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# Engineering Economics of the Illinois Central Railway & AT Math

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## Opinion

In this brief paper, we provide the calculation that shows how early American Infrastructure Ventures were financed to the optimum level [1].

Illinois Central RR

Bond Capital = \$ 5M = -PV

705 miles of track @\$20,000/mile

$1/\sqrt{2} \times 2 = 2 = 14.14M = -PMT$

Labour 3000 workers @\$1.25/day x 6 days per week x 52 weeks per year = \$1.17M/year

$-PMT = \$14.14 + \$1.17 = \$15,31M$

$i = 5.983$

$n = 9$  years

$FV = 1.835 = 1/545 = 1/t$

$t^2 - t - 1 = E$

$5448^2 - 5448 - 1 = 296 = 1 - 0.704 \approx 1/1/\sqrt{2}$

$E = 1 - t$

$1/t = 1 - t$

$1 = t - t^2$

$t^2 - t - 1 = 0$  GMP

## Conclusion

Economics follows the same laws as Physics. The GMP is ubiquitous.

## References

1. Srinivasan B (2017) Americana a 400-year history of American capitalism. Penguin press, NY, USA, p. 90.