

**3<sup>ο</sup> Εθνικό Συνέδριο**  
**Επιστημονικής Εταιρείας Χρηματοοικονομικής**  
**Μηχανικής και Τραπεζικής**



**<http://www.fel.tuc.gr/febsgr2012>**

17-18 Δεκεμβρίου 2012, Αθήνα



# ΜΗΝΥΜΑ ΑΠΟ ΤΟΝ ΠΡΟΕΔΡΟ ΤΟΥ ΣΥΝΕΔΡΙΟΥ

Αγαπητοί Φίλοι και Συνάδελφοι,

Εκ μέρους της Οργανωτικής Επιτροπής σας καλωσορίζω στο 3ο Εθνικό Συνέδριο της Επιστημονικής Εταιρείας Χρηματοοικονομικής Μηχανικής και Τραπεζικής (ΕΕΧΜΤ).

Η ΕΕΧΜΤ ιδρύθηκε το 2010 στα Χανιά. Το Δεκέμβριο του 2010 πραγματοποιήθηκε στην Αθήνα το 1ο Εθνικό Συνέδριο της εταιρείας και ακολούθησε τον Ιούλιο του 2011 το 1ο Διεθνές Συνέδριο το οποίο πραγματοποιήθηκε στα Χανιά. Στα πλαίσια των δραστηριοτήτων της ΕΕΧΜΤ πραγματοποιήθηκε επίσης το 2ο Εθνικό Συνέδριο το Δεκέμβριο του 2011 στην Αθήνα, και το 2ο Διεθνές Συνέδριο που έλαβε χώρα τον Ιούνιο του 2012 στο Λονδίνο με μεγάλη επιτυχία (περισσότερες από 150 εργασίες, ορισμένες από τις οποίες θα δημοσιευτούν σε ειδικό τεύχος στο Journal of Banking and Finance).

Το 3ο Εθνικό Συνέδριο της Επιστημονικής Εταιρείας Χρηματοοικονομικής Μηχανικής και Τραπεζικής αποτελεί τη συνέχεια των δύο προηγούμενων Εθνικών Συνεδρίων της Εταιρείας, για την ανταλλαγή και τη διακίνηση ιδεών σχετικών με τη χρηματοοικονομική μηχανική και τραπεζική στον Ελληνικό χώρο.

Στόχος του συνεδρίου είναι η παρουσίαση νέων ερευνητικών αποτελεσμάτων καθώς και η διάδοση μεθοδολογιών για την ανάλυση και λήψη αποφάσεων στο χώρο της Χρηματοοικονομικής, από τα μέλη της Εταιρείας, αλλά και όποιων άλλων το επιθυμούν.

Είμαστε περήφανοι που διοργανώνουμε για τρίτη συνεχή χρονιά ένα τόσο σημαντικό γεγονός στην Αθήνα. Πιστεύω, ότι αυτό το συνέδριο θα προσφέρει μια μοναδική ευκαιρία για ανταλλαγή καινούριων ιδεών, μέσω διεξοδικών συζητήσεων στα κοινά πεδία ερευνητικού ενδιαφέροντος.

Μαζί με την Οργανωτική Επιτροπή έχουμε δουλέψει σκληρά, ώστε να διασφαλίσουμε την επιτυχία του συνεδρίου και πιστεύω ότι τον στόχο αυτό τον έχουμε επιτύχει. Συνολικά, έχουμε συμπεριλάβει 32 ερευνητικές εργασίες στο τελικό πρόγραμμα του συνεδρίου, το οποίο οργανώνεται σε πέντε συνεδρίες. Οι εργασίες αυτές καλύπτουν όλες τις πρόσφατες εξελίξεις στον χώρο της χρηματοοικονομικής μηχανικής και τραπεζικής. Επιπλέον, συνεχίζοντας την πολιτική που ακολουθήσαμε και σε προηγούμενα συνέδρια της ΕΕΧΜΤ, στη διάρκεια του συνεδρίου θα πραγματοποιηθούν δύο στρογγυλά τραπέζια με εξαιρετικά επίκαιρα θέματα οικονομικού ενδιαφέροντος και ομιλητές από τον ακαδημαϊκό χώρο αλλά και την αγορά. Επίσης, έχει προγραμματιστεί η παρουσίαση δύο νέων βιβλίων σε θέματα σχετικά με τη θεματολογία του συνεδρίου, ενώ θα πραγματοποιηθούν και δύο προσκεκλημένες διαλέξεις από τον Καθηγητή Νικόλαο Τραυλό, Πρύτανη του ALBA, και τον Δρ. Αλέξανδρο Μπένο, Διευθυντή Ελέγχου και Δομής Κινδύνων της Τράπεζας και του Ομίλου της Εθνικής Τράπεζας.

Είμαι βέβαιος, πως όλοι οι συμμετέχοντες θα επωφεληθούν του πλούσιου προγράμματος του συνεδρίου και θα βρουν χρήσιμες καινούργιες ιδέες, όχι μόνο για την παρούσα αλλά και για την μελλοντική τους έρευνα.

Καθηγητής Κωνσταντίνος Ζοπουνίδης  
*Πρόεδρος*

# ΕΠΙΤΡΟΠΕΣ

## ΠΡΟΕΔΡΕΙΟ ΣΥΝΕΔΡΙΟΥ

Κωνσταντίνος Ζοπουνίδης

## ΕΠΙΣΤΗΜΟΝΙΚΗ ΕΠΙΤΡΟΠΗ

Ανδριοσόπουλος, Κ.	ESCP Europe, UK
Ανδριοσόπουλος, Δ.	Swansea University, UK
Βασιλείου, Δ.	Ελληνικό Ανοικτό Πανεπιστήμιο
Γαγάνης, Χ.	Πανεπιστήμιο Κρήτης
Γαλαριώτης, Ε.	Audencia Nantes, School of Management, France
Γρηγορούδης, Ε.	Πολυτεχνείο Κρήτης
Δελής, Μ.	University of Surrey, UK
Δημητράς, Α.	Ελληνικό Ανοικτό Πανεπιστήμιο
Δούμπος, Μ.	Πολυτεχνείο Κρήτης
Δούνιας, Γ.	Πανεπιστήμιο Αιγαίου
Εφραιμίδης, Ι.	ICAP Group
Ζαπράνης, Α.	Πανεπιστήμιο Μακεδονίας
Ζοπουνίδης, Κ.	Πολυτεχνείο Κρήτης
Θωμαΐδης, Ν.	Πανεπιστήμιο Αιγαίου
Ιωαννίδης, Χ.	University of Bath, UK
Καβουσάνος, Μ.	Οικονομικό Πανεπιστήμιο Αθηνών
Καλαντώνης, Π.	ΤΕΙ Πειραιά
Καλοτύχου, Ε.	Cass Business School, UK
Κάντζος, Κ.	ΤΕΙ Πειραιά
Κίτσιος, Φ.	Πανεπιστήμιο Μακεδονίας
Κοσμίδου, Κ.	Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης
Λαζαρίδης, Ι.	Πανεπιστήμιο Μακεδονίας
Λελεδάκης, Γ.	Οικονομικό Πανεπιστήμιο Αθηνών
Μάρκελλος, Ρ.	University of East Anglia, UK
Ματσατσίνης, Ν.Φ.	Πολυτεχνείο Κρήτης
Μπαουράκης, Γ.	Μεσογειακό Αγρονομικό Ινστιτούτο Χανίων
Μπατσαρισάκης, Π.	Εταιρεία Anasigrotisis
Νούλας, Αθ.	Πανεπιστήμιο Μακεδονίας
Παπαδόπουλος, Δ.	Πανεπιστήμιο Μακεδονίας
Παπαδόπουλος, Σ.	Δημοκρίτειο Πανεπιστήμιο Θράκης
Παπανικολάου, Ν.	University of Luxembourg, Luxembourg
Παρδαλός, Ρ.	University of Florida, USA
Πασιούρας, Φ.	Πολυτεχνείο Κρήτης & University of Surrey, UK
Σίσκος, Ι.	Πανεπιστήμιο Πειραιώς
Σπαθής, Χ.	Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης
Σταϊκούρας, Σ.	Cass Business School, UK
Συριόπουλος, Κ.	Πανεπιστήμιο Πατρών
Τσώλας, Ι.	Εθνικό Μετσόβιο Πολυτεχνείο
Φίλιππας, Ν.	Πανεπιστήμιο Πειραιώς
Χαρίτος, Τ.	Westminster Business School, UK
Ψαρράς, Ι.	Εθνικό Μετσόβιο Πολυτεχνείο
Ψιμάρνη-Βούλγαρη, Φ.	ΤΕΙ Κρήτης
Hasan, I.	Fordham University, USA

Mester, L.  
Molyneux, Ph.  
Resti, A.

Federal Reserve Bank of Philadelphia, USA  
Bangor University, UK  
Bocconi University, Italy

## **ΟΡΓΑΝΩΤΙΚΗ ΕΠΙΤΡΟΠΗ**

Αγγελάκη, Ε.	Μεσογειακό Αγρονομικό Ινστιτούτο Χανίων
Αλεξάκης, Δ.	Πολυτεχνείο Κρήτης
Άρχοντα, Α.	ΤΕΙ Πειραιά
Ατσαλάκη, Ι.	Πολυτεχνείο Κρήτης
Λιαδάκη, Α.	Πολυτεχνείο Κρήτης
Μακρίδου, Γ.	Πολυτεχνείο Κρήτης
Μανθούλης, Γ.	Μεσογειακό Αγρονομικό Ινστιτούτο Χανίων
Μαραγκογιάννη, Α.	Πολυτεχνείο Κρήτης
Μπάλλα, Β.	Πολυτεχνείο Κρήτης
Νίκλης, Δ.	Πολυτεχνείο Κρήτης
Παπαδόπουλος, Γ.	Attica Ventures
Σαρρή, Σ.,	Πολυτεχνείο Κρήτης
Τσιριγωτάκης, Κ.	Πολυτεχνείο Κρήτης

## **ΓΡΑΜΜΑΤΕΙΑ**

Γεωργία Μακρίδου  
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## ΔΗΜΟΣΙΕΥΣΗ ΕΡΓΑΣΙΩΝ

Επιλεγμένες εργασίες που θα παρουσιαστούν στο Συνέδριο θα δημοσιευθούν ύστερα από κρίση σε ειδική έκδοση στο περιοδικό **International Journal of Financial Engineering and Risk Management** (Inderscience Publishers).

