RESEARCH PAPER

QUANTITATIVE ANALYSIS OF THE PERFORMANCE OF PROTECTED EQUITY LOANS

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Abstract

Protected Equity Loans involve the provision of up to 100% of the purchase price of ASX listed shares with the lender's only security being in respect of the shares themselves. This form of security and loan arrangement is known as "limited recourse" finance. The protected lender charges the borrower a premium interest rate to cover the cost of hedging against the risk of loss arising on default by the borrower, which insures that the value of the shares will not be less than the amount lent to finance their cost.

Using data in respect of Commonwealth Bank of Australia Protected Equity Loans initiated during the period 1 January 1994 and which matured between that date and 30 October 2014, this research paper shows that the average returns for an SMSF in accumulation mode (eg taxed at the rate of 15% pa) using a Protected Equity Loan outperformed the returns of the same portfolio of shares when purchased without capital protection by 7.14% pa. Actual returns are shown to vary with respect to portfolio and time of initiation (as would be expected). Furthermore, the frequency of the outperformance of the Protected Equity Loan compared to the same portfolio purchased without capital protection was 60% of the portfolios analysed during the 20 year period.

The financial and portfolio benefits of Protected Equity Loans are illustrated by this analysis. Furthermore, given that the protection created for lenders by these arrangements insures the lender against the risk of loss, the paper notes that Protected Equity Loans can be seen as an enhancement to the integrity of the financial system, rather than as an additional source of systemic risk.

Methodology

The data analyses Protected Equity Loans initiated during the period 1 January 1994 to 30 October 2014. Six different stock portfolios were used as the basis of this analysis. Protected Equity Loans terms of 3 years were analysed in respect of these portfolios. This data includes interest costs applicable to the Protected Equity Loans available from Commonwealth Bank of Australia during the period (or for periods prior to these loans being offered, interest costs are based on pricing models which would have been current at that time, based on the same criteria currently used for Protected Equity Loans and applied during those earlier periods), actual dividend returns (including franking credits), actual share price performance, and takes account of the taxation rules applicable during the period regarding tax deductibility of interest and capital gains treatment of non-deductible amounts. Performance analysis compares the return on actual investment in a portfolio with the same value: in the case of the unprotected portfolios, it is assumed the investor paid cash for the portfolio; in the case of the portfolio purchased using a Protected Equity Loan it is assumed that the investor has outlaid only the cost of the Protected Equity Loan to obtain a portfolio of equivalent value to that considered in the case of the unprotected portfolio (ie 100% gearing was used with no capital/equity contribution being made by the investor/borrower).

Disclaimer

1. Financial Rationale for Investment Leverage

Households typically use borrowings to assist with the purchase of the principal place of residence and as a result, most Australian adults are familiar with the concept of financial leverage in respect of this asset. Other forms of financial leverage are available to assist with investments, including in respect of real estate and shares. Debate abounds regarding the benefits and risks of financial leverage and investments, with adverse outcomes being experienced by many leveraged investors during periods of market shock, such as the GFC. This debate has been sharply focused recently on the merits of SMSF gearing.

1.1 Investment gearing

The use of debt finance to assist with share investments has been considered by corporate finance scholars in a wide range of scenarios, ranging from the corporate balance sheet analysis conducted by Modigliani and Miller in the 1950s, to the investment and portfolio construction analysis conducted by William F Sharpe in the next decade. Whilst noting the potential for leverage to add risk, these scholars understood the potential benefits of leverage.

Modgliani and Miller examined the role of investor-level gearing in their search for a method to calculate the "optimal" debt to equity ratio for a company. They noted the possibility that the very companies into which investors gear, may themselves be under geared (ie in comparison to other, similar companies) —and in this case, they proposed that external gearing could be seen simply as a "self help" investor reaction to this phenomenon:

> "Levered companies can not command a premium over unlevered companies because investors have the opportunity of putting the equivalent leverage into their portfolio directly by borrowing on personal account."[1]

In this context it can be argued investors who gear their holdings do so in a manner consistent with the original Modigliani – Miller view that it may be sensible for investors in relatively under-geared companies to do so. The problem of course is that the assumption of gearing by investors transfers the cost of doing so as well as the risk of insolvency – which can be assumed to be a risk that the company itself has declined to take (and therefore of questionable benefit to the investor).

