Steve Keen's Debtwatch: Equity Financed Mortgages

Recently I was asked to comment on this new mortgage funding product, in which the bank takes an equity stake in a house purchase, as well as providing a loan. The product, marketed as an "Equity Financed Mortgage" by the developer Rismark International, is touted as being a good deal for the borrower who wishes to either:

- buy a house worth up to 25% more than she can afford with a standard loan, or
- reduce payments by up to 20% compared to a standard loan.

The product does have those effects, but there are other consequences that aren't given sufficient attention in the promotional literature. For starters, **Rismark's** website **www.efm.info** doesn't consider the interest that has to be paid when calculating the profits from selling an EFM-financed property--but you have to take out a loan with an EFM lender for as much as 75% of the purchase price (if you buy with the minimum 5% deposit, and opt for the maximum EFM ratio of 20%). Equally, it neglects to show what the bank stands to gain from an EFM--if property prices rise in monetary value.

Using **Rismark's example** of an 8% rate of growth of housing prices, an interest rate of 8%. and a sale six years after purchase, with a standard loan a borrower would make a profit of $51,000 (before transaction costs). Under an EFM, the borrower would actually make a loss of $76,000, after allowing for:

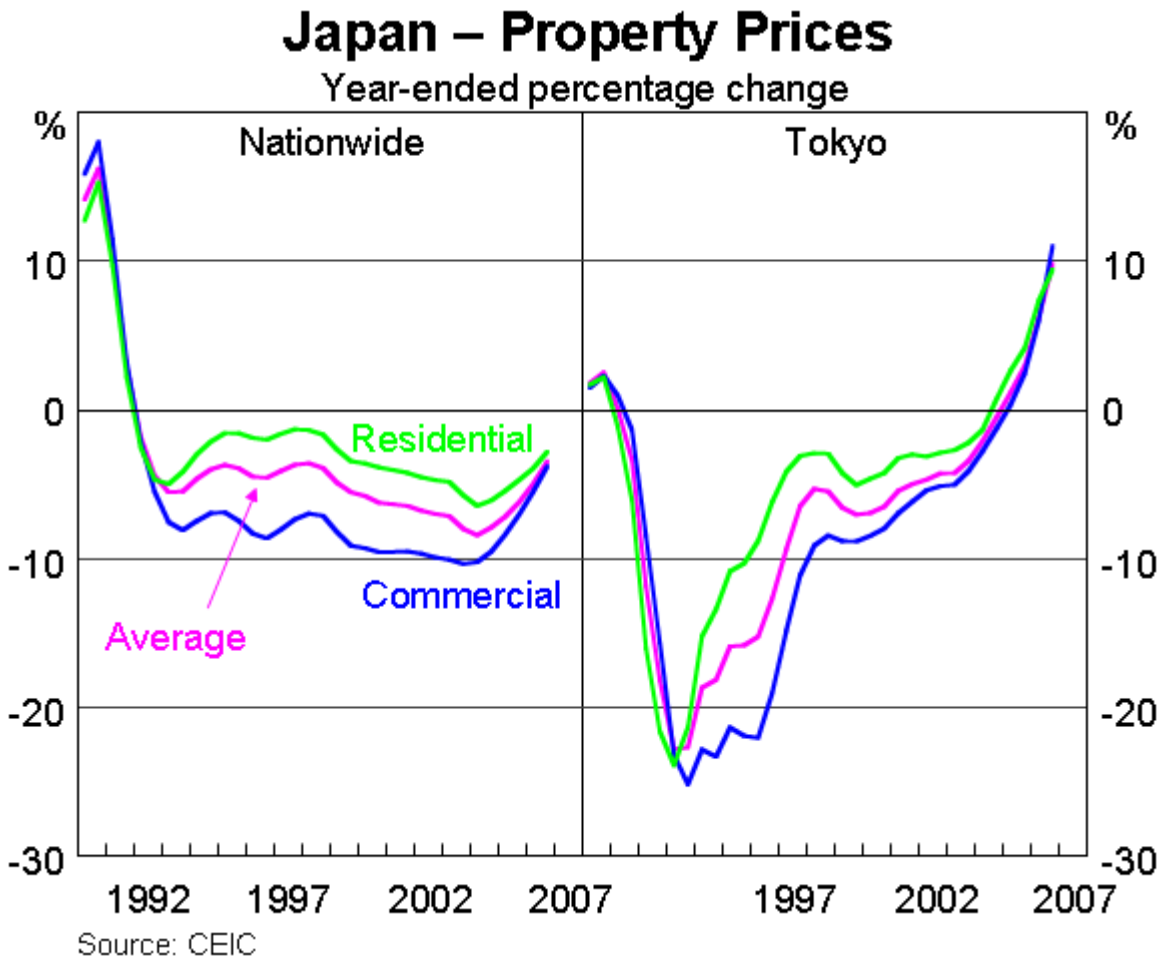
- The capital gain on the sale ($188,000 for a standard loan, $232,000 for the more expensive property bought with the Equity Financed Mortgage)
- Paying the bank interest on the $304,000 that was borrowed to provide 75% of the purchase price ($136,000 in both cases);
- Refunding the 20% of the purchase price provided by the EFM investor ($79,000); and
- Foregoing 40% of the capital gain in the event of an increase in house prices ($93,000).

