Financial strategy and risk track
Financial risk in a digital era
Leverage data to streamline FX hedging and multi-currency pricing

Antonio Rami
Chief Operating Office
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Leveraging data to streamline FX hedging and multi-currency pricing

by Toni Rami
COO, Co-founder
IATA is a business enabler. It allows Airlines to sell in multiple local currencies.
Airlines receive funds in their home currency on a weekly basis.
However, IATA cannot manage FX risk, which leaves Airlines exposed to currency fluctuations.
IATA updates ROE to airline invoice.

Profit Margin

Transaction FX Risk

Airlines set price in home currency.

1 day

7 days

Booking confirmation

Settlement to airline
Thanks to automation, Airlines can leverage real-time data in a simple way, leaving behind techniques based on complex models.
LEVERAGING DATA

Complex Hedging Techniques
Complex Models & Complex Data

<table>
<thead>
<tr>
<th>Currency Pair</th>
<th>CHFUSD</th>
<th>EURUSD</th>
<th>GBPUSD</th>
<th>SGDUSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHFUSD</td>
<td>100.00</td>
<td>71.09</td>
<td>46.70</td>
<td>55.19</td>
</tr>
<tr>
<td>EURUSD</td>
<td>71.09</td>
<td>100.00</td>
<td>63.04</td>
<td>73.67</td>
</tr>
<tr>
<td>GBPUSD</td>
<td>46.70</td>
<td>63.04</td>
<td>100.00</td>
<td>55.19</td>
</tr>
<tr>
<td>SGDUSD</td>
<td>55.19</td>
<td>73.67</td>
<td>55.19</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Automated Hedging Solutions
Scalable Tech & Fewer Data Points

1. Execute Hedge
2. Calculate Exposure
3. Monitor Markets

INFORMATION
Hedges & Positions
Once Airlines have FX risk under control, they will be ready to embrace more currencies in all channels.
**Increased Use of “Direct Connect” Distribution**

<table>
<thead>
<tr>
<th>Factor</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>New generation of revenue management systems are introduced</td>
<td>41%</td>
</tr>
<tr>
<td>Inventory booking classes will become progressively irrelevant</td>
<td>37%</td>
</tr>
<tr>
<td>New generations of PSS are implemented</td>
<td>32%</td>
</tr>
<tr>
<td>GDSs introduce a different commercial model than the one currently in use</td>
<td>27%</td>
</tr>
</tbody>
</table>

*Source: IATA*

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**Dynamic Pricing**

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predictive Analytics</td>
<td>62%</td>
</tr>
<tr>
<td>De-commoditization</td>
<td>60%</td>
</tr>
<tr>
<td>NDC</td>
<td>52%</td>
</tr>
<tr>
<td>Cognitive Intelligence</td>
<td>33%</td>
</tr>
<tr>
<td>New Forms of...</td>
<td>21%</td>
</tr>
<tr>
<td>Fraud prevention</td>
<td>2%</td>
</tr>
</tbody>
</table>

*Source: Ingenico*

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**“One-in-four shoppers will leave a website if local currency is not offered.”**

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**Q: Would you be likely to spend more money with online merchants who price in your local currency?**

<table>
<thead>
<tr>
<th>Country</th>
<th>Yes, definitely</th>
<th>Yes, probably</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>35%</td>
<td>15%</td>
<td>14%</td>
</tr>
<tr>
<td>Australia</td>
<td>32%</td>
<td>24%</td>
<td>18%</td>
</tr>
<tr>
<td>Canada</td>
<td>34%</td>
<td>21%</td>
<td>27%</td>
</tr>
<tr>
<td>Germany</td>
<td>21%</td>
<td>25%</td>
<td>40%</td>
</tr>
</tbody>
</table>

*Source: E4X eCommerce*
With new FX solutions, the finance team becomes not only a risk manager, but a business enabler as well.
How to structure FX hedging in a company

Andrea Sottoriva
Group Treasurer
SITA

IATA WORLD FINANCIAL SYMPOSIUM
How to Structure FX Hedging in a Company

Andrea Sottoriva

Thursday, 26 September 2019
Context

Exchange Rates have become more volatile: Treasury Dept has to manage the **FX risk**

**Hedging strategy:** derived from the corporate strategy. Structured FX Policy

Every year is a new budget year. We have to protect the current budget with hedging.