William F Sharpe also explicitly validated the use of leverage in his work on portfolio construction. Sharpe analysed the implications for portfolios in an efficient market and concluded that all investors would own the same set of risky assets, and would only vary their portfolio construction by holding more or less cash, depending on their risk tolerance. In other words:

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[1] Modigliani F and Miller M: "The Cost of Capital, Corporation Finance and the Theory of Investment" (1958) The American Economic Review 261 at p. 270.

> "…the conservative investor would lend to the aggressive investor, so that the aggressive investor could take levered positions in the market portfolio."[2]

1.2 SIS Act regulation

Superannuation funds are able to borrow in accordance with the provisions of the Superannuation Industry (Supervision) Act ("SIS Act"). Prior to the reform of the SIS Act in 2007, the relevant provision was section 67 which proscribed borrowing except in limited circumstances. Prior to 2007, superannuation regulators recognized that "limited recourse" borrowing did not infringe the proscription in section 67, if the borrowing did not create an indebtedness, defined as an obligation to repay the borrowing.

In APRA/ATO Media Release No. 02.58 issued on 16 December 2002, APRA and the ATO stated that:

> "…not all liabilities of a superannuation entity will be *borrowings* within the meaning of section 67 of the SIS Act…
>
> …A borrowing involves receiving a payment from someone in the context of a lender/borrower relationship on the basis that it will be repaid. A transaction that gives rise to a debtor/creditor relationship does not necessarily give rise to a lender/borrower relationship and hence does not necessarily represent a borrowing for the purposes of the restriction…
>
> The instalment warrant market has grown significantly and many instalment issuers are now actively targeting superannuation funds with more complex products. In some cases, instalment warrants offer superannuation funds benefits that would otherwise not be readily available to them and these instruments *could* form part of a superannuation fund investment strategy *in certain situations*."

This regulatory statement recognizes that limited recourse loans do not create an obligation on the borrower to repay the loan. Clearly the statement does not counsel the use of this type of investment facility in all situations, and the statement goes on to urge caution in the use of instalment warrants, specifically drawing attention to the need to be satisfied regarding appropriateness and suitability.

1.3 SIS Act Amendments – The Dutton Reforms

In 2007 the SIS Act was amended to clarify the procedural aspects which need to be implemented in order for the use of borrowing by a superannuation fund (including an SMSF) to ensure that the borrowing does not impose a "liability to repay." The amendments introduced new section 67 (4A) which codified the rules regarding SMSF gearing. These rules were further amended several years later and are now contained in section 67 A of the SIS Act.

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[2] Kaplan P: "Back to Markowitz, " p. 66 (June/July 2014, Morningstar Journal)

1.4 Cooper Review

In the "Phase 3" report of the 2010 Cooper Review, in section 8.1 (at page 28, which dealt with investments) it was stated that:

> "In principle, the Panel has concerns with the concept of direct borrowing within any superannuation funds, whether SMSFs or APRA-regulated funds. In principle 8, the Panel expressed the view that leverage should not be a core focus for SMSFs.
>
> The original default position adopted in the SIS legislation was that superannuation funds should not engage in borrowing, other than in the very short term to address cash flow issues. The rationale for this stance was simply that leverage for asset acquisition amplifies both gains and losses and this was seen as placing fund members' retirement savings at too much risk. The Panel agrees with the original default position adopted in the SIS legislation.
>
> On 24 September 2007, the SIS Act was amended to allow all regulated superannuation funds, including SMSFs, to invest in instalment warrants…The Panel is concerned that if direct borrowing had been more widespread before the recent GFC then a substantial amount of retirement savings could have been lost. The Panel therefore believes that the 2007 amendments to the SIS Act, which relaxed the borrowing provisions, are inconsistent with Australia's retirement policy."

In light of the statement by APRA and the ATO issued in December 2002, it is clear that the analysis regarding the scope of the legislative proscription set out in Cooper Phase 3 is incorrect. The policy discussion in Cooper Phase 3 regarding gearing states that:

> "…leverage for asset acquisition amplifies both gains and losses and this was seen as placing fund members' retirement savings at too much risk…" and that
>
> "…if direct borrowing had been more widespread before the recent GFC then a substantial amount of retirement savings could have been lost…"

Given the importance of an equitable and efficient Australian retirement policy, it is necessary to evaluate the correctness of these statements.

