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## GUEST EDITORIAL

# International market structure: global problems and micro solutions

International  
market structure

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### Abstract

**Purpose** – The purpose of this paper is to present new empirical evidence on global trends in equity-related transaction costs and trading volume, as well as to highlight recent research in international market microstructure.

**Design/methodology/approach** – Estimates of brokerage commissions, indirect trading costs, and trading volume are obtained from a comprehensive institutional investor database. Quarterly data are used to compute trends in transaction costs and trading volume, as well as shifts in trading between mature and emerging markets.

**Findings** – The results indicate a steady decline in brokerage commissions around the world but indirect trading costs appear to have reached a plateau. The fastest growth in trading volume can be found in the emerging markets of South America but the USA leads the way in terms of the steepest reductions in transaction costs.

**Research limitations/implications** – The paper relies on one source of transaction cost estimates over a relatively short period (March 2005-December 2007).

**Originality/value** – The paper provides comprehensive and current empirical evidence on important trends in international market microstructure.

**Keywords** Market system, Structures, International business, Trade

**Paper type** Research paper

### 1. Introduction

As we approach the end of the first decade of the twenty-first century, one can marvel at the rapid growth and innovation that have occurred in international financial markets during the past ten years. For example, Davis *et al.* (2006) note that electronic trading systems have been adopted swiftly in recent years as traditional trading floors around the world closed or saw their market share decline. Interestingly, the leaders in the move towards electronic financial markets during the past decade have typically been outside the USA. Consequently, the importance of international financial markets, particularly in the areas of derivatives and equities trading, has grown substantially. For example, the recent merger of the NASDAQ stock market with Scandinavia-based OMX Group was spurred in part because of the latter's well-respected and widely-used OMX electronic trading technology. Thus, global investors are taking notice of the



The author wishes to thank Abel/Noser Corporation and Judy Maiorca for generously providing the financial data from its *Ancerno* data service. Financial support for this research was provided by a Villanova School of Business summer research grant.

growing influence and liquidity of financial markets outside the USA. However, as Davis *et al.* (2006) point out, there are still significant challenges facing the world's financial markets in terms price discovery, transparency, trading costs, and liquidity provision despite the major advances that have been made during the past decade[1].

Academic interest in this area has risen in tandem with the growth in international financial markets. For example, a July 2008 search of the *EconLit* academic research database based on the keywords "international," "microstructure," and "stock" yielded only six articles prior to 2000 but 25 articles since then. The current issue of *International Journal of Managerial Finance* contributes to this growing literature by focusing on important developments in market microstructure across both international equities and derivatives markets.

Before delving into some of the highlights of the market microstructure papers found within this issue, it is useful to present some empirical evidence related to two key areas of focus in the microstructure literature:

- (1) the growth in international trading activity; and
- (2) the trends in transaction costs around the globe.

In addition, we examine whether international trading costs are closely correlated with recent developments in US financial markets. To do this, we focus on global equity trading activity and use data on institutional trading behavior provided to us by an independent brokerage firm's analytical service. We use Abel/Noser Corporation's *Ancerno* database to examine trends in transaction costs and trading volume for six geographic regions covering 50 different equities markets. In addition to this regional analysis, we also focus our analysis more finely by reporting results for six countries which contain some of the largest equity markets in the world.

We find that transaction costs have been falling around the world over the past three years, led by a sharp decline in US brokerage commissions (e.g. -40 per cent from March 2005 to December 2007). However, indirect one-way transaction costs such as those related to market impact and order execution delay may have approached a bottom at around 2 basis points (bps)[2]. That is, although there is still considerable geographic variation in trading costs, the indirect costs of trading appear to be converging around a plateau of approximately 2 bps per trade. In addition to these cost estimates, we report dramatic increases in trading volume across all parts of the globe with some of the largest percentage gains occurring in the emerging markets of South America (+633 per cent), Asia (+76 per cent), and the Middle East/Africa (+61 per cent). In addition, Europe's share of global trading volume has increased 4 percentage points to 17.5 per cent while North America's share has slipped 5.6 percentage points to 73.6 per cent. Lastly, we find that the overall decreases in global trading costs are strongly correlated with movements in US transaction costs, with most regions reporting correlations of +0.90 or more with US figures.

