



Borrowing at negative interest rates and investing at imaginary returns

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Wouldn't it would be great if middle Australia could invest in more productive assets and increase their take home pay in the process?

After buying a house to live in, middle Australia typically have no money and no time for investing. The only way to change that is to give them some incentive and the money to invest. Mortgaging the assets that they buy can provide them most of the purchase price and the associated tax deductions can generate enough tax rebates to pay the rest and potentially put money in their pockets. This structure sets up the tax rebate as a zero cost loan from the government that shares both the risk and the rewards of their investing.

The assets that I have been working with are expected to meet all future loan and tax payments over time as well as occasionally providing windfall gains. So not only is there an expectation of keeping the net upfront receipts, there is also the possibility of some investment magic along the way.

And for its part in enabling government assisted savings, the government gets an expected return of around 10% pa on the tax rebates before any consideration of the additional revenues that might be generated by these investments.

This note looks at how an investment can be transformed into both a cheap loan and a potential windfall for someone who is struggling with a mortgage.

Borrowing at negative interest rates and investing at imaginary returns.

What makes gambling on random numbers more attractive than punting on the expert assumptions found in a prospectus?

Although most of us prefer not to make any comparison, I think that we all have a lust for a little bit of magic... and that is increasingly hard to find in a world full of fees and charges that diminish the prospects for small investors.

This note presents some structuring and risk sharing ideas that give middle Australians demonstrable benefits immediately with a chance at imaginary returns. Imaginary returns describe magical investment outcomes that require the imaginary number, i , to calculate a rate of return.

The practical challenge in delivering these ideas is to avoid the cost structures that spoil the cream and then to break through the 'too good to be true' reaction.

With a little imagination, work and support, I think that it is possible to turn high risk/high return assets into investments that offer a little bit of magic and a reasonable expected return. In the process, a focus on more productive investments may just help to create a more dynamic economy too.

A quick note on negative and imaginary returns

Most of you have probably used MS Excel and seen an #NUM result for an IRR calculation that it can't do. It is good to think that we can occasionally still find mathematical answers where our computer can't. It is easiest to demonstrate this with a simple example;

Table 1 - Borrowing cash flows and IRRs

| Case | Time | | | |
|---------------|------|-----|---------|-----------------|
| | 0 | 1 | 2 | |
| 1 (normal) | \$1 | \$0 | -\$1.21 | $IRR_1 = 10\%$ |
| 2 (negative) | \$1 | \$0 | -\$0.81 | $IRR_2 = -10\%$ |
| 3 (imaginary) | \$1 | \$0 | \$1.21 | $IRR_3 = \#NUM$ |

Case 2 illustrates that a negative IRR occurs when repayments are less than the amount borrowed.

Case 3 seems unlikely but illustrates what I call imaginary returns.

We can see that $(1 + IRR_3)^2 = -1.21$

Therefore $IRR_3 = [+ \text{ or } -] 1.1i - 1$ Where $i = (-1)^{0.5}$

It is easy to determine a rate of return over 2 years with generalised cash flows using the quadratic equation. And over 1 year it is possible to determine an IRR that is convertible semi-annually in the same way. If we like, we can quickly convert that convertible rate to the standard annual rate.

The mathematics gets more complicated as we add cash flow points so I am not planning to generalise these calculations any further unless I can find a practical use for these IRRs.

Middle Australia and Investing

Middle Australia is cash flow sensitive often attending to a mortgage and family costs. Superannuation provides some investment diversity, but basically the family home is usually over 100% of net assets and the concept of diversifying investments further has a low priority.

By the time that the cash flow pressure is relieved and retirement becomes a consideration, middle Australia has heard about so many financial collapses that the only sensible investment seems to be a relatively unproductive house.

I think that middle Australia is underserved and well placed to invest into projects and productive assets with higher returns if they can be structured to fit their cash flows needs.

