Magic of Compounding

Be Responsible…..

Be Secure…..

The Magic of Compound Interest
Periodic Payments; Annuities

Once upon a time there were three friends named Mahesh, Ramesh, and Suresh. They were all 21 years old and had just completed an exciting elective in mathematics, learning how mathematics applies to the real world. Mahesh made a proposal: "Hey guys, I know we're all going to get jobs, but let's not slave our entire lives away. That financial planner that spoke to our class said he could find us an annuity plan, paying 10% interest, compounded annually. Let's start right now, putting Rs.30,000/- a year in an annuity. We'll keep it up for 30 years, and then we'll meet. We'll be 51, still young enough to travel and have fun. We'll take our money and do something fabulous with it!" Ramesh and Suresh agreed, and Mahesh drove straight to the financial planner to set up his annuity.

Meanwhile, Ramesh and Suresh got together. Ramesh said, "I'm too young to start worrying about what happens when I'm 51." Suresh agreed, "I know what you mean. Here's an idea. Why don't we enjoy our money for a few years? Mahesh's going to put away Rs.30,000/- a year for 30 years. Let's wait 10 years, until we're 31 and have bigger incomes. We'll meet then and set up our annuities. Let's see, if we put in 45,000/- a year for 20 years, we'll put in exactly the same amount as Mahesh, but we can have more fun now in our 20s."

Ten years passed. Mahesh kept socking it away. Ramesh and Suresh kept in touch. Ramesh set up his 20-year plan and looked forward to catching up with Mahesh. Suresh wrote: "Look, man, my kid's sick, my wife's pregnant again, and I can hardly keep up with my credit card payments. This just isn't a good time for me. Give me five more years, and then I'll be ready to start." Ramesh wrote back: "OK, buddy, but since you'll only have 15 years, I guess you'll need to put in Rs60,000/- a month to catch up with Mahesh and me." Suresh agreed, and they didn't tell Mahesh.

In five years, Suresh kept his word and started a 15-year annuity.

The day arrived for the three buddies to meet, now all 51 years old.

Mahesh had comfortably accumulated an amount of around 54 Lacs and was looking forward to spend the amount on a world tour. He was looking forward to meet Ramesh and Suresh. When he met them, Ramesh and Suresh explained the situation to Mahesh and told him that they were able to accumulate only 28 Lacs and 21 Lacs respectively even though each had invested a total amount of 9 Lacs.

| Interest Rate		10%		
Investment		Rs.30,000	Rs.45,000	Rs.60,000
Total Amount Invested		Rs.900,000	Rs.900,000	Rs.900,000
Year	Age	Mahesh – Compounded Earning	Ramesh – Compounded Earning	Suresh – Compounded Earning
1	21	Rs.33,000	Rs.0	Rs.0
2	22	Rs.69,300	Rs.0	Rs.0
3	23	Rs.109,230	Rs.0	Rs.0
4	24	Rs.153,153	Rs.0	Rs.0
5	25	Rs.201,468	Rs.0	Rs.0
6	26	Rs.254,615	Rs.0	Rs.0
7	27	Rs.313,077	Rs.0	Rs.0
8	28	Rs.377,384	Rs.0	Rs.0
9	29	Rs.448,123	Rs.0	Rs.0
10	30	Rs.525,935	Rs.0	Rs.0
11	31	Rs.611,529	Rs.49,500	Rs.0
12	32	Rs.705,681	Rs.103,950	Rs.0
13	33	Rs.809,250	Rs.163,845	Rs.0
14	34	Rs.923,174	Rs.229,730	Rs.0
15	35	Rs.1,048,492	Rs.302,202	Rs.0
16	36	Rs.1,186,341	Rs.381,923	Rs.66,000
17	37	Rs.1,337,975	Rs.469,615	Rs.138,600
18	38	Rs.1,504,773	Rs.566,076	Rs.218,460
19	39	Rs.1,688,250	Rs.672,184	Rs.306,306
20	40	Rs.1,890,075	Rs.788,903	Rs.402,937
21	41	Rs.2,112,082	Rs.917,293	Rs.509,230
22	42	Rs.2,356,291	Rs.1,058,522	Rs.626,153
23	43	Rs.2,624,920	Rs.1,213,874	Rs.754,769
24	44	Rs.2,920,412	Rs.1,384,762	Rs.896,245
25	45	Rs.3,245,453	Rs.1,572,738	Rs.1,051,870
26	46	Rs.3,602,998	Rs.1,779,512	Rs.1,223,057
27	47	Rs.3,996,298	Rs.2,006,963	Rs.1,411,363
28	48	Rs.4,428,928	Rs.2,257,159	Rs.1,618,499
29	49	Rs.4,904,821	Rs.2,532,375	Rs.1,846,349
30	50	Rs.5,428,303	Rs.2,835,112	Rs.2,096,984

