MONASH UNIVERSITY
FACULTY OF BUSINESS AND ECONOMICS

BULLS AND BEARS IN THE CAR PARK: AN APPLICATION OF STOCK MARKET AND LOCAL RULE THEORY TO THE BEHAVIOUR OF SHOPPERS

Simon Moss, Tim Haslett & Charles Osborne

Working Paper 39/00
October 2000

Abstract

This paper attempts to derive predictions of consumer behaviour from nonlinear dynamics and local rule theory. In particular, a model that was originally formulated to predict performance in the stock market was applied to anticipate the effects of price changes to car parking behaviour. The degree of crowd influence and fundamental bias were designated as the key determinants of consumer responses. The results revealed that small price changes to parking fees created a transient pattern of unstable behaviour. Ultimately, parking behaviour returned to the baseline pattern but at a different level. These findings could be readily accommodated by, and generally predicted from, the tenets of complexity theory.

BULLS AND BEARS IN THE CAR PARK: AN APPLICATION OF STOCK MARKET AND LOCAL RULE THEORY TO THE BEHAVIOUR OF SHOPPERS

NONLINEAR DYNAMICS AND COMPLEXITY THEORY

The advent of nonlinear dynamics and complexity theory has confirmed the impossibility of predicting consumer behaviour with precision. These theories have demonstrated that simple systems can yield complex, unpredictable outcomes (eg. Baumol & Benhabib, 1989). In addition, trivial perturbations in the environment can induce dramatic changes in the pattern of behaviours (eg. Guastello, 1988). Despite such phenomena, complexity theory can be exploited to predict consumer responses to environmental changes. The demonstration presented in this paper is designed to enhance the predictive utility, as well as the theoretical status, of nonlinear dynamics in social systems.

Complexity theory applies to systems that are composed of many distinct but interacting elements, such as organizations, ecosystems, organisms, and galaxies (eg. Kauffman, 1989). A hallmark of almost every complex system is the ineffable sense of order and coherence that emerges. The individual elements seem to operate in a concerted but dynamic manner. For example, a flock of birds can sail through the sky like a solitary creature. The neurons in our central nervous system yield a cohesive pattern of activation to produce a unified sense of consciousness (for a discussion of order in psychology, see Barton, 1994). Complexity theory denotes the search for, and exploration of, this emergent and remarkable order.

The recognition of order from complexity certainly predated nonlinear dynamics. Order was assumed to arise from the vicissitudes of natural selection. Random mutations to amino acids, for example, generated peptides, which survived as a consequence of their salutary properties. The same process was invoked to explain the evolution of peptides to proteins and ultimately animals. Indeed, precipitous transformations to economies, communities, and ecosystems were all ascribed to natural selection, albeit tacitly.

Several investigators, however, decried this reliance on natural selection as the sole source of order from complexity (see Kauffman, 1995; Waldrop, 1992). Simulations and calculations demonstrated that numerous instances of order could not have arisen from natural selection alone. For instance, the likelihood that amino acids could have evolved into animals or even DNA is negligible. These revelations motivated a vanguard of researchers to uncover the principles that foster the emergence of order.

In some instances, especially social systems, order may arise from top-down mechanisms. In particular, executive agents, such as presidents or directors, may deliberately impose some form of order upon the system. As a trivial example, a CEO may decide to introduce a uniform to the organization, thereby creating an incarnation of order. Of course, most systems, such as cells and galaxies, do not entail an executive leader or coordinator, and thus another account of order is warranted. Even when top-down mechanisms are conceivable, the emergence of order seldom conforms to the desires and commands of the executive. These limitations spawned a bottom-up approach to order.

