GSBE Marketing-Finance Symposium:

The Whole is Greater than the Sum of its Parts (III)

Maastricht, October 8, 2015

Prof. Dr. ir. Joost M.E. Pennings

Universiteit Maastricht

Overview of Presentation

1. **Contracting & value creation**

   Study 1:Linking Channel Contracting to Shareholder Value: A Marketing-Finance Approach

2. **Traders behavior using MF approach**

   Study 2: Behavioral anomalies of Chicago Traders

3. **Reverse engineering & feasible-financial product identification**

   Study 3 Case study "developing a world commodity index futures contract"

Study 1: Linking Channel Contracting to Shareholder Value: A Marketing-Finance approach

- Transforming *financial objectives* to marketing actions

Motivation: A key question raised by managers during depth interviews:

> "How can we translate our focus on shareholder value into marketing decisions?"

Shareholder Value & Cash flow Volatility → Risk Adjusted Cost of Capital

- Role of Marketing & Finance
  - Marketing activities can reduce the volatility of cash flows,
    - effectively lowering the firm's cost of capital and reducing its working capital (cash) needs
    - lower cost of capital increases the firm's net present value and hence improves shareholders' wealth.
      - » Lowering its cash needs,
      - » return freed-up working capital to its shareholders for reinvestment purposes

Shareholder Value & Channel Contracts

We focus on the cash flow consequences of channel contracts as it directly relates to cash flow volatility and hence SHV

- Spot Contracts:
  - price of transaction determined at time of delivery; price unknown at time of contract engagement

- Fixed-Price Contracts:
  - price of transaction determined at time of contract engagement; price known from the start of contract relationship

Contractual Relationship

Party 1		Party 2
Quantity		Quantity
Quality		Quality
Price	cash-flow preferences	Price
Time of Exchange		Time of Exchange
Place of Exchange		Place of Exchange

Contract Relationship ***Preferences***

- Marketing manager's *internal environment*:
  - Risk attitude and risk perceptions

- Marketing manager's *external environment:*
  - Shareholders

Contract Relationship Preferences: Hypotheses

- H1: CMs with a high focus on **SHV** are likely to prefer forward contract relationships over cash forward contract relationships

- H2: **Risk aversion** and **risk perception** are positively related to the CM's preference for a forward contract relationship over a cash relationship.

Preferred vs. *Realized* Channel Contracts

- Different degrees of focus on shareholder value may lead to **incongruity in contract preferences** ↔ interdependence between channel members

- Power, Conflict, and…..termination of the contract relationship?

Incongruent Contract Preferences & Financial facilitating Services (e.g. Derivatives)

- Financial Facilitating Services (FFS) can *complement* the cash flow consequences of a channel contract

That is:

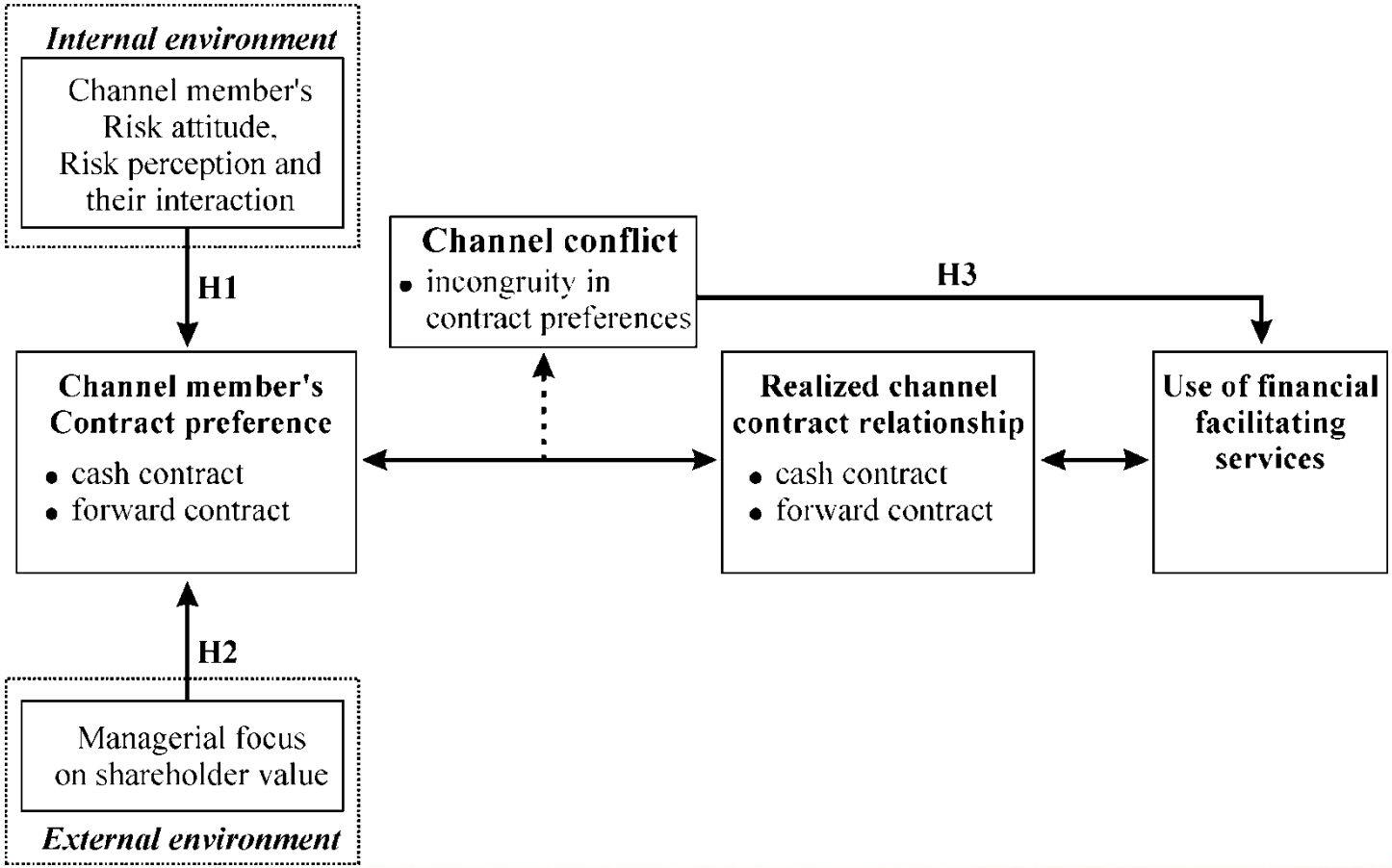
<u>The cash flow from a forward contact</u> =