Interest Rate		10%		
Investment		Rs.30,000	Rs.45,000	Rs.60,000
Year	Age	Mahesh - Compounded Earning	Ramesh - Compounded Earning	Suresh - Compounded Earning
31	51	Rs.6,004,133	Rs.3,168,124	Rs.2,372,682
32	52	Rs.6,637,546	Rs.3,534,436	Rs.2,675,950
33	53	Rs.7,334,301	Rs.3,937,380	Rs.3,009,545
34	54	Rs.8,100,731	Rs.4,380,618	Rs.3,376,500
35	55	Rs.8,943,804	Rs.4,868,179	Rs.3,780,150
36	56	Rs.9,871,185	Rs.5,404,497	Rs.4,224,165
37	57	Rs.10,891,303	Rs.5,994,447	Rs.4,712,581
38	58	Rs.12,013,433	Rs.6,643,392	Rs.5,249,840
39	59	Rs.13,247,777	Rs.7,357,231	Rs.5,840,824
40	**60**	**Rs.14,605,554**	**Rs.8,142,454**	**Rs.6,490,906**

Mahesh was angry. "You tried to cheat on our agreement , but you cheated yourselves. I'm going to give you another chance. I'm enjoying my job and I'm not ready to retire. And none of us is a crorepati, yet. Let's meet again in 10 more years. Keep making your payments, and let's see what happens. I'll keep putting in Rs.30,000/- a year, and you guys keep up your Rs.45,000/- and Rs.60,000/ payments. Surely by the time we're all 61, you'll catch up with me!"

When they met again at the age of 61 yrs. Mahesh had accumulated an amount of 146 Lacs whereas Ramesh and Suresh had managed to accumulate 81 Lacs and 65 Lacs respectively.

This illustrates the importance of the magic of compounding and the importance of starting early to save. The above table is illustrated in the graphs below.