Government Assisted Savings (GAS) Securities

One simple option is to share some investment risk with the federal government via tax deferral. Negative gearing of property and margin lending on shares can do this by creating a tax credit for the loan interest. This improves the cash flow of the investor by deferring tax payments. Tax may then be reduced with capital gains provisions or avoided if no profits are generated. Even without a reduced tax rate, a tax deferral would improve the cash flows.

I have worked on securities that defer tax and produce an after tax return that is only marginally below the pre-tax return even for those on the highest marginal rates. These securities do not rely on CGT or a reduced tax rate. An example of expected investor cash flows is set out in Table 2.

Table 2 - GAS – example of expected cash flows

| Expected | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------------|---------|-----|-------|-------|-------|-------|-------|-------|---------|
| Cash flow | | | | | | | | | |
| Pre tax | -62,712 | 531 | 1,297 | 2,121 | 3,546 | 4,652 | 5,860 | 7,181 | 116,236 |
| Post tax | -43,396 | 422 | 928 | 1,472 | 2,413 | 3,144 | 3,942 | 4,814 | 75,451 |
| Tax effect | -19,315 | 109 | 369 | 649 | 1,132 | 1,508 | 1,918 | 2,367 | 40,784 |

The IRR on the tax effect (the difference between investor pre-tax and post-tax cash flows) is 13% pa. Even without considering flow on and other taxation impacts, this would be a positive financial outcome for a government with a low funding cost. (This IRR will vary with the actual asset returns.)

Since the government stands to gain from these investments, there is some justification for it sharing the risk. In any case, it is very likely that the deductions will be taxable fees in another party's hands. I also expect that these investments will be productive and create activity that leads to new revenue.

Creating a Borrowing Transaction

An investment remains an investment regardless of how it is funded. It may also become a part of a borrowing transaction if an investor can create more cash than required to fund that investment. In this case, extracting enough vendor financing for the investment so that the tax deferral exceeds the net cost. Then, the cash surplus at the outset is like a loan with two components (mortgage and tax

components) that may need to be repaid at or before the disposal of the investment. Any appreciation in the investment would create additional taxes but should also leave some untaxed appreciation to help with the repayments.

Borrowing Rates

If we call the investment and tax deferral package a borrowing transaction, we might ask at what rate we are borrowing. The notes below examine the dynamics.

Definitions

V Value of investment

l_{tv} Loan to V ratio

d Deductibility to V ratio

t₁ Tax rate on deductions

t₂ Tax rate on returns

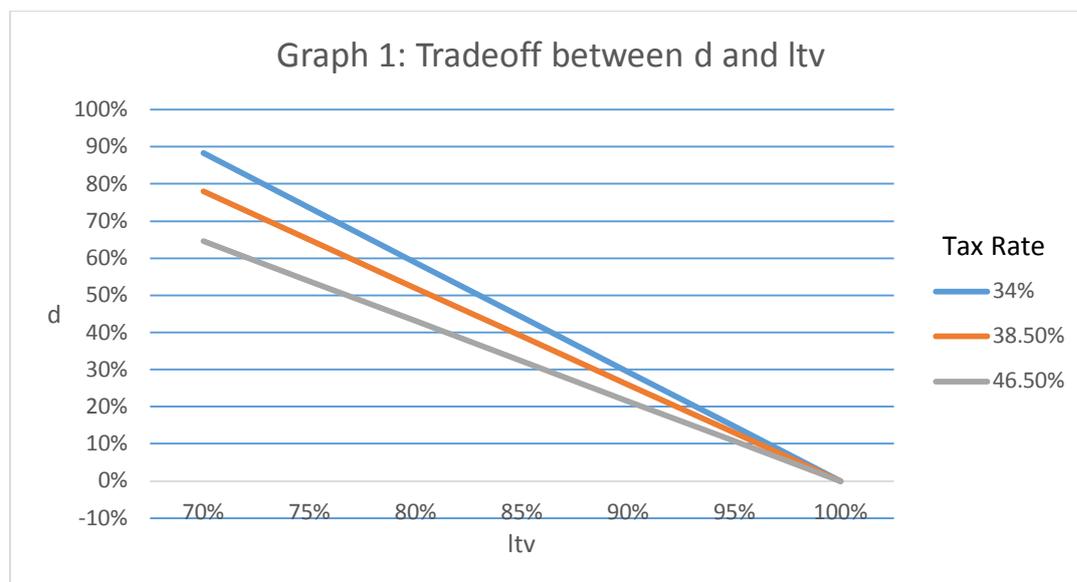
I Borrowing rate

R Return on Investment (Proceeds of sale – for simplicity I assume this is net of expenses)