1. Cash flow from spot contract +
2. cash flow generated by taking a position in a derivative

Conflicting Contract Relationship Preferences

- H3: Channel conflict caused by **contract preference in congruency** increases the probability of channel members' using financial facilitating services.

Conceptual model



Empirical Study

- 140 marketing managers of food marketing channel (Producers, Wholesalers & Processors)
- Computer guided interviews
- Unique data set: soft data & accounting data

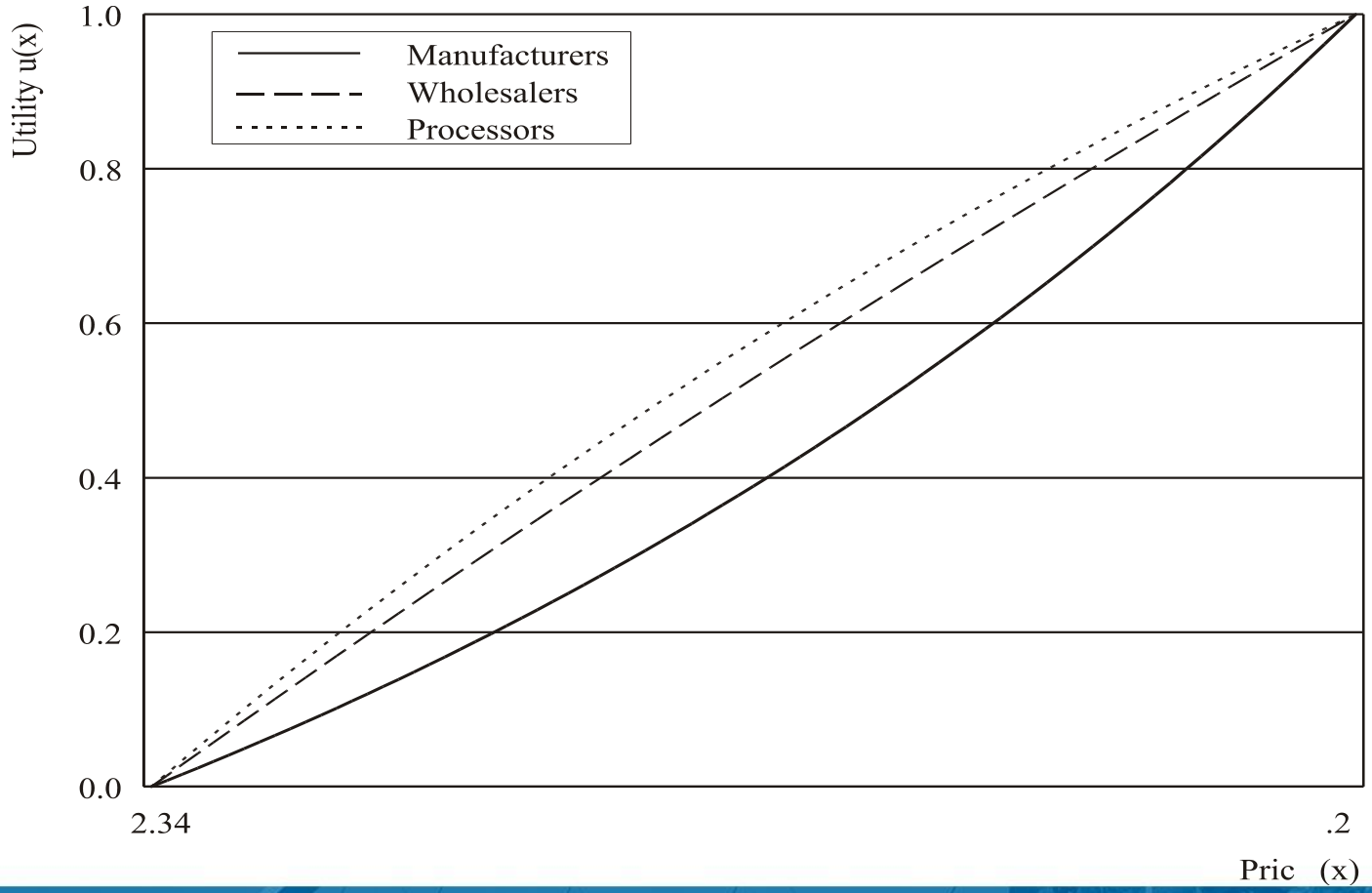
Analysis & Results

TABLE 1

Descriptive Statistics of the Sample

Legal Form of Enterprise		*Revenue in Euros**	
Private company	15.5%	Less than 1 million	24.4%
Private limited company	70.9%	1- 2.5 million	14.6%
Public limited company	13.6%	2.5 -5 million	6.8%
		5-10 million	11.7%
		Over 10 million	42.5%
	100%		100%
Highest Educational Degree of Respondent		*Type of Business*	
High school	2.0%	Producer	11.8%
College	52.0%	Wholesaler	59.0%
University	42.2%	Processors	29.2%
Other	3.8%		
	100%		100%

