms)

Entity	Label	Score
Risk Management Division	ORG	
1	CARDINAL	
42,350	CARDINAL	
8.2 billion USD	MONEY	
30-year	DATE	
FHA	ORG	
55%	PERCENT	
15-year	DATE	
25%	PERCENT	
5/1	CARDINAL	
20%	PERCENT	
2	CARDINAL	
BORROWER	ORG	
640	CARDINAL	
580	CARDINAL	
10%	PERCENT	
680	CARDINAL	
43%	PERCENT	
the most recent 24 months	DATE	
DTI	ORG	
3	CARDINAL	
97%	PERCENT	
80%	PERCENT	
250,000 USD		
- Property	QUANTITY	
Second	ORDINAL	
4	CARDINAL	

Gliner NER: 48 entities (178ms)

Entity	Label	Score
8.2 billion USD	database_column	0.32
fixed-rate FHA mortgages	requirement	0.57
conventional		
mortgages	requirement	0.43
5/1 ARM	constraint	0.72
BORROWER ELIGIBILITY CRITERIA	constraint	0.89
FICO score	requirement	0.76
FHA products	requirement	0.74

Entity	Label	Score
580 with 10% down payment	requirement	0.53
conventional products	requirement	0.67
Debt-to-income ratio	metric	0.79
qualified mortgages	requirement	0.68
Employment verification	requirement	0.84
DTI calculation		
3	requirement	0.69
Loan-to-value ratio	constraint	0.71
80% for conventional	constraint	0.38
Independent appraisal	constraint	0.69
primary residence	constraint	0.50
Second lien positions	constraint	0.62
not permitted	constraint	0.43
MIP	requirement	0.43
PMI	requirement	0.46
mortgage insurance premium	requirement	0.43
ANALYSIS	action	0.30
delinquency rates	metric	0.62
FHA	constraint	0.39
ARM	requirement	0.37
automated payment	action	0.46
collections team	role	0.97
loss mitigation review	action	0.62

Stanza NER: 89 entities (1180ms)

Entity	Label	Score
Q4 2025	DATE	
42,350	CARDINAL	
8.2 billion USD	MONEY	
30-year	DATE	
55%	PERCENT	
15-year	DATE	
25%	PERCENT	
5/1	CARDINAL	
20%	PERCENT	
2.	CARDINAL	
640	CARDINAL	
FHA	ORG	
580	CARDINAL	
10%	PERCENT	
680	CARDINAL	
43%	PERCENT	
the most recent 24 months	DATE	
3	CARDINAL	
97%	PERCENT	
80%	PERCENT	
250,000 USD	MONEY	
Second	ORDINAL	
4	CARDINAL	
6.25%	PERCENT	
0.55%	PERCENT	
annually	DATE	

Entity	Label	Score
5.75%	PERCENT	

Flair NER: 12 entities (86ms)

Entity	Label	Score
Risk Management Division	ORG	1.00
USD	MISC	1.00
FHA	ORG	0.75
FICO	MISC	1.00
FHA	MISC	0.65
DTI	MISC	0.94
Basel III	MISC	1.00
Dodd-Frank	MISC	1.00

Relations (SRL)

31 SRL frames (83ms)

Verb	Agent	Patient	Other
contain	portfolio	42,350 active loans	AI
compose	portfolio		AI
meet	All borrowers	following minimum requirements :	
ARGM-MOD=must			
exceed	- FICO score of 640 or above for FHA pro	43 % for qualified mortgages	
- Employment	ARGM-MOD=must, ARGM-NEG=not		
require			AI
-			
permit	borrowers		
combine	their income		AI
3			
cap			AI
require			AI
exceed		250,000 USD	
- Property			
be	COLLATERAL REQUIREMENTS		
- Loan - to -	borrower 's primary residence	ARGM-MOD=must, ARGM-ADV=to qualify as co	
qualify			AI
- Second lien p			
permit	collateral		
- Second lien positions		ARGM-NEG=not, ARGM-LOC=on conventional p	
require			AI
- 5/1 ARM : Initia			
include	lifetime cap of 5 %		
- APR calculation	origination fee , points , and mortgage		
send	DELINQUENCY ANALYSIS		
Current delinquen	60 - day delinquent : assigned to collec		
assign			AI
initiate	loss mitigation review	90 - day delinquent	
classify			AI
begin	foreclosure evaluation	120 - day delinquent	AI
6			
provide	All APR disclosures		AI