The bank (or rather the sum of the bank and the shared equity investor, since the money behind EFMs will actually come from investors), on the other hand, increases its earnings by about two thirds.

This calculator lets you test out a range of scenarios (unfortunately since it's developed in the specialist maths program Mathcad, I can't make it widely available, but it shouldn't be too difficult to reproduce the formulas in a spreadsheet and test out different hypotheticals). The only scenario that is more favourable to the borrower than the lender under an EFM loan is when house prices fall in absolute value. EFMs are thus really about giving the banks a means to profit from asset price inflation. Their sole benefit to borrowers is letting them purchase a more expensive house now--which would serve to throw more fuel onto an already overcooked housing market That makes EFMs a bad idea for society, as well as for the individual.

There is a downside risk to the lender however (or rather, to the investor in an EFM, since the funds for the equity component will be raised on the money market, rather than being supplied by the bank that bundles the loan/equity package): they are gambling that Australasian house prices won't follow the Japanese post-Bubble Economy lead, when they fell by between 2 and 5 per cent per annum for 15 years (the next chart is taken from Malcolm Edey's **recent speech)**. If they do, then EFMs will turn out to be a very good deal for the home buyer--though I doubt that there would be all that many "happy campers" in a deflating economy.

I debate the merits of Equity Financed Mortgages with Dr Chris Joye, Managing Director of Rismark International, on tomorrow's Saturday Extra with Geraldine Doogue: ABC Radio National, 7.30am-9am.



Enter loan details here

Frequency of payments

- Yearly
- Monthly
- Fortnightly

Payment per period ($): 2290.38

Deposit ($): 16000

Deposit Type:
- Dollars
- 5 % of price

Percentage contributed by Equity Financed Mortgage (fill out if from Australia)
- 0
- 10
- 15
- 20

