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Top managers' preferences and Firm actions: the moderating role of early-life experience of wars

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Abstract

This study attempts to explore how the heterogeneity of managers' risk and time preferences explains the different financial leverage and investment behaviors of firms, specifically between firms led by managers born in and after the Vietnam wars. To answer that research question, we conducted a lab-in-the-field experiment with a sample of top managers from 320 textile and garment small and medium-sized enterprises (SMEs) in Vietnam. Our study provides interesting evidence that managers' risk aversion and present bias have a strong link to the firm actions led by managers born and grown-up during the Vietnam wars.

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1. Introduction

Some theories, such as the upper-echelons theory and resource dependence, suggest that managers vary in styles, skills, and knowledge (Hambrick & Mason, 1984; Holcomb et al., 2009), leading them to make different decisions that affect firm performance. For example, according to Rashad Abdel-Khalik (2014), in influencing firm activities, top managers draw up risk-taking strategies in their own styles and risk preferences, while Hermalin and Weisbach (2017) point out that practitioners assess the quality of managers as managers' incompetence affects investors.

Although extant empirical work suggests that managerial traits matter for firm performance, their evidence only explains part of the story (Graham et al., 2013). To explore another aspect of that story, this study attempts to measure top managers' risk and time preferences and relate them to firms' financial leverage and investment behavior. As such, our experiment not only elicits managers' risk aversion by focusing on the Cumulative Prospect Theory (Tversky & Kahneman, 1992), but also measures the present bias of managers following the hyperbolic time weighting function (Thaler, 1981). We then link our experimental data with survey data obtained from the General Statistics Office of Vietnam. Consequently, we can relate managers' preferences to firm-level policies. Additionally, following Choi et al. (2021), managers' ages are used to determine whether a manager has war experience. As Vietnam wars ended on 30th April 1975, a manager has war experience if he or she was born in or before 1975.

Our study provides striking evidence for the first time on how firms led by managers born in the period of the Vietnam wars (in or before 1975) behave differently to those firms led by managers born and grew up after the Vietnam wars and when Vietnam reformed its economy. We find that in firms with managers born after 1975, managers' risk aversion and present bias does not affect total investment, while firms' financial leverage is not affected by the present bias level of managers. In contrast, we observe strong links between financial leverage and investments of firms led by managers born in the Vietnam wars and their managers' risk aversion and present bias levels. Our results are in line with extant literature uncovering that personal experience of war and related macro fluctuations have long-lasting effects on an individual's belief and behaviour (e.g., (Alesina & Fuchs-Schündeln, 2007; Giuliano & Spilimbergo, 2014). In addition, most managers born before 1975 were very young (less than ten years old) during the war. This unique aspect of our managers shows that emotionally intense experiences at a young age play a particularly salient role in driving investment behaviour years later (Malmendier & Nagel, 2011; Malmendier et al., 2011)

2. Research method and preferences measurement

Drawing from Tanaka et al. (2010)'s experiment approach, we carried out a field experiment embedded in questionnaire with a sample of 320 managers of 320 textile and garment small and medium-sized enterprises (SMEs) in Vietnam. These SMEs operate and compete in the same business environments. The textile and garment industry as it is one of the Vietnam's main industries with export turnover of $16 billion in 2018. Further, most of the participants are Chief Executive Officers (CEOs) or Chief Financial Officers (CFOs). They play the most crucial role in the firm's decision-making, and their effect is likely to be significant. Thus, to stimulate the participants to express their actual preferences, besides the $15 participation fee, they were paid in conformity with their decisions in some specific lottery games. All participants were informed clearly in advance about our incentivized experiment, and their choices on games were undisclosed.

The experiment comprises two lottery settings. The first set consists of 35 situations in three groups of lotteries designed to measure risk preferences in accordance with the Cumulative Prospect Theory (Tversky & Kahneman, 1992). In the second set, we provided participants with 35 decision situations combined with different pairs of lotteries to capture time preferences rate in accordance with the framework of Thaler (1981).

It is worth noting that in this study, we concentrate on eliciting managers' risk aversion (α) and present bias (β). The 14 situations in the second group of lotteries in the first set were designed to elicit managers' risk aversion (α). In particular, participants were asked to choose between two possible outcomes (Option A and Option B) for each decision situation. We recorded the switching points at which participants switch from Option A to Option B. A participant is more risk-averse when he/she switches to Option B later.