Cummulative Earning of Friends

Cummulative Earning of Friends
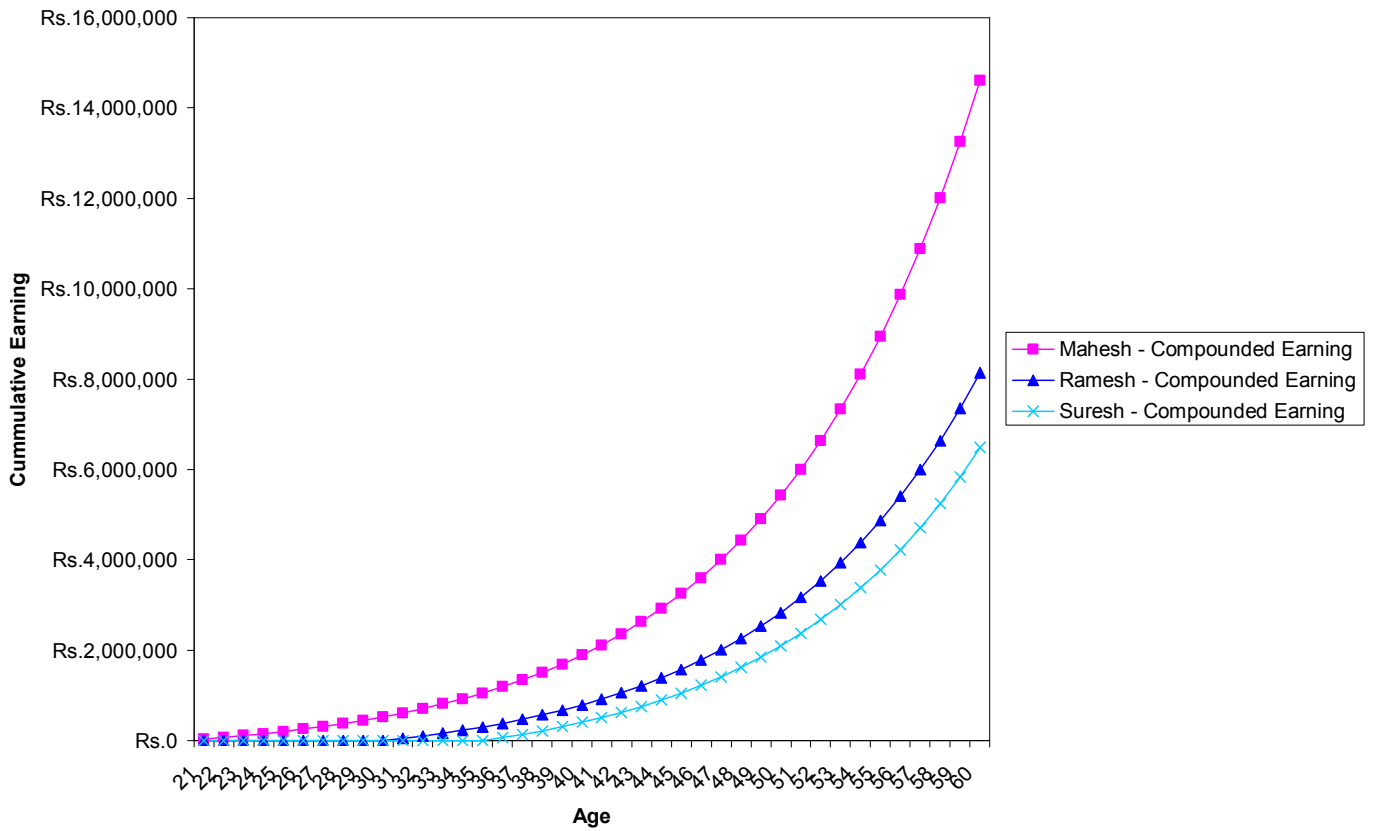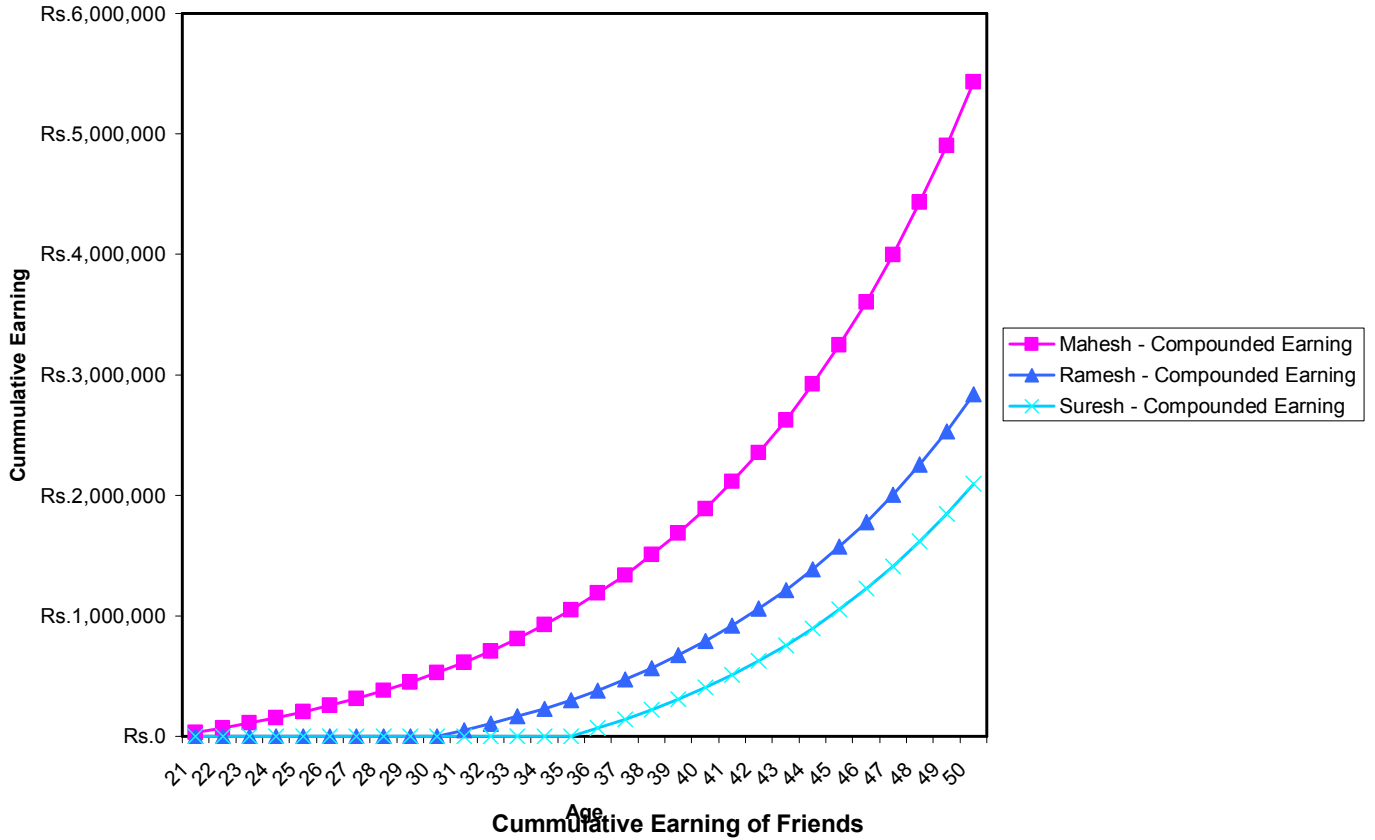
The shape of the curve shows that as the number of years in which an investor stays invested, the savings increases more rapidly due to the power of compounding. Based on calculations of future value, if Ramesh and Suresh have to catch up with Mahesh in terms of the amount accumulated after 30 years i.e at the age of 51, then Ramesh has to invest an amount of Rs.86,000/- and Suresh has to invest an amount of Rs.155,000/-.