Expected Housing Price Growth Rate (% p.a.): 3 4 5 6 7 **8** 9 10 11 12 13 14 15

Interest Rate (% p.a.): 7 **8** 9 10 11 12

Term of Loan (years)
- Fifteen
- Twenty
- Twenty five
- Thirty

Years from Purchase to Sale: **6** 7 8 9 10 11 12 13 14 15

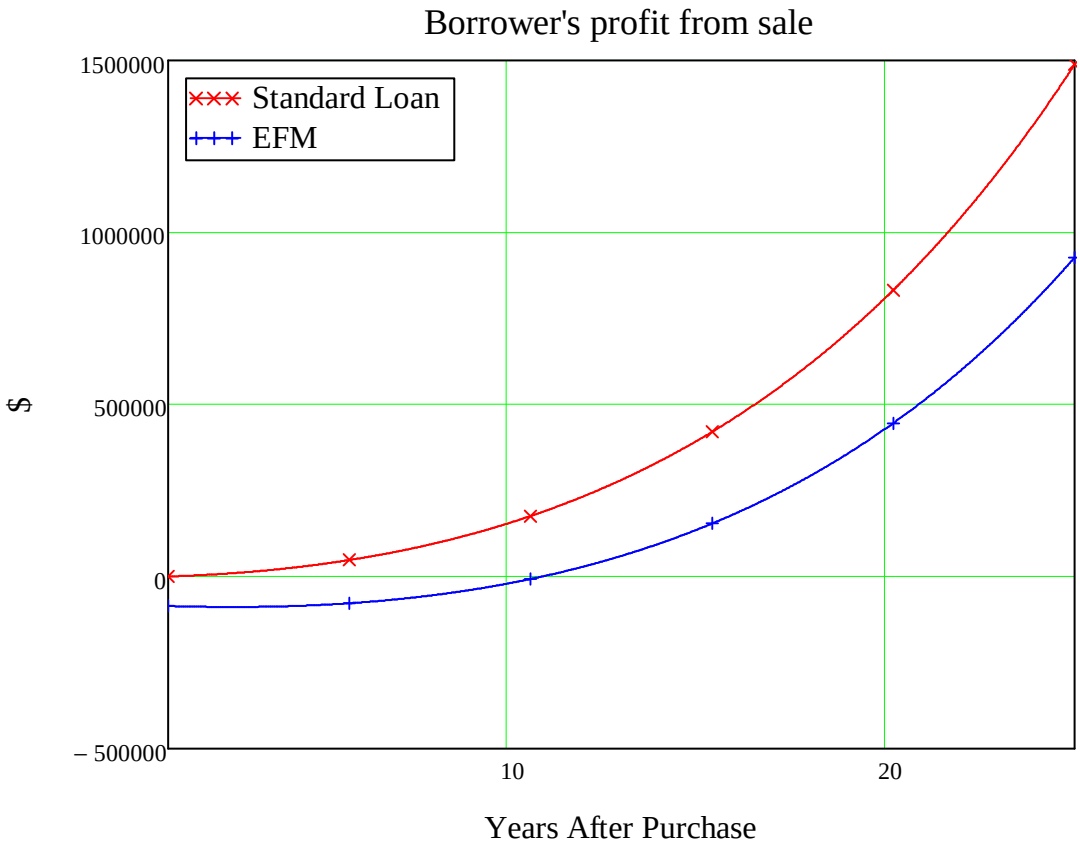
Country
- Australia
- New Zealand

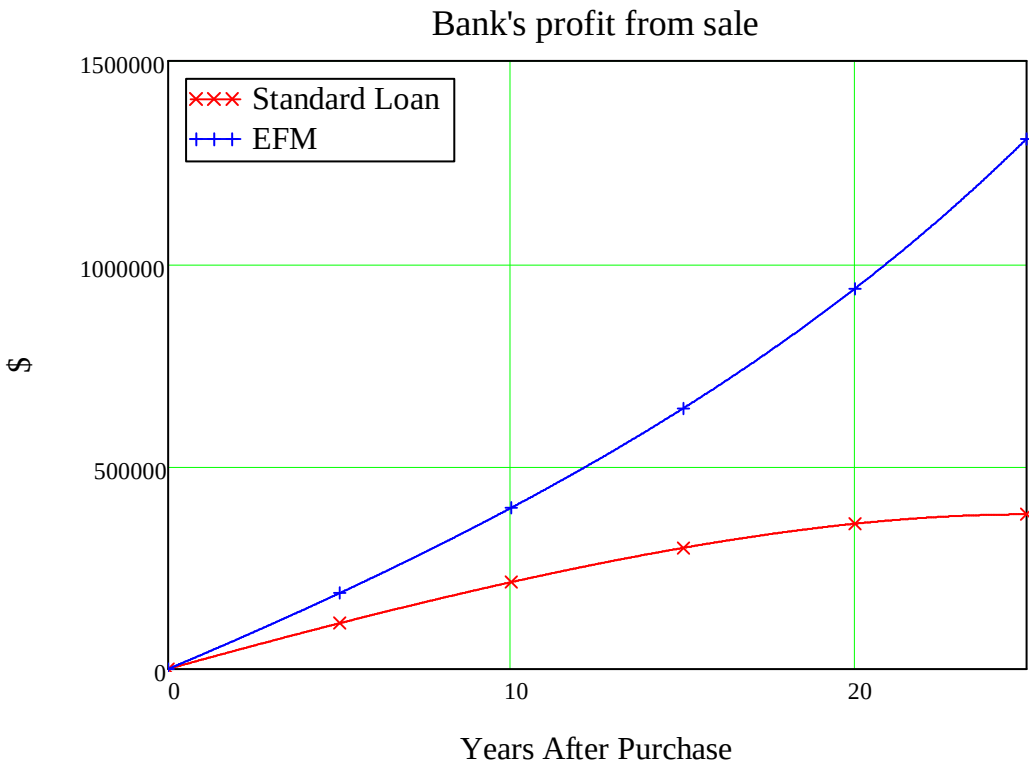
This table shows the outcomes given the assumptions above, including the date of sale.