The remainder of this paper is organized as follows. Section 2 provides some details on Abel/Noser's financial data service, *Ancerno*. Section 3 provides our empirical results while Section 4 highlights some of the key points of the articles contained within this issue. Section 5 presents some concluding thoughts.

## 2. The *Ancerno* financial database

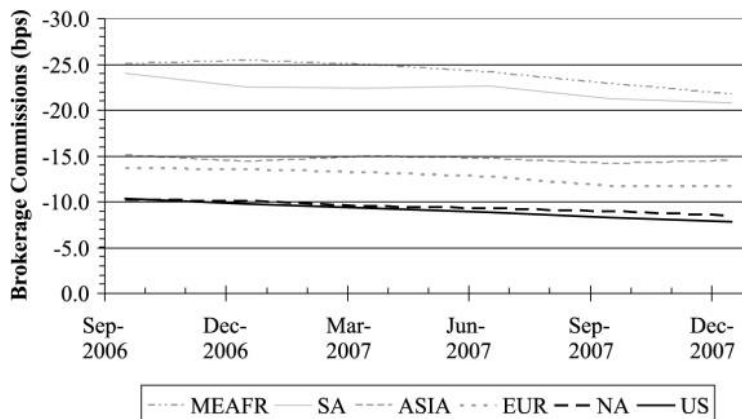
The *Ancerno* data reported here are drawn from detailed trade-level transaction data that were obtained from large institutional investors. The *Ancerno* database tracks orders from:

- the time they enter the institutional investor's order entry system;
- to the time the order is placed by the firm's traders; and
- up to, and including, all of the related filled trade executions associated with that order.

This data set captures a significant portion of global institutional trading activity and helps quantify trends in trading costs beyond basic brokerage commissions. For example, the *Ancerno* database is built on the trading activity of institutional investors with a total of \$4.9 trillion invested in US markets and \$2.0 trillion invested in 50 equity markets outside the US (as of March 2007). These data are drawn from over 400 Abel/Noser clients in the USA and 125 international clients. Although these data do not capture trading by all institutional investors in every global market, the database does represent an economically significant portion of global financial assets (e.g. nearly \$7 trillion) and a sizable number of the world's largest investment managers[3].

## 3. Empirical results on global trading activity

To identify the broad trends in one-way brokerage commissions and indirect trading costs such as market impact and order execution delay, we plot graphs for regional and country-specific markets in Figures 1-3 and Figures 4-6, respectively. Figure 1 shows the steady decline in brokerage commissions during September 2006-December 2007 for all six major geographic regions (Middle East/Africa, South America, Asia, Europe, North America, and the USA), with the USA leading the way with the lowest brokerage costs of 7.8 bps in December 2007[4]. Figure 4 reports a similar trend in six major trading markets (Japan, Hong Kong, Australia, Germany, the UK, and the USA) during March 2005-December 2007. Both of these graphs show sizable declines in brokerage commissions, with the USA exhibiting the sharpest drop in percentage terms (-40 per cent during March 2005-December 2007). However, there still is considerable



**Figure 1.** This graph displays the median brokerage commissions (in basis points) during September 2006-December 2007 for Middle East/Africa (MEAFR), South America (SA), Asia (ASIA), Europe (EUR), North America (NA) and the USA