Risk attitudes



Analysis & Results

Characteristics of Channel Members	Entire Sample (*n*= 127)	Producers (*n*= 15)	Wholesalers (*n*= 75)	Processors (*n*=37)
Contract Preferences cash versus forward contracts	Cash: 46.5% Forward: 53.5%	Cash: 73.3% Forward: 26.7%	Cash: 49.4% Forward: 50.6%	Cash: 29.6% Forward: 70.4%
Experiencing Channel Contract Conflict (%) (Channel member's contract preference is not the one that has been realized)	52.0%	35.7%	54.8%	48.6%
Financial Facilitating Services Usage (%)	55.9%	40.0%	62.6%	48.6.1%

Hypotheses	Parameter estimate	*p*-value	Correctly classified choices	PRPE	Nagelkerke R^2
Hypothesis 1					
Independent variable:					
Channel members' contract preferences (0 = cash contract, 1 = forward contract)					
Dependent variables:					
Managerial focus on shareholder value	1.299	0.005	82.9%	0.8	0.284
Hypothesis 2					
Independent variable:					
Channel members' contract preferences (0 = cash contract, 1 = forward contract)					
Dependent variables:					
Risk attitude	2.894	0.010			
Risk perception	3.238	0.005			
Interaction between risk attitude and risk perception	0.237	0.006	78.2%	0.8	0.218
Hypothesis 3					
Independent variable:					
Channel members' use of financial facilitating services (0 = not using, 1 = using)					
Dependent variable					
Channel conflict	1.192	0.004	87.2%	0.9	0.305

Relating Top Management Questions to Frontline Marketing Actions

- Do frontline marketing managers need help from a third party?

  →Yes. When the strive for shareholder value leads to channel conflicts

- Do suppliers and customers have to have the same focus on shareholder value in order to establish long term relationships?

Relating Top Management Questions to Frontline Marketing Actions

- How will the use of financial facilitating services change markets and channel relationships?

→Financial facilitating services can be used to **redistribute** cash flow **volatility** outside the marketing channel.

Study 2: Marketing managers' behavior using MF approach

How do market managers behave in the context of using FFS?

- Behavioral finance literature
  - Risk behavior literature
    - Anomalies

Drivers of Anomalies

- Prospect Theory
  - A theory that people value gains and losses differently
    - loss-aversion theory
      - According to prospect theory, losses have more emotional impact than an equivalent amount of gains
- Probability weighting
  - expresses that people tend to overreact to small probability events, but under react to medium and large probability events

Probability weighting & Marketing Managers' use of FFS

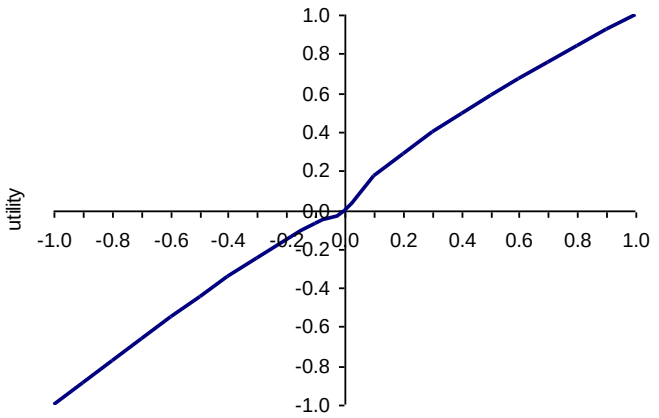
- Study how professional marketers behave in situations of risk and uncertainty
  - allowing for loss aversion and probability weighting
- Investigate how individual characteristics influence trading behavior
- Investigate how trading behavior affects performance in the market

