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19-EE-328

Case-Study 9

Crowd-Funding

1) consider the "Grand father clock" ---?

a)

Total population = 200 M

Total cost = ~~10~~ 1 M

Amount to be collected per individual = $\frac{1\,M}{200\,M}$

= 0.005 Rs

b) As only 0.005 Rs to be collected from each individual. It can be collected easily within one month.

2) Consider "Disney Land" ----?

a)

Total population = 200 M

Total cost = 10,000 M

Amount to be collected per individual = $\frac{10,000\,M}{200}$

= 50 Rs

b)

As only 50 Rs to be collected from each individual. It can be collected within one month.

3) Consider now the most important project ---?

a)

Total cost = 18×10^{12}

Total population = 200×10^{6}

Amount require per individual = $\frac{18 \times 10^{12}}{200 \times 10^{6}}$

= 90k Rs

b)

Essential dreamers pay = 250/months

Realist pay = 50/month

Total E.d = 80M

Total Realist = 10M

Amount donated in one month

$= (250 \times 80M) + (50 \times 10M)$

$= 2.05 \times 10^{10}$

Amount donated or collated in one year $= 12 \times 2.05 \times 10^{10}$

$= 2.46 \times 10^{11}$

Years required $= \frac{18 \times 10^{12}}{2.46 \times 10^{11}}$

$= 73.1$ years

c)

Total debt $= 18 \times 10^{12}$

Total debt to pay in one month $= \frac{18 \times 10^{12}}{12 \times 10}$

$= 15 \times 10^{10}$

Let y is the amount donated by E.D and x is the amount donated by Realists.

ED donates 5 times more than realists

$y = 5x$

So

$15 \times 10^{10} = 5x \times 80M + x \times 10M$

$15 \times 10^{10} = x \times 410M$

$x = \frac{15 \times 10^{10}}{410M}$

$x = 365.85$

$y = 5(x) = 1830$

will

E. Di pays = 1830

Realist will pay = 365.8

d) to increment 5%, multiply by 1.05

Year	Principal Amount
2021	18×10^{12}
2022	1.89×10^{13}
2023	1.9845×10^{13}
2024	2.083725×10^{13}
2025	2.187911×10^{13}
2026	2.29×10^{13}
2027	2.419×10^{13}
2028	2.53×10^{13}
2029	2.65×10^{13}
2030	2.79×10^{13}
3031	2.93×10^{13}

e) Total amount with increment from part (d) = 2.93×10^{13}

amount to be paid per month

$$= \frac{2.93 \times 10^{13}}{12 \times 10}$$

$$= 2.44 \times 10^{11} \text{ Rs/month}$$

from 3(c)

$$\text{Rs } x = \frac{2.44 \times 10^{11}}{410M}$$

$$= 592.6$$

$$y = 5x = 5 \times 592$$

$$= 2963$$

E.D pays = 2963 Rs/month

Realists pays = 592.6 Rs/month

f)

E.D can pay = 400 Rs/month

Total amount per month = $400 \times 85M$

$$= 3.2 \times 10^{10}$$

x is the amount paid by Realists

Amount to be collected/month

$$= 2.43 \times 10^{11}$$

$$2.43 \times 10^{11} = 3.2 \times 10^{10} + (x \times 10M)$$

$$x \times 10M = \frac{2.11 \times 10^{11}}{}$$

$$x = \frac{2.11 \times 10^{11}}{10M}$$

$$x = 21100 \text{ Rs/month}$$

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Year	Principal Amount	Interest Amount	Donations	Remaining Debt
2021	1.8×10^{12}	9×10^{11}	0	1.89×10^{13}
2022	1.89×10^{13}	9.45×10^{11}	2.7×10^{12}	1.71×10^{13}
2023	1.71×10^{13}	8.5×10^{11}	2.7×10^{12}	1.5×10^{13}
2024	1.5×10^{13}	7.6×10^{11}	2.7×10^{12}	1.3×10^{13}
2025	1.3×10^{13}	6.5×10^{11}	"	1.09×10^{13}
2026	1.09×10^{13}	5.4×10^{11}	"	8.74×10^{12}
2027	8.74×10^{12}	4.3×10^{11}	"	6.47×10^{12}
2028	6.47×10^{12}	3.23×10^{11}	"	4.09×10^{12}
2029	4.09×10^{12}	2×10^{11}	"	1.59×10^{12}
2030	1.59×10^{12}	7.9×10^{10}	"	-1.05×10^{12}
2031	-1×10^{12}	-5×10^{11}	"	-3.25×10^{12}

4)

Date: ___/___/20

Day: M T W T F S

Year	Principal Amount	Interest Amount	New Debt	Donations	Remaining Debt
			0	0	1.89×10^{13}
2021	1.8×10^{12}	9×10^{11}	1.89×10^{12}	2.7×10^{12}	1.985×10^{13}
2022	1.89×10^{13}	9.45×10^{11}	1.93×10^{12}	2.7×10^{12}	1.948×10^{13}
2023	1.903×10^{13}	9.51×10^{11}	1.998×10^{12}	2.7×10^{12}	1.97×10^{13}
2024	1.948×10^{13}	9.74×10^{11}	1.97×10^{12}	2.7×10^{12}	1.985×10^{13}
2025	1.97×10^{13}	9.85×10^{11}	1.99×10^{12}	2.7×10^{12}	2.814×10^{13}
2026	1.99×10^{13}	9.9×10^{11}	2.8×10^{12}	2.7×10^{12}	2.96×10^{13}
2027	2.814×10^{13}	1.4×10^{12}	2.96×10^{12}	2.7×10^{12}	3.17×10^{13}
2028	2.96×10^{13}	1.48×10^{12}	3.17×10^{12}	2.7×10^{12}	3.37×10^{13}
2029	3.17×10^{13}	1.58×10^{12}	3.37×10^{12}	2.7×10^{12}	3.60×10^{13}
2030	3.37×10^{13}	1.68×10^{12}	3.60×10^{12}	2.7×10^{12}	3.87×10^{13}
2031	3.60×10^{13}	1.89×10^{12}			

(i)

Assuming (void funding) is the only solution, govt can open factories and hire No Dreams (poors), as the No Dreams will have income, they can also donate, because currently no dreams (poors) are not donating. Govt can limit the imports, so that the people money stays in the country, and they can donate more. More tax on the rich i.e (Realists)

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Govt can also promote tourism to increase its income. It can also work on building new industries, which can earn him profit.