

# PROSPECT THEORY REVISITED: RISK ATTITUDES AND FINANCIAL DECISION-MAKING ACROSS CULTURAL CONTEXTS

Salvador Espinosa, PhD<sup>1</sup>; Roberto Ivo Da Rocha Lima Filho, PhD<sup>2</sup>;  
<sup>1</sup>San Diego State University, <sup>2</sup>Federal University of Rio de Janeiro

1

CULTURE IS A POWERFUL FORCE DRIVING DECISION-MAKING, AS IT HAS THE POTENTIAL TO SHAPE COGNITIONS, ATTITUDES, PERCEPTIONS, AND ACTIONS. INDIVIDUALS ARE PRONE TO INTERNALIZING REGULATION AND POLICY INTERVENTIONS DIFFERENTLY.

2

WHEN TWO INDIVIDUALS WILL HAVE A DIFFERENT POINT WHEN FACING THE SAME INVESTMENT SCENARIO IS WHAT MAKES PROSPECT THEORY SUITABLE TO ANALYZE HOW CULTURE AFFECTS FINANCIAL DECISION-MAKING IN THE CONTEXT OF PORTFOLIO CREATION.

3

THE IDEA OF A DELTA PARAMETER (CRAWFORD AND OSTROM, 1995, 2005) IS AIMED AT EXPLAINING THE INTERNAL VALUATION THAT INDIVIDUALS CONDUCT WHEN ASSESSING THE COSTS AND BENEFITS ASSOCIATED WITH A DECISION

Size, sign, and interpretation of delta parameters in the literature

Delta parameters	Concepts used by other authors	Citations
$+g^{0t}$	Warm glow	Andreoni 1989, Ledyard 1995
$+g^{0t}$	Encouragement, status improvement, reputation enhancement, honor	Coleman 1988, Ullman-Margalit 1977
$-g^{0t}$	Duty	Knack 1992
$+g^{0t}$	Cost of being punished (P and P'), social sanctions, third-party sanctions	Aschford 1986; Knack 1992; Bendor and Moskherjee 1996
$+g^{0t}$ and $-g^{0t}$	Internalized norms, public-spiritedness, moral duty, duty	Coleman 1987, Mansbridge 1994, Etzioni 1988; Commons [1924] 1968
$+g^{0t}$ and $-g^{0t}$	Externally sanctioned norms, reputation, responsibility, moral judgment	Coleman 1987, Krebs 1990, Commons [1924] 1968, Sugden 1986

Source: (Crawford and Ostrom, 2005), p.169

4

OUR THEORETICAL INQUIRY USES PROSPECT THEORY AS A POINT OF DEPARTURE AND INTRODUCES THE DELTA PARAMETER AS A MONOTONIC AND SYMMETRIC OF THE VALUE FUNCTION:

$$V(x) = \begin{cases} x^\beta & \text{if } x \geq 0 \\ -\lambda(-x^\beta) & \text{if } x < 0 \end{cases} \quad V(\delta x) = \delta^\beta V(x)$$

5

WE TEST THE MODEL EMPIRICALLY BY USING DATA FROM HOFSTEDE'S CULTURE COMPASS (2001), A FRAMEWORK THAT IS WIDELY USED TO OPERATIONALIZE CULTURE. GIVEN THAT CULTURE (AND CULTURAL CHANGE) IS EXPECTED TO BE TIME-INVARIANT, IT IS REASONABLE TO EXPECT THAT DIFFERENCES BETWEEN COUNTRIES HAVE REMAINED STABLE OVER TIME. WE FOCUS ON:

- (1) UNCERTAINTY AVOIDANCE, USED AS PROXY TO OPERATIONALIZE PROBABILITY WEIGHTS (I.E., THE BETA PARAMETER) - THE HIGHER THE PUNCTUATION, THE LESS PRONE TO UNCERTAINTY PEOPLE ARE, THEREFORE MORE RISK AVERSE,
- (2) INDIVIDUALISM/COLLECTIVISM DIMENSION, USED AS PROXY TO OPERATIONALIZE THE DELTA PARAMETER - THE HIGHER THE NUMBER, THE LESS COLLECTIVE SOCIETY IS AND THEREFORE, INDIVIDUALS TEND TO BE MORE RISK SEEKER.