Similarly, the present bias (β) was estimated from the participants' responses to 17 situations with two possible outcomes for each (Option A and Option B) in the second sets of lotteries in the first set. We also recorded the switching point when the participants switch from Option A (receiving $100 in one week) to Option B (receiving higher rewards in two weeks, which changes over the course of the lottery series). The later the switch occurs, the more present biased the participant is. we use $\beta^* = |1- \beta|$, so the higher value of β^* is, the higher a manager's present bias level is.

3. A theoretical framework

We consider a risk neutral manager who make an investment decision in accordance with the following setup:

i. The cost of investment is I

ii. The return on investment is either H (high) or L (low) with probability of $\pi \; and \; 1-\pi$, respectively

iii. For simple exposition, we also assume $L < I < H$. To incorporate Prospect Theory we consider *the cost of investment is I* being the reference point.

iv. The manager's standard exponential discount factor, present bias, and loss aversion are δ, β, λ respectively.

Case 1: A standard model of investment decision

$$PV = \sum_{t=1}^{\infty} \delta^t \left(\pi H + (1-\pi)L\right) - I = \frac{\delta(\pi H + (1-\pi)L)}{1-\delta} - I$$

$$\text{Invest if } \frac{\delta(\pi H+(1-\pi)L)}{1-\delta} \geq I$$

Case 2: Incorporating manager's loss aversion:

Manger would like to invest tomorrow if:

$$PV_T \geq 0$$

$$\therefore \beta \sum_{t=1}^{\infty} \delta^t \{[\pi H + (1-\pi)L] + [\pi H - \lambda(1-\pi)(I-L)] - I\} \geq 0$$

$$Or: \frac{\delta[\pi H + (1-\pi)L]}{1-\delta} + \frac{\delta[\pi H - \lambda(1-\pi)(I-L)]}{1-\delta} \geq I$$

Manger would like to invest today if:

$$\beta\left\{\frac{\delta[\pi H+(1-\pi)L]}{1-\delta}+\frac{\delta[\pi H-\lambda(1-\pi)(I-L)]}{1-\delta}\right\}\geq I$$

Note that the right hand side (RHS) of the above inequality decreases in λ. As such, the manger would have less incentive to invest if he has a greater loss aversion (greater λ).

Interestingly, the manager's perception regarding the probability π - of making a positive return on the investment - has a positive link with his incentive to make investment. In addition, we can show that: $\partial^2\frac{RHS(.)}{\partial\lambda\partial\pi}<0; and\ \partial^2\frac{RHS(.)}{\partial\lambda\partial\pi}>0$ indicating that the manager's perception about π moderates the link between manager's traits and investment.

In what follows, we will explore a possibility that such manager's perception may vary depend on whether they were born before or after 1975. Extant studies from cognitive psychology and neuroscience have suggested that experiences made under strong emotional influence such as the war experience are particularly salient to individuals and a strong driver of behaviour (Dolan, 2002). Similarly, Giuliano and Spilimbergo (2014) note that a macroeconomic environment during early ages significantly influences individual's belief years latter – including beliefs about investment opportunities. To incorporate this idea, it is worth noting that most of managers born before 1975 were still very young during the wars (less than ten-year old). Incorporating this aspect, we now suppose that managers, who were born before 1975, have a normally-distributed prior of the probability π as follows: $\pi\sim N(\mu_0, 1/\tau_0^2)$. Where $\mu_0\ and\ 1/\tau_0^2$ are the mean and variance of the distribution, respectively. Likewise, those born after 1975 have a normally-distributed prior $\pi\sim N(\mu_1, 1/\tau_0^2)$. Finally, we assume that managers receive a noisy signal $z=\pi+\varepsilon_z, where\ \varepsilon_z\sim N(0,1/\tau_Z^2)$

To integrate the fact that managers born and grew up during the wars may have a different belief about investment opportunities, we assume $\mu_1>\mu_0$ indicating that on average managers born after the war – due to experiencing more favourable macroeconomic environment when grown up - are more optimistic about investment opportunity.