- Hedging is a process to protect Corporates positions from adverse movements in FX markets.
An enduring currency/debt crisis

2007-2012
US subprime collapse
Indirect impact on Europe and Emerging Markets

The US property market bottomed out in 2013

2010-2015
Euro crisis
Economic growth still weak

Yield spreads back to normal thanks to ECB intervention, but some worries about negative yields in CHF, EUR

2013-2019
Brexit / Emerging markets / Commodities turmoil / Trade War

Slowdown in Chinese GDP growth impact many EM Countries, fall on commodities
Low or Negative interest rates
Issue: Real FX Exposure by currency.
Proposed Solution ➔ Use Actual FX needs and adjust for expected changes

Issue: Duration, tools, percentage of hedges, correlation among currencies.
Proposed Solution ➔ Benchmarking and Analysis

Issue: How to set FX budget rates.
Proposed Solution ➔ Composite rate to be defined taking into account forward rates, weighted trade rates, consensus and trends.

Issue: How to assess business cases.
Proposed Solution ➔ Natural hedge to be achieved, contractual clauses, FX contingencies.
A well defined FX Policy is fundamental to operate.

- Requires Treasury to hedge and protect the budget rates in order to indemnify the Company from achieving its annual objectives
- Specifies not to speculate on market movements
- Defines the responsibilities of Treasury and the supervisory role of the CFO

Treasury measures its success on this basis and not on what subsequently occurs in the foreign currency market.
Rolling and Layering Hedging

using EUR/USD example

Including a layering strategy permits to reduce the volatility from 8.53% (with rolling only) to 2.69%.
Main Key Takeways

FX Hedging is needed to protect the Company’s positions from adverse movement in FX markets. This requires a multi-dimensional approach:

Market Analysis

View on the Company’s exposure evolution

Benchmarking

The development role of the Treasury as a Business Partner is crucial.

What hedge does suit to your company?
What is the appetite of risk of the Management?

FX Policy to be clearly articulated.
Strategies to manage FX risk.
Proactive Treasurers are stepping up and taking on strategic roles.
Thank you
Financial advanced analytics create opportunities for overall business strategy making you the axis

Jeremy Sosabowski,
Co-founder & Executive Director at AlgoDynamix - AI Financial Risk Analytics Provider, AlgoDynamix
Financial Advanced Analytics: Pushing the limits of risk management and forecasting

Jeremy Sosabowski, PhD  jeremy@algodynamicx.com
How Fintech Is Eating The World

Alex Lazarov Contributor @

Fintech

I am fascinated by the future of fintech and global entrepreneurship.

In the early 2000s, people thought of technology as its own industry. There was healthcare, industrials, finance, and... technology. Technology was separate, unique and altogether foreign to the others. It was the domain of innovators that made operating systems like Microsoft and search engines like Google.
Welcome! a bit more context

jeremy@algodynamix.com

- Company started in 2013, incorporated in January 2014
- Our technology is based on many years of research at University of Cambridge
- We have offices in London (HQ), Cambridge (Technology) and Frankfurt (support)
- Global client base within financial services
- Financially backed by institutional investors including Amadeus Capital Partners
FX moves around a bit…

Reference: www.iata.org/economics and BIS
Financial risk forecasting tools providing hours or days advance warning of major directional market movements. Example showing Down Flag (D1) followed by End Flag (E2) on currency markets.
Financial risk forecasting tools providing hours or days advance warning of major directional market movements. Example showing Up Flag (U1) followed by End Flag (E2) on currency markets.
Financial risk forecasting tools providing hours or days advance warning of major directional market movements. Example showing Down Flag (U1) followed by End Flag (E2) on commodity indices.
Annex A – Detailed impact of exchange rate movements on airlines

- Business vs. Leisure
  - Demand Composition
  - Price Elasticity
- Timing
- Domestic vs. International
- Consumer Decisions
- Fleet Composition
- Flight Frequency
- Network Choice
- Diversification
- New Routes
- Concentration
- Financial Accounts
  - Balance Sheet
    - Trading & Hedging
      - Strategy (Leverage)
    - Foreign Liabilities
    - Foreign Assets
    - Foreign currency
    - Reconciliation
    - Aircrafts valued in USD
    - Holdings in foreign companies
  - Operating Activities
    - Cost Breakdown
      - Crew
      - Labour
      - Admin
      - Maintenance
      - Non-USD Costs
      - USD Costs
      - Airport & Ground fees
      - Fuel
      - MRO
      - Aircraft leases

Reference: www.iata.org/economics
• The AlgoDynamix risk analytics engine is based on ‘deep data’ agent-based algorithms scanning - in real-time - multiple quantitative primary data sources (order books).