Οι εργασίες μπορούν να υποβληθούν έως τις 28/2/2013, μέσω του online συστήματος του περιοδικού. Σχετικές οδηγίες είναι διαθέσιμες στην ιστοσελίδα του περιοδικού:

<http://www.inderscience.com/jhome.php?jcode=ijferm>

# ΣΥΝΟΠΤΙΚΟ ΠΡΟΓΡΑΜΜΑ

Δευτέρα 17 Δεκεμβρίου 2012

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- 09:00–09:30** Εγγραφές Συνέδρων
- 09:30–09:45** Χαιρετισμοί & Έναρξη Συνεδρίου (Αλέξανδρος Τουρκολιάς, Διευθύνων Σύμβουλος της Εθνικής Τράπεζας)
- 09:45–12:15** 1η Συνεδρία
- 12:30–13:30** Προσκεκλημένη ομιλία (Καθηγ. Νικόλαος Τραυλός, Πρύτανης του ALBA)
- 13:30–14:30** Γεύμα
- 14:30–16:15** **Στρογγυλό τραπέζι I: Καρτέλ, λόμπι, συντεχνίες ενάντια στην οικονομία και την κοινωνία**  
**Συντονιστής:** Καθηγ. Κωνσταντίνος Ζοπουνίδης, Πολυτεχνείο Κρήτης & Audencia Group, School of Management, France  
**Ομιλητές:**  
Γεώργιος Ατσαλάκης, Εκλεγμένος Λέκτορας Πολυτεχνείου Κρήτης  
Γιάννης Παπαδόπουλος, Διευθύνων Σύμβουλος Attica Ventures  
Αθανάσιος Παπανδρόπουλος, Δημοσιογράφος, Εφημερίδα “Ναυτεμπορική”  
Ζώης Τσώλης, Δημοσιογράφος, Εφημερίδα “Το Βήμα”
- 16:15–16:30** Διάλειμμα
- 16:30–18:45** 2η Συνεδρία
- 18:45–20:30** Παρουσίαση του νέου βιβλίου των Π. Ξυδώνα, Γ. Μαυρωτά, Θ. Κρίντα, Ι. Ψαρρά και Κ. Ζοπουνίδη, υπό τον τίτλο “**Multicriteria Portfolio Management**” (Εκδόσεις Springer)  
**Συντονιστής:** Έλενα Παπαδημητρίου, Δημοσιογράφος  
**Ομιλητές:**  
Χρήστος Σταϊκούρας, Αν. Υπουργός Οικονομικών  
Ιωάννης Γαμβρίλης, Πρόεδρος Attica Bank & ΤΣΜΕΔΕ  
Νικόλαος Φίλιππας, Καθηγητής Πανεπιστημίου Πειραιώς  
Παναγιώτης Αθανάσογλου, Οικονομολόγος  
Χρίστος Δήμας, Βουλευτής  
Νικόλαος Δάρας, Καθηγητής Στρατιωτικής Σχολής Ευελπίδων  
Δέσποινα Μπαρδακίδου, Γενική Διευθύντρια Cinsight Advisory
- 21:00** Επίσημο Δείπνο

## Τρίτη 18 Δεκεμβρίου 2012

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- 09:00–11:30** 3η Συνεδρία
- 11:30–11:45** Διάλειμμα
- 11:45–14:15** 4η Συνεδρία
- 14:15–15:00** Γεύμα
- 15:00–17:15** 5η Συνεδρία
- 17:15–17:30** Διάλειμμα
- 17:30–19:00** **Στρογγυλό τραπέζι II: Αναχρηματοδότηση των μικρομεσαίων και μεγάλων επιχειρήσεων**  
**Συντονιστής:** Παναγιώτης Μπατσαρισάκης, Οικονομικός Αναλυτής Επιχειρηματικός Σύμβουλος  
**Ομιλητές:**  
*Λουκάς Αποστολίδης*, Δικηγόρος, πρ. Αντιπρόεδρος της Βουλής, Υφ. Εθνικής Άμυνας – Βουλευτής  
*Δημήτριος Μπουραντάς*, Καθηγητής Management στο Οικονομικό Πανεπιστήμιο Αθηνών  
*Λοΐζος Σορωνιάτης*, Πρόεδρος Δ.Σ Οργανισμού Τουριστικής Εκπαίδευσης και Κατάρτισης  
**Παρουσίαση του νέου βιβλίου των Κ. Ζοπουνίδη, Φ. Βούλγαρη, Χ. Λεμονάκη, Ε. Γρηγορούδη, Μ. Καθαράκη με θέμα "Σύγχρονα Θέματα Χρηματοδότησης και Στρατηγικού Σχεδιασμού Επιχειρήσεων"**
- 19:00–19:30** Προσκεκλημένη ομιλία (Δρ. Αλέξανδρος Β. Μπένος, Διευθυντής Ελέγχου και Δομής Κινδύνων της Τράπεζας και του Ομίλου της Εθνικής Τράπεζας)
- 19:30–19:45** Κλείσιμο Συνεδρίου



# ΑΝΑΛΥΤΙΚΟ ΠΡΟΓΡΑΜΜΑ ΣΥΝΕΔΡΙΟΥ

Δευτέρα, 17 Δεκεμβρίου 2012

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**09:00–09:30** Εγγραφές Συνέδρων

**09:30–09:45** Χαιρετισμοί & Έναρξη Συνεδρίου

*Αλέξανδρος Τουρκολιάς, Διευθύνων Σύμβουλος της Εθνικής Τράπεζας*

**09:45–12:15** 1η Συνεδρία (Προεδρείο: Αιμίλιος Γαλαριώτης)

**The effect of time-varying information entropy on markets' uncertainty**

*D.Th. Philippas, C. Siriopoulos*

**U.S. monetary policy and stock market dynamics**

*N.T. Laopodis*

**The role of correlation dynamics in sector allocation**

*E. Kalotychou, S.K. Staikouras, G. Zhao*

**Forecasting beta coefficients applying a different approach for stocks traded on S&P 500**

*P. Messis, A. Zapranis, C. Kollias*

**Combination forecasts of bond and stock returns: An asset allocation perspective**

*E. Panopoulou, S. Plastira*

**Do level, slope and curvature pose a risk for banks?**

*E. Kalotychou, S.K. Staikouras, G. Zhao*

**12:30–13:30** Προσκεκλημένη ομιλία

*Καθηγ. Νικόλαος Τραυλός, Πρύτανης του ALBA*

**13:30–14:30** Γεύμα

**14:30–16:15** Στρογγυλό τραπέζι I: Καρτέλ, λόμπι, συντεχνίες ενάντια στην οικονομία και την κοινωνία

*Συντονιστής: Καθηγ. Κωνσταντίνος Ζοπουνίδης, Πολυτεχνείο Κρήτης & Audencia Group, School of Management, France*

**Ομιλητές:**

Γεώργιος Ατσαλάκης, Εκλεγμένος Λέκτορας Πολυτεχνείου Κρήτης

Γιάννης Παπαδόπουλος, Διευθύνων Σύμβουλος Attica Ventures

Αθανάσιος Παπανδρόπουλος, Δημοσιογράφος, Εφημερίδα “Ναυτεμπορική”

Ζώης Τσώλης, Δημοσιογράφος, Εφημερίδα “Το Βήμα”

**16:15–16:30** Διάλειμμα

**16:30–18:45** 2η Συνεδρία (Προεδρείο: Κωνσταντίνος Δράκος)

**On a generalized polynomial logistic distribution with applications in financial data**

*V. Koutras, K. Drakos*

**Term spread regressions of the rational expectations hypothesis of the term structure allowing for risk premium effects**

*E. Argyropoulos, E. Tzavalis*

**On inter-arrival times of extreme events in bond markets**

*V.G. Siakoulis, I.A. Venetis*

**Value versus growth: Evidence from the Indian stock market**

*I.R. Davidson, G.N. Leledakis, S.Kr. Rai*

**Contagion risk and spillover effects within the Eurozone countries: How serious is the effect of the current sovereign debt crisis**

*A. Tsopanakis*

**On the Greek economic crisis of 2009-2012: Fundamental causes and effects; Future prospects for Greece and Eurozone**

*C.C. Fragkos, C.C. Fragkos, M. Agoraki*

**18:45–20:30** Παρουσίαση του νέου βιβλίου των Π. Ξυδώνα, Γ. Μαυρωτά, Θ. Κρίντα, Ι. Ψαρρά και Κ. Ζοπουνίδη, υπό τον τίτλο “*Multicriteria Portfolio Management*” (Εκδόσεις Springer)

Συντονιστής: Έλενα Παπαδημητρίου, Δημοσιογράφος

**Ομιλητές:**

Χρήστος Σταϊκούρας, Αν. Υπουργός Οικονομικών

Ιωάννης Γαμβρίλης, Πρόεδρος Attica Bank & ΤΣΜΕΔΕ

Νικόλαος Φίλιππας, Καθηγητής Πανεπιστημίου Πειραιώς

Παναγιώτης Αθανάσογλου, Οικονομολόγος

Χρήστος Δήμας, Βουλευτής

Νικόλαος Δάρας, Καθηγητής Στρατιωτικής Σχολής Ευελπίδων

Δέσποινα Μπαρδακίδου, Γενική Διευθύντρια Cinsight Advisory

**21:00** Επίσημο Δείπνο

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**Τρίτη, 18 Δεκεμβρίου 2012**

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**09:00–11:30** 3η Συνεδρία (Προεδρείο: Φώτιος Πασιούρας)

**Bank diversification and overall financial strength: International evidence around the crisis**

*M. Doumplos, C. Gaganis, F. Pasiouras*

**Using data envelopment analysis (DEA) to measure and forecast bank performance: The case of Germany against Europe's PIGS**

*E. Lazaridou, T. Papapanagiotou, D. Kousenides*

**Liquidity risk and credit risk: A relationship based on the interaction between liquid asset ratio and non-performing loans ratio**