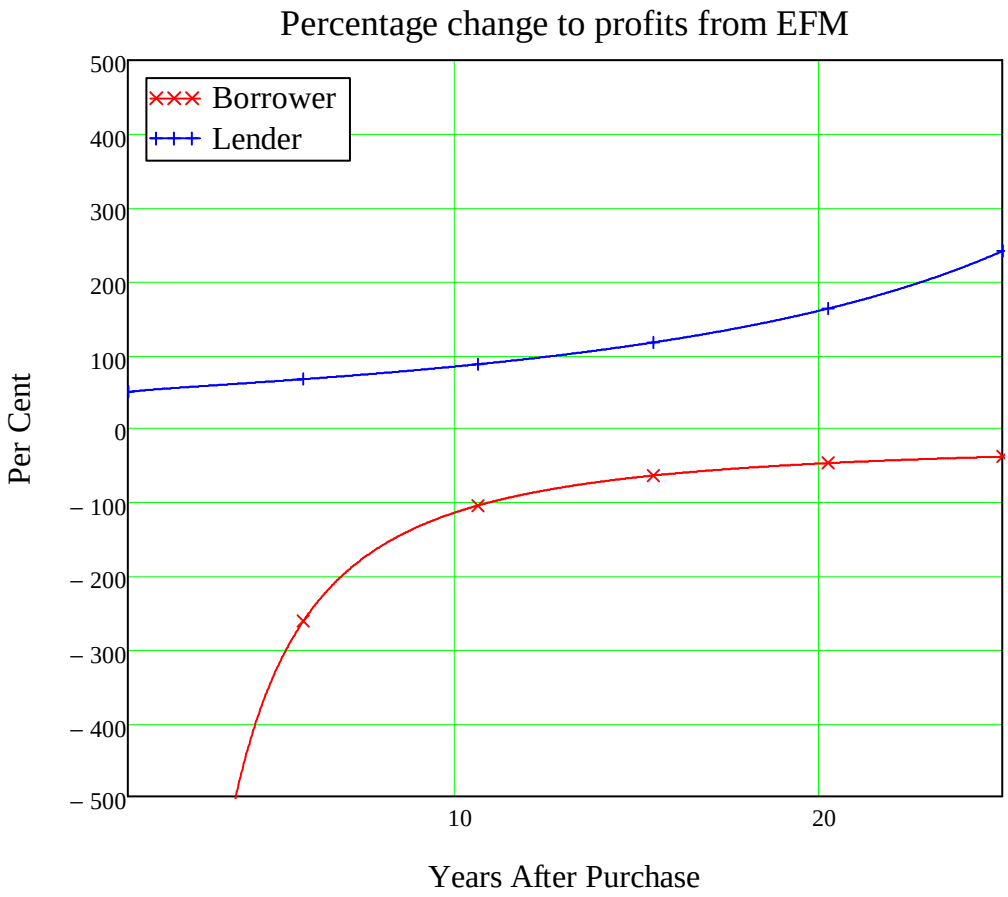
Ans =

	0	1	2	3
0	"Comparisons"	"Standard Loan"	"EFM Loan"	"Ratio"
1	"Loan"	303999.74	303999.74	1
2	"Deposit"	15999.99	15999.99	1
3	"Purchase Price"	319999.73	395999.67	1.24
4	"Sale Price"	507799.36	628401.7	1.24
5	"Capital Gain"	187799.63	232402.04	1.24
6	"Gain Received"	187799.63	139441.22	0.74