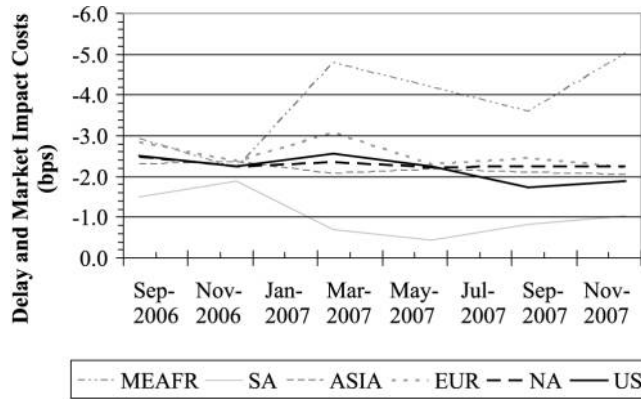
cross-sectional variation in these commissions as regions such as South America and the Middle East/Africa report median one-way brokerage costs of 21-22 bps whereas investors in European and North American markets pay less than 12 bps.

We use *Ancerno's dEX* variable to examine the indirect costs of market impact and delay related to institutional trades. This variable measures the cost from the time a portfolio manager enters the order into the firm's trading system until the order is finally executed[5]. We report this indirect cost measure in Figures 2 and 5 for the regions and countries, respectively, and find a much different pattern than the one associated with brokerage commissions. Both at the regional and national levels, the trend in the indirect costs is essentially flat with most values hovering between 2 and 3 bps. Thus, in contrast to the steady decline in commissions, the indirect costs appear to have bottomed at approximately 2 bps. Due to the relatively short time period for which we have data, it is unclear whether this is a true "floor" in indirect trading costs or just a temporary hiatus from the secular downtrend in global trading costs.

To get a sense as to how both direct and indirect trading costs have fluctuated in the aggregate, we add the brokerage commissions to the *dEX* indirect cost estimates and

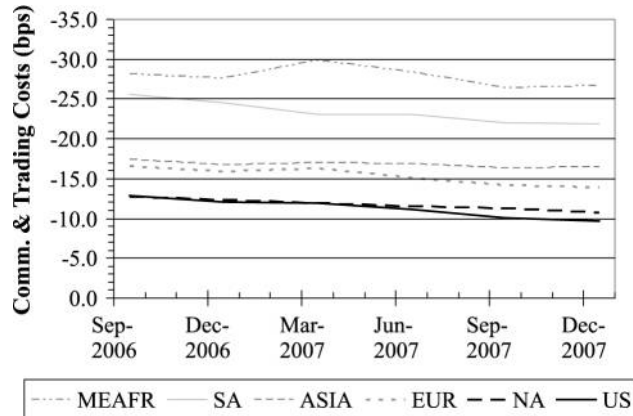
**Figure 2.**

This graph displays the median estimates of one-way indirect trading costs related to order execution delay and market impact (in basis points) during September 2006-December 2007 for Middle East/Africa (MEAFR), South America (SA), Asia (ASIA), Europe (EUR), North America (NA) and the USA



**Figure 3.**

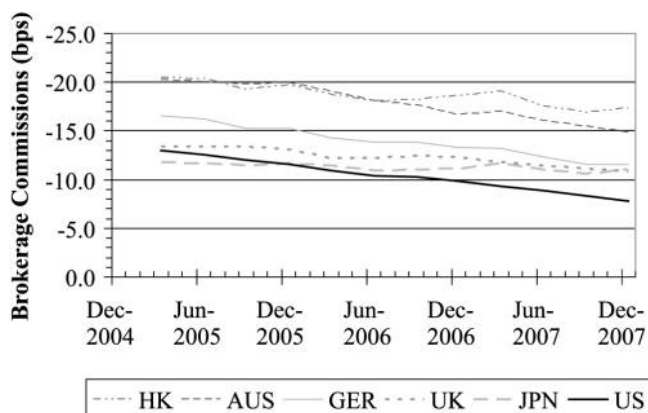
This graph displays the sum of the estimates for brokerage commissions and indirect trading costs (in basis points) during September 2006-December 2007 for Middle East/Africa (MEAFR), South America (SA), Asia (ASIA), Europe (EUR), North America (NA) and the USA