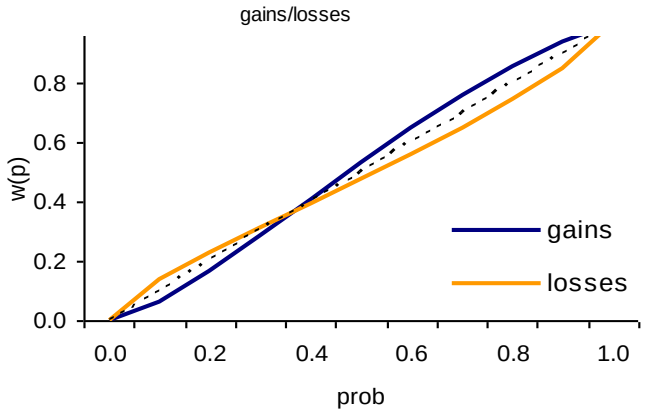
Results: Manager # 1

$$U(x)=\begin{cases} x^{0.7682} & x>0 \\ -(-x)^{1.1621} & x\le 0 \end{cases}$$

$$gains: w(p)=\exp\left[-(-\ln(p))^{1.2439}\right]$$

$$losses: w(p)=\exp\left[-(-\ln(p))^{0.8057}\right]$$



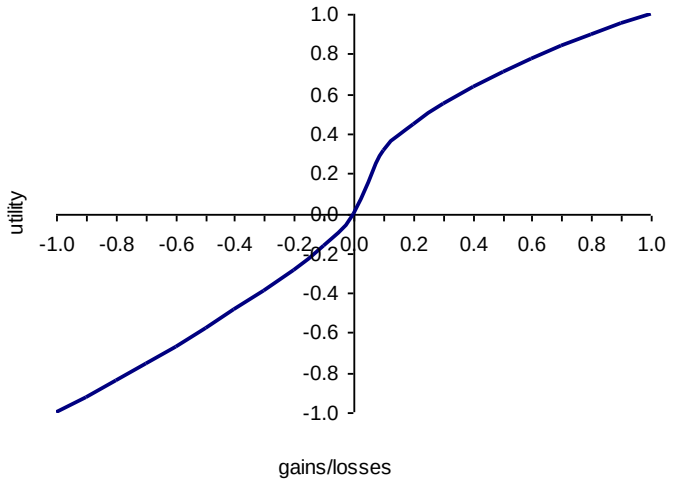


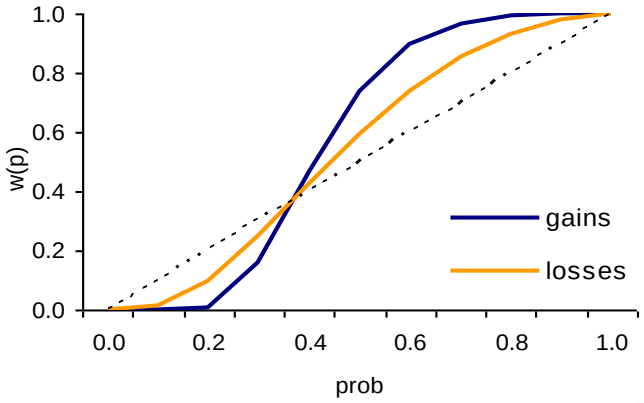
Results: manager # 7

$$U(x)=\begin{cases} x^{0.4987} & x>0 \\ -(-x)^{0.7826} & x\le 0 \end{cases}$$

$$gains: w(p)=\exp\left[-(-\ln(p))^{3.2494}\right]$$

$$losses: w(p)=\exp\left[-(-\ln(p))^{1.7927}\right]$$





Results of 50 Chicago managers

- There is large variability in the magnitude of the parameters of the utility and weighting functions
  - these differences may also represent several differences in behavior
- Interaction between utility and weighting functions may lead to many other behavior patterns

Results of 50 Chicago Managers

- Performance of traders significantly different!

  - Best performers: Traders that do not exhibit loss aversion and probability weighting!

Can we become better traders?

→ Selection & Learning

Example: Optimal use of futures in case of loss aversion

$$h = \frac{(1-\lambda)\cdot\mu_f}{(\theta_G + \lambda\theta_L)\cdot\sigma_f^2} - \frac{\sigma_{cf}}{\sigma_f^2}$$

μ_f = expected change in futures price

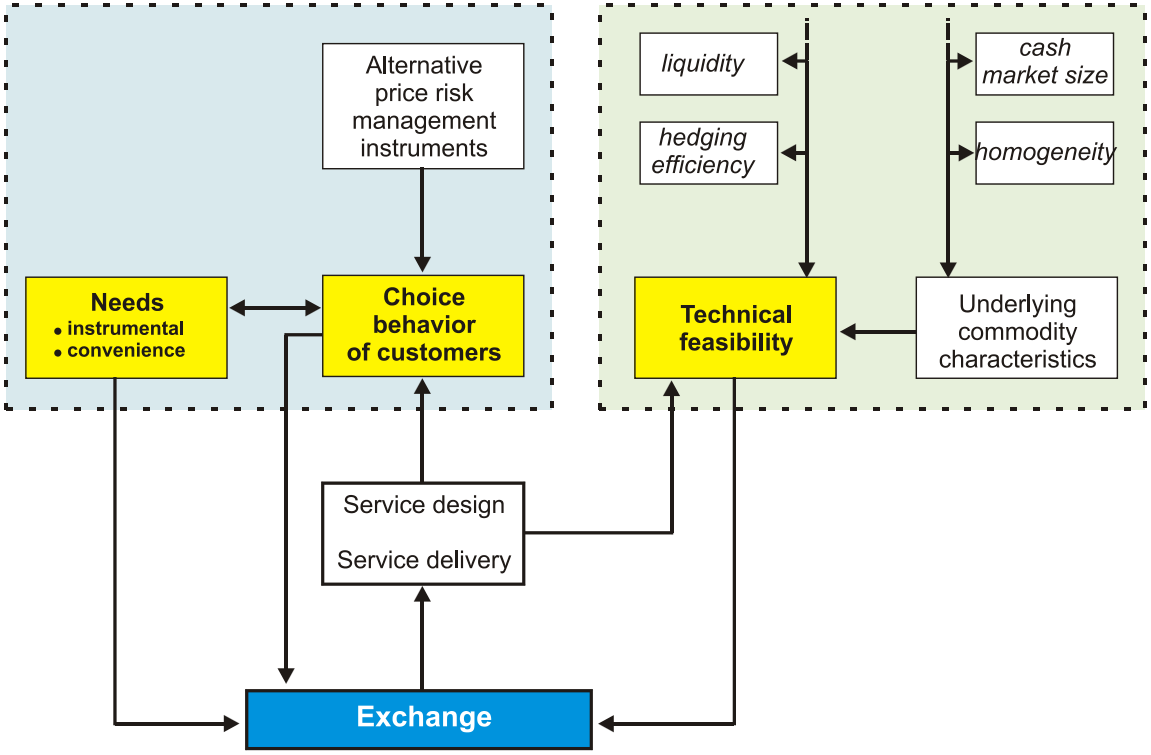
σ_f^2 = variance of futures price change