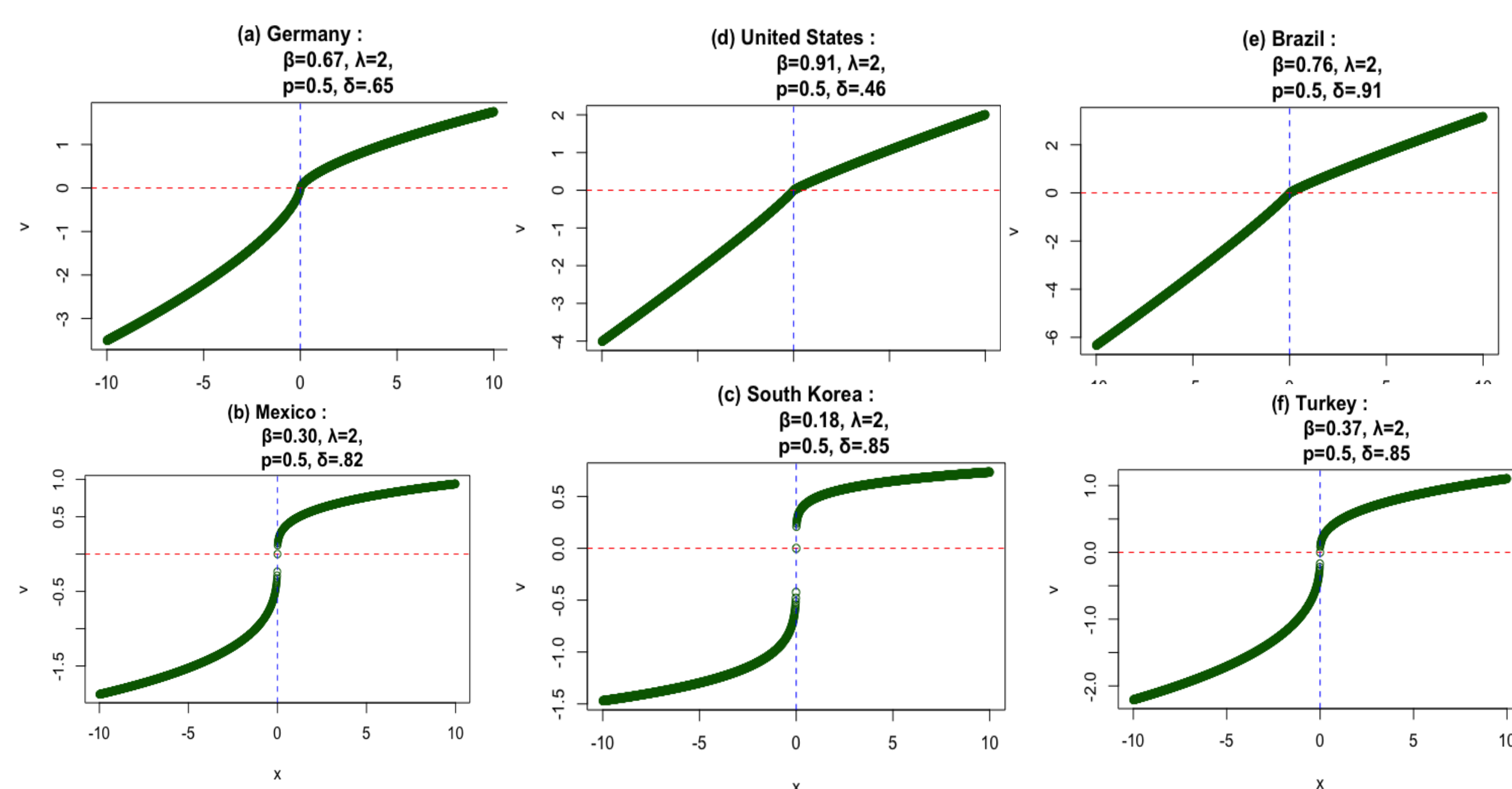
Cultural Compass: Individualism and Uncertainty Avoidance Indices

Countries	Individualism	Description	Uncertainty Avoidance	Description
United States	91	Premise of people look after themselves and not rely on authorities for support	46	Acceptance for new ideas and a willingness to try something different
Brazil	38	prone towards strong, cohesive groups.	69	Bureaucracy, laws, and rules are very important
Germany	67	Strong belief in the ideal of self-actualization and contracts.	65	Strong preference for deductive complex hierarchical law system.
Mexico	30	Risk averse behavior given its collective society	82	Intolerant of unorthodox behavior
South Korea	18	long-term commitment to the member of a defined group	85	Rigid culture that influences peoples' act
Turkey	37	Importance of belonging to in-groups.	85	Huge need for laws and rules,

Source: Hofstede (2001)

6

BETA PARAMETER APPEARS TO BE SHAPING THE VALUE FUNCTION, INDICATING THAT PROBABILITY WEIGHTS WILL VARY ACROSS NATIONS DEPENDING UPON THEIR TOLERANCE TOWARDS UNCERTAINTY.