  - These algorithms analyse the dynamic behaviour of market participants, i.e. buyers and sellers, through our unsupervised machine learning technology which clusters them based on common feature sets.

  - Noise classification, cluster identification and behavioural finance theory are part of our unique core capabilities

  - Market anomalies occur when large clusters of buyers or sellers are identified, note that in the following slides everything still ‘looks normal’ but the deep data insights reveal a very different picture.
Underlying technology (behavioural)
→ ‘Cluster the limit order book’
AlgoDynamix analytics engine

- Software identified ‘clusters’ of user-behaviour
- Within each cluster, users have comparable feature sets
- Cluster identification amongst noisy buyers and sellers is part of our unique core capabilities
AlgoDynamix analytics engine

- Software identified clusters of user-behaviour
- Within each cluster, users have comparable feature sets
- Cluster identification amongst noisy buyers and sellers is part of our unique core capabilities
- Software identified ‘clusters’ of user-behaviour

- Within each cluster, users have comparable feature sets

- Cluster identification amongst noisy buyers and sellers is part of our unique core capabilities
→ Up Flags, Down Flags, End Flags across most financial instruments and asset classes, see also next slides.

→ Treasury specific decision strategies are developed on the back of these directional insights.
Historical data, research notes etc...

### Resources available to view or download

- Webinars
- Workshops
- Research notes
- Conferences

#### Webinars
- February 2017 Cambridge Webinar with full overview of ALDX PI analytics including results
- December 2016 Webinar with “soft launch event” of ALDX PI analytics
- Summer 2016 Canary Wharf Fintech Week Webinar
- AlgoDynamix Easter Webinar, April 2016

#### Workshops
- AlgoDynamix Workshop/Bootcamp 20th May 2016 Part 5/6: Volatility forecasting, benchmarking
- AlgoDynamix Workshop/Bootcamp 20th May 2016 Part 5/6: Product overview, login instructions
- AlgoDynamix Workshop/Bootcamp 20th May 2016 Part 4/6: Analytics Engine, advanced breakdown
- AlgoDynamix Workshop/Bootcamp 20th May 2016 Part 3/6: Clustering technologies

May 2016 Part 2/6: Risk & technology overview
May 2016 Part 1/6: Introduction
Different types of Machine Learning:

**Supervised**

Supervised learning

- Start with a labelled “training” data set
- Used for producing predictive models
- Examples are:
  - Classification
  - Regression

→ Works very well if the future looks a lot like the past....
Different types of machine learning

**Supervised vs unsupervised**

**Supervised learning**
- Start with a labelled “training” data set
- Used for producing predictive models
- Examples are:
  - Classification
  - Regression

**Unsupervised learning**
- No labelling on the data
- Used for producing descriptive models
- Examples are:
  - Clustering
  - Association learning
Use cases:

- Hedging
- Alpha capture
- Sector rotation
- Sales traders
- Trade execution flow

Live client use cases:

- Investment banks: brokerage with or without inventory
- Agency trading, client facilitation, trading desks
- Asset management: outright Alpha, much better risk adj. returns
AlgoDynamix Proof of value

- Workshop with registration of selected users
- Selection of financial instruments
  * We do not require any internal or proprietary data sets
- **8+ weeks access to risk analytics software**
- Ongoing support

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Disclaimer

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Credit Risk Management in the 21st century, know who you trust

Ian Watts,
Practice Leader UK and Ireland
Marsh

IATA WORLD
FINANCIAL SYMPOSIUM
Credit Risk Management in the 21st Century

Ian Watts, UK Practice Leader, Trade Credit

Credit Specialties Analytics
Credit Risk Management in the 21st Century
Know Who You Trust

- Overview of global economic landscape.
- Traditional methods of gaining insight.
- What’s new in terms of assessing risk.
- What is the purpose of credit risk assessment.
- Managing risk of counterparty trade.
Trade uncertainty impacted global trade much more than tariffs via four channels:

1. Investment (delays in investment plans).

2. Consumption saving rates increased globally).

3. Inventories and prices. Euler estimate that while US tariffs hampered global trade growth by -0.3\% in 2018, US-led trade uncertainty cost -0.5\%.