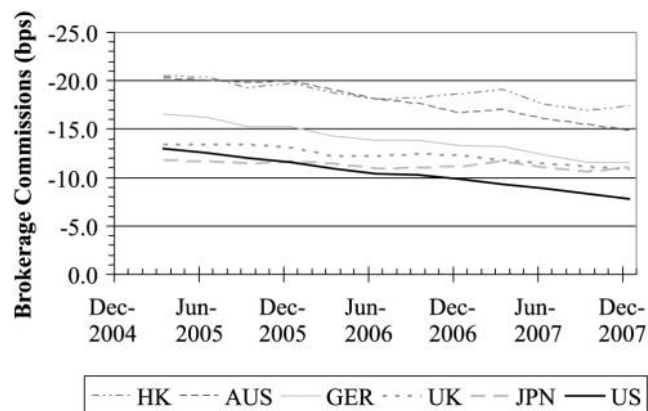
report these “total” trading cost estimates in Figures 3 and 6[6]. As can be seen in these graphs, the overall trend in the sum of direct brokerage commissions and indirect trading costs is downward for all regions and countries. However, the decrease in Asia’s total trading costs is slight due to only modest declines in both commissions and indirect costs (i.e. both fall less than 1 bps).

Table I quantifies the trends illustrated in Figures 1-6 by reporting the percentage changes in commissions, total trading costs, and trading volume (measured in US dollars). This table also reports each region’s/country’s respective share of trading volume, the change in this market share, and the correlations of total trading costs with those estimated for the USA. For example, the first two columns of Table I show the declines in trading costs across the various countries/markets (in Panel A) and regions (in Panel B). As noted earlier, the USA has exhibited the strongest decreases in trading costs while Asian countries experienced much milder declines (most notably, Japan’s total trading costs actually increased 3.1 per cent during the period).

The third, fourth, and fifth columns in Table I report trading volume activity. As the third column shows, there are substantial gains across all parts of the globe with some



**Figure 4.** This graph displays the median brokerage commissions (in basis points) during March 2005-December 2007 for Hong Kong (HK), Australia (AUS), Germany (GER), U.K. (UK), Japan (JPN), and the USA



**Figure 5.** This graph displays the median estimates of one-way indirect trading costs related to order execution delay and market impact (in basis points) during March 2005-December 2007 for Hong Kong (HK), Australia (AUS), Germany (GER), U.K. (UK), Japan (JPN), and the USA

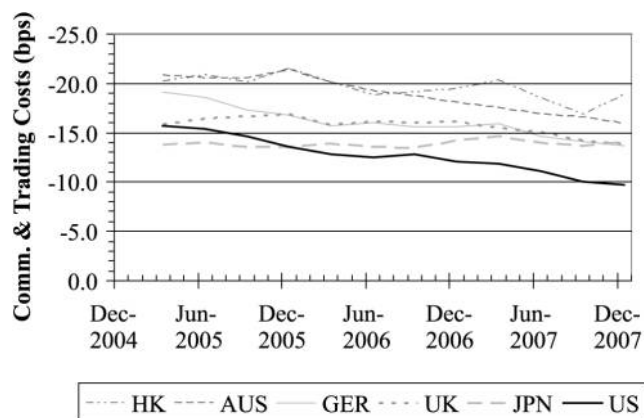
of the largest percentage gains in trading volume occurring in the emerging markets of South America (+ 633 per cent), Asia (+76 per cent), and the Middle East / Africa (+61 per cent). In addition, columns 4 and 5 of Table I indicate that Europe's share of global trading volume has increased 4 percentage points to 17.5 per cent while North America's share has slipped 5.6 percentage points to 73.6 per cent. Thus, the USA is still the dominant force in global equities but its overall share of trading activity is declining, albeit slowly.