THE VALUE FUNCTIONS TEND TO ACCEPT UNSTABLE ENVIRONMENTS AND THEREFORE HIGHLY INDIVIDUALISTIC INVESTORS PREFER HIGH RISK AND HIGH RETURN ASSETS TO BONDS. (DÍEZ-ESTEBÁN ET. AL. 2017)

THERE ARE POINTS OF DISCONTINUITY, WHICH INDICATES THAT CULTURE STARTS TO IMPACT MORE GREATLY WHEN LOSSES ARE MORE SEVERE. THE SAME DYNAMICS CAN BE VERIFIED, BUT IN A MINOR MAGNITUDE. INVESTORS WHO DISLIKE UNCERTAINTY PREFER BONDS TO RISKIER ASSETS (DÍEZ-ESTEBÁN ET. AL. 2017)

7

WE CLAIM THAT CULTURE INFLUENCES AN INDIVIDUAL'S INTERNAL VALUATION OF PROBABLE GAINS AND LOSSES, WHICH ENDS UP AFFECTING HOW RISKY OR UNCERTAIN SITUATIONS ARE APPROACHED. THE SIMULATION SUGGESTS THAT THE CULTURAL BACKGROUND OF AN INDIVIDUAL MODIFIES THE SHAPE OF THE DECISION FUNCTION. EVEN IF TRADERS HAVE THE SAME DEGREE OF RISK AVERSION/TOLERANCE, CULTURAL DIFFERENCES WILL RESULT IN DIFFERENT TRADING DECISIONS.

## REFERENCES

- CRAWFORD S., & OSTROM, E. (2005). A GRAMMAR OF INSTITUTIONS. IN E. OSTROM (ED), UNDERSTANDING INSTITUTIONAL DIVERSITY (PP. 137-174). PRINCETON UNIVERSITY PRESS.
- DÍEZ-ESTEBÁN, JM, GARCÍA-GÓMEZ, C. D., LÓPEZ-ITURRAGA, F. J., SANTAMARÍA-MARISCALA, M. (2017). CORPORATE RISK-TAKING, RETURNS AND THE NATURE OF MAJOR SHAREHOLDERS: EVIDENCE FROM PROSPECT THEORY. RESEARCH IN INTERNATIONAL BUSINESS AND FINANCE 42 (2017) 900-911
- HOFSTEDE, G. (1980). CULTURE'S CONSEQUENCES: INTERNATIONAL DIFFERENCES IN WORK-RELATED VALUES. CROSS-CULTURAL RESEARCH AND METHODOLOGY 5. BEVERLY HILLS CA: SAGE.
- HOFSTEDE, G. (2001). CULTURE'S CONSEQUENCES: COMPARING VALUES, BEHAVIORS, INSTITUTIONS, AND ORGANIZATIONS ACROSS NATIONS. (2ND ED). NEW YORK: SAGE.
- TVERSKY, A., KAHNEMAN, D. (1992). ADVANCES IN PROSPECT THEORY: CUMULATIVE REPRESENTATION OF UNCERTAINTY. JOURNAL OF RISK AND UNCERTAINTY. VOL. 5, 297-323. <https://doi.org/10.1007/BF00122574>
- KAHNEMAN, D., SLOVIC, P., & TVERSKY, A. (EDS). (1982). JUDGMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES. NEW YORK, USA: CAMBRIDGE UNIVERSITY PRESS.
- KAHNEMAN, D., & TVERSKY, A. (1979). PROSPECT THEORY: AN ANALYSIS OF DECISION UNDER RISK. ECONOMETRICA, 47, 263-291.
- SANDERS, M., SMULDERS, V., & HALLSWORTH, M. (2018). BEHAVIOURAL SCIENCE AND POLICY: WHERE ARE WE NOW AND WHERE ARE WE GOING? BEHAVIOURAL PUBLIC POLICY, 2(2), 144-167. DOI: 10.1017/BPP.2018.17
- TVERSKY, A., & KAHNEMAN, D. (1974). JUDGMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES. SCIENCE, 185, 1124-1131.
- TVERSKY, A., & KAHNEMAN, D. (1981). THE FRAMING OF DECISIONS AND THE PSYCHOLOGY OF CHOICE SCIENCE, 21(1481), 453-458.
- YATES, J. F., & OLIVEIRA, S. D. (2016). CULTURE AND DECISION MAKING: ORGANIZATIONAL BEHAVIOR AND HUMAN DECISION PROCESSES, 136, 106-118.

## CONTACTS

ROBERTO IVO DA ROCHA LIMA FILHO / SALVADOR ESPINOSA  
FEDERAL UNIVERSITY OF RIO DE JANEIRO / SAN DIEGO STATE UNIVERSITY  
EMAIL: [ROBERTO.IVO@POLLUFRIJBR](mailto:ROBERTO.IVO@POLLUFRIJBR) / [SALVADOR.ESPINOSA@SDSU.EDU](mailto:SALVADOR.ESPINOSA@SDSU.EDU)  
PHONE: + 1 (858) 744-3027