LOCAL RULES

The transition from a top-down assumption to a bottom-up perspective was, to some extent, foreshadowed earlier this century in relation to crowd psychology and political science. According to this view, a crowd exhibits properties and characteristics that transcend the individuals themselves – the crowd is regarded as more emotional, irrational, and susceptible to deceit than individuals (see Allett, 1996). An executive agent, such as a charismatic leader, is sometimes partly responsible for this emergent property. Nevertheless, researchers recognized that qualities associated with the individuals themselves sparked this order. Crowd psychology was ascribed to various instincts and archetypes that drive individuals to seek comfort from groups (eg. Bowles, 1990). In other words, the behaviour of many interacting individuals can produce an emergent whole with novel and unanticipated qualities.

This bottom-up approach was crystallized by Kauffman, Arthur, and other proponents of the Sante Fe institute (see Waldrop, 1992). These researchers emphasised the significance of feedforward mechanisms for creating order from complexity (Kauffman, 1995). Although feed forward mechanisms are rife in many domains of science and engineering, the remarkable implications of these principles to complex systems had been overlooked.

To illustrate these ramifications, Kauffman considered the evolution of DNA from simple peptides (see Kauffman, 1989, 1995). According to his account, random forces may induce a bond between two simple peptides, creating a more complex product. This product may then serve as the catalyst to other reactions, creating even larger compounds and novel catalysts. This snowballing process yields a complex, but coherent and organized system. The same principles apply to economic systems where random forces may produce a slight advantage of one product over another. This marginal benefit attracts investment which, in turn, promotes further development. This development will raise demand and attract more investment, and so forth, until one product completely overwhelms the other.

The mechanisms that underlie the evolution of complex systems were further clarified by Holland (1989). In particular, Holland attributed evolution to the adaptive, systematic, and unceasing changes to the rules and principles that are generated by individual agents. These are termed local rules because they act in a specific locality with specific environmental demands. In essence, these local rules are subject to the laws of natural selection; unsuccessful rules are continually recombined, updated, or rejected so that optimal adaptation to the environment occurs. The interaction of autonomous individuals, all dictated by separate but interdependent local rules, yields a complex, dynamic, but often coherent system.

These theories, in which order is presumed to arise from the complex interaction of individual agents, have received extensive support. This notion of complexity seems to describe the dynamics of systems in many diverse areas (Waldrop, 1992). Furthermore, a plethora of computer simulations have verified the plausibility of this protean approach in many domains. Some researchers have created systems from a set of interacting, autonomous elements that can resolve sophisticated problems, such as vibrations in elastic systems (Carnel & Fuller, 1995) and engineering issues (Grover, 1997). Other investigators have developed artificial populations from individuals dictated by local rules (eg. Epstein & Axtell, 1996). Finally, some researchers have utilised local rules to model behaviour of animal colonies, such as wasps (Putters & Vonk, 1990) and humans, such as postal workers (Haslett et al, 2000) and factory managers (Haslett et al, forthcoming).

PREDICTIVE UTILITY OF LOCAL RULES

Despite this undeniable success, nonlinear dynamics, complexity theory and local rules can seldom be applied to predict behaviour. Indeed, this criticism is typically regarded as a compliment by investigators in these fields. The burgeoning literature of chaos, a cousin of complexity theory, claims that many simple systems are inherently unpredictable (eg. Baumol & Benhabib, 1989). Undetectable perturbations can yield a surprising diverse range of patterns or classes of outcomes. This sensitivity to initial conditions, the hallmark of chaos, precludes any predictions of medium term behaviour. Prediction is regarded as intrinsically elusive.

Notwithstanding these caveats, this shortfall in predictive utility does constrain the field of complexity. Apart from its pragmatic benefits, prediction is also a crucial element of theory development and evaluation. Although Lakatos, Kuhn, and others have certainly influenced the philosophical attitudes of researchers, social scientists are still primarily governed by the Popperian dictum that theories should be falsifiable. A theory that can potentially be rejected empirically is conferred a higher status than its untestable rivals. The inability of nonlinear dynamics, complexity theory, and local rules to predict behaviour in many circumstances may has precluded definitive tests of these principles.