A Bayesian manager who was born before 1975 forms the posterior:

$$f^B(\pi|z)=N\left(\frac{\tau_0\mu_0+\tau_z z}{\tau_0+\tau_z},\tau_0+\tau_z\right)$$

Similarly, a Bayesian manager who was born after 1975 forms the posterior:

$$f^A(\pi|z)=N\left(\frac{\tau_0\mu_1+\tau_z z}{\tau_0+\tau_z},\tau_0+\tau_z\right)$$

Because $\mu_1>\mu_0$, we have $f^A(\theta|z)>f^B(\theta|z)$. In other word, given the same signal from the macroeconomic environment managers born after 1975 perceive the probability for the investment to receive a better return i.e., H – to be greater than those born before 1975. Such higher perception regarding favourable return on investment would mitigate the effect of manager's behavioural traits on their investment decision.

4. Data analysis

4.1. Descriptive statistics

In table 1, no outliers are detected by using descriptive statistics. Breaking down our data into firms led by managers born and grew up during the Vietnam wars (in and before 1975) and those firms led by managers born after 1975, we observe that their average risk aversion levels are roughly 0.724 and 0.702, respectively, which indicates that managers born after the Vietnam wars have a marginally lower level of risk aversion than those born during the Vietnam wars. Further, although there are not big differences, the present bias (β)'s mean value of managers born and grew up during the Vietnam wars (mean = 0.372) shows that they are likely to be more present biased than their counterparts born after the Vietnam wars (mean = 0.343)

Table 1: Descriptive statistics

Variables	Full sample		Managers born during the Vietnam wars		Managers born after the Vietnam wars	
	Obs	Mean	Obs	Mean	Obs	Mean
Total investment	320	55268.46	189	19479.05	131	23318.37
Foreign debt	320	11595.74	189	11499.58	131	11893.94
Domestic debt	320	22196.66	189	23114.62	131	19428.08
Present bias (β*)	320	0.364	189	0.372	131	0.343
Risk aversion (α)	320	0.767	189	0.724	131	0.702
Age	320	49.71038	189	54.73006	131	37.87701
Gender	320	0.6525	189	0.707372	131	0.624884
Education	320	5.560658	189	5.657467	131	5.332442
Firm size	320	65.6092	189	41.297	131	60.026
Sales revenue	320	73374.3	189	56975.58	131	81534.87
Cost of goods sold	320	47832.23	189	14500.82	131	1502.02

4.2. Correlation matrix

In table 2, the correlation between dependent variables and parameters of risk and time preferences discloses some clear tendency. Beginning with managers' present bias (β^*), β^* is significantly negatively correlated to firms' total investment ($r= -0.093$, $p<0.1$), but it not significantly correlated to foreign debt and domestic debt at any levels ($r= 0.051$, $p>0.1$; $r= 0.005$, $p>0.1$, respectively). In contrast, managers' risk aversion (α) show a negatively correlation with firms' total investment, foreign debt and domestic debt ($r = -0.117$, $p < 0.05$; $r = -0.121$, $p < 0.05$, $r = -0.124$, $p < 0.05$, respectively).

Table 2: Correlation matrix

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Total investment	**(1)**	1										
Foreign debt	**(2)**	0.278***	1									
Domestic debt	**(3)**	0.318***	0.142***	1								
Present bias (β*)	**(4)**	-0.093*	0.051	0.005	1							
Risk aversion (α)	**(5)**	-0.117**	-0.121**	-0.124**	-0.063	1						
Age	**(6)**	0.006	-0.022	-0.095*	0.007	0.002	1					
Gender	**(7)**	0.005	-0.171***	-0.041	0.011	0.007	0.149***	1				
Education	**(8)**	0.126**	0.031	0.013	0.002	-0.023	0.162***	-0.023	1			
Firm size	**(9)**	0.131**	0.004	-0.041	-0.027	0.021	-0.006	0.008	0.016	1		
Sale revenue	**(10)**	0.022	0.025	-0.062	-0.008	-0.017	-0.01	-0.01	0.024	-0.013	1	

Cost of goods sold	**(11)**	0.135**	0.021	0.038	-0.014	0.007	0.005	0.006	0.016	0.161***	0.012	1

*Note: * p<0.1, ** p<0.05, and *** p<0.01*

4.3. The link between managers' risk and time preferences and firm actions

In table 3 we observe the difference in investment behavior of firms led by managers born in the Vietnam wars. Results in model 3 show that managers' risk aversion (α) and present bias (β*) levels of managers are significant drivers of the total investment of firms headed by managers born in or before 1975 ($\hat{\gamma}_1$ = -0.145, p<0.05; $\hat{\gamma}_2$ = -2.166, p<0.01, respectively).

