


Chapter 2

An Adaptive Prospect Theory View of Market References: NARDL and GARCH-X Models

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ABSTRACT

This chapter considers investors' susceptible (S), proactive (P), reactive (R), and mindful (M) attitudes for the SPRM efficient portfolio. It offers an adaptive prospect theory (APT) view of decision choices that incorporates behavioral biases and noises. With use of NARDL models, in explaining returns of the sample stocks listed in the NSE Nifty from 2000 to 2019, the study incorporates positive and negative effects of the decision references like risk-free return and systematic risk along with endogenous return variables. It explains investors' behavioral biases at susceptible, reactive, and mindful attitudes at stable, unstable, and adaptive market spectrums. The GARCH effects at the empirical GARCH-X augmentation of the NARDL model show the presence of noise and its impacts in terms of proactive effects in the decision choices. With investors' episodic journey over the stable, unstable, and adaptive stock markets, the author contributes towards developing the SPRM framework. Investors' inter-temporal adaptation across biases and the limited sample size limit the generalizability of the study.

INTRODUCTION

In behavioral finance, the central epistemological focus rests on how investors vis-à-vis markets arrive at decisions on stocks' prices (De Bondt, 1995). The price generation process is perspective-driven, psychologically biased, noisy and irrational as well (Sinha, 2015; 2019; 2021a; 2021b). Unless one constructs its weirdness explicitly and measures it precisely, an assumption of weirdness is of less use (Brock, 1995; Kahneman, Sibony, & Sunsten, 2021). The economic agents also differ in their beliefs, preferences and endowments, and these matter in assets' pricing (Anderson, Ghysels, & Juergens, 2005). Hence, in an ontological approach, this chapter develops an adaptive prospect theory view of market references.

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An Adaptive Prospect Theory View of Market References

At investors' decision choices under risk and uncertainty, in contrast to standard finance propositions of the capital assets pricing model (CAPM), there are dynamic behavioral finance propositions in the two standard prospect theory (PT) views in Kahneman and Tversky (1979) and Tversky and Kahneman (1992) (Sinha & Agarwal, 2021). In the former study, investors' gains and losses are viewed from the perspective of reference points. Investors are risk-averse (-taker) in the region of their gains (losses). They show over-weighting (under-weighting) of prospects' value at situations nearer to a certainty (farther from a certainty). That is, in contrast to the expected utility function in the linear CAPM framework, the PT value function is essentially non-linear. The non-linear PT value function is convex at the losses, concave at the gains and steeper at a loss than for equal gain. Nonetheless, the PT value function calls for subjects' adaptation to isolation effects and at a failure to adapt, it suggests for shift of reference points. At shift of reference point or at choice for either initial or final state instead of gains or losses, the version lacks persistency. Tversky and Kahneman (1992) overcame it with their five ontological perspectives - framing effects, nonlinear preference, source dependence, risk-seeking and loss-aversion. This latter version offers separate cumulative functional forms to gains and losses and it extends the same over uncertain and risky prospects.

Kőszegi and Rabin (2006) show that past decision-references - past utility, expectation or belief about consumption, determine present decisions endogenously. With the incorporation of stochastic beliefs and reference points, Kőszegi and Rabin (2007, 2009) extended their 2006 study to address people's reference-dependent risk attitude and consumption. The reference-dependent property covers monopolists' price discrimination (Tramontana, 2021). Investors' narrow-framing explains myopic loss-aversion (Benartzi & Thaler, 1995; Barberis, Huang, & Thaler, 2006; Zeisberger, Langer, & Trede, 2007; Dimmock & Kouwenberg, 2010; Lee & Veld-Merkoulova, 2016). Framing effects and loss-aversion together link disposition effects and realisation effects if investors compare their possible gains at hand with opportunity costs of possible losses that may otherwise be realised (Barberis & Xiong, 2009; Frazzini, 2006; Meng & Weng, 2018, Barberis & Xiong, 2012). Source-dependence describes investors' ambiguity-aversion - at the presence of comparative exposures, investors depict ambiguity aversion and prefer objects with known probability to objects with unknown probability, while ambiguity aversion disappears at non-comparison (Fox & Tversky, 1995; Chow & Sarin, 2001). Baillon and Bleichrodt (2015) find the presence of ambiguity-aversion (seeking) attitudes for likely gains (losses) and unlikely losses (gains). The PT probability weighting function also addresses the equity premium puzzle (Barberis & Huang, 2008; Bali, Cakici, & Whitelaw, 2011; Green & Hwang, 2012).

In generalising the PT, Post, Assem, Baltussen and Thaler (2008) showed that at simple and well-defined problems vis-à-vis high-stake problems, the subjects' choices are reference-dependent and largely explained by their past outcomes while their risk-aversions diminish once their past outcomes differ from expectations. Pope and Schweitzer (2011) found a presence of loss aversion in high-risk contexts. Chew, Ebstein and Zhong (2011) found that the people who are exposed to heterogeneity biases (like anxiety, etc.) depict familiarity bias while the people who are exposed to homogeneity bias depict ambiguity aversion. That is, an ambiguity aversion (familiarity bias) prevails at maintaining status-quo (dynamics) of subjects' reference dependencies.

The existing studies have explored the PT aspects with a variety of biases separately. Incorporation of the PT views in Barberis (2013) along with other behavioral biases, through a general equilibrium model, may lead to a normative view of ontological reality of the market-wide biases. This chapter offers an adaptive prospect theory (APT) view of the biases, markets' manifestation, transition and evolution over the periods.

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