Verb	Agent	Patient	Other
fall	Closing cost estimates		AI
maintain - Dodd - F	Minimum capital adequacy ratio of 8 %	Closing cost estimates must fall within	AI
require 7			AI
cap - Late fee			AI

Enriched Extraction (batch-enrich)

Single GPU call: 48 entities, 10 roles, 31 SRL frames (394ms)

Latency Comparison

Method	Latency
Separate (GLiNER 178ms + GLiClass 151ms + SRL 83ms)	412ms
batch-enrich (unified)	394ms
Speedup	1.0x

Per-Sentence Enriched Results (sample)

Sentence	Entities	Role	SRL Frames
--- Sheet: Narrative ---			
LOAN PORTFOLIO RISK ANALYSIS — Q4 2	0	Confidence (0.17)	0
The portfolio contains 42,350 active loans with a total outs	1	Entity (0.45)	1
The portfolio is composed of: 30-year fixed-rate FHA mortgag	3	Type (0.34)	1
2. BORROWER ELIGIBILITY CRITERIA	1	Requirement (0.48)	0
All borrowers must meet the following minimum requirements:			
9	Requirement (0.52)	5	
COLLATERAL REQUIREMENTS			
- Loan-to-value ratio capped at 97%	9	Requirement (0.44)	8
DELINQUENCY ANALYSIS			

Current delinquency rates by product:

- | 11 | Penalty (0.48) | 5 | | REGULATORY COMPLIANCE
- TILA: All APR disclosures must be pr | 4 | Requirement (0.32) | 1 | | Closing cost estimates must fall within 10% tolerance for th | 6 | Type (0.27) | 9 | | After 15-day grace period Modification fee | Waived | Active | 4 | State (0.17) | 1 |

Entity Type Distribution (enriched)

Label	Count
requirement	19
constraint	13
action	10
metric	2
role	2
database_column	1
temporal_concept	1

Role Distribution (enriched)

Role	Count
Requirement (Causal)	4
Type (Programming)	2
Confidence (Scientific)	1
Entity (Core)	1
Penalty (Normative)	1
State (State)	1

QLang Sentences

Gliclass: 10 classifications (151ms)

Causal (4)

- [Requirement] (0.48) 2. BORROWER ELIGIBILITY CRITERIA...
- [Requirement] (0.52) All borrowers must meet the following minimum requirements:
- FICO score of 640 ...
- [Requirement] (0.44) COLLATERAL REQUIREMENTS
- Loan-to-value ratio capped at 97% for FHA and 80% for ...
- [Requirement] (0.32) REGULATORY COMPLIANCE
- TILA: All APR disclosures must be provided within 3 busi...

Core (1)

- [Entity] (0.45) The portfolio contains 42,350 active loans with a total outstanding balance of 8...

Normative (1)

- [Penalty] (0.48) DELINQUENCY ANALYSIS Current delinquency rates by product:
- FHA 30-year: 3.47% ...

Programming (2)

- [Type] (0.34) The portfolio is composed of: 30-year fixed-rate FHA mortgages (55%), 15-year co...
- [Type] (0.27) Closing cost estimates must fall within 10% tolerance for third-party fees
- Bas...

Scientific (1)

- [Confidence] (0.17) --- Sheet: Narrative --- LOAN PORTFOLIO RISK ANALYSIS — Q4 2025 Review Prepared ...

State (1)

- [State] (0.17) After 15-day grace period Modification fee | Waived | Active hardship programs...

Qualtron: 2 classifications (10611ms)

Causal (1)

- [Requirement] (0.95) COLLATERAL REQUIREMENTS...

Other (1)

- [Title] (0.95) LOAN PORTFOLIO RISK ANALYSIS — Q4 2025 Review...

QHG Process Models

FSM (2216ms)

Could not parse structured output

None

BPMN (4663ms)

Could not parse structured output

None

DFG (5939ms)

10 nodes, 9 edges

- [source] Portfolio Overview
- [operation] Borrower Eligibility
- [operation] Collateral Requirements
- [operation] Interest Rate Structure
- [operation] Delinquency Analysis
- [operation] Regulatory Compliance
- [operation] Fee Structure
- [store] Delinquency Escalation Protocol
- [store] Compliance Metrics
- [store] Fee Calculations

KnowledgeState (11859ms)

Could not parse structured output

None

CNL / QNR2 Rules

7 rule patterns detected

Obligation (5)