Admittedly, some aspects of this domain have generated models that yield precise predictions. For instance, several researchers have invoked catastrophe theory to model social behaviour (eg. Guastello, 1982, 1987, 1988). These models can predict striking changes of some outcome in response to trivial perturbations of other variables. However, catastrophe theory has been almost exclusively utilised to model changes in fixed-point attractors. These models cannot be used to predict sudden outbursts of chaotic, periodic, or monotonic behaviour.

Fortunately, other models have been formulated to predict the emergence of these patterns. Perhaps the most encouraging and provocative model was devised by Vaga (1994). This model, which entails a single equation, was proposed to predict performance on the stock-market. Performance was primarily determined by two factors: degree of crowd behaviour and fundamental bias. In essence, this model could yield four stable patterns of performance.

The first pattern arose when the market was susceptible to crowd behaviour and the outlook was positive. These parameters will most likely foster a prolonged rise in share prices – a bull market. Second, when the market is vulnerable to crowd influence, but the outlook is negative, a steady decline in the value of shares may ensue – a bear market. The third pattern corresponds to a market that is less sensitive to crowd effects and is neither positively nor negatively biased. In this situation, performance will vary randomly over time; daily rises and falls will conform to a gaussian distribution, and will thus describe a random walk. Finally, the fourth pattern arises when the crowd is influential but the outlook is neither positive nor negative. In this case, the market will experience acute and unpredictable changes, denoted as unstable transitions. The distribution of these changes will be platykurtic rather than gaussian. Table 1 summarizes these patterns.

Insert Table 1 about here

Although plausible and informative, this model does has two shortcomings. First, the degree to which this model can be generalized beyond the stock-market has not been explored. Second, assuming the model is applicable in other domains, crowd behaviour and fundamental bias cannot be readily operationalized or estimated. The present study is designed to begin to redress these limitations.

THE PRESENT STUDY

According to Vaga's model (1994), the fluctuations and oscillations of stock-market performance seem to be contingent upon two key factors: crowd behaviour and fundamental bias. The present study assessed the degree to which this model applies to another facet of consumer behaviour. In particular, this study explored consumer responses to a price rise in the carpark of a local shopping centre. Vaga's (1994) model was invoked to predict the response of shopping patrons, as reflected by the number of vehicles that entered the car park, to this price rise. The campaign to publicize this rise was effective and involved prominent signs, prize draws, leaflets, and so forth.

To derive these predictions, crowd behaviour and fundamental bias had to be operationalized and estimated. First, crowd behaviour was operationalized as the extent to which the individual agents are exposed to the same event. When individuals are exposed to a publicized event, they will tend to seek advice from each other and the media, thereby augmenting collective behaviour. Second, fundamental bias in the aftermath to this change was operationalized as the average response divided by the standard deviation. In other words, when some event yields an equal blend of positive and negative responses, the fundamental bias will approach zero. Nonetheless, a marginal bias towards either positive or negative responses can be obscured when the variability across individuals is appreciable.

In this study, crowd behaviour and fundamental bias prior to the publicity campaign was assumed to be stable and negligible. Hence, car parking attendance should conform to a random walk. The publicity and implementation of price changes should then inflate crowd behaviour. Nevertheless, the fundamental bias should remain negligible. To justify this claim, the rise in prices may repel some patrons from using the car park. On the other hand, this repulsion may increase the number of unoccupied spaces and thus attract new patrons. Taken together, these opposing forces may negate one another. Thus, during this period, car parking attendance should produce marked, unstable transitions.

These unstable transitions may randomly yield a marginal bias, which may then be exaggerated by feed forward mechanisms. Hence, soon after the price change, the crowd behaviour coupled with this fundamental bias should yield a steady rise or fall in car parking behaviour. Crowd influence and fundamental bias should then return to baseline levels, producing the original random walk.

METHOD

Description of the car park

The shopping plaza is located in Geelong, Australia. Geelong is a satellite city with a population of 220,000 and is located 75 km from the Victorian capital, Melbourne. The plaza, typical of many centres in Australia, has been operating for nine years and constitutes the major source of shops for this city.