$$\text{Upfront cost} = V * (1 - l_{tv} - t_1 * d)$$

The upfront cost is negative if $t_1 * d + l_{tv} > 1$

The trade-off between l_{tv} and d for a \$0 upfront cost is shown in Graph 1.



If the upfront cost is negative, the investor has effectively received cash and for that borrowing to be at a 0% rate the return on disposal of the investment must equal the tax on that return **plus** the loan repayment and borrowing cost **less** the net upfront amount. This can be expressed as;

$$R = V * [1 - t_1 + d * (t_2 - t_1) + i * ltv * (1 - t_1)] / (1 - t_2)$$

So if R exceeds the formula on the right hand side, the borrowings would have been effected at a negative rate. Clearly tax rates can change over time and individual tax payer circumstances will change occasionally, sometimes in ways that can create advantage. Anyone going from a high marginal rate of tax to a low rate (perhaps as they retire) might be asked to consider options that defer some of the tax that they would otherwise pay at the higher rates.

In the simplest case $t_1 = t_2$ and therefore;

$$R = V * (1 + i * ltv) \text{ produces borrowings at } 0\%.$$

Since the tax deferral component is a loan at a rate of 0%, it is easy to see that the investment returns only need to cover the interest on the financed component. If returns exceed the investment plus that interest cost, the borrowings have been effected at a negative rate.

Another interesting case is when $t_1 = t_2 * 2$ (Capital gains tax or CGT). Then;

$$R > V * (1 + i * ltv) - V * t_2 * (i * ltv + d) / (1 - t_2) \text{ produces borrowings at a negative rate.}$$

Again this result looks reasonable since we need to adjust the simplest case by half of the tax deferral and allow for the effect of the lower tax rate on the taxable appreciation.

Borrowing at a Negative Interest Rate

In the simple case of applying one tax rate to all deductions and returns, we see that a borrowing transaction is effected at a negative interest rate if the investment returns exceed the financing costs. In a low interest rate environment, this should be an achievable hurdle provided the expense loadings are not too significant. Even if the investment returns fall short of the financing costs, there is some room before the borrowing transaction becomes expensive for someone who is paying off a mortgage.

If the asset in Table 2 is leveraged to create \$5,000 upfront and sold 1 year later at a 10% return, the after tax 'repayment' is \$3,321, which is a borrowing at -34%.

What stands out in the CGT equation is that the financing cost hurdle is reduced in the order of 30% (depending on the exact tax rate) before the other components lower the hurdle even further. With such a low hurdle required to produce a negative borrowing rate, it may not be imprudent to think about arrangements that lend against the security of the investors' other assets to invest in these new income producing assets. However, to do this may be challenging for middle Australia as they have yet to create significant unencumbered security for such loans.

Clearly, these drivers are at the heart of the "get rich seminar" industry and make sense, as long as you can justify the exposure to one asset class and the risk of a change to the rules that may leave almost every investor on the wrong side of that market at the same time. For the same reasons, it would be important that anyone considering borrowing transactions as described above looked at diversifying their exposure to asset classes.

Imaginary Returns

As the return on investments increases, it covers more of the finance and tax repayments. The size of the negative interest rate increases. At some point, the return covers and then exceeds all outgoings. After we pass the free money point (where the servicing of the initial cash components is matched by the investment returns), the IRR calculation needs a solution involving imaginary numbers. It seems reasonable to label it an imaginary return.