*I.K. Malandrakis*

**Διαχείριση λειτουργικού κινδύνου, στην Ελλάδα και διεθνώς, στο πλαίσιο των κανονιστικών διατάξεων της BASEL II – BASEL III**

*Χ. Μπαλωμένου, Ε. Κοκκίνου*

**Evaluating the profitability of European banks through stress testing**

*K. Moutsianas, K. Kosmidou*

**Efficiency and performance of the Greek banking system: Using the PROMETHEE and DEA methods**

*G. Manthoulis, D. Niklis, G. Baourakis, D. Alexakis, C. Zopounidis*

**Implementing IFRS and corporate governance in Greece: The case of Proton Bank**

*T. Lazarides, E. Pitoska*

**11:30–11:45** Διάλειμμα

**11:45–14:15** 4η Συνεδρία (Προεδρείο: Αυγουστίνος Δημητράς)

**Διαχείριση πελατειακών σχέσεων (CRM) στον τραπεζικό κλάδο: Η περίπτωση των συνεταιριστικών τραπεζών**

*E. Pitoska, T. Lazarides*

**The role of switching costs in churn prediction: A review of decision making approaches**

*E. Angelaki, E. Grigoroudis, C. Zopounidis*

**Comparison of classification techniques in the prediction of securities class actions**

*V. Balla, P. Pasiouras, C. Zopounidis*

**Επιρροή των μεθόδων δημιουργικής λογιστικής στην αξιολόγηση των επιχειρήσεων**

*Θ. Βασιλιάδης, Ι. Παπαδόπουλος*

**Drivers of profitability and leverage of Greek firms in the post crisis era**

*C. Lemonakis, F. Psimarni-Voulgaris*

**Inflation forecasting in Greece using a neuro-fuzzy system**

*G. Atsalakis, I. Atsalaki*

**Tourism demand forecasting based on a neuro-fuzzy model**

*G. Atsalakis, E. Chnarogiannaki, C. Zopounidis*

**14:15–15:00** Γεύμα

**15:00–17:15** 5η Συνεδρία (Προεδρείο: Κώστας Ανδριοσόπουλος)

**Measuring the market risk of freight rates: A forecast combination approach**

*C. Argyropoulos, E. Panopoulou*

**The time dimension and value of flexibility in resource allocation: The case of the maritime industry**

*K. Axarloglou, I. Visvikis, S. Zarkos*

**Ο ρόλος της εγχώριας ναυτιλίας στις πολιτικές μείωσης των εκπομπών αερίων ρύπων και οι πιθανές επιπτώσεις στα ελληνικά λιμάνια**

*A. Μαραγκογιάννη, Σ. Παπαευθυμίου, Κ. Ζοπουνίδης*

**Forecasting total energy exports using the ANFIS system**

*G. Atsalakis, K. Tsakalaki*

**An integrated approach for energy efficiency analysis in European Union countries**

*G. Makridou, K. Andriosopoulos, M. Doumpos, C. Zopounidis*

**Trading before stock price shocks: An empirical analysis using stock option trading volume**

*E. Galariotis, W. Rong, S. Spyrou*

**17:15–17:30** Διάλειμμα

**17:30-19:00** Στρογγυλό τραπέζι II: Αναχρηματοδότηση των μικρομεσαίων και μεγάλων επιχειρήσεων

*Συντονιστής: Παναγιώτης Μπατσαρισάκης, Οικονομικός Αναλυτής - Επιχειρηματικός Σύμβουλος*

**Ομιλητές:**

*Αποστολίδης Λουκάς, Δικηγόρος, πρ. Αντιπρόεδρος της Βουλής, Υφ. Εθνικής Άμυνας – Βουλευτής  
Μπουραντάς Δημήτριος, Καθηγητής Management στο Οικονομικό Πανεπιστήμιο Αθηνών  
Σορωνιάτης Λοΐζος, Πρόεδρος Δ.Σ. Οργανισμού Τουριστικής Εκπαίδευσης και Κατάρτισης*

**Παρουσίαση του βιβλίου των Κ. Ζοπουνίδα, Φ. Βούλγαρη, Χ. Λεμονάκη, Ε. Γρηγορούδη, Μ. Καθαράκη με θέμα «Σύγχρονα Θέματα Χρηματοδότησης και Στρατηγικού Σχεδιασμού Επιχειρήσεων»**

**19:00–19:30** Προσκεκλημένη ομιλία

*Δρ. Αλέξανδρος Β. Μπένος, Διευθυντής Ελέγχου και Δομής Κινδύνων της  
Τράπεζας και του Ομίλου της Εθνικής Τράπεζας*

**19:30–19:45** Κλείσιμο Συνεδρίου

# Περιλήψεις Εργασιών

**Δευτέρα, 17 Δεκεμβρίου 2012**

## **09:45–12:15: 1η Συνεδρία**

### **The effect of time-varying information entropy on markets' uncertainty**

*D.Th. Philippas, C. Siriopoulos*

We herein examine the effect of constant information flow on seven European market indices. By separating information flow into time cells, this novel proxy measures the effect of individual and mutual time-varying information entropy on the dynamics of the processes that determine conditional volatility. The results of the empirical analysis demonstrate that variations in constant information flow have a significant effect on markets in terms of conditional volatility but do not determine or differentiate totally investors' mental accounts, which are directly linked to the dynamics of volatility, nature of information and functional allocation of investors' time-varying information flows.

### **U.S. monetary policy and stock market dynamics**

*N.T. Laopodis*

This paper examines the dynamic linkages between monetary policy and the stock market during the three distinct monetary regimes of Volcker, Greenspan and Bernanke. The period under investigation is from 1979 to 2011. I propose splitting the sample period into three sub periods to investigate the monetary policy - stock market dynamics within the context of the three different stances of the Federal Reserve (or Fed Chairmen views) on monetary policy targets. The methodological design consists of the following steps. First, the definition and rationalization of the main monetary policy tool (the federal funds rate) applied to all three monetary regimes takes place. Second, the derivation of the monetary policy shock (based on the fed funds rate) after setting up and estimating the Fed's feedback rule follows. The assumption here is to make this shock orthogonal to the Fed's information set comprised of several macroeconomic variables. And third, monetary policy can be measured by the (fitted values of the) federal funds rate innovations from a VAR system composed of the following variables: industrial production, an index of commodity prices, inflation rate, the federal funds rate, total reserves, and non-borrowed reserves. Finally, I derive and discuss the dynamic interactions between U.S. monetary policy switches on the U.S. general stock market, proxied by the S&P500. Some major findings are the following. First, in the 1990s it appears that there was a disconnection between Federal Reserve's actions and responses by the stock market. Second, augmenting the feedback rule with other financial variables (such as term spreads, unemployment and financial uncertainty proxies) revealed some interesting results in terms of the Fed's taking into account additional market considerations, especially since Greenspan's era. And third, significant asymmetric effects of monetary policy on the stock markets were observed throughout each monetary regime but these were more pronounced during bear markets than bull markets. Taken overall, these results suggest that there was no consistent, dynamic relationship between monetary policy and the stock market and that the nature of such dynamics was different in each of the three monetary regimes.

### **The role of correlation dynamics in sector allocation**

*E. Kalotychou, S. K. Staikouras, G. Zhao*

This paper assesses the value of capturing the temporal evolution of correlations for sector allocation. A correlation timing framework is deployed to evaluate dynamic strategies against a static constant covariance strategy and the industry standard RiskMetrics model. We document time-variation,

asymmetry and structural breaks in sector correlations and show that the predictability of conditional correlation models capturing such features is economically relevant and leads to better risk-adjusted performance, particularly during the crisis. The incremental value of correlation timing is more pronounced for monthly than daily rebalancing. In contrast, the RiskMetrics proves relatively trade intensive and sustains no net performance gains.

### **Forecasting beta coefficients applying a different approach for stocks traded on S&P 500**

*P. Messis, A. Zapranis, C. Kollias*

The beta coefficient coming from the Capital Asset Pricing Model is important to many applications in finance. It is used by academics, portfolio managers and investors to model and control systematic risks. The estimation of expected asset returns using the CAPM of Sharp (1964) and Lintner (1965), the intertemporal CAPM of Merton (1973) and the arbitrage pricing theory of Ross (1976) is mostly based on the estimation of beta. Although the models assume the stability of beta coefficient, a lot of studies have shown its nonlinear nature. The academic literature refers different reasons for the observed instability of beta coefficient. For example, it is assumed that the coefficient remains the same over 'bull' and 'bear' market conditions. However, Levy (1974) proposed that beta may differ with market conditions so the inferences based on the stable nature of beta will be rather misleading. More recently there is evidence that inefficiencies of CAPM arise because of behavioural characteristics such as herding (Hwang and Salmon, 2004). The betas of individual assets that estimated from the CAPM will be biased and away from their equilibrium values when investors' herding towards market portfolios is present. Because of the significant role of the estimation of betas a number of different techniques have emerged that allow the modelling and estimation of time varying betas. In the literature, the most common techniques are the autoregressive conditional heteroscedasticity model (ARCH) and their alternatives GARCH, EGARCH, TARARCH. Furthermore, there is the Schwert and Seguin (1990) model that extends the market model incorporating an additional term that captures the varying level of volatility which is present in market returns. Last but not least, there is the state space approach where the betas are estimated using the Kalman filter algorithm. The transition equation of this model depends on the form of stochastic process that betas are assumed to follow. The most common forms that have been used in the literature is the AR(1) and the random walk processes with the later one to give the best characterisation of the time-varying beta (Faff et al., 2000). These models are compared with a new approach, where the beta coefficient is assumed to be a function of market return. Based on the findings that beta coefficient has a nonlinear form, the functional form of  $f()$  is approached by equation 1:

$$\bar{\beta} = \alpha \exp^{(bR_{ms} + cR_{ms}^2 + u)} \quad (1)$$

where  $\alpha$ ,  $b$ ,  $c$  are constants to be estimated,  $R_{ms}$  is the shorted market return,  $\bar{\beta}$  the average betas corresponding to each market return interval and  $u$  the residuals with  $u \sim iid(0, \sigma^2)$ . Through linearization and assuming that beta coefficients are greater than zero, as it is happened more often than not, eq. 1 takes the following shape:

$$\ln(\bar{\beta}) = \ln(\alpha) + bR_{ms} + cR_{ms}^2 + u \quad (2)$$

The estimated betas coming from eq. 2 are compared with the aforementioned models using the mean squared error (MSE) and mean absolute error (MAE) as measures of forecast accuracy. The data are applied daily, ranging from January 1993 to August 2011. One hundred and forty stocks selected based on the availability of data. The stocks are traded on S&P 500.