2. Investment Performance of Protected Equity Loans

2.1 Scope of Analysis

The analysis of Protected Equity Loans initiated by Commonwealth Bank of Australia and set out in this research paper examines limited recourse loans used to finance the purchase of ASX listed stocks, with the terms of these Protected Equity Loans as described in the "methodology" section above.

These Protected Equity Loans embed a protection feature which permits the lender to limit its security to the shares purchased using the Protected Equity Loan, with no right to demand early repayment

(apart from non-payment of interest) during the term of the loan. Specifically, the Protected Equity Loans do not impose any requirement on the borrower/investor to make any top up payments/increase security in the event of the share price/s falling during the investment term. The Protected Equity Loans are functionally equivalent to ASX listed instalment warrants with these features.

Accordingly this analysis does not purport to provide any financial or other form of evaluation regarding the following products:

- Margin loan
- Synthetic gearing facility of the type known as "equity lever" or "share lever"
- ASX listed instalment warrants with a "stop loss" mechanism

2.2 Protected Equity Loans avoid the problem of "short gamma"

Unlike these products, Protected Equity Loans do not impose a requirement that the borrower/investor must provide any top up to the security which supports the loan, in the event of a fall in the price of the share/s which have been purchased using the loan.

In the case of margin loans and synthetic gearing facilities, the investor can be required to pay a "margin call" (or equivalent) in the event of a price fall, and failure to make this margin call will give the lender the right to sell some or all of the underlying shares.

In the case of "stop loss" style ASX listed instalment warrants, it is typically the case that the issuer/lender can simply sell down shares in the event of a price fall, ie it will not permit the borrower/investor to make a margin payment.

As a result, each of these style of products exhibits the feature known as "short gamma" – ie where some or all of the share/s will be sold during a period when the market falls. "Short gamma" positions are inherently risky because the expose an investor to the prospect of crystallizing losses during periods of market disruption, rather than permitting the investor to continue to hold shares until the market recovers.

Protected Equity Loans avoid the problem of "short gamma" and thus provide important investor benefits not available with other forms of share finance.

2.3 Results

The analysis was conducted using actual share portfolios over which Protected Equity Loans have been created by Commonwealth Bank of Australia. Details of the methodology used in the analysis is set out above. The portfolios are quantitative models that CBA produces and provides to clients, with no specific means taken to "optimize" the underlying stocks as being "suitable" for use within a Protected Equity Loan strategy.

The six different share portfolios analysed are set out in the table below:

Balanced Small	**Balanced Large**	**Enhanced Yield Small**	**Enhanced Yield Large**	**Growth Small**	**Growth Large**
ANZ	AMC	CBA	AMC	BHP	AMP
BHP	CBA	NAB	ANZ	BXB	BHP
BXB	MQG	ORG	BHP	NAB	BXB
CBA	NCM	RIO	BXB	RIO	CCL
CCL	ORG	TLS	CBA	SHL	NAB
NCM	OSH	TOL	CCL	WES	QBE
ORG	RIO	WOW	NCM	WPL	RIO
STW	SHL	STW	ORG	STW	TLS
	STW		TAH		TOL
	TLS		TLS		WBC
	TOL		WDC		WPL
	WES		STW		STW

Table 1: Share Portfolios (source: Commonwealth Bank of Australia)

The comparative performance of these portfolios when invested using investor's own funds, or funds borrowed using a Protected Equity Loan, are set out below in Table 2.