σ_{cf} = covariance between cash and futures price change

λ = loss aversion

θ_G, θ_L = risk aversion

Study 3: Developing Risk Management Instruments



Study 3: Case Study
Reverse engineering & feasible-financial product identification

- Statistical tools that can map "soft" variables like attitudes & intentions to concrete product attributes!
  - Product attributes include for futures are for example:
    - Contract size
    - Specification of underlying product
    - Way of trading

Goal: Creating high volume "world" commodity index

- Reduce **residual risk of users**
- Produce **speculation opportunities**
- Broaden the spectrum of users:
  - hedgers – investors - locals

Reverse engineering & feasible-financial product identification

1. Commodities included
   (3 commodities: B, C, and P)

2. Volume weighting scheme

3. Re-balancing (volume) scheme

4. Price weighting scheme

Reverse engineering & feasible-financial product identification

Commodities included → BC; BP; CP; BCP

1. **Volume weighting scheme** (per country)

   E = total export volume

   G = gross indigenous production

   I = total import volume

Reverse engineering & feasible-financial product identification

2. Rebalancing rule

M = monthly

A = annually

Y = over the calculation period

Reverse engineering & feasible-financial product identification

3. Index Value: Price Weighting

- Average weekly price
- Weighting the weekly average prices by the volume for each individual country

Reverse engineering & feasible-financial product identification

4. Index performance evaluation

- Hedging effectiveness
  - hedgers
  - investors

- Arbitrage possibilities
  - Locals/traders/speculators/investors

Reverse engineering & feasible-financial product identification

- **Hedging profiles**:
  - HP1: b producer in country j
  - HP2: c producer in country j
  - HP3: p producer in country j
  - HP4: trader in country j

Study 4: Case Study
Reverse engineering & feasible-financial product identification

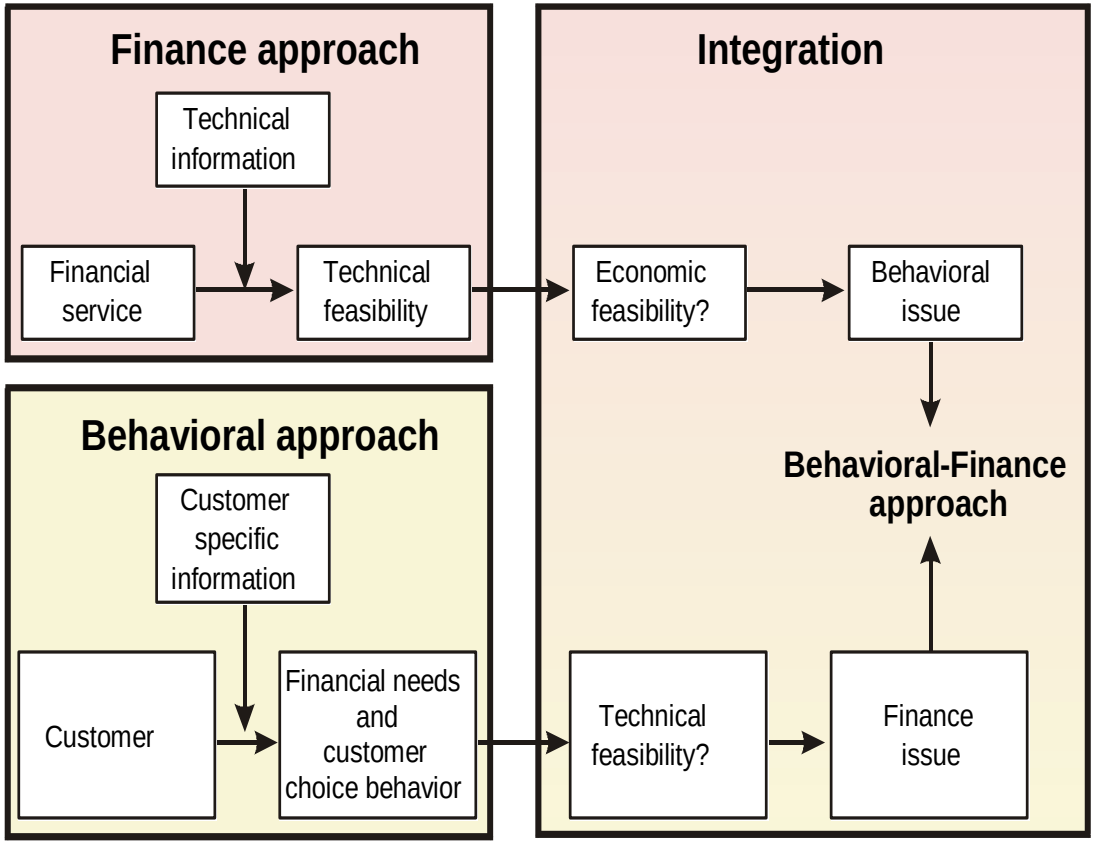
- **Fund (speculative)** profiles:
  - FP1: Inflation index (HCPI)
  - FP2: German discount rate
  - FP3: FTSE UK top 100-index
  - FP4: German DAX-index
  - FP5: CAC 40-index
  - FP6: EURO.NM all share-index
  - FP7: Dow Jones Stoxx Euro-index
  - FP8: FTSE Euro top 100-index