### **Combination forecasts of bond and stock returns: An asset allocation perspective**

*E. Panopoulou, S. Plastira*

In this paper, we investigate the out-of-sample forecasting ability of empirical factors; namely, the value premium (HML factor), the size premium (SMB factor), the short-term reversal (ST-Rev), the long-term reversal (LT-Rev) and the momentum (MOM) factors along with appropriate decompositions of them, on

U.S. bond (long-term government bond returns) and stock (S&P500 index) returns. The performance of these factors is evaluated by means of an AutoRegressive Distributed Lag (ARDL) model while the forecasting horizon varies from the short run (1 month) to the medium run (2 years), thus adding the time dimension to our forecasting results. Concerning the decomposition of the initial factors, we consider the big and small counterparts for the HML, MOM, LT and ST factors and propose the decomposition of the SMB factor into its value, neutral and growth parts, investigating thus the size effect on the value and momentum premium and the value effect on the size premium. Our findings suggest that these empirical factors include significantly more information for future bond and stock market returns than the typically employed financial variables, but the extent to which this forecasting ability appears differs. Given the fact that a single factor/variable cannot generate reliable forecasts over time due to the instability and complexity of the economy, we go one step further and combine the above forecasts by employing combination methods proposed in the literature. We construct various portfolios of forecasts based on three simple combining methods; namely, the mean, median and trimmed mean and three more advanced ones; the first one is based on the historical performance of the individual ARDL models (discount Mean Square Forecast Error (MSFE) combining method), the second one is based on equal-size clusters based on MSFE values – and the final one is based on principal component combining. The forecasting ability of the aforementioned factors/methods is assessed by means of the ROS2 statistic, which measures the improvement of the MSFE of the proposed model over the MSFE of the benchmark AR model forecast. With respect to the significance of the results, we employ the MSFE-adjusted statistic, which tests the null hypothesis of equal MSFEs among the competing models, against the alternative hypothesis that our model's MSFE is less than the benchmark AR model MSFE. Our results provide evidence that, indeed, both the decomposed factors and their combination forecasts display superior forecasting ability. Next, we assess whether asset managers can benefit from our findings by incorporating them in their asset allocation decisions. We focus on this issue and generate trading strategies based on the forecasts of our proposed models. Specifically, we consider a mean-variance investor, who rebalances her portfolio every month, and estimate the optimal way she allocates her wealth among bonds, stocks and the risk free rate. The economic value of the proposed strategies is measured by computing the utility gains accrued to investors, who exploit the predictability of bond and stock returns, relative to the benchmark alternative, along with a risk-adjusted portfolio's premium return (manipulation-proof performance measure), which assesses the most valuable model among the competing ones. Finally, the robustness of our results is assessed by conducting the same tests for markets outside the US. By employing data for the European and Japanese bond and stock markets, we conclude that the forecasting ability of combination forecasts formed on the basis of the empirical factors is rather pervasive in these markets, as well.

### **Do level, slope and curvature pose a risk for banks?**

*E. Kalotychou, S. K. Staikouras, G. Zhao*

The current study investigates the time-varying interest rate risk of the banking sector as well as the global systematically important financial institutions (i.e. G-SIFIs) across the U.S., UK and Japanese markets from October 2002 to March 2012. We employ the three factor loadings (i.e. level, slope and curvature effect) derived from the Nelson-Siegel model as measures of changes in the interest rate environment. The interest rate beta in our study is derived from the conditional variance-covariance matrices (i.e.  $\beta_i = \text{Cov}_{i,j}/\text{Var}_i$ ) estimated from a multivariate GARCH model. To our knowledge, the current study is the first one to adopt such empirical framework to investigate the time-varying interest rate risk. Our empirical evidence indicates that positive (negative) changes in long-term (short-term) rates will have a positive impact on banks' equity value. That means, banks benefit (suffer) from steeping (flattening) yield curve. In addition, further investigation on the determinant of time-varying interest rate beta suggests that the size of banks' maturity mismatch seems unable to explain the fluctuations in the interest rate beta. Instead, the market sentiment/risk aversion is found to be the main driven force behind banks' time-varying interest rate betas.

## 16:30–18:45: 2η Συνεδρία

### On a generalized polynomial logistic distribution with applications in financial data

V. Koutras, K. Drakos

The importance of Logistic distribution has been widely recognized in many applied areas such as, demography, population studies, Finance, Agriculture etc. A random variable  $x$  has the logistic distribution with location parameter  $\mu$  and scale parameter  $\sigma > 0$  (notation:  $x \sim L(\mu, \sigma)$ ) if its cumulative distribution function (cdf) is given by

$$F(x; \mu, \sigma) = \frac{1}{1 + \exp[-(x - \mu) / \sigma]}, \quad -\infty < x < \infty.$$

The introduction of new families of distributions which provide flexibility and adaptability in fitting well to real and empirical data is an important statistical issue. The capability of the Logistic distribution to describe satisfactory real data, initiated additional research on several generalizations of it which would be more flexible than the classical model, with obvious aim to establish better data fitting, see Balakrishnan (1992), Gupta and Kundu (2010) and references therein. Recently, Koutras, Drakos and Koutras (2012) introduced and studied a natural generalization of the Logistic distribution which offers quite remarkable adaptability in real data arising in finance. The key point for the creation of their model is the well-known property of the Logistic distribution that the logit transformation of its cdf, i.e.  $\log(F(x)) / (1 - F(x))$  is a linear function of  $x$ . Motivated by this property they considered a probability model whose logit cumulative distribution function transformation is of polynomial type. More specifically a random variable  $X$ , is said to follow a Polynomial Logistic distribution if its cdf is given by

$$F(x) = \frac{1}{1 + \exp(-P(x))}, \quad -\infty < x < \infty$$

where  $P(x) = \sum_{i=0}^r a_i x^i$  is a polynomial of degree  $r$  which is increasing in  $(-\infty, \infty)$ .

A popular method for creating new families, using already existing cumulative distribution functions is by considering the class of the so-called "Lehmann alternatives", which is defined by  $G(x) = (F(x))^a$ , where  $a$  is positive parameter. It should be mentioned that, in the case where  $a$  is a positive integer, say  $a = n$ , then  $G(x)$  is the cdf of the maximum of  $n$  i.i.d. random variables following a distribution with cdf  $F(x)$ . In the present article we study a distribution whose cdf is given by

$$G(x) = \frac{1}{\left(1 + \exp\left(-\sum_{i=0}^r a_i x^i\right)\right)^a}$$

This distribution accommodates a variety of distribution models (unimodal, bimodal, symmetric and non-symmetric) and includes as special cases the generalized logistic distribution (for  $r=1$ ) which has been extensively studied in the literature (see Dubey (1969), Balakrishnan and Leung (1988)), as well as the Polynomial Logistic distribution mentioned above (for  $a=1$ ). Due to its flexibility, it offers a rich family of distributional models for fitting financial data where the presence of skewness and asymmetry is quite common, and use of models with heavy tails is indispensable. For illustrative purposes, we exploit the Generalized Polynomial-Logistic family of distributions to model the Euro foreign exchange reference rates provided by the European Central Bank for several currencies.

### Term spread regressions of the rational expectations hypothesis of the term structure allowing for risk premium effects

E. Argyropoulos, E. Tzavalis

This paper suggests term spread regression based tests allowing for time-varying term premium effects with the aim of explaining the empirical failures of the term spread to forecast future movements in



interest rates. To capture the effects of a time-varying term premium on the term spread, the paper relies on a simple and empirically attractive arbitrage-free Gaussian Dynamic Term Structure Model, which assumes that the term structure of interest rates is spanned by three unobserved factors. To retrieve these factors from the data, the paper suggests a new empirically methodology which modifies the popular method of Pearson's and Sun (1994) to diversify away possible effects of measurement (or pricing) errors on the estimates of the unobserved factors. By using the Principal Components Portfolio we switch from latent to observable states instead of using the Kalman filter technique. The paper provides a number of interesting results, which have important policy implications. First, it shows that a three-factor simple and empirically tractable GDTSM can sufficiently explain the cross-section movements of the US term structure of interest rates implied by no-arbitrage conditions in the bond market. This model provides estimates of the unobserved factors of the term structure of interest rates, which are persistent and can capture cyclical shifts in interest rates, observed during our sample. Second, the paper shows that adjusting term spread regressions by the term premium effects implied by our suggested GDTSM can explain the empirical failures of the term spread to forecast future movements of long-term interest rates one-period ahead and thus rescue the Expectations Hypothesis. This result means that our model can be successfully employed to forecast the correct direction of future long-term interest rate changes, in practice, net of term premium effects. Finally, the paper shows that the factors that are priced in the bond market and, thus, have significant time-varying effects on the term spread regressions are those which are associated with "level" and "slope" shifts of the term structure of interest rates. The "curvature" effects of the term structure are not priced in this market.