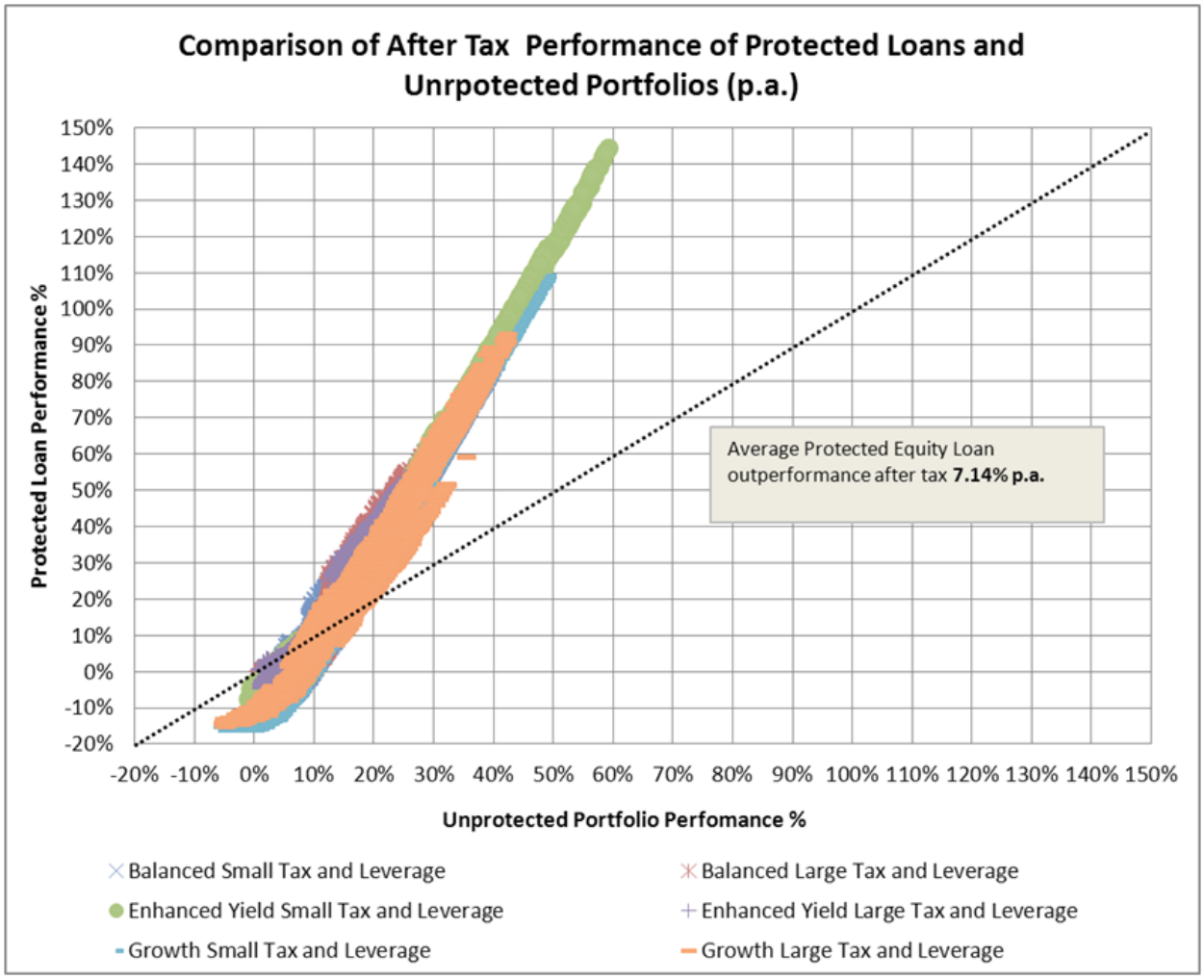

Table 2: Comparative Performance of Protected Equity Loans vs Ungeared Portfolios (source: Commonwealth Bank of Australia).

2.3 Specific Portfolio Results

To further illustrate the analysis the results for each stock portfolio are set out below. It can be seen that:

1. the relative performance of portfolios selected with regard to yield (12.69% pa average return) scores better than portfolios selected with regard to growth (7.95% pa average return) (eg Table 5 compared to Table 7);

2. the "balanced" portfolios underperform the "yield" portfolios;

3. the small concentrated portfolios perform better than the larger portfolios (eg Table 3 compared to Table 4; Table 5 compared to Table 6; Table 7 compared to Table 8).