Reverse engineering & feasible-financial product identification

- **72 indices**
  x 15 countries
  x 4 HPs
  x 8 FPs
  = 12960 performance evaluations

  A set of indices selected for behavioral analysis

A General Conceptual Model



Case Study: Developing Commodity Futures Index X

- Research questions:
  - What is the optimal specification for the futures / options (combining this info with technical feasibility & finance results)?
  - Can we identify different segments of potential customers? → customized product development

Preference Structure of Customers

- Importance of each attribute (e.g. way of trading)
- Utility of level of attribute (e.g. way of trading: electronically vs. open outcry)

Research Design

- Target Group
  - Potential users of index product
- Focus groups
  - Revealing what attributes they deem important
  - Decision criteria
- Based on the group discussion we developed futures and options profiles

Research Design: 32 index commodity profiles (proto types) (options and futures)

- Characteristics of contracts
  - contract value (€25,000, €100.000, €250.000 and €1,000,000)
  - trade frequency (1× per day, 2× per day, 5× per day, continuous)
  - way of trading (electronically vs. floor)
  - number of expiration dates (¼&½ year, ¼,½&1 year, ¼,½,1&2 years, ¼,½,1,2&3 years)
  - option type (American vs. European)

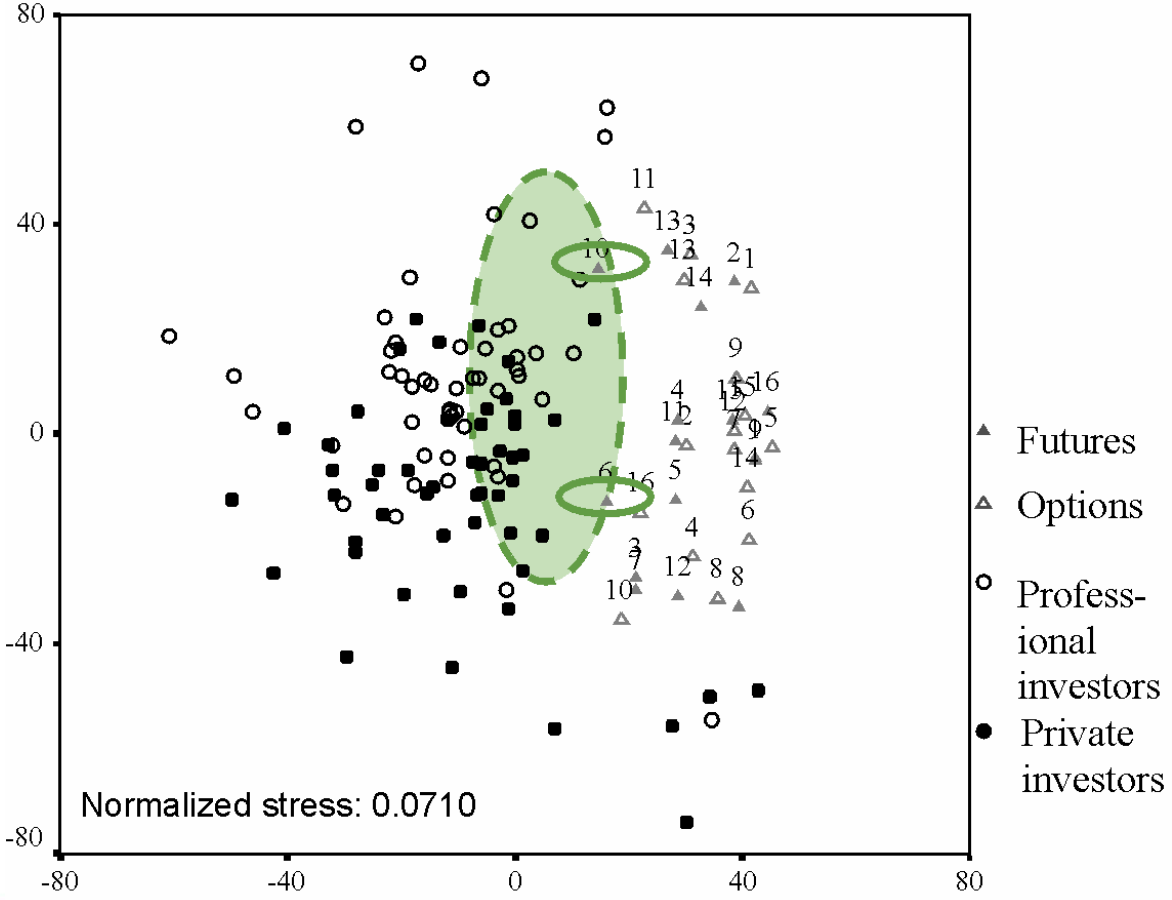
Research Design:
32 index commodity profiles (options and futures)