7	"Capital Repaid"	0	79199.93	"N/A"
8	"Interest Paid"	136161.7	136161.7	1
9	"Profit from Sale"	51637.92	-75920.42	-1.47
10	"Bank Profit"	136161.7	229122.52	1.68

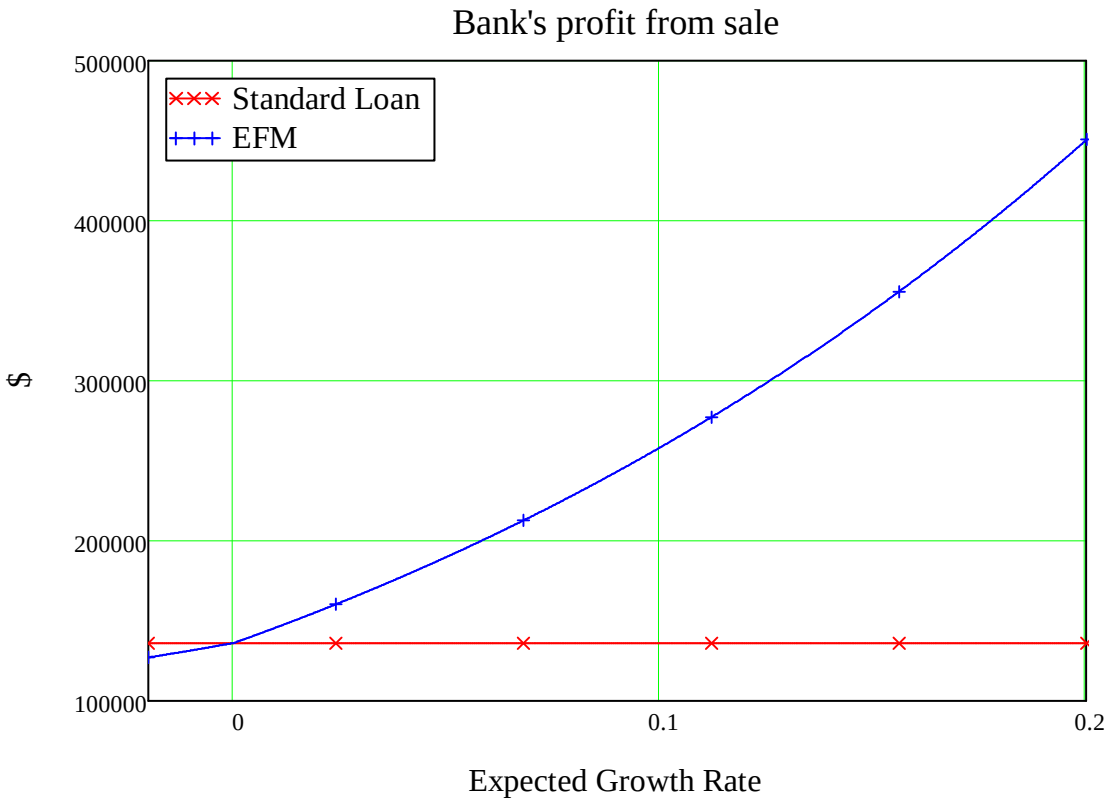
These graphs indicate the profits that would be made from sale at any date up till term, given the assumed interest rates and rates of house price increase.

