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# Dealer Behaviour and Price Strategy in the Foreign Exchange Market: Evidence from FX Tunisian Market Dealer

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# Content

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- I. Motivation
- II. Literature Review
- III. Database
  - a) Exchange Rate
  - b) Trading Volume
  - c) Volatility
  - d) Spread
- IV. Empirical Results
- V. Conclusion



# Motivation

## Object of Study

- relation between trading volume, volatility and bid-ask spreads in foreign exchange market



Liquidity and the risk of the foreign exchange market

## In this article:

1) ***examination of this relation empirically***

2) ***new data set***

a) intra-day total trading volume, exchange rate and spreads for inter-dealers and costume markets

b) daily EUR/TND exchange rate for two periods: January 2010 to December 2010 and January 2012 to December 2012



# Motivation

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## Econometric model & MDH

Data tested by an econometric model to find out the relationship between trading volume, volatility and spread

## Mixture of Distribution Hypothesis (MDH) applicability

- ↳ offers an appealing explanation for the positive relation between trading volume and volatility of returns
- ↳ MDH predicts that volatility will move together with unexpected trading volume and also predicts that spread increases with market volatility.



# Literature Review

Relation between variables with **arrival of new information** → Galati (2000) and others

**MDH** → adopted by studies on volume, volatility and spreads → Clark (1973)

Spread increases with market uncertainty → Galati (2000)

Relation between volume and volatility → Anderson (1976)

↳ Arrival of information causes a price discovery phase and then a equilibrium phase

Theoretical model using inventory and trade data found that price changes reflect significant information effects → Madhavan and Smidt (1991)

# Database

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Data from a foreign exchange dealer

Rate of EUR versus TND (**EUR/TND**)



Spot FX Market **before and after Arab Spring**

Two periods: Jan 2010 → Dec 2010 and Jan 2012 → Dec 2012



# Exchange Rate

Statistics on exchange rate behaviour  
(bid-ask spreads)

Depreciation of Tunisian dinar → 5,75%

↳ Political and economic instability

Real depreciation followed by foreign deficits, low foreign reserves and market uncertainty

Transfer obligation of daily position of currency by banks was cancelled by TCB

↳ Strong volatility in interbank market      ➔ No defense policy of the parity by TCB

Table 1 : Descriptive statistics EUR/TND

|             | 2010     |          |           | 2012      |          |           |
|-------------|----------|----------|-----------|-----------|----------|-----------|
|             | Cours    | Volume   | Spread    | Cours     | Volume   | Spread    |
| Mean        | 1.897588 | 2460666  | 0.002461  | 2.006682  | 3723613. | 0.004856  |
| Median      | 1.894600 | 1455174  | 0.001500  | 2.005750  | 2438099. | 0.002433  |
| Maximum     | 1.956000 | 17984921 | 0.032100  | 2.052250  | 28904799 | 0.036000  |
| Minimum     | 1.837500 | 29000.00 | -0.029500 | 1.927400  | 15262.00 | -0.009000 |
| Std.dev     | 0.025012 | 2617369. | 0.006495  | 0.025943  | 4378245. | 0.008122  |
| Skewness    | 0.140467 | 2.088614 | 1.007501  | -0.587327 | 2.614705 | 1.576719  |
| kurtosis    | 2.855890 | 9.172833 | 10.58162  | 3.428909  | 12.29705 | 5.621087  |
| Jarque-Bera | 1.021842 | 569.4193 | 630.7972  | 15.05133  | 1095.150 | 161.8373  |
| prob        | 0.599943 | 0.000000 | 0.000000  | 0.000539  | 0.000000 | 0.000000  |



# Trading Volume

The **literature has contradictory** findings about the relation between volatility and the size of transactions

↳ Trading volume and volatility increase when new information flow increase and when price decrease

**Dealer includes the new information in his intra-day activity**

Decrease of interbank exchanges and market uncertainty caused by TCB decision led to:

- **Trading volume** and **number of transactions** decreased in 2012
- Weakness of the **previsibility** oh the foreign exchange assets

↳ **Capital flight** which led to a liquidity crisis in foreign exchange market





# Volatility

## Measure tool of market risk

Historical data used to test the risk

Jorion (1996) showed that volatility and volume have a positive correlation

Galati (2000) complemented this analysis demonstrating that this happens because of the **arrival of new information**

↳ Dealer reacts to this, his demand curve shifts leading to the positive correlation

↳ Testing MDH importance by the following equation:

$$R_{t+1}^2 = a + bE_t(v) + c(v - E(v)) + \varepsilon_{t+1}$$



# Spread

Represents the **market maker remuneration**

Ding (2007) showed that volume and spread are negatively correlated

↳ Spread increase when activity of the dealer decrease (in this article)

↳ Holds for the first period (before Arab Spring)

Do not hold for the second period due to market uncertainty and low market liquidity

Explain the increase of spread between 2010 and 2012



# Empirical Results

Augmented Dickey-Fuller tests suggest that **trading volumes** are **stationary**

Trading volumes represented by AR Models

Trading volume split into **unexpected** and **expected** components

**Positive correlation** between **intra-day volume** and **exchange rate volatility**

**Risk** on the foreign exchange market can be better **forecast** by **conditional variance of the return**



# Empirical Results

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## Unexpected Volume

1. positively and statistically significant for 2010 → Volumes and volatility driven by information flows  
↳ Consistent with Galati (2000) main finding
2. Negative coefficient for 2012 → Instability and uncertainty of the spot FX market **after Arab Spring**

## Expected Volume

1. Positive coefficient for 2012 → **Volatility and return are dependent** of trading volume essentially from **unexpected component**



# Empirical Results

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Volatility and spread are positively correlated  **Spread follows the market risk**

**Volatility influences bid-ask spreads** through its effect on inventory costs – Galati (2000)

For the two periods, it was found a **positive coefficients on unexpected volumes**



Stability of exchange between the dealer and his competitors



# Conclusion

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**Data in spot FX market** → Intra-day data on trading volume, exchange rates and bid-ask spreads of EUR/TND

**Main finding** → **unexpected trading volume** and **volatility** are **positively correlated** during the first period (reaction to new information arrival) → MDH prediction

## Other Evidences

- ↳ Negative coefficient on trading volumes influenced by period of instability
- ↳ Market uncertainty increases during periods of stress → Arab Spring
- ↳ Significant impact of unexpected volume on spread

# Questions

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1. How are trading volume and volatility related before and after Arab Spring? Which factor influences them?
2. What were the implications of TCB decision (no obligation of transfer of daily positions) on foreign exchange market?
3. How volume and spread are correlated? In which way influences dealer activity?