- Respondents: 100 investors
  - Professional investors (including top management members of blue chip companies)
  - Private investors

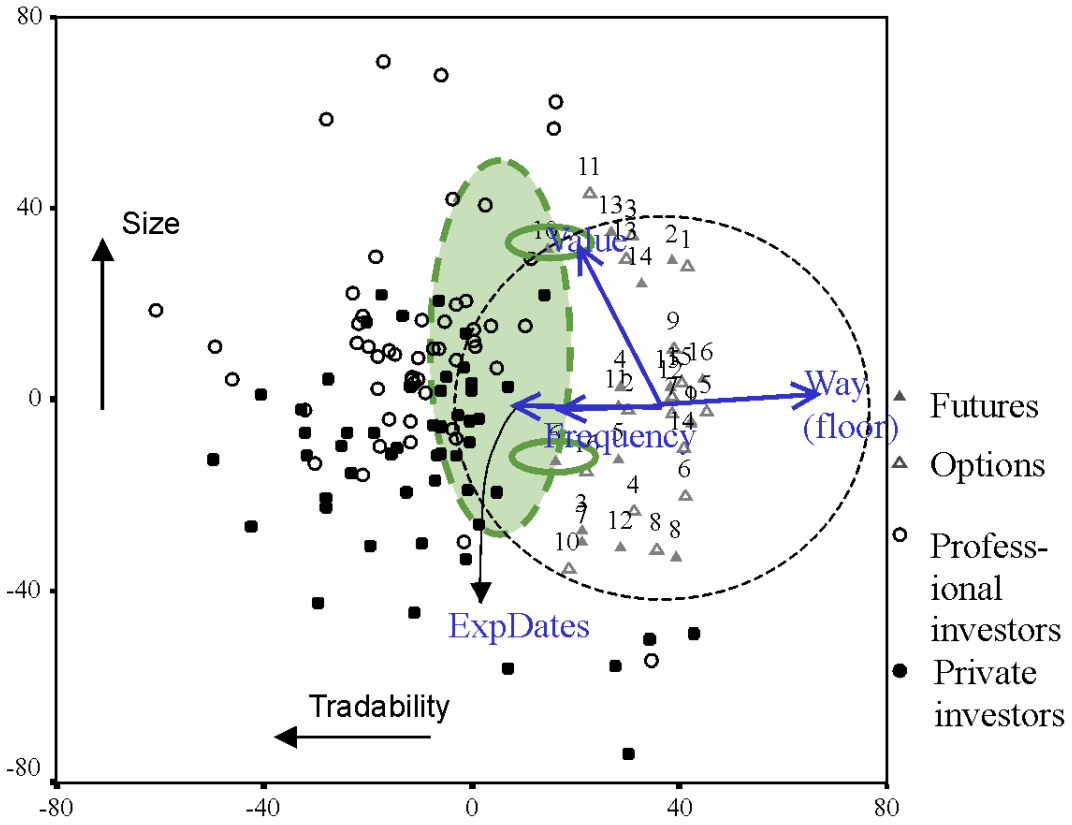
Research Design

- Respondents had to rank the various profiles
- During the ranking, the computer program estimated the utility attached to each attribute and level
- Estimating probability of using “ideal” profile