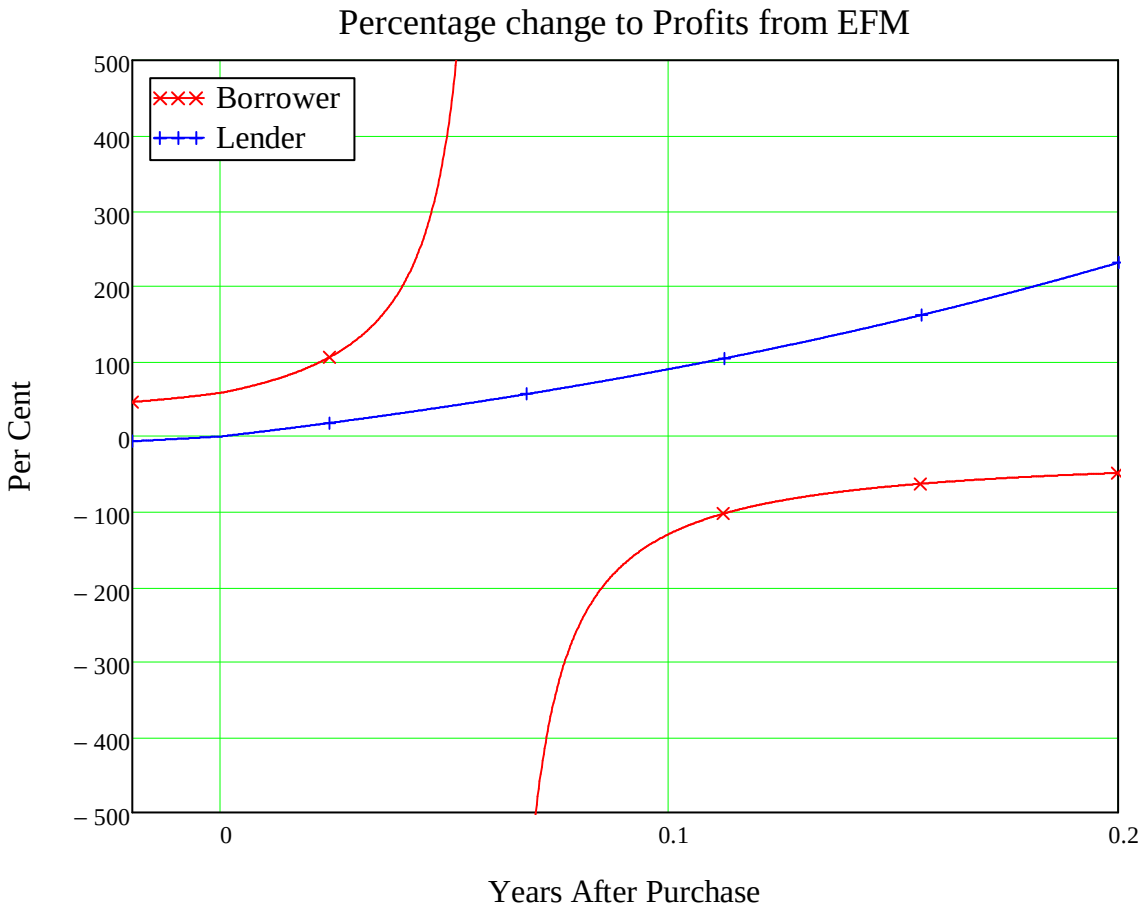



Bank's profit from sale
Standard Loan
EFM
1500000
1000000
500000
0
$
0
10
20
Years After Purchase