In its simplest form, an imaginary return simply involves the receipt of cash at the outset and a further receipt of cash from the net proceeds of the investment. Using the example in Table 2 again, the \$5,930 upfront would be followed by another \$7,129 after tax at the full marginal rate if the underlying longevity asset were to mature in year 1. The mortality assumptions put this probability at around 2%. This probability rises in the subsequent years and the 'investment' continues to produce imaginary returns.

Parties to Borrowing Transaction

The investor needs to have a starting tax paying position that allows for a sufficient tax deferral. The investor should also understand the investment risks, the worst case outcome and the components of the borrowing transaction.

This arrangement requires an investment with a high expected return and is likely arranged and created by a financially aware institution or individual. The investment could be a direct interest in something or a suitable security over it. Since the role of deductible items is important in generating tax deferrals, there is a need for significant expenses and a low capital cost. A start-up or research arrangement might generate lots of deductions but would also need to give a lender some confidence of repayment. Housing assets tend to be the other way around.

A lender is required to stand alongside the government who also becomes a lender through the tax deferral process. The government need only be concerned that the investments have reasonable return expectations. As described above, the government should benefit from these activities.

Limitations of Borrowing Transactions

The arrangements described require some form filling and there will be compliance and distribution costs for any arranger. This often means that middle Australia is not offered the chance to participate.

Also these borrowings are a function of lending capacity and tax deferral. It is unreasonable to contemplate lending that exceeds the purchase price so the maximum possible borrowing is the tax deferral. The tax deferral will normally be small in comparison to the size of the investment itself and therefore the risks of that investment must be considered very carefully before entering this type of arrangement. If lending levels are high in relation to the investment, it would be important to consider if that reflected the security of the investment or of the investor.

Nevertheless, it is easy to show that an Australian earning \$150,000 could 'borrow' \$8,000 p.a. with the investments and lending that I have described with a reasonable expectation that these investments would cover all further payments.

It might be easier to think of this transaction as taking a significant portion of the expected investment profits upfront and sharing the investment risk. I think that it is a better basis for investing than being asked to bear all of the investment risk and pay a significant portion of the profits to 3rd parties upfront.

Uses of Borrowing Transactions

If the Australian above earning \$150,000 has a family and a \$300,000 mortgage, this borrowing covers half of the interest payments which allow for quicker principal repayments and/or some discretionary spending.

As there is no prescription for the application of the 'borrowing', it could be equally used to purchase other investments. Even though I like the idea of generating a more diversified portfolio in this way, it would be prudent to focus on the risks before the potential gains.

The Value in Tax Deferrals

Taking advantage of tax deferrals makes a lot of sense for investors. They should be able to diversify their investment portfolio with the lower net cost and benefit from a higher after tax return. The deferral means that some investment risk is shared.

But there is nothing new in structuring investments to try to improve the cash flows and the after tax returns. Clearly, wealthy Australians have had all the running to date with advantages in access to lending, access to products only sold to sophisticated investors and larger transaction sizes.

Middle Australia, on the other hand, probably hasn't taken much advantage from the opportunities to defer tax and diversify their investments. It might be argued that they are not sophisticated enough to take this path but I think that technology now provides the access to information necessary to even this playing field. Technology also provides the possibility of lower distribution costs that might allow smaller transactions to work efficiently.

Generational equity may also be improved if we can grow and postpone taxation revenue using more individual tax deferrals. In Federal budgets it has proved difficult to set aside funding for all future liabilities as they arise so perhaps individuals can help.

The Value in Borrowing Transactions

The big gains could come from carefully structured product that delivered cash to middle Australia. It is putting cash into tight budgets without exposing them to excessive risks that were either not explained or that they may not have understood. It is squeezing upfront expenses to create the free cash which has the benefit of aligning and prioritising interests of providers and investors more appropriately. It allows middle Australians to choose to genuinely diversify their investments in a way that more closely matches ideal life savings patterns and to defer paying the higher marginal tax rates.