



The Restructuring and Refinancing of Technical Debt

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Software maintenance has tangible financial consequences and impact on projects

The rapidly growing issue demands a financially-oriented evaluation framework

Rationale

- Existing technical debt metaphor facilitates tracing analogies between the financial and software spaces
- Extending the metaphor to include fixed income securities provides more tools for managers to evaluate issue through existing financial debt management solutions

Factors



Technical debt is a type of debt that can be restructured or refinanced

Decision is contingent upon the debtor's liquidity

Restructuring

- Low liquidity scenario (high distress), primarily seeking to provide liquidity relief to debtor at expense of counter-party
- Reduction of principal:
 - Largest loss of value
 - Reduce functionality requirements
 - High impact renegotiation
- Lower interest rates:
 - In terms of refactoring cycles
 - Equivalent to extension of deadlines
 - Low impact renegotiation

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Refinancing

- Moderate to high liquidity (low or no distress), primarily seeking to provide improvements to terms of current debt obligations to reap some benefit for debtor
- Capitalize on a better interest rate:
 - Increase resource utilization
 - Endogenous to the debtor
 - Limited by Brook's Law
- Freeing up cash flows:
 - Freeing up resources
 - Quality assurance and quality control
 - Requires debtor proactiveness

Framework is robust and requires empirical benchmarks for accurate debt management

Requires developments in the quantification of technical debt and understanding of context shifts

Limitations

1. Quantification of technical debt would enable tangible cost-benefit analysis and liquidity measurement
2. Technical debt introduced by shift in context

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Future steps

- Efficient market pricing model for interest rates
- Evaluation of exogenous debt sources as risk factors
- Determine returns on technical debt investments

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Questions

- What other risk factors are systematic to technical debt?
- How to evaluate the lifespan of technical debt?
- Who resolves conflicts between involved parties in negotiations?