Percentage change to profits from EFM
Borrower
Lender
500
400
300
200
100
0
– 100
– 200
– 300
– 400
– 500
Per Cent
10
20
Years After Purchase

These charts show the sensitivity of profit predictions to the rate of growth of housing prices, if the sale were to occur at the date given above. In every case except when prices are falling, the EFM is a worse deal for the borrower than a standard loan.





Sheet logic

The formulas behind the calculations shown above are listed below.

Frequency adjusted intrerest rate

$$r = \sqrt[f]{1 + \frac{r_{pc}}{100}} - 1$$

Expected price growth rate p.a.

$$g = g_{pc} \div 100$$

EFM rate (New Zealand's scheme has a fixed rate of 30% on both equity and return)

$$EFM_{Rate} = \begin{cases} ans \leftarrow 0.3 & \text{if Country} \\ ans \leftarrow EFM_{PC} \div 100 & \text{otherwise} \end{cases}$$

EFM Share

$$EFM_{Share}(EFM_{Rate}, g) = \begin{cases} ans \leftarrow 0.3 & \text{if Country} \\ \text{otherwise} \\ \quad \begin{cases} ans \leftarrow 2 \cdot EFM_{Rate} & \text{if } g \geq 0 \\ ans \leftarrow EFM_{Rate} & \text{otherwise} \end{cases} \\ ans \end{cases}$$

Loan Size

$$L = \frac{P}{r} \cdot \left[1 - (1 + r)^{-(T \cdot f)}\right]$$

Deposit (this allows for either an absolute deposit, or 5% of the purchase price

$$Dep = \begin{cases} ans \leftarrow Deposit & \text{if } Deposit_{type} \\ ans \leftarrow L \div 19 & \text{otherwise} \end{cases}$$

Amount outstanding at time t:

$$O(t) = L \cdot (1 + r)^{t \cdot f} - \frac{P}{r} \cdot \left[(1 + r)^{t \cdot f} - 1 \right]$$

Sum of Interest paid by time t:

$$Int_{Sum}(t) = \left(L - \frac{P}{r} \right) \cdot (1 + r)^{f \cdot t + 1} + \frac{P \cdot (r + f \cdot r \cdot t + 1)}{r} - L$$

Purchase price with a standard mortgage given conditions

$$PP = L + Dep$$

Sale price with standard loan

$$SP(g, t) = PP \cdot (1 + g)^{t}$$

Profit with standard mortgage

$$\Pi(g, t) = PP \cdot \left[(1 + g)^{t} - 1 \right] - Int_{Sum}(t)$$

Purchase price using EFM

$$PP_{EFM} = \frac{L}{\left(1 - EFM_{Rate}\right)} + Dep$$

Sale price with EFM

$$SP_{EFM}(g, t) = PP_{EFM} \cdot (1 + g)^{t}$$

Profit from EFM

$$\Pi_{EFM}(g, t) = PP_{EFM} \cdot \left[(1 + g)^{t} - 1 \right] \cdot \left(1 - EFM_{Share}\left(EFM_{Rate}, g\right)\right) - PP_{EFM} \cdot EFM_{Rate} - Int_{Sum}(t)$$

The borrower has to give the bank 40% of the capital gain, repay the bank's original 20% investment, and pay the interest on the loan.

Bank profit from standard loan

$$Bank_{Inc}(t) = Int_{Sum}(t)$$

Bank profit from EFM

$$Bank_{IncEFM}(g, t) = Int_{Sum}(t) + PP_{EFM} \cdot \left[(1 + g)^{t} - 1 \right] \cdot EFM_{Share}\left(EFM_{Rate}, g\right)$$