### **On inter-arrival times of extreme events in bond markets**

*V.G. Siakoulis, I. A. Venetis*

The ongoing European sovereign debt crisis has renewed the discussion over the role of financial contagion and linkages among countries since it has exhibited considerable pressure in stock and currency markets, widen sovereign debt differences along with a series of sovereign credit rating downgrades and increased credit default swap (CDS) spreads. Contributing to the debate of crisis transmission in Europe we examine the inter-arrival times between the occurrence of extreme movements in sovereign bonds markets. Under the hypothesis of crisis transmission and time-varying behavior of risk premiums, the inter-arrival times will exhibit clustering behavior since short turbulent periods will tend to be followed by short turbulent periods and large tranquil periods will be followed by large tranquil periods. This is a particularly evergreen subject especially after the observed repercussions of the Greek Crisis in terms of the cost of borrowing for other European countries. In order to define an extreme bond market movement we focus solely in extreme yield changes over a predefined threshold in accordance to Bae et al (2003) whereas our econometric specification employs the Autoregressive Conditional Duration (ACD) model of Engle and Russel (1998). This specification allows the modeling of crisis clustering by accounting for the conditional autoregressive structure present in the inter-arrival times between occurrences of extreme movements in sovereign bonds markets. The incorporated conditional time series dynamics to the probability distribution of durations overcomes the several restrictive assumptions of the benchmark duration model enhancing our economic insight and diminishing out-of-sample forecast errors. To our knowledge, such an approach has not been attempted before in the domain of financial contagion analysis. An additional feature of the proposed inter-arrival times approach is the creation of a forecasting in nature model for the hazard rate defined as the probability of an exceedance occurrence given that it has not so far occurred. Further, we extend the ACD model in a nonlinear framework by allowing interventions influencing the conditional duration mean of inter-arrival times of extreme bond market events in line with a methodology proposed by Fokianos and Fried (2010) for INGARCH models. In summary, our results show significant evidence of crisis transmission and time-varying behavior of the risk premium in European bond markets. This is a particularly important finding since it verifies the fact that the cost of borrowing of a European country does not depend solely on its macroeconomic status but also on the economical conditions of other European countries, providing important insights concerning European policy issues. We also find that accounting for interventions or structural shifts in the conditional mean process may bias upward

estimates of duration persistence rendering dubious the usefulness of ACD models in situations where the interventions are likely to have occur and the degree of permanence is important for forecasting purposes. Finally, the inclusion of conditional time series dynamics in the inter-arrival times of exceedance episodes and the introducing of nonlinearities in the conditional mean sets the fountains for a predictive in nature model for the hazard rate, that is, for the probability of exceedance occurrence given that it has not occurred so far.

### **Value versus growth: Evidence from the Indian stock market**

*I.R. Davidson, G.N. Leledakis, S. Kr. Rai*

The purpose of this paper is to determine whether there is value premium on the Indian stock market over the period July 1991 to June 2012. The empirical analysis is based on portfolio grouping and cross-sectional regressions. The firm-specific variables, as proxies for value-growth, incorporated in the empirical analysis include the book to market, earnings to price, sales to price and cash-flow to price. The findings show that the book to market ratio best explains cross-sectional variation in Indian stock returns, which in isolation suggests that it is the superior proxy for value-growth.

### **Contagion risk and spillover effects within the Eurozone countries: How serious is the effect of the current sovereign debt crisis**

*A. Tsopanakis*

Eurozone is getting through its most serious financial crisis, since its creation. This situation put at stake the whole European integration project and set a number of crucial questions for the viability of the Eurozone as an economic and political entity and of the euro as a common currency. One of the most interesting aspects of this financial turmoil in Eurozone is the identification of the sources of the instability. More precisely, it is important for policymakers and market participants to be able to spot the channels through which the crisis has affected European markets. Such a work can help on the creation of the most appropriate policy framework, in order to establish the best possible framework for financial markets' regulation and supervision, along with the necessary macro-prudential policies. In order to achieve the aforementioned, we focus on the main source of this financial crisis, that is, the financial and banking markets. Here, instead of focusing to single indicators of financial instability, we move one step forward, by using financial stress indices, in order to have a clear-cut idea of the size and the severity of the financial turmoil through time. Using a wide number of series, we first proceed to the construction of financial stress indicators for the money market, bond market, banking sector and the stock market of each Eurozone country, while an overall index for each country is also provided. By employing these indices, it is possible to have a clear narrative of the evolution of the current crisis for the whole Eurozone, as well as for each country and, even more important, for the markets that drove the crisis in each country. In order to be able to identify the spillover effects between Eurozone countries and their markets, a battery of multivariate GARCH models have been utilized. The results provide a clearer picture, regarding the countries and, more importantly, the specific markets that worked as the main propagators of the financial crisis.

### **On the Greek economic crisis of 2009-2012: Fundamental causes and effects; Future prospects for Greece and Eurozone**

*C.C. Frangos, C.C. Frangos, M. Agoraki*

The aim of this paper is to present the economic, social, political and moral causes and effects of the Greek debt crisis. The debt and deficit figures for Greece are presented. The causes of the crisis are: (a) corruption, (b) tax evasion and deposit of the stolen money in tax heavens of Switzerland, Lichtenstein, Island of Man e.t.c. (c) inefficiency of the public sector, (d) absence of transparency practices in the system of justice, in the areas of health, education, defense and labor, (e) excessive consumption habits of the Greeks, (f) lack of entrepreneurial and innovative spirit among the Greeks, (g) excessive debt and non-permissible budget deficit. The consequences are: (a) unemployment, (b) poverty, (c) social exclusion, (d) rising inequalities as it is shown by original research on Gini coefficient,

(e) homelessness, rising prostitution, (f) health problems, AIDS, depression, cardiac diseases (g) rising suicide rate. Future prospects are: possible exclusion of Greece in 2013 from Eurozone because of inability to repay debt and to reduce deficit.

## **Τρίτη, 18 Δεκεμβρίου 2012**

### **09:00–11:30: 3η Συνεδρία**

#### **Bank diversification and overall financial strength: International evidence around the crisis**

*M. Doumpos, C. Gaganis, F. Pasiouras*

This study uses a two-step analysis to investigate the impact of diversification on bank financial strength. First, we construct a novel overall financial strength indicator (OFSI), using a multicriteria technique that allows us to combine popular financial ratios selected on the basis of the CAMEL framework. Then, we examine the impact of income, earning assets, and on-and-off balance sheet diversity on banks' OFSI. Using a sample of 1,204 commercial banks operating in 111 countries over the period 2001-2010, we find that diversification improves the overall financial strength of banks. The results also show that income diversification can be more beneficial for banks operating in developing and transition countries, compared to banks in major advanced and advanced countries. However, we observe the opposite in the case of diversification between off-balance sheet and on-balance sheet activities. Furthermore, the results reveal that earning assets diversification can mitigate the adverse effect of the financial crisis on bank financial strength. Our findings are robust to controls for various country-specific variables, and the use of alternative techniques for the estimation of both the overall financial strength indicator and the second stage regressions.

#### **Using data envelopment analysis (DEA) to measure and forecast bank performance: The case of Germany against Europe's PIGS**

*E. Lazaridou, T. Papapanagiotou, D. Kousenides*

Banks have an important role as financial intermediaries to distribute a capital in an economic system. The aim of this paper is to examine the efficiency performance of the German banks against the banks in Portugal, Italy, Ireland, Greece and Spain; the so-called PIGS countries. For this purpose we obtain data from the financial statements of 7 German, 5 Portuguese, 17 Italian, 2 Irish, 9 Greek and 8 Spanish banks during year 2004-2011, some years before and after the financial crisis, and we use the DEA non-parametric frontier technique to derive technical and scale efficiency. For the country comparisons for bank efficiency we have been based on pooled estimates of banks across countries and we have typically assumed a common frontier, considering that the differences in efficiency scores among banks are primary due to the disparities in certain country-specific aspects of banking technology. This way, we compare the competitiveness of some European countries, as it is measured in terms of efficiency. The results indicate that 2 of the 48 banks are operating at an absolute efficient level in all years and that 2006 was the worst years in terms of overall, pure and scale efficiency. Surprisingly German has not the most efficient banking system in this period, due to the potential productivity loss from not achieving the optimal size of the banks. Also, from PIGS countries, Ireland is the most technical efficient, while Portugal is the most inefficient country. In general, we cannot say that the ineffective utilization of resources is the main cause of inefficiency in Europe. The result depends on the year and the country examined. Moreover, as forecasting is an important tool for planning and evaluating the operation, we use one of the most commonly used techniques for forecasting, the regression analysis. We use the methodology of Fixed Effect Well Balanced Panel Model and we include a new independent variable, the comparable bank's DEA efficiency score, into the regression analysis. The results of applying this new regression forecasting methodology show that the ratio of total loans to total assets of banks are

positively correlated with the inputs-variables' ratios of salaries to total assets and of total deposits to total assets; as they are defined from the intermediate approach, and also with the score of scale efficiency. Furthermore, the forecasting regression method shows the trend, the upper and lower limits of total loans indicating that the mean of the forecast series of total loans is almost the same with the mean of the actual series, with some remaining unsystematic forecasting errors. Last but not least, we deduce that in a cross-country study we ought to take into account the cross-country differences in economic conditions, demographics and environmental factors, but this is out of the purpose of this paper. The results of our paper may produce useful insights for bankers and policy makers in their decision-making and policy formulation.

### **Liquidity risk and credit risk: A relationship based on the interaction between liquid asset ratio and non-performing loans ratio**

*I.K. Malandrakis*

Financial institutions face several risks, the most significant of which are liquidity risk and credit risk. This became evident after the 2007-2008 financial crises. Recently, the severe crisis of the Greek economy has significantly affected the Greek banking sector; Greek banks, due to the lack of liquidity and the significant increase of non-performing loans, reduced lending to businesses and households dramatically. The aim of this paper is to examine the relationship between credit risk and liquidity risk, based on the potential interdependence between liquid asset ratio and non-performing loans ratio. In the second part of this paper, the concepts of liquidity, liquidity risk and liquidity risk management methods are briefly analyzed. In the third and fourth parts, the relationship between credit risk and liquidity risk is discussed; it was found that there is a relatively high degree of negative correlation between liquid asset ratio and non-performing loans ratio. Furthermore, this result implies that liquidity depends not only on the typical funding sources, but it also relies on the ability of borrowers to fulfil their contractual obligations timely (i.e. not to be in arrears).

### **Διαχείριση λειτουργικού κινδύνου, στην Ελλάδα και διεθνώς, στο πλαίσιο των κανονιστικών διατάξεων της BASEL II – BASEL III**

*Χρ. Μπαλωμένου, Ελ. Κοκκίνου*

Ο λειτουργικός κίνδυνος συγκεντρώνει πολλούς ανόμοιους κινδύνους που καλύπτουν διάφορες περιοχές όπως διαδικασίες, συστήματα, ανθρώπους και εξωτερικά γεγονότα, έτσι η επαλήθευση των μοντέλων λειτουργικού κινδύνου έχει αποδειχθεί μια σημαντική πρόκληση.