Prior to the price change, patrons could leave their vehicle in the car park for the first two hours without charge. Indeed, 90% of shoppers parked their vehicles for less than two hours. In April 1996, management decided to introduce a small charge for the first two hours, equivalent to approximately 35 US cents.

Procedure

Data were collected from 1995 to 1998 during the period between 2 February and 31 July. Two measures were recorded every day, apart from Sundays. The first measure was simply the total number of vehicles that entered the car park. The second measure was the number of people who entered the main doors of the shopping centre. This measure reflected the number of individuals who patronised the centre. Linear interpolation was applied to replace missing data.

For each day, the number of vehicles that entered the car park was divided by the number of patrons. This ratio was regarded as the most appropriate measure of parking behaviour, because it is relatively uncontaminated by seasonal and daily fluctuations in other aspects of shopping, such as stock-take sales and school holidays.

RESULTS

Figure 1 presents the ratio of number of vehicles to number of patrons each day. The arrow represents the date in which the parking fees were changed.

Insert Figure 1 about here.

This time series seems to entail five distinct phases. The first phase is characterized by a stable pattern, with the possible exception of a transitory disturbance towards the beginning of May. The second phase begins 3 weeks before the introduction of new parking fees. This phase, which coincides with the campaign to publicize the new parking scheme, entails marked fluctuations. The third phase begins a few days after the changes in parking fees. At the beginning of this period, the ratio is lower than the level observed during the first phase. Throughout this phase, however, the series gradually climbs. The fourth phase begins about 6 weeks after the change and seems to be stationary. The final phase begins in 1997. Although stable, the series seems to be lower than the other stationary periods.

An interrupted time-series analysis was undertaken to determine whether or not phase 4 departed significantly from phase 1. The data that pertain to these phases were subjected to a seasonal ARIMA process (see Box and Jenkins, 1976). Three terms were invoked to model these data. In particular, this series was expressed as a function of the values observed one day, one week, and two weeks before. A dummy variable, denoted as phase, was employed to differentiate between the two phases.

This model accurately captured the series. In particular, an examination of the residuals did not uncover any autocorrelation and none of the Box-Ljung Q values at any of the first 20 lags attained significance. Table 2 provides the output associated with this model.

Insert Table 2 about here

No significant difference arose between the two phases. In other words, phase 4 did not depart significantly from phase 1. The stable pattern that arose after the change in parking fees mimicked the original pattern.

Furthermore, another interrupted time-series analysis was conducted to ascertain whether phases 1 and 4 differed significantly from phase 5. Essentially, the same seasonal ARIMA model was utilized, except the dummy variable was now used to differentiate phases 1 and 4 from phase 5.

Again, this model represented the data series accurately – the residuals did not exhibit any autocorrelation. Table 3 presents the outcome of this analysis.

Insert Table 3 about here

The analysis revealed a significant interruption to the series. The mean level of this series dropped significantly after 1996. The source of this reduction is unknown, because 6 months elapsed between phases 4 and 5. The striking feature, however, was the persistence of the underlying pattern. Despite the drop between 1996 and 1997, each data point continued to depend on the previous day, week, and fortnight.

DISCUSSION

This study investigated the impact of price changes to consumer behaviour in the context of nonlinear dynamics and complexity theory. Prior to the publicity campaign regarding the car parking price change, both crowd behaviour and fundamental bias were predicted to be minimal. Hence, according to Vaga's (1994) model of stock-market performance, car parking attendance should conform to a random walk model.

The outcome of this study partly, but not wholly, supports this prediction. Parking behaviour each day was partly contingent upon parking behaviour one day, one week, and two weeks before. When these autoregressive characteristics were eradicated, the pattern conformed to a random, gaussian distribution. In other words, Vaga's (1994) model will be able to accommodate this pattern once an autoregressive component is appended.

The publicity campaign, coupled with the price change, was predicted to promote crowd behaviour without a concommitant fundamental bias. According to Vaga's (1994) model of stock-market performance, this period should be characterized by instability and marked deviations.