Results



Results

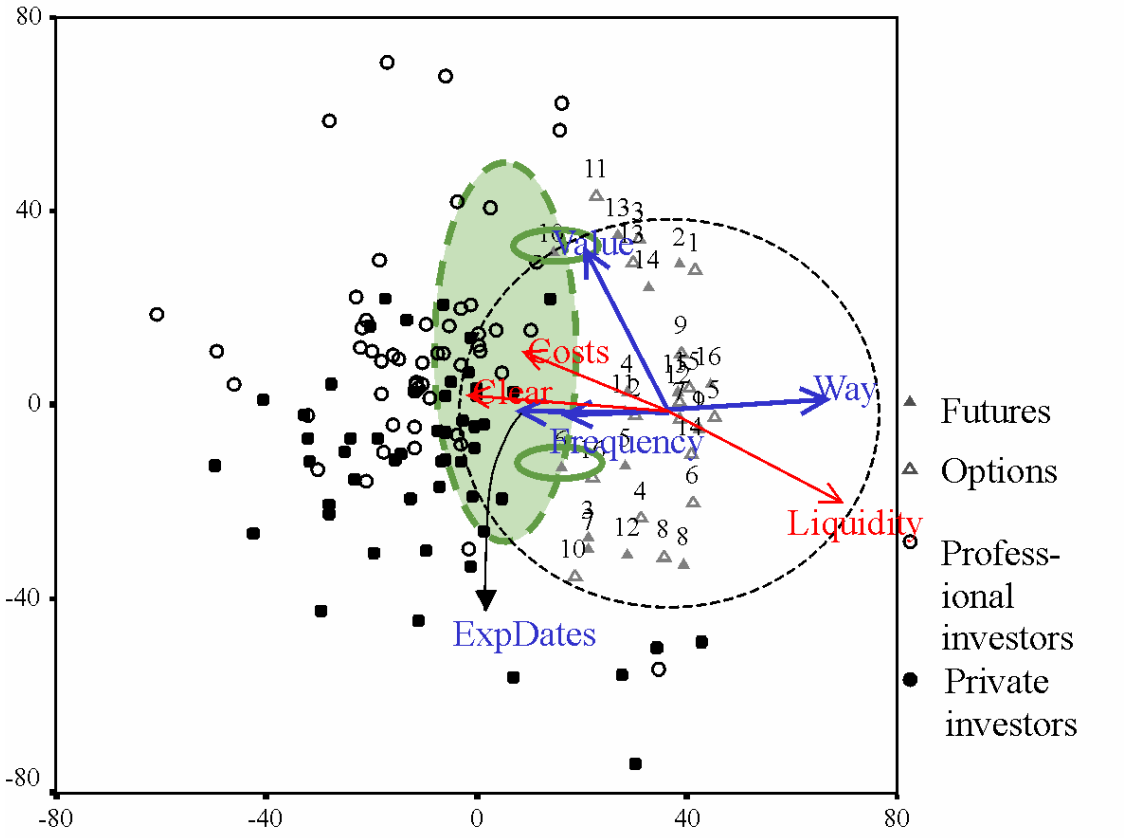

80
40
0
-40
-80
-80
-40
0
40
80
Size
Tradability
Value
Frequency
Way
(floor)
ExpDates
Futures
Options
Profess-
ional
investors
Private
investors

What about financial / technical constraints? (The F in MF Approach!)

Product development department concerns:

- Easy of Clearance (Easy ↔ Difficult)
- Liquidity (Low ↔ High)
- Costs (Low ↔ High)

Include the F in M map!

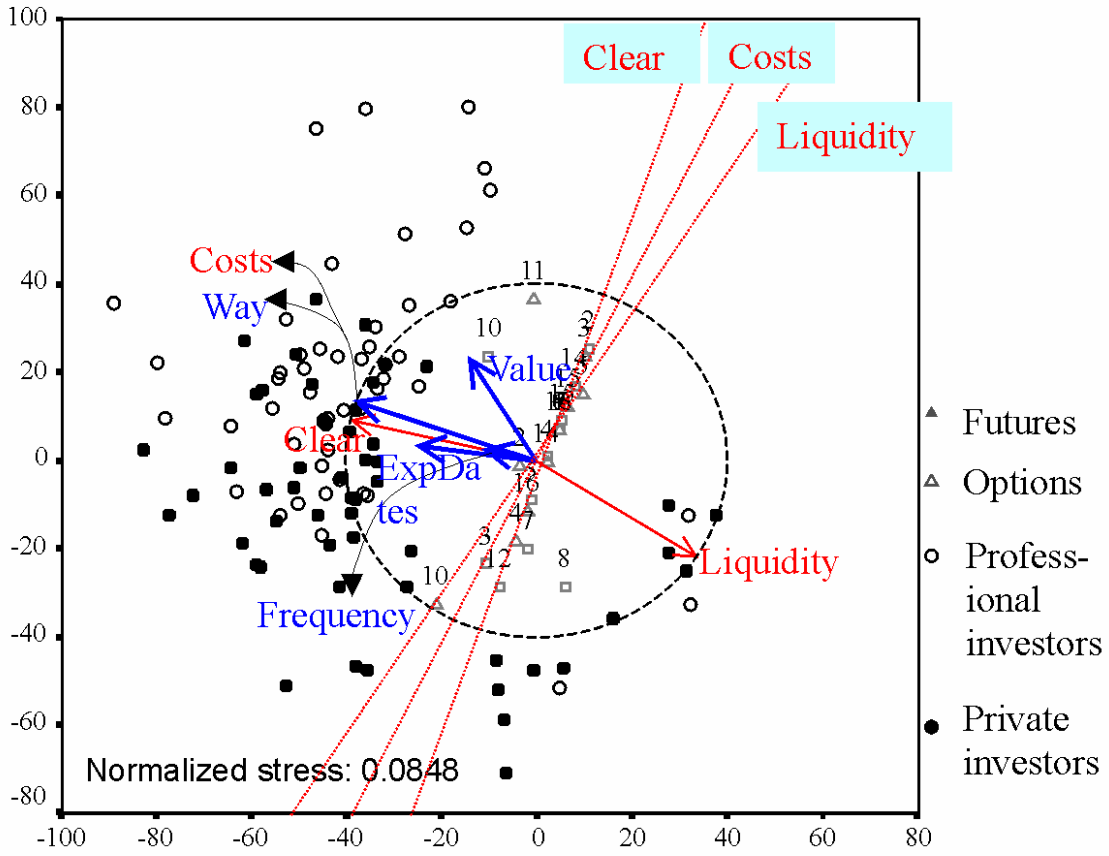


Optimal Solution?

Multiple Axial Partitioning Constraints (MAPC)

- Impose constraints on the product map, in such a way that convex regions in the map correspond to unique combinations of product characteristics and feasibility from financial/technical/strategic considerations (constraining attributes)

Solution


Clear
Costs
Liquidity
Costs
Way
Value
Clear
ExpDa
tes
Liquidity
Frequency
Normalized stress: 0.0848
100
80
60
40
20
0
-20
-40
-60
-80
-100
-80
-60
-40
-20
0
20
40
60
80
Futures
Options
Profess-
ional
investors
Private
investors

Conclusions

- New statistical MF tool available that:
  - Can transform customers' preferences in concrete attributes of futures/options
  - Are able to take the technical constraints into account
  - And hence operationalize our new approach toward product development

Is This Technique The Holy Grail?

- No, it is a decision support system for both the marketing and product development department

- The concept structures product development → significant increase in success rate
- New developments in research
  - Neurosciences – Marketing-Finance interface