The US market's influence can also be seen in the correlations reported in the last column of Table I. These correlations compare movements in USA total trading costs with those of each respective region/country and indicate that nearly all of these regions/countries are strongly and positively correlated with US trading costs. For example, the five geographic regions in Panel B all report correlations with US costs between 64 per cent and 98 per cent. The one exception to these strong positive correlations is Japan, which exhibits a negative correlation with US trading costs because Japan's transaction costs have bucked the global downward trend.

Overall, the results reported in Table I and Figures 1-6 present relatively good news for global investors as brokerage commissions continue to decrease while trading volume climbs at a rapid rate. Both of these empirical findings suggest that global equity markets are creating lower trading "frictions" and greater depth/liquidity than ever before. These trends are due, in part, to the changes in market structure that have occurred over the past ten to 15 years (e.g. new trading systems, more effective regulation, better enforcement of trading rules, etc.). However, as Figures 2 and 5 illustrate, indirect trading costs related to market impact and order execution delays are not declining as rapidly as brokerage commission costs. This suggests there is still room for improvement in terms of how global capital markets can be structured to increase the trading efficiency of both institutional and retail investors.

#### 4. Highlights of this issue on international market microstructure

Given the preceding discussion, we have included in this issue several articles that address current market microstructure issues in various financial markets around the world. For example, Aitken *et al.* (2009) examine the role of underwriters' market-making behavior in post-IPO trading for a sample of the 50 largest



**Figure 6.**

This graph displays the sum of the estimates for brokerage commissions and indirect trading costs (in basis points) during March 2005-December 2007 for Hong Kong (HK), Australia (AUS), Germany (GER), UK (UK), Japan (JPN), and the USA

	Chg. in commissions (%)	Chg. in comm. and trading costs (%)	Chg. in dollar volume (%)	Share of dollar volume (%)	Chg. in six-market share of volume (%)	Correl. with US trading costs (%)
<i>Panel A. (3/05 - 12/07) - Country</i>						
USA	-39.5	-38.2	66.8	78.7	-0.2	-
UK	-19.2	-12.6	88.4	9.3	1.1	79.8
Germany	-30.0	-28.7	23.5	3.2	-1.1	97.5
Japan	-6.4	3.1	53.5	6.1	-0.5	-31.3
Hong Kong	-15.1	-7.0	195.8	1.5	0.6	72.6
Australia	-26.4	-23.4	91.8	1.2	0.1	91.0
Averages	-22.8	-17.8	86.6			61.9
<i>Panel B. (9/06 - 12/07) - Region</i>						
North America	-17.7	-16.1	49.8	73.6	-5.6	97.3
Europe	-14.6	-15.8	109.7	17.5	4.0	98.0
Asia	-4.0	-4.9	76.1	7.3	0.6	90.5
South America	-13.6	-14.6	633.0	1.2	1.0	93.3
MidEast/Africa	-13.7	-4.9	60.8	0.4	0.0	64.5
USA	-24.0	-24.1	11.3			-
Averages	-14.6	-13.4	156.8			88.7

**Note:** This table presents changes in equity-related brokerage commissions, total trading costs (commissions plus market impact and order delay costs), and trading volume, as well as each region's market's share of trading volume (measured in US dollars) and their respective changes in this market share. The correlations between US total trading costs and each region/market are also reported in the final column. Panel A. reports results for specific countries/markets for March 2005-December 2007 and Panel B. reports similar statistics for all major geographic regions within the world's equity markets during September 2006-December 2007



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Australian IPOs during 1996-1999. In typical market microstructure models, the reduction of asymmetric information between insiders / informed traders and liquidity traders is of primary importance. Thus, this study explores the cross-sectional determinants of these underwriters' participation in the post-IPO price discovery process.