Table 3: Moderating effects of managers' experience of wars

	Managers were born during Vietnam wars			**Managers were born after Vietnam wars**		
	Foreign debt	Domestic debt	Total investment	Foreign debt	Domestic debt	Total investment
	(1)	(2)	(3)	(4)	(5)	(6)
Risk aversion (α)	-1.036*	-2.263*	-0.145**	-0.913*	-1.532	-0.216
	(-1.89)	(-1.75)	(-2.23)	(-2.01)	(-1.55)	(-0.32)
Present bias (β*)	-3.551***	-1.88*	-2.166***	-0.783	-0.024	-1.003
	(-3.88)	(-1.74)	(-2.62)	(-0.88)	(-0.7)	(-1.02)
Age	-0.043	-0.460***	-0.544	0.067	-0.026	-0.049
	(-0.70)	(-3.65)	(-0.17)	(0.67)	(-0.52)	(-0.45)
Gender	-1.331**	-6.820**	-0.193	0.35	1.099**	0.349
	(-2.12)	(-2.39)	(-0.29)	(0.49)	(2.25)	(0.57)
Education	0.133	0.868*	-0.089	0.082	0.152	0.223
	(0.78)	(2.04)	(-0.08)	(0.24)	(0.3)	(1.3)
Firm size	1.092	1.331	0.277***	-0.459	-0.859*	1.208*
	(1.01)	(1.36)	(2.62)	(-0.56)	(-1.86)	(1.98)
Sale revenue	-0.168	0.061	0.051***	0.018	0.042	0.048*
	(-0.74)	(1.54)	(2.61)	(0.11)	(0.23)	(1.7)
Cost of goods sold	0.262	0.458	-0.093	0.187	-0.126	-0.395*
	(1.26)	(0.96)	(-0.81)	(1.44)	(-1.05)	(-1.69)
Intercept	6.850*	5.891**	5.925***	7.864	6.261***	4.519
	(1.91)	(2.61)	(7.25)	(1.12)	(4.33)	(0.89)
Observations	189	189	189	131	131	131
Adjusted R-squared	0.419	0.79	0.131	0.541	0.271	0.162

*Note: * p<0.1, ** p<0.05, and *** p<0.01*

However, the results in model 6 indicate that managers' risk and time preferences do not have any statistically significant association with the investment behavior of firms led by managers born after 1975. One possible interpretation is that managers' present bias and risk aversion levels consistently increase with age, while younger managers are more patient and more willing to take risks. These results are consistent with previous studies as Graham et al. (2013) document that corporate behaviors vary with CEO age, while individual risk aversion is found to increase with age (Dohmen et al., 2017).

The same story happens when we examine the effect of managers' present bias level on firms' financial leverage. While we fail to find any significant link between managers' present bias and financial leverage of firms headed by managers born after the Vietnam wars at any significance level in models 4 and 5; a one-point increase in managers' present bias leads to roughly 3.6 percentage point decrease in foreign debt level ($\hat{\alpha_2}$ = -3.551, p<0.01), and around 1.9 percentage point reduction in domestic debt level of firms led by managers born in or before 1975 ($\hat{\alpha_2}$ = -1.88, p<0.1). Again, these results are in line with the conventional wisdom that people become more patient when they get older (Nguyen, 2011).

As far as the association between financial leverage and managers' risk aversion is concerned, we find that the risk aversion level of managers born in or before 1975 has a stronger effect than their counterparts. One point increase in managers' risk aversion is associated with 1.036 and 2.263 percentage points reduction in foreign debt and domestic debt levels of firms led by managers born during the Vietnam wars ($\hat{\alpha_1}$ = -1.036, p<0.1; $\hat{\alpha_1}$ = -2.263, p<0.1). However, in the firms led by managers born after the Vietnam wars, we observe that managers' risk aversion does not have any link to domestic debt level. At the same time, one standard deviation increase in risk aversion of managers only leads to a 0.913 percentage point reduction in foreign debt level ($\hat{\alpha_1}$ = -0.913, p<0.1).

5. Conclusion

Our study sheds new light on the current literature by examining how firms led by managers born in and after the Vietnam wars behave differently. We find interesting evidence that risk and time preferences of managers born after 1975 do not affect firms' total investment, but their effects on the total investment of firms led by managers born during the time of the Vietnam wars are strong. Similarly, we observe a significant association between the present bias level of managers and the financial leverage of firms headed by managers born in or before 1975. However, these variables do not have any link in the case of firms led by managers born after the Vietnam wars.

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