Στην παρούσα εργασία επιχειρείται ανάλυση των εργαλείων για τη διαχείριση και αξιολόγηση του λειτουργικού κινδύνου και συγκεκριμένα γίνεται αναφορά στα απαιτούμενα περιεκτικά εφαρμόσιμα πλαίσια σε όλο το εύρος της τράπεζας, στην ανάγκη για τη διενέργεια ποιοτικών και ποσοτικών αναλύσεων, στη δυσχέρεια στη συλλογή δεδομένων για τους υπολογισμούς πιθανότητας. Αναλυτικότερα η εργασία πραγματεύεται τα εργαλεία για τον περιορισμό των επιπτώσεων από τον λειτουργικό κίνδυνο με αναφορά στο risk mitigation και εκτενέστερη ανάλυση των δεδομένων ζημιών (loss data), της βάσης δεδομένων, των δεικτών λειτουργικού κινδύνου (KRIs) και της αυτοαξιολόγησης κινδύνων και ελεγκτικών μηχανισμών (RCSA). Παράλληλα, επιχειρείται σε πρακτικό επίπεδο η επεξεργασία δείκτη λειτουργικού κινδύνου και η πειραματική καταγραφή περιπτώσεων από την αυτοαξιολόγηση κινδύνων και ελέγχων (RCSA) μιας επιχειρηματικής μονάδας για την καλύτερη κατανόηση των εργαλείων και της χρησιμότητάς τους στο συνολικό πλαίσιο. Η αυξημένη εστίαση και ο έλεγχος του κινδύνου σε ένα πιστωτικό ίδρυμα μπορούν να συνδράμουν στην κατανόηση της φύσης και της μέτρησης του λειτουργικού κινδύνου αναπτύσσοντας μια πρακτική και ρεαλιστική προσέγγιση για το σκοπό αυτό. Η εργασία βασίζεται στην αναζήτηση μεθοδολογίας μέσω βιβλιογραφικών αναφορών και αρθρογραφίας από την οποία προκύπτει ότι η ύπαρξη πραγματικών γεγονότων μεγάλης βαρύτητας δυσχεραίνει την εξαγωγή συμπερασμάτων και την εφαρμογή των εργαλείων σε πραγματικές συνθήκες. Η προσέγγιση βασίστηκε στη μελέτη των εγγράφων που έχουν καταρτισθεί από την Επιτροπή της Βασιλείας για τον εν λόγω κίνδυνο αλλά και στη μελέτη εξειδικευμένων άρθρων και εργασιών που αφορούν την εξέταση επιμέρους θεμάτων τόσο σε επίπεδο μεθοδολογίας όσο και στις αντίστοιχες εφαρμοσμένες τεχνικές. Το εμπειρικό τμήμα της εργασίας εμπεριέχει αφενός τη δημιουργία δεικτών με

τυχαία δεδομένα ως πείραμα εργαστηρίου καθώς και μια προσπάθεια παρουσίασης ενός πειραματικού RCSA με αναλυτική καταγραφή δύο περιπτώσεων (μιας πολύ σοβαρής και μιας μέτριου κινδύνου) για την καλύτερη κατανόηση της μεθοδολογίας. Η μέτρηση και η ρύθμιση του λειτουργικού κινδύνου είναι αρκετά διαφοροποιημένη από άλλους τύπους τραπεζικού κινδύνου. Ο λειτουργικός κίνδυνος πραγματεύεται μικρά και συχνά γεγονότα αλλά επίσης μεγάλα, ακραία και σπάνια δίνοντας έμφαση στη διαχείριση της δεύτερης κατηγορίας και παρακολουθεί παρεκκλίνουσες συμπεριφορές και καταστάσεις. Η έκθεση σε κίνδυνο δεν είναι εύκολα προβλέψιμη, αλλά με τη χρήση εργαλείων όπως οι δείκτες λειτουργικού κινδύνου και η αυτοαξιολόγηση κινδύνων και ελέγχων ανά μονάδα γίνεται προσπάθεια οι κίνδυνοι να μειωθούν ή να περιορισθούν ενώ διατυπώνονται διορθωτικές ενέργειες και σχέδια δράσης για την αντιμετώπιση του υπολειπόμενου κινδύνου.

### **Evaluating the profitability of European banks through stress testing**

*K. Moutsianas, K. Kosmidou*

The financial crisis of 2008 had severe consequences for the profitability of the banking institutions. The examination of the behavior of banks and the entire financial system in a hypothetical economic environment in which extreme events cause large amount of unexpected losses has become necessary. The purpose of this research is the investigation of the profitability of European banks through hypothetical stress test scenarios in order to examine the behavior of the profitability ratios of return on assets (ROA) and net interest margin (NIM) when adverse but plausible events occurred. For this reason, we develop a stress testing methodology with the following steps: selection of the banks which represent the most important institutions for the financial stability of each country, identification of the macroeconomic and bank-specific variables related with the profitability of the banks using panel data analysis for the period 2000-2010, application of adverse values to the variables which affect the banks' profitability and, finally, the interpretation of the results. It should be noted that the stress testing methodology has become an important risk management tool for the banking institutions and the regulatory agencies in order to assess the stability of the financial systems. Besides, the stress testing is a forward-looking tool which helps the banks to redesign their planning in order to avoid potential shocks. In this research we examine both macroeconomic variables and bank-specific variables in order to take into consideration all the potential effects. The analysis provides useful information for the banking institutions and the supervisory authorities since it includes evidence for the impact of the macroeconomic environment and internal factors to the profitability of banks.

### **Efficiency and performance of the Greek banking system: Using the PROMETHEE and DEA methods**

*G. Manthoulis, D. Niklis, G. Baourakis, D. Alexakis, C. Zopounidis*

In recent years, the role of financial institutions has become more complex. This has happened due to various changes and the rapid developments which have taken place as a result of the liberalization of financial markets, the globalization of activities and the significant advances in technology. The financial institutions, beyond their traditional role as intermediaries between depositors and borrowers, have to manage several risks, including: credit risk, interest rate risk and liquidity risk. Consequently, financial institutions need to be efficient in order to face the challenges effectively. The aim of this study is to evaluate the performance and efficiency of 12 Greek commercial banks over the period 2004-2010, using the multi-criteria outranking method PROMETHEE II and the non-parametric Data Envelopment Analysis (DEA). This can be used to analyze the strengths and weaknesses of each bank compared to its competitors in a period before and after the recent financial crisis. The PROMETHEE II multi-criteria method was applied to give a complete ranking of the examined banks. The results revealed that there were small changes in the ranking of the earlier years which became larger in 2008 and 2010. Data Envelopment Analysis was used in order to evaluate the efficiency of each bank; for the non-efficient banks, potential improvements were suggested in order to perform efficiently. The number of the efficient banks increased till 2008 when a decrease followed in the next two years. The results indicate that the banks examined in this study have not been affected so much by the subprime (international) crisis as much as from the Greek national debt crisis. The main conclusion is that, for a dynamic and

extremely competitive sector, such as the banking sector, the characteristics of each financial institution should be flexible and able to directly adapt to any unexpected change.

### **Implementing IFRS and corporate governance in Greece: The case of Proton Bank**

*T. Lazarides, E. Pitoska*

The last two decades Greece's business environment has changed dramatically. Innovations and initiatives in regulation, in product, capital and money markets have taken place. New institutions, best practices and methodologies have been implemented. Major changes are: the introduction of corporate governance in 2002 (Law 3016/2002 and voluntary initiatives mainly focused on best practices), the introduction of International Financial reporting Standards (IFRS) in 2003-2004 and mandatory opening of money and capital markets. All these changes have been initiated by outside stimuli, mainly European Union (EU) regulation compliance and legal harmonization of all regulation in EU members. Especially the banking sector and its role in the economy have been at the focal point of many changes and criticism worldwide due to corporate scandals in 2002 and 2008. Banks play a unique role in a modern economy. They have some unique characteristics (Capital structure, Risk structure, Ownership structure, Management and governance structure, Product cycle, Impact on society and economy, etc.). These unique characteristics and their size and role in the economy distinguish them from manufacturing and other service corporations. Their product life cycle may be extremely long term and extremely short term. Furthermore, the banking sector faces risk very differently and very different risks and its dependence of managerial effectiveness, skill and knowledge is higher from other sectors of the economy. Hence, corporate governance and financial reporting is crucial for this sector. The banking sector was and still remains the main sector that crisis is incubated. The recent corporate scandals and the inability of the public policy makers to present a stable and feasible plan to exit the crisis are phenomena of the inability to control the power and influence of the banking sector. Even after ten years from the scandals, the role of banks and their operational – regulating framework is still under debate. Regulating the balance of interests of the banking sector is a difficult task. Difficulty factors are: the complexity of the products, the extremely small product cycle, the variety of stakeholders and the high political influence that the banking sector has. The paper argues that the banking sector in Greece has some characteristics that differentiate it from the banking sector of other countries. The Proton Bank scandal highlights these characteristics and reveals the flaws of regulation and the mismatch of the fundamentals of the business environment and the framework (operational, legal, social, etc.) that has been established. Especially the paper focuses on the IFRS introduction and the introduction of corporate governance principles and practices in Greece.