The outcome provided undeniable support of this hypothesis. These results indicate that publicized changes that do not patently benefit or hinder consumers will produce unstable patterns of behaviour. This pattern is marked by both chaos, in the sense the pattern seems to follow a random path, and order, in the sense that many individuals seem to be adapting their behaviour in unison.

Shortly after the price change, marginal biases arising from random forces should be magnified by feed forward mechanisms. Again, this hypothesis was corroborated by the transient rise in car parking attendance that superseded the unstable period. Interestingly, however, this rise simply returned car parking attendance to the baseline pattern but at a different level. Hence, despite the price change, the car parking attendance pattern ultimately returned.

At this point, the original autoregressive pattern re-emerged. Indeed, the same pattern was also observed in 1997 and 1998, albeit at reduced levels. These findings demonstrate the stability of this autoregressive model.

In short, these findings reveal that Vaga's (1994) model of the stock-market seems to be applicable to other facets of consumer behaviour. Admittedly, this model may need to consider idiosyncratic forces in particular domains, such as autoregression. Nevertheless, the chief patterns of behaviour were successfully predicted from this model. These findings provide a glimmer of hope that complexity theory, which was established to explain the unpredictable nature of our universe, can be invoked to produce meaningful predictions regarding patterns of social behaviour.

REFERENCES

Barton, S. (1994). Chaos, self-organization, and psychology. *American Psychologist*, 49(1), 5–14.

Baumol, W.J., & Benhabib, J. (1989). Chaos: Significance, mechanism, and economic applications. *Journal of Economic Perspectives*, 3(1), 77–105.

Haslett, T., Moss, S., Osborne, C., & Ramm, P. (2000). Local rules and fitness landscapes: A catastrophe model. *Non-linear Dynamics, Psychology and Life Sciences*, 4(1), 67–86.

Haslett, T., Moss, S., & Osborne, C. (2000 forthcoming). Local rules: Their application in a kanban system. *International Journal of Operations and Production Management*, 20(7).

Kauffman, S.A. (1995). *At home in the universe: The search for self-organization and complexity.* Oxford University Press: New York.

Vaga, T. (1994). *Profiting from chaos: Using chaos theory for market timing, stock selection, and option valuation*. McGraw-Hill: New York.

Table 1

Primary patterns in stock-market performance

	Low crowd behaviour	High crowd behaviour
Positive bias	*	Bull market
Negative bias	*	Bear market
No bias	Random walk	Unstable transitions

* These situations are rare, because events that produce bias will typically augment crowd behaviour.

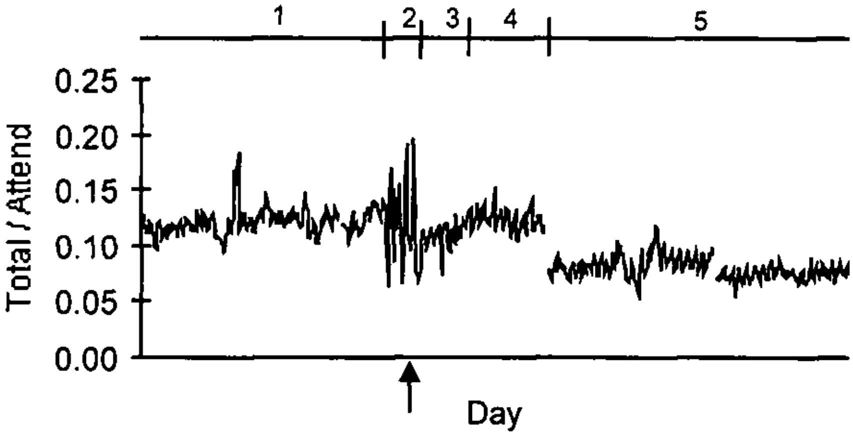

Figure 1. Total number of vehicles in the car park divided by the number of individuals who entered the main doors. The breaks in this series demarcate the years.