Aitken *et al.* (2009) explore more precisely what role underwriting market makers perform in this context and find that these firms help verify facts for liquidity traders rather than produce new information for all investors. That is, the authors find that underwriting market makers participate more actively in the price discovery process (as estimated by the Gonzalo and Granger (1995) common factor technique) when the issuing firm's business is more complex (as proxied by the number of suppliers and customers reported in the IPO prospectus). In addition, participation by these market makers in price discovery declines when an IPO is: the first in a new product area or technology and when venture capitalists or senior management retain a significant equity stake. In these cases, an underwriting market maker's certification role is not as important as the signaling effects associated with venture capitalist/senior management involvement and thus the market maker does not contribute as much to the price discovery process. Overall, Aitken *et al.* (2009) provides us with a deeper understanding of how underwriting market makers help reduce asymmetric information and improve price discovery by verifying important facts for liquidity traders.

Charitou and Panayides (2009) also examine the role of market making in international financial markets but do so by providing a comprehensive analysis of 30 equity markets in 29 nations, with a particular emphasis on how emerging markets can improve their liquidity by incorporating one of three market designs (a quote-driven dealer market, a centralized order-driven structure, or a non-centralized order-driven market). To improve an emerging markets' liquidity and ease potential capital supply shortages, the authors recommend several factors that these markets should consider. Most notably, the authors propose that these emerging markets should take into account the market structures of the "target" foreign countries from which they wish to attract capital investments.

For example, Charitou and Panayides (2009) finds that developed countries have a bias towards avoiding investments in emerging markets but this bias can be reduced or even reversed if an emerging market has a market structure that is similar to the target foreign market's. Thus, one interesting policy implication from this analysis is that the senior management of an emerging equity market might want to consider the costs and benefits of reorganizing its market structure to be more consistent with the structure of its target foreign markets. By doing so, emerging markets that pursue this policy might be able to increase the flow of financial capital from these more-developed nations.

Strother *et al.* (2009) study market making from yet another perspective by focusing on the role that electronic communications networks (ECNs) play in terms of quote-setting behavior when they compete with market makers for the best bid and ask quotes on the Nasdaq Stock Market. In particular, Strother *et al.* (2009) examine how ECN-initiated bid-ask quotes affect trading costs by decomposing the bid-ask spread into its theoretical cost components associated with adverse selection, inventory handling, and order processing. They find that time-weighted average quoted spreads

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are negatively related to ECN-initiated quotes but effective spreads are positively associated with these quotes.

Strother *et al.* also shows that adverse selection costs vary across different spread decomposition models, with these cost estimates either positively or negatively related to effective spreads. Interestingly, these findings suggest that adverse selection costs are not lower for ECN-initiated quotes during periods of high stock returns and high volatility. The authors also assert that the sensitivity of the results to the choice of model implies that the spread decomposition models of Stoll (1989) and Lin *et al.* (1995) might be complements rather than substitutes because each model captures different information. Thus, an important outcome of this analysis is that researchers should consider using these models together rather than in isolation.

In contrast to the analyses of market making activities found in Aitken *et al.* (2009), Charitou and Panayides (2009), and Strother *et al.* (2009), Girard and Omran (2009) study the effects of order flow information and trading volume on the volatility of stock returns for 79 firms on the Cairo and Alexandria Stock Exchange (CASE) during a period which incorporated some major stock market reforms in May 2001. These market reforms included the introduction of a new automated trading system that improved market transparency. Using a Threshold-GARCH (TGARCH) approach with daily data during 1998-2005, the authors find that trading efficiency and information dissemination have both been enhanced.

Most importantly, Girard and Omran (2009) observe a more muted negative reaction to information shocks after the May 2001 market reforms. They conclude that a significant decline in volatility persistence after the new trading system's introduction is consistent with a market that processes information more efficiently because it implies a reduced presence of noise trading and speculative bubbles. Overall, Girard and Omran's study shows another example of how changes in market microstructure can have a large impact on the efficiency, transparency, and liquidity of financial markets, particularly those in emerging markets.