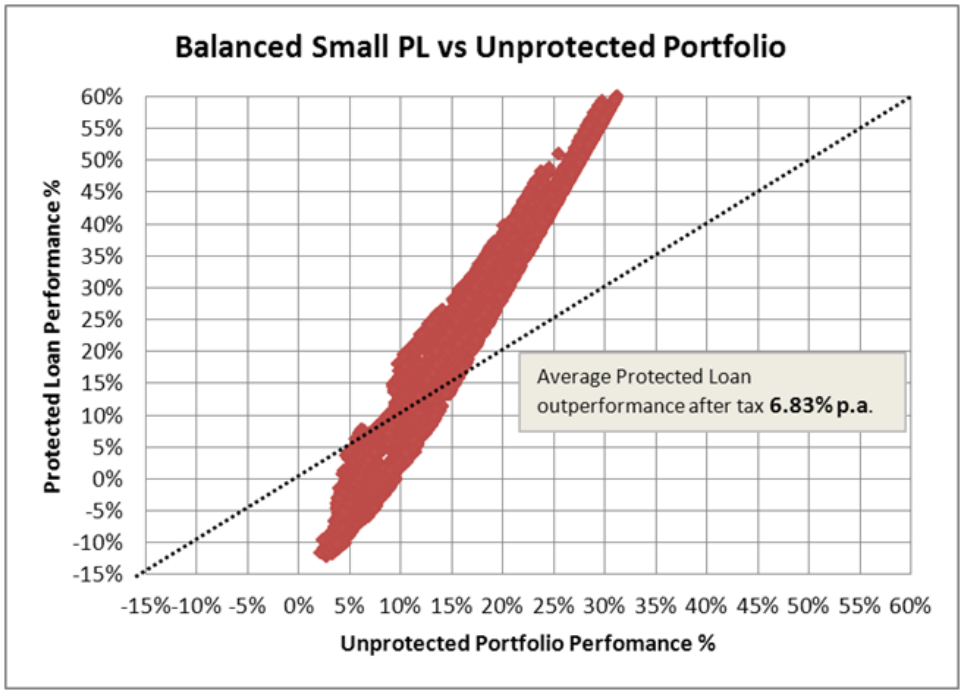

Table 3: Source CBA

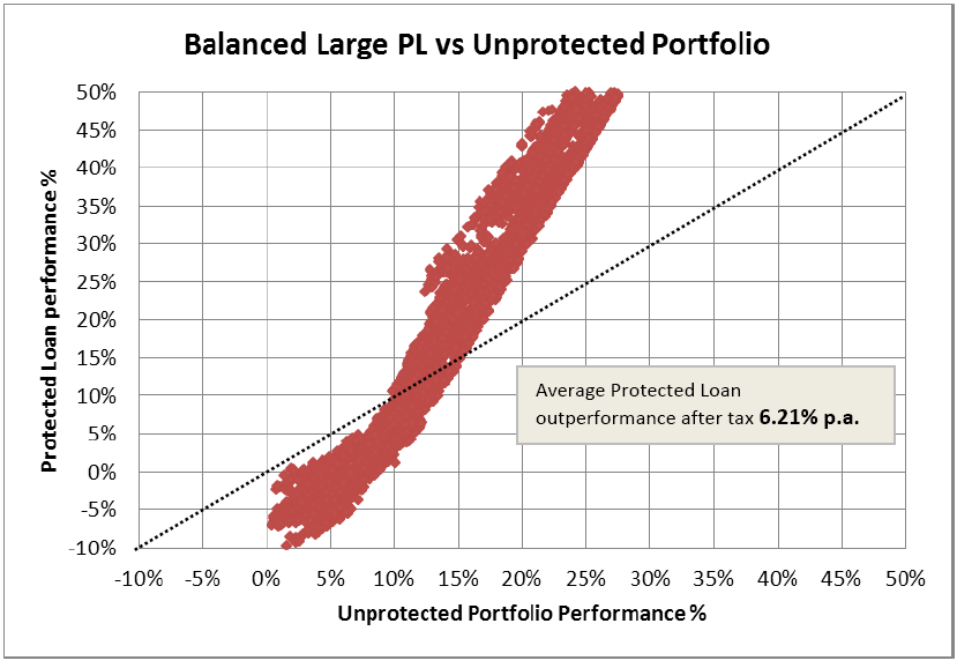

Table 4: Source CBA

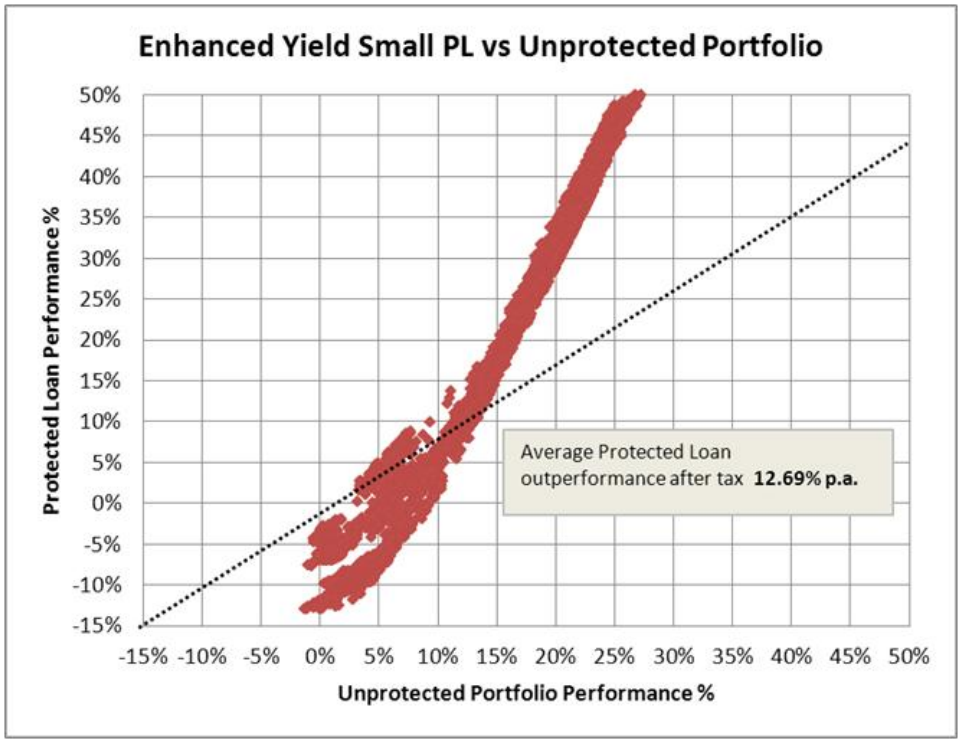

Table 5: Source CBA

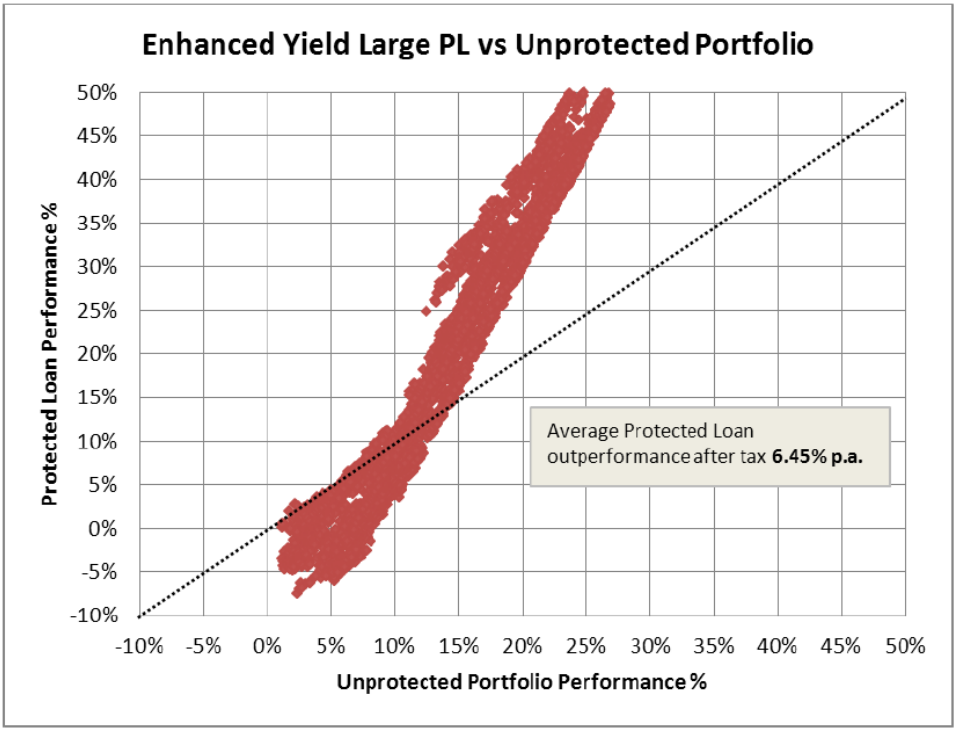

Table 6: Source CBA

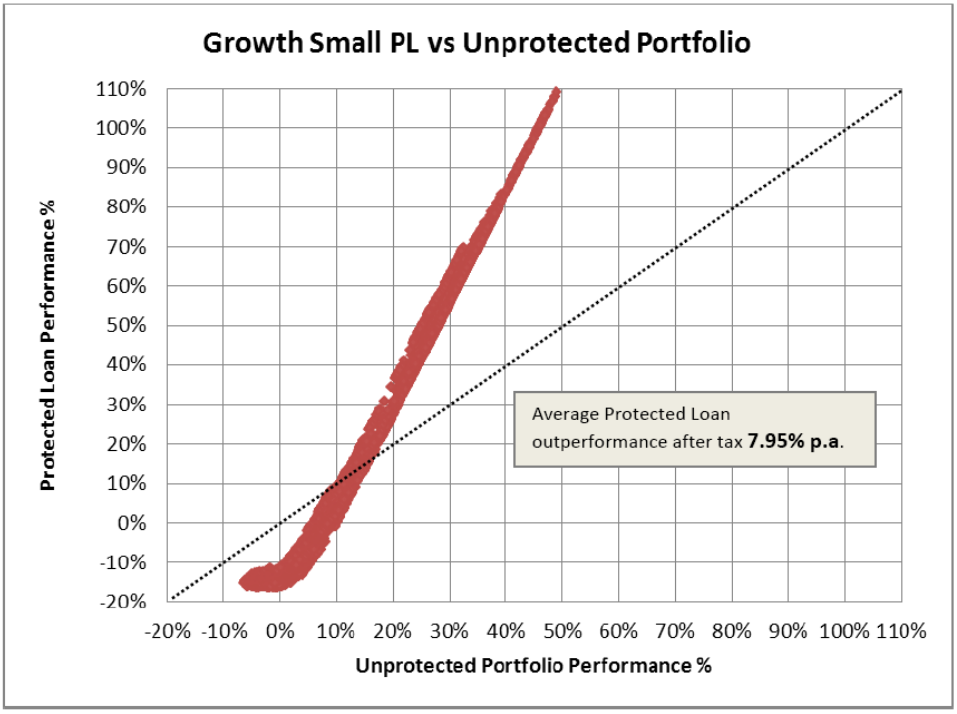

Table 7: Source CBA

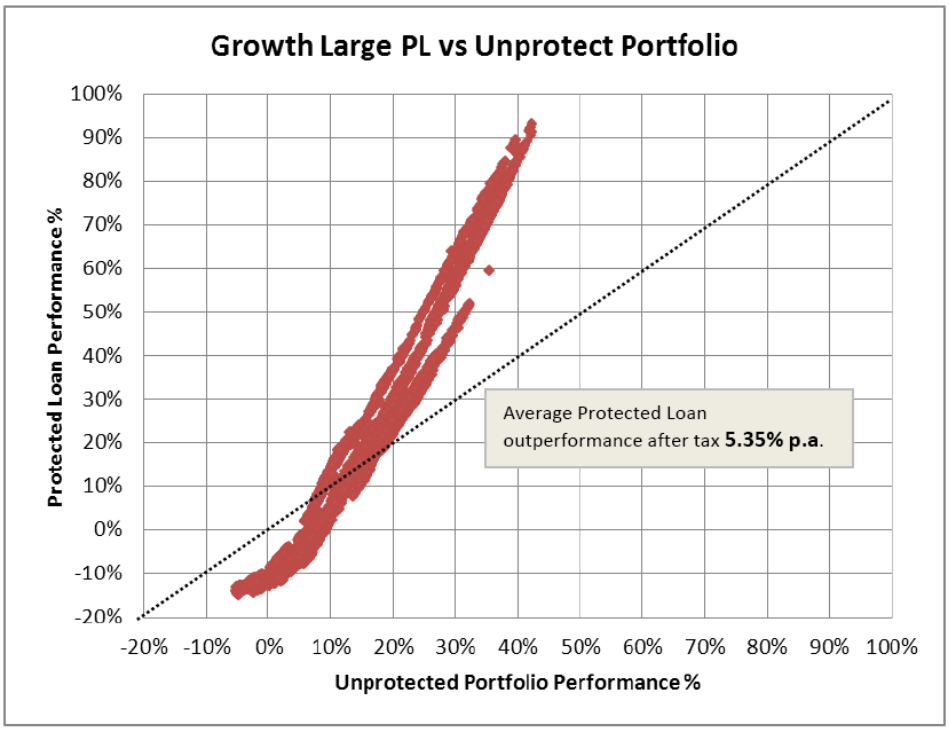

Table 8: Source CBA

2.4 Summary of Results

Table 2 shows that the majority of Protected Equity Loan portfolios outperformed the same portfolios which were purchased using the investor's own funds. The frequency of outperformance was 60% of the time during the period analysed. The Tables illustrates the following points:

- The average outperformance for the period was 7.14% pa across all portfolios.
- It can also be seen that there are periods when the Protected Equity Loan portfolio under-performs the ungeared/unprotected portfolio.
- The amount by which the Protected Equity Loan under-performs the ungeared/unprotected portfolio, vary depending on the portfolio.