## **11:45–14:15: 4η Συνεδρία**

### **Διαχείριση πελατειακών σχέσεων (CRM) στον τραπεζικό κλάδο: Η περίπτωση των συνεταιριστικών τραπεζών**

*E. Pitoska, T. Lazarides*

Η εργασία έχει αντικείμενο τις τεχνικές διαχείρισης πελατειακών σχέσεων στον τραπεζικό κλάδο και συγκεκριμένα στις συνεταιριστικές Τράπεζες. Ο τραπεζικός κλάδος, που έχει σημειώσει την τελευταία δεκαετία ραγδαία ανάπτυξη, είναι ιδιαίτερα ανταγωνιστικός. Οι ειδικοί του κλάδου εκτιμούν ότι δεν υπάρχουν πλέον σημαντικά περιθώρια ανάπτυξης, οπότε το πεδίο ανταγωνισμού μεταξύ των τραπεζών έχει μεταφερθεί σε άλλο επίπεδο, σε αυτό που αφορά στην ικανοποίηση που η κάθε μία προσφέρει στους πελάτες της. Οι τράπεζες πλέον στηρίζουν την ανάπτυξή τους στην ποιότητα υπηρεσιών που προσφέρουν με στόχο την ικανοποίηση και διατήρηση πελατών. Προκειμένου να καταφέρουν να φτάσουν σε υψηλά επίπεδα ικανοποίησης και πιστότητας, οι τράπεζες έχουν αρχίσει να εφαρμόζουν συστήματα διαχείρισης πελατειακών σχέσεων ώστε να ενδυναμώσουν τις σχέσεις τους με την πελατειακή βάση τους. Η διαχείριση πελατειακών σχέσεων (CRM) αποτελεί πλέον απαραίτητη στρατηγική για όλες τις επιχειρήσεις, δεδομένου ότι η αποτελεσματική εφαρμογή της μπορεί να αυξήσει

την ικανοποίηση, την πίστη και τη διατήρηση πελατών και έτσι, τις πωλήσεις και να οδηγήσει σε επαναλαμβανόμενες αγορές (Feinberg & Kadam 2002, Kotorov 2002, Anton & Hoeck 2002). Εντούτοις, αν και το CRM είναι μια από τις ταχύτερα αναπτυσσόμενες διοικητικές προσεγγίσεις για την σύγχρονη επιχείρηση, η εφαρμογή του δεν έχει αποδώσει πάντα τα αναμενόμενα αποτελέσματα (Rigby et al., 2002). Σε έρευνα του ο Kekoe (2002) διαπίστωσε ότι μέχρι και το 20% των επιχειρησιακών ανώτερων υπαλλήλων υποστήριξε ότι οι πρωτοβουλίες CRM είχαν βλάψει τις πελατειακές σχέσεις. Κατά συνέπεια, οι επιχειρήσεις στον τραπεζικό τομέα οφείλουν να εξετάζουν προσεκτικά τις επενδύσεις σε συστήματα διαχείρισης πελατειακών σχέσεων (CRM) προκειμένου να έχουν το επιθυμητό για την επιχείρηση αποτέλεσμα. Η παρούσα εργασία μετά από μια συνοπτική επισκόπηση της βιβλιογραφίας σχετικά με την Διαχείριση Πελατειακών Σχέσεων, την Ικανοποίηση καταναλωτή αλλά και την πιστότητα, περιλαμβάνει και μια εμπειρική διερεύνηση. Η εμπειρική διερεύνηση είχε σκοπό να αξιολογήσει το επίπεδο υιοθέτησης και την αποτελεσματικότητα της Εφαρμογής του συστήματος Διαχείρισης Πελατειακών Σχέσεων από τις Συνεταιριστικές Τράπεζες. Η έρευνα πραγματοποιήθηκε με δομημένα ερωτηματολόγια που συμπληρώθηκαν με προσωπική συνέντευξη με ανώτερα στελέχη δύο Συνεταιριστικών Τραπεζών. Μετά από καταχώρηση και στατιστική επεξεργασία των δεδομένων της έρευνας, εξάγονται συμπεράσματα.

### **The role of switching costs in churn prediction: A review of decision making approaches**

*E. Angelaki, E. Grigoroudis, C. Zopounidis*

Modern business organizations invest on customer retention, since, as widely accepted, it is more expensive to attract new purchasers than to keep existing ones. This is more evident today due to the globalization, the highly competitive environment and the financial crisis. Moreover, modern companies need to identify those customers who are most likely to churn, since markets have become increasingly saturated. Switching costs play an important role in customer churn, and their role has been widely studied in the relevant literature. As proposed in several previous research efforts, switching costs are directly related with customer loyalty and they may affect the strategic position of company in the market. This paper reviews the recent literature of switching costs and discusses their typology. Given the necessity of deploying proactive retention campaigns, business organization should try to analyze consumer behavior and identify customer needs. For this reason, some well-known churn prediction techniques are also presented, which may help companies to understand and manage customer churn.

### **Comparison of classification techniques in the prediction of securities class actions**

*V., Balla, P., Pasiouras, C., Zopounidis*

In recent years, there has been an increase in the number and value of securities class actions (SCAs), attracting the attention of various stakeholders such as investors, managers, policy makers, lawyers, etc. A small, but growing number of academic studies has also focused on the factors influencing the amount of settlement, the causes and consequences of SCAs, and the stock price movements. The present study employs an alternative approach to extend the literature, by examining the possibility of developing classification models to forecast securities class actions filed against U.S. firms. The development of such models, although quite important has not received attention compared to other financial decision making classification problems such as bankruptcy prediction and credit risk assessment where hundreds of papers have been published. In more detail, the present study compares the classification accuracy of multicriteria decision aid (MCDA) techniques like UTADIS and MHDIS, to the one of another advanced technique namely Support Vector Machines (SVMs). These three techniques are also compared to statistical and econometric approaches like discriminant and logit analysis, in an attempt to examine whether the state-of-the-art techniques could outperform the predictive ability of traditional methods. Information about SCAs is collected from Stanford Law School Securities Class Action Clearinghouse, while financial data about the firms are obtained from OSIRIS database of Bureau van Dijk. The study covers the period 2003-2010.

## **Επιρροή των μεθόδων δημιουργικής λογιστικής στην αξιολόγηση των επιχειρήσεων**

*Θ. Βασιλιάδης, Ι. Παπαδόπουλος*

Στόχος της εργασίας είναι η ανάδειξη της Επιρροής των μεθόδων της δημιουργικής λογιστικής αφ' ενός επί των Scoring Συστημάτων και αφ'εταίρου επί της αξιολόγησης των επιχειρήσεων με την χρήση της Χρηματοοικονομικής ανάλυσης. Επιλέχθηκαν εταιρείες που ανήκαν σε συγκεκριμένο κλάδο, υπολογίστηκαν τα χρηματοοικονομικά στοιχεία του κλάδου και τέθηκαν ως κριτήρια. Ακολουθώντας, με την χρήση των μεθόδων δημιουργικής λογιστικής (επεμβάσεις σε αποθέματα, αποσβέσεις, εξοδα σε πάγια, μεταφορά βραχυ σε μακρο δανεισμό κ.α.) και για κάθε εταιρεία ξεχωριστά, τροποποιήθηκαν οι ισολογισμοί και υπολογίστηκαν αφ' ενός το Z-score (Altman) και αφ'εταίρου ένα σετ χρηματοοικονομικών παραμέτρων (ρευστότητες, σχέση ιδίων προς ξένα, κεφ. Κίνησης, κ.α.). Τα αποτελέσματα που βρέθηκαν δείχνουν σημαντική επιρροή επί των συστημάτων scoring αλλά μικρή επί ενός κατάλληλα επιλεγμένου σετ χρηματοοικονομικών μεγεθών που πληρούν τα κριτήρια που τέθηκαν.

## **Drivers of profitability and leverage of Greek firms in the post crisis era**

*C. Lemonakis, F. Psimarni-Voulgaris*

Since 2008 Greece is going through a severe economic crisis which has affected the economic performance and viability of its manufacturing sector. The purpose of this study is to investigate the determinants of profitability and capital structure of Greek manufacturing firms in the after crisis period and compare with empirical research findings from the pre EU entry period. The study uses multivariate panel data analysis covering the period 2008-10, based on firm level financial data of 2.493 firms, from the Agriculture, Cement, Energy and Food and Beverages sectors in Greece. Our findings suggest that the main drivers of profitability are, among others the level of Fixed Assets and Equity Capital, especially in F&B and Cement sectors. Net Profit Margin ratio, which characterizes profitable firms that have better control over their costs compared to its competitors, is positive and significant in all examining sectors, showing positive effect to profitability. Financial Cost is shown to have an important negative effect on profitability in Agricultural and Energy sectors, as expected. Finally, Size came out to influence positively profitability only in the agricultural sector. The factors found to affect significantly the financial leverage of the firms, measured in terms of Debt over Equity, are the Fixed Assets and Liquidity Ratios for all sectors. Inventories and Accounts receivables are shown to affect the leverage of all sectors, except food and beverage, indicating that most of the debt is financing current assets. Liquidity is found to be negatively correlated to leverage, as expected. Size is significant determinant in the Energy and F&B sectors indicating that large firms have better access to bank financing in Greece, due to their higher securitization of debt and higher level of credibility. In an era of increasing globalization and competitiveness, the findings imply that Greek firms should focus on reducing their overall leverage levels, within acceptable limits, with better control of their inventories and better management of their current assets. In this task, their efforts would focus on increasing their general and quick liquidity levels, either by providing special discount policy in "reliable customers" or by using factoring for their financing.

## **Inflation forecasting in Greece using a neuro-fuzzy system**

*G. Atsalakis, I. Atsalaki*

This paper analyses inflation forecasting power of a hybrid intelligent system called Adaptive Neuro Fuzzy Inference System (ANFIS) for forecasting the quarterly inflation rate in Greece. Recent studies have addressed the problem of inflation rate forecasting by using different methods including artificial neural networks and model based approaches. The ANFIS combines both the learning capabilities of a neural network and reasoning capabilities of fuzzy logic in order to give enhanced forecasting capabilities, as compared to using a single methodology alone. Quarterly data that concern the rate of growth of production, of imports prices, of consumer index, the rate of labor cost and the rate of growth of Athens Stock Exchange General Index have been used as inputs to the model. Various models have been trained by leaving the half data out. Then the models have been evaluated by the data that are left out. The forecasting accuracy of the alternative ANFIS models is compared in terms of the Root Mean



Square Error (RMSE) and other common error measures. The results have shown that, ANFIS provides a prudent way to capture uncertainty in relationships among input variables and output variable.