Lien and Yang (2009) also examine volatility and the role of microstructure but in three derivatives markets around the world: the copper futures markets operated by the London Metals Exchange (LME), New York Mercantile Exchange (NYMEX), and the Shanghai Futures Exchange (SHFE). Using five-minute intraday returns in 2005 across these three major copper futures markets, the authors find that the return and volatility spill-overs between LME and NYMEX are bi-directional in general with the trading mechanism playing an important role. For example, when traders use electronic trading systems, these two markets are more integrated due to the presence of bi-directional spillovers. In contrast, under the open outcry trading system, the authors claim the markets are less integrated because there are no significant volatility spill-overs between these two markets. In addition, the results of the tests between SHFE and the two more developed markets suggest that the SHFE market is more closely linked to the LME rather than NYMEX.

Overall, Lien and Yang's evidence reveals that both the trading mechanism and the degree of market integration exert strong influences on the inter-market transmission of return and volatility effects. Consistent with prior studies in equities markets, the authors find that higher levels of market integration and easier access to trading information can also lead to faster information dissemination and strengthen the inter-relationships of returns and volatility across futures markets.

## 5. Concluding thoughts

We have presented some empirical evidence related to two key areas of interest in international market microstructure studies:

- (1) the growth in international trading activity; and
- (2) the trends in global transaction costs.

In addition, we examine whether international trading costs are closely correlated with recent developments in US financial markets. We focus on global equity trading activity and employ data on institutional trading behavior obtained from Abel/Noser Corporation's *Ancerno* database. These data enable us to examine trends in transaction costs and trading volume for six geographic regions covering 50 different equities markets, as well as for six countries that include some of the largest equity markets in the world.

We find that transaction costs have been falling around the world over the past three years, led by a sharp decline in US brokerage commissions (e.g. –40 per cent from March 2005 to December 2007). Interestingly, indirect transaction costs such as those related to market impact and order execution delay may have approached a plateau at around 2 basis points (bps) per trade. In addition to these cost estimates, we report large increases in trading volume across all parts of the globe with some the largest gains occurring in the emerging markets of South America, Asia, and the Middle East/Africa. In addition, Europe's share of global trading volume has increased 4 percentage points to 17.5 per cent while North America's share has slipped 5.6 percentage points to 73.6 per cent. Lastly, we find that the overall decreases in global trading costs are strongly correlated with movements in US transaction costs, with most regions reporting correlations of +0.90 or more with the US data.

Beyond the empirical data reported here, this issue contains several articles that address key questions in international market microstructure. As we have discussed in Section 4, these papers provide further empirical evidence on the significant impact that the structure and design of markets can have on liquidity provision, transaction costs, and a firm's cost of capital, most notably in emerging markets.

### Notes

1. As Miller and Pagano (2007) demonstrate, these forces are also influencing the relatively recent global trend of securities exchanges going public and/or merging with other financial markets.
2. One-way transaction costs represent the per-trade costs of either initiating or liquidating an investment whereas round-trip transaction costs include both the costs of initiating and liquidating a position.
3. For more details on this database, see [www.ancerno.com](http://www.ancerno.com)
4. The figures reported here are negative values that denote cash outflows and thus we use an inverted scale to illustrate the decreases in these trading costs. Also, the regional market figures are based on six-quarter moving averages while the country-specific markets are based on four-quarter moving averages. Due to changes in the way Ancerno has collected and computed some of its data, we are limited in terms of how far back we can extend our analysis (e.g. March 2005 is the earliest period for which we can obtain data). In addition, all figures reported here are the median values for their respective metrics.

5. This cost is computed as the difference between each trade's execution price and the volume-weighted average price of all trades during the period from the order's initiation until the final trade is completed over the course of a given day.
6. Although the commission costs and dEX costs are both median values and, technically, cannot be added together directly, we do this in order to obtain a rough approximation of these combined costs. Since we have data only in aggregate form rather than at the specific-trade level, this is the best approximation available to us. It should also be noted that other costs such as transaction taxes and other fees are not included in our "total" trading cost estimates.

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