- In periods of positive returns for the ungeared/unprotected portfolio, the Protected Equity Loan portfolio shows strongly positive enhancements to those returns, for example, where the ungeared/unprotected portfolio average return is 40% pa, the Protected Equity Loan average portfolio return is 90% pa.

From first principles it can be noted that periods where the Protected Equity Loan under-performs the ungeared/unprotected portfolio coincide with weak positive to slightly negative returns in the ungeared/unprotected portfolio. In that case, the costs of the Protected Equity Loan have been higher than the negative returns in the ungeared/unprotected portfolio. Those costs include interest and the costs of the issuer's protection for the limited recourse feature of the Protected Equity Loan.

From first principles it can also be noted that the Protected Equity Loan outperforms the unprotected portfolio during periods of strong negative returns in the unprotected portfolio.

3 Conclusions

Protected Equity Loans combine an interest cost with limited recourse finance for up to 100% of the purchase price of ASX listed shares. They are eligible for use by SMSFs. Analysis of returns for the period 1994 to 2014 shows that for the majority of portfolios and for the majority of periods, the Protected Equity Loan provided superior returns compared to the ungeared/unprotected portfolio. In periods of positive returns on the ungeared/unprotected portfolio, the Protected Equity Loan portfolio showed strong performance enhancement. In periods of modest negative returns on the ungeared/unprotected portfolio, the additional costs of the Protected Equity Loan portfolio caused slight under-performance compared to the ungeared/unprotected portfolio. In periods of strong negative returns on the ungeared/unprotected portfolio, the Protected Equity Loan portfolio showed strong outperformance compared to the ungeared/unprotected portfolio.

It is also notable that the smaller concentrated portfolios typically outperformed the larger portfolios when used in the Protected Equity Loan. This is likely due to the minimization of the chances of larger dispersal of returns (which would reduce overall positive returns in the case of Protected Equity Loans).

It can also be seen that the portfolios selected based on yield performed better than other styles such as “growth” or “diversified.” This is likely due to the reduction that higher yield provides to the net after tax costs associated with Protected Equity Loans (eg which defrays part of the cost of the Protected Equity Loan).

This analysis highlights the financial benefits available using Protected Equity Loans and illustrates their utility when used by SMSF investors. The protection which is created by issuers as part of their security arrangements for Protected Equity Loan facilities (ie underlying put options) helps protect issuers from the risk of loss in the event of share prices falling. This mechanism limits the systemic risk created to the banking system by the issue of Protected Equity Loans.

The analysis shows that there is little rational basis for banning the use of Protected Equity Loans by SMSFs.

Tony Rumble PhD