- must meet the following minimum requirements:
- must not exceed 43% for qualified mortgages
- must be the borrower's primary residence to qualify as collateral
- must be provided within 3 business days of application
- must fall within 10% tolerance for third-party fees

Permission (1)

- are permitted and their income is combined for DTI calculation

Prohibition (1)

- must not exceed 43% for qualified mortgages

Heuristic Facts & Rules

15 facts, 11 rules

Facts (sample)

- The portfolio is composed of: 30-year fixed-rate FHA mortgages (55%), 15-year conventional...
mortgages (25%), and 5/1 ARM products (20%)....
- – FICO score of 640 or above for FHA products (580 with 10% down payment)...
- – Loan-to-value ratio capped at 97% for FHA and 80% for conventional...
- – FHA 30-year fixed: Base rate (currently 6.25%) + MIP (0.55% annually)...

- – 5/1 ARM: Initial rate (5.50%) with annual adjustment cap of 2% and lifetime cap of 5%...
- – FHA 30-year: 3.47% (30+ days past due)...
- – Conventional 15-year: 1.12%...

Rules (sample)

- [obligation] All borrowers must meet the following minimum requirements:...
- [obligation, quantified] - Debt-to-income ratio must not exceed 43% for qualified mortgages...
- [obligation, quantified] - Employment verification required for the most recent 24 months...
- [obligation] - Independent appraisal required for all loans exceeding 250,000 USD...
- [obligation] - Property must be the borrower's primary residence to qualify as collateral...
- [obligation, quantified] - Conventional 15-year: Base rate (currently 5.75%), no PMI required above 80% LTV...
- [conditional] - 120-day delinquent: charge-off per servicer policy unless active forbearance...
- [obligation] - TILA: All APR disclosures must be provided within 3 business days of application...

Topics (Gensim LDA)

- **Topic 0:** {'word': 'products', 'weight': 0.0308}, {'word': 'borrowers', 'weight': 0.0308}, {'word': 'fico', 'weight': 0.0308}, {'word': 'income', 'weight': 0.0308}, {'word': 'score', 'weight': 0.0308}, {'word': 'ratio', 'weight': 0.0168}, {'word': 'conventional', 'weight': 0.0168}, {'word': 'fha', 'weight': 0.0168}
- **Topic 1:** {'word': 'portfolio', 'weight': 0.0557}, {'word': 'risk', 'weight': 0.0383}, {'word': 'sheet', 'weight': 0.0209}, {'word': 'active', 'weight': 0.0209}, {'word': 'balance', 'weight': 0.0209}, {'word': 'review', 'weight': 0.0209}, {'word': 'loan', 'weight': 0.0209}, {'word': 'outstanding', 'weight': 0.0209}
- **Topic 2:** {'word': 'fee', 'weight': 0.0538}, {'word': 'active', 'weight': 0.021}, {'word': 'balance', 'weight': 0.021}, {'word': 'sheet', 'weight': 0.021}, {'word': 'max', 'weight': 0.021}, {'word': 'payment', 'weight': 0.021}, {'word': 'amount', 'weight': 0.021}, {'word': 'mortgages', 'weight': 0.0144}
- **Topic 3:** {'word': 'conventional', 'weight': 0.0285}, {'word': 'year', 'weight': 0.0285}, {'word': 'rate', 'weight': 0.0285}, {'word': 'delinquent', 'weight': 0.0285}, {'word': 'day', 'weight': 0.0285}, {'word': 'fha', 'weight': 0.0217}, {'word': 'delinquency', 'weight': 0.0217}, {'word': 'collateral', 'weight': 0.0149}
- **Topic 4:** {'word': 'year', 'weight': 0.0261}, {'word': 'mortgages', 'weight': 0.0261}, {'word': 'within', 'weight': 0.0261}, {'word': 'portfolio', 'weight': 0.026}, {'word': 'fixed', 'weight': 0.0142}, {'word': 'composed', 'weight': 0.0142}, {'word': 'arm', 'weight': 0.0142}, {'word': 'mortgage', 'weight': 0.0142}

Summary (Sumy LexRank)

The portfolio contains 42,350 active loans with a total outstanding balance of 8.2 billion USD. The portfolio is composed of: 30-year fixed-rate FHA mortgages (55%), 15-year conventional mortgages (25%), and 5/1 ARM products (20%). All borrowers must meet the following minimum requirements: - FICO score of 640 or above for FHA products (580 with 10% down payment) - FICO score of 680 or above for conventional products - Debt-to-income ratio must not exceed 43% for qualified mortgages - Employment