4. For each two months of trade uncertainty, we estimate the cost to be -0.1\% of global trade growth, and for each four months, -0.1\% of global economic growth.

Sources: IHS, Euler Hermes, Allianz Research
Global Economic Growth
Country Forecasts

<table>
<thead>
<tr>
<th>Region</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>3.2%</td>
<td>3.1%</td>
<td>2.9%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Latin</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>America</td>
<td>1.2%</td>
<td>0.7%</td>
<td>1.8%</td>
<td>2.4%</td>
</tr>
<tr>
<td>Eurozone</td>
<td>2.5%</td>
<td>1.8%</td>
<td>1.2%</td>
<td>1.3%</td>
</tr>
<tr>
<td>Asia</td>
<td>5.3%</td>
<td>5.0%</td>
<td>4.8%</td>
<td>4.6%</td>
</tr>
<tr>
<td>Africa</td>
<td>3.1%</td>
<td>2.3%</td>
<td>2.8%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Middle East</td>
<td>1.2%</td>
<td>1.8%</td>
<td>1.7%</td>
<td>2.1%</td>
</tr>
</tbody>
</table>

N.B.: India’s figures are in fiscal year
Source: Allianz Research
1. Looking at the US, EU and China, good’s export gain year-to-date reached EUR29 billion in May 2019. This compares to EUR22 billion in May 2018.

2. A trade diversion and Europe benefits. Goods that have not been exported from the US to China have been almost compensated by Europe exports to China.

3. The sectors that experienced the highest expansions are chemicals, machinery and transport equipment (including cars and aircraft components), and agrifood.
Aggregate Insolvency Projections
% Change Year-on-Year

Insolvency Outlook 2019

The values in the figures show forecast estimates of the annual growth rate in insolvencies. Positive values mean that the insolvencies for the full year are expected to increase compared to last year – i.e. higher frequency risk.

Source: Atradius. Note: Forecasts are based on the outcome of statistical models and expert opinion. All views expressed here are those of Atradius Economic Research (updated August 2019).
Traditional Methods of Gaining Insight

- External information providers – e.g. Dun and Bradstreet.
- Annual report and accounts.
- Payment performance.
- Sector analysis.
- Counterparty client visits.
- Ratings agencies – Standard and Poor’s, Fitch, Moody’s.
- Credit circles.
- Peer analysis/competitor.
What Are Multinational Companies Looking at When Reviewing Credit Risk?
Providing C-Suite Executives with Forward-Looking Risk Evaluation

- Velocity of political, commercial, and technological change is compelling organizations to strengthen resilience against shocks and surprises.

- Global risks require action across multiple organizations and territories. Yet steeper obstacles to collective action heightens challenge facing multinationals, getting varied stakeholders to coordinate response to these risks.

- Recently economic risks became less of a hot topic. But does swing to economic optimism suggest possibility of complacency?

- Probability for wider political events disrupting economic trade is arguably higher now.

- Supporting where growth is most readily apparent:
  - Developing markets – generally higher risk.
### Information Analysis – How Insurers Grade Risk

#### Buyer Risk Analysis

- Insurers use a grading scale that gives a credible prediction of the probability of a company defaulting.
- It also enables you to have forward-looking visibility of your buyer portfolio.
- Probability of default ranges from 100% to 0.25%
Risk Assessment in the Digital Economy: What’s New?

- Multiple sources of data – not just traditional financial statements.
- Updated data sets in real time – think UBER, think algorithms.
- Third-party and consumer role in credentialing counterparty risk.
- Possibility for a rapid deterioration in liquidity – based on the user experience.
- Use of blockchain technology to reduce friction in the trading system.
- Cost of external data input is reducing.
- Computing capability is massively increased.
- Overall an explosion of data.
Basis For Taking Risk
Creating A Competitive Differential

- Credit drives the global economy.
- Duration or credit either costs or saves money.
- Secured or unsecured credit.
Why Take Risk?

The $86 Trillion World Economy in One Chart

Article & Sources:
https://howmuch.net/articles/the-world-economy-2018
https://sivaroadbank.worldbank.org
Trade Credit Analytics
The Process and Outputs (High Level)

- Marsh will calculate a total cost of risk (TCOR) and economic cost of risk (ECOR).

- The benefit of the ECOR calculation over TCOR, is that it includes a capital charge