### **Tourism demand forecasting based on a neuro-fuzzy model**

*G. Atsalakis, E. Chnarogiannaki, C. Zopounidis*

Tourism in Greece has a major role in the country's economy, where an accurate forecasting model for tourism demand could be a useful tool, affecting decision making and planning of the future. In this paper, are answered some questions such as how did the forecasting techniques evolve during the years, how precise can those techniques be and in which way they can be used in tourism demand. An, Adaptive Neuro Fuzzy Inference System (ANFIS) is used to make the forecasts. The data concerns monthly time series tourist arrivals by air, by train, by sea and by road in Greece from January 1996 until September 2011. The 80% of the data have been used to train the forecasting models and the rest have been used to evaluate the models. The data are used as input for the forecasting models. The performance of the models is achieved by the calculation of some well known statistical errors. The accuracy of the ANFIS model is further compared with two conventional forecasting models: the autoregressive (AR) and autoregressive moving average (ARMA) time-series models. The results were satisfying even if the collected data were not pleasingly enough. The ANFIS performed much better compared to the other time-series models. In conclusion, the ANFIS model forecasted accurately proving its great importance in tourism demand forecasting.

## **15:00–17:15: 5η Συνεδρία**

### **Measuring the market risk of freight rates: A forecast combination approach**

*C. Argyropoulos, E. Panopoulou*

Freight rate risk has always been one of the most important risk factors of the shipping industry mainly because it affects its primary source of income. In addition, the uprising interest of participants in the shipping industry such as shipping companies and shipping hedge funds makes the accurate measuring of freight risk a procedure of high importance. Despite the plethora of respective research in the financial sector, the measurement of the market risk of freight rates has not been a popular subject. This paper aims at contributing to the literature in three ways: First, we re-evaluate the performance of popular Value-at-Risk (VaR) estimation methods amid the adverse economic consequences of the recent financial and sovereign debt crisis. Secondly we provide a detailed and extensive backtesting methodology in order to identify possible weaknesses associated with the standard backtesting criteria. Last, we propose a combination forecast approach in estimating the VaR. Our approach provides a method of accurate VaR estimates reducing the cost in time and resources. More in detail, we calculate the one-day 95% and 99% VaR by applying a wide range of estimation methods. Specifically we apply parametric (ARMA-GARCH, EVT models), non-parametric (Historical Simulations), Simulation Methods (Filtered Historical Simulation, Monte Carlo Simulation) and a variety of combination methods on the logarithmic returns of the most important Baltic Exchange indices. With respect to the combination methods we employ the mean, median and trimmed means of individual VaR estimates in order to produce a superior forecast. The sole purpose of this approach is to examine if combinations of the individual methods are capable of producing estimates of the same or higher performance. In order to conduct a more reliable and in depth statistical evaluation, we implement a battery of newly developed backtesting criteria along with the standard Christoffersen approach. These criteria consist of the Manganelli and Engle regression approach, the Christoffersen and Pelletier duration approach and finally the Colletaz, Hurlin and Perignon test. Our findings suggest that both the parametric and simulation methods produce accurate estimates of daily VaR at the 95% significance level. However, at the 99% level the parametric methods dominate with the non-parametric producing accurate estimates only at the Bulk Tanker Sector. More importantly, our combination methods produce more accurate

estimates in both significance levels and for all the sectors under scrutiny, while in some cases they may be viewed as conservative since they tend to overestimate nominal VaR.

### **The time dimension and value of flexibility in resource allocation: The case of the maritime industry**

*K. Axarloglou, I. Visvikis, S. Zarkos*

The study empirically analyses the time-varying properties of the spread between voyage and time-charter rates and presents evidence that these properties are directly related to the business cycle (market demand) of the maritime industry, to the expectations for the future market demand and to market volatility. Using a real options methodology, it is demonstrated that the time-varying properties of the spread is the outcome of the strategic decision to time-commit company resources in the industry. During a market upturn (downturn) managers choose to commit company resources for a short period (long period), and thus, maintain flexibility (commitment) in better exploiting the upcoming business opportunities (protecting company resources from lack of business opportunities). Overall, the fluctuations of the time-varying spread between voyage and time-charter rates offer managerial insights in resource allocation that can better shape up chartering, budgeting and financial management decisions on the time commitment of resources in the maritime industry.

### **Ο ρόλος της εγχώριας ναυτιλίας στις πολιτικές μείωσης των εκπομπών αερίων ρύπων και οι πιθανές επιπτώσεις στα ελληνικά λιμάνια**

*A. Μαραγκογιάννη, Σ. Παπαευθυμίου, Κ. Ζοπουνίδης*

Την τελευταία δεκαετία η παγκόσμια κοινότητα καλείται να αντιμετωπίσει πλέον με πρακτικά εφαρμόσιμες λύσεις το φαινόμενο της κλιματικής αλλαγής, ένα από τα πλέον απαιτητικά περιβαλλοντικά προβλήματα. Παρόλο που στα πλαίσια των διεθνών συμφωνιών και σε ότι αφορά στους τομείς των μεταφορών, έχουν ψηφιστεί και εφαρμοστεί προτάσεις-πλαίσια για τη μείωση των εκπομπών αερίων ρύπων και κυρίως του διοξειδίου του άνθρακα (CO<sub>2</sub>), τόσο στον τομέα της ναυτιλίας και των θαλάσσιων μεταφορών όσο και στον τομέα της ενεργειακής και περιβαλλοντικής συμμόρφωσης των λιμανιών δεν έχει σημειωθεί σημαντική πρόοδος. Ο εναρμονισμός της ναυτιλίας στις υποχρεωτικές κατευθύνσεις της παγκόσμιας περιβαλλοντικής πολιτικής είναι πλέον αναπόφευκτος και θα σημάνει την είσοδο της διεθνούς ναυτιλίας στις αγορές διαχείρισης ρύπων άνθρακα. Ο συγκεκριμένος τομέας των μεταφορών είναι υπεύθυνος μόλις για το 3% των εκπεμπόμενων ρύπων σε διεθνές επίπεδο, ωστόσο οι εκτιμήσεις αναμένουν αλματώδη αύξηση του ποσοστού αυτού, συγκεκριμένα με ρυθμό ανάπτυξης κατά 150% (συγκριτικά με τις τιμές του 2007), σε περίπτωση μη εφαρμογής μίας δέσμης προτεινόμενων περιβαλλοντικών μέτρων. Επίσης, θεμελιώδη ρόλο σε αυτή την οικουμενική προσπάθεια αναμένεται να διαδραματίσουν τα λιμάνια καθώς θα είναι αναγκαίο να ανταποκριθούν σε μία εντελώς νέα πραγματικότητα, η οποία διαμορφώνεται από τις τρέχουσες διαδικασίες της παγκόσμιας περιβαλλοντικής πολιτικής, τις νέες μεταφορικές ανάγκες που σχετίζονται με τα σύγχρονα πρότυπα κατανάλωσης καθώς και τις ραγδαίες τεχνολογικές αλλαγές. Η παγκοσμιοποίηση του εμπορίου, που έχει μετατρέψει το παραδοσιακό λιμάνι σε κέντρο διαχείρισης και οργάνωσης εμπορευμάτων (logistics), σε συνδυασμό με τις απαιτητικές και αυστηρές περιβαλλοντικές πολιτικές έχουν επηρεάσει τη σύγχρονη λιμενική βιομηχανία. Η προτεινόμενη εργασία έχει ως στόχο να αναδείξει το σημαντικό ρόλο της ελληνικής ναυτιλίας στο σχεδιασμό και υλοποίηση των νέων μέτρων και πολιτικών για τη μείωση των εκπομπών αερίων του θερμοκηπίου από τις θαλάσσιες μεταφορές. Θα αναλυθούν όλα τα προτεινόμενα και υπό διαβούλευση μέτρα για τον περιορισμό των περιβαλλοντικών επιπτώσεων από τη ναυτιλία αλλά και οι αναμενόμενες συνέπειές τους. Τέλος, θα αναλυθεί ο ρόλος των ελληνικών λιμένων στις πολιτικές για τη μείωση των εκπεμπόμενων αερίων, και θα προταθούν ορισμένα μέτρα - εργαλεία και πολιτικές για την αναγκαία μετατροπή των λιμένων σε ενεργειακά αποδοτικότερους σταθμούς.

### **Forecasting total energy exports using the ANFIS system**

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The role of total energy exports is crucial nowadays not only for the countries that export any kind of energy but also for the countries that import energy. More specific, countries that export energy are increasing their revenues and enhance their growth and countries that import energy are exploiting it for general purposes, satisfying the need of their citizens for consuming energy in terms of heating, cooking, vehicle movements and so on. This results in the interest of various researchers in all possible kinds of energy and in forecasting any variable that is connected with them. In this paper, an Adaptive Neuro-fuzzy Inference System (ANFIS) system is used in order to forecast total energy exports, using data that concern monthly exports. This system is compared with two other conventional models, Auto-Regressive (AR) models and Auto-Regressive Moving Average (ARMA) models. The experimental results are very encouraging, due to the fact that they show the superiority of the neuro-fuzzy technique over the other two models, and through these results it can be proved that the ANFIS model is efficient and easily applicable.

### **An integrated approach for energy efficiency analysis in European Union countries**

*G. Makridou, K. Andriosopoulos, M. Doumpos, C. Zopounidis*

This paper evaluates the energy efficiency of EU countries over the period 2000–2010. At the first stage, Data Envelopment Analysis (DEA) is employed, combining multiple energy consumption data, economic outputs, structural indicators, and environmental factors. The efficiency estimates obtained from the analysis are evaluated in a second stage through a multiple criteria decision aiding methodology (MCDA). The proposed non-parametric approach combining DEA with MCDA enables the modeling of the problem in an integrated manner, providing not only energy efficiency estimates, but also supporting the analysis of the main contributing factors, as well as the development of a benchmarking model for energy efficiency evaluation in country level.

### **Trading before stock price shocks: An empirical analysis using stock option trading volume**

*E. Galariotis, W. Rong, S. Spyrou*

This paper offers original evidence on the behavior of investors in stock option contracts for the period preceding price shocks in the underlying stocks. The sample stocks are all S&P100 constituent stocks for the recent period. We find that option trading volume tends to increase before positive and negative price shocks and that for up to 65% of price shocks (depending on test periods and significance levels) the hypothesis of abnormal option trading volume cannot be rejected. Furthermore, pre-event option trading volume seems to be related to post-event abnormal returns especially for High B/M and High Market Value stocks.

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