Table 2 Output derived from the ARIMA analysis that compared phase 1 with phase 4

	B	Standard Error	t
Phase	-.003	.004	-0.62
Day Lag	.650	.049	13.16 ***
Week Lag	.169	.064	2.62 **
2 Week Lag	.139	.066	2.11 *
Constant	.122	.025	49.02 ***

* $p < 0.05$, ** $p < 0.01$, ***$p < 0.001$

Table 3 Output derived from the ARIMA analysis that compared phases 1 and 4 with phase 5

	B	Standard Error	t
Phase	-.042	.002	-14.81 ***
Day Lag	.645	.035	18.10 ***
Week Lag	.197	.046	4.30 ***
2 Week Lag	.156	.046	3.39 ***
Constant	.121	.002	59.27 ***

* $p < 0.05$, ** $p < 0.01$, ***$p < 0.001$

DEPARTMENT OF MANAGEMENT

2000 WORKING PAPER SERIES

1/00 Amy Wong. "The Role of Relationship Strength in the Formation of the Customer-Contact Employee Relationship" (January, pp.26).

2/00 Paul Kalfadellis & Loong Wong "Labour of Burden: An Analysis of Occupational Change – The Domestic Worker (January, pp. 9).

3/00 Marjorie Jerrard "Organisation of the Roman Clothing and Textile Industry: Skill, Occupation, and the Gender-segmented Workforce" (January, pp. 11).

4/00 Marjorie Jerrard "Formation to Arbitration" – The Early Years of the Queensland Branch of the Australasian Meat Industry Employees' Union 1889-1918" (January, pp. 14).

5/00 Jacintha Tan & Damian Morgan "Quality in Australian Tourism Education: Educator and Professional Views" (January, pp. 15).

6/00 Betty Weiler & Sam H Ham "Training Ecotour Guides in Developing Countries: Lessons Learned from Panama's First Guides Course" (January, pp. 9).

7/00 Rosemary Black, Sam Ham & Betty Weiler "Ecotour Guide Training in Less Developed Countries: Some Research Directions for the 21st Century" (January, pp. 12).

8/00 Jacintha Tan & Damian Morgan "Tourism Education: Views from Educator and the Tourism Industry" (January, pp.8).

9/00 Warwick Frost "Ecotourism and Rainforests" (February, pp.13).

10/00 Glenice J. Wood & Margaret Lindorff "Sex Differences in Managers' Explanations for Career Progress: A Test of Social Role Theory" (February, pp.15).

11/00 Yi-Ting Yu & Alison Dean "Including Emotions in Customer Satisfaction Measurement: a new Perspective on Loyalty" (March, pp.11).

12/00 Dianne Waddell & David Mallen "The Future for Quality Managers" (March, pp.13).

13/00 Di Waddell & Deb Stewart "Training and Management Development of Quality Managers" (March, pp.12).

14/00 Geraldine Khachan & Cornelis Reiman "Australia's Relationship with the Middle East – A Trade Perspective" (March, pp.16).

15/00 Lim Hong Hai, Ali Haidar & Len Pullin "Managerial Values of Penang Island Municipal Council Officers: A Preliminary Report" (March, pp.11).

16/00 Alison M. Dean & Dr. Milé Terziovski "Quality Practices and Customer/Supplier Management in Australian Service Organisations: Untapped Potential" (March, pp.12).

17/00 Sarah Germaine Grant, Sonja Petrovic-Lazarevic & Mike Berrell "Significance of Recognition of Australian and Singaporean Cross-Cultural Differences in the Decision-Making Process" (April, 15.pp).

18/00 Michelle R. Greenwood "The Study of Business Ethics: A Case for Dr. Seuss" (April, 9.pp).

19/00 Bernadine Van Gramberg & Julian Teicher "Exploring Managerialism in Victorian Local Government" (April, pp.13).

20/00 Jan Schapper "Value Dissonance: A Case of the Pyschodynamics of Organisational Identity" (April, pp.15).

21/00 Alison M. Dean "Issues Inherent in Measuring and Monitoring Quality in Contracted Services" (April, pp.16)

22/00 Damien Power & Amrik S. Sohal "An Empirical Study of Human Resource Management Strategies and Practices in Australian Just-in-Time Environments" (April, pp.11).

23/00 Amrik S. Sohal & Mile Terziovski "Continuous Improvement Process Teams (CIP Teams) and Corrective Action Teams (CATs) at Varian Australia" (April, pp. 8).

24/00 Damien Power & Amrik S. Sohal "Human Resource Management Strategies and Practices in Just-in-Time Environments: Australian Case Study Evidence" (April, pp. 23).

25/00 Cherrie Jiuhua Zhu & Peter J. Dowling "Changes in the Role of Government in Human Resource Practices in China: Implications for Multinational Corporations" (April, pp. 14).

26/00 Ruth Barton & Julian Teicher "A Labor Government's Different than the Current Government" Telstra, Neo-Liberalism and Industrial Relations" (April, pp.17).

27/00 Owen E Hughes "New Public Management: A Parliamentary Perspective" (April, pp. 13).

28/00 Tui McKeown "Why do Professionals become Contractors?" (May, pp. 13).

29/00 Deb Stewart & Dianne Waddell "Quality Managers: Are their Personal and Professional Development Needs being fulfilled? (May, pp. 6).

2000 WORKING PAPER SERIES

30/00 Yvette Reisinger & Lindsay Turner "Cultural Differences between Mandarin Speaking Tourists and Australian Hosts and their impact on Cross-Cultural Tourist-Host Interaction" (May, pp. 21).

31/00 Yvette Reisinger & Lindsay Turner "A Cultural Analysis of Japanese Tourists: Challenges for Tourism Marketers" (May, pp. 22).

32/00 Yvette Reisinger & Lindsay Turner "Japanese Tourism Satisfaction: Gold Coast Versus Hawaii" (May, pp. 20).

33/00 Yvette Reisinger & Lindsay Turner "Asian and Western Cultural Differences: The New Challenge for Tourism Marketplaces" (May, pp.17). **(Reissued June, pp.12)**

34/00 Yvette Reisinger & Lindsay Turner "Tourist Satisfaction with Hosts: A Cultural Approach Comparing Thai Tourists and Australian Hosts" (June, pp.16).

35/00 Yvette Reisinger & Lindsay Turner "Structural Equation Modeling with Lisrel: Application in Tourism" (June, pp.29).

36/00 Helen De Cieri & Peter J. Dowling "Convergence and Divergence: Central Concepts in Strategic Human Resource Management and Marketing in an International Context" (June, pp.15).

37/00 Michelle R Greenwood "The Importance of Stakeholders According to Business Leaders" (June, pp.13).

38/00 Phyllis Tharenou "Consequences of Mentoring on Career Advancement: Does Protégé Gender Make a Difference" (June, pp.16).

39/00 Simon Moss, Tim Haslett & Charles Osborne "Bulls and Bears in the car park: An Application of Stock Market and Local Rule Theory to the Behaviour of Shoppers" (October, pp.10).

40/00 Warwick Frost "Golden Anniversaries: Tourism and the 150th Anniversary of the Gold Rushes in California and Victoria Festivals" (October, pp.10).

41/00 Sonja Petrovic-Lazarevic & Milé Terziovski "The Effects of Human Resources Management on Transitional Companies in the Globalisation System" (October, pp.8).

42/00 Amanda Pyman, Julian Teicher & Glennis Hanley "The Impact of the Workplace Relations Act 1996 (Cth.) – The Views of Five Australian Trade Unions" (October, pp.11).

43/00 Margaret Lindorff & Michael Barnett "Gender Differences in Work Values: Testing Alternative Explanations" (October, pp.7).

44/00 Margaret Lindorff "Gender, Social Support, and Strain: What is Helpful to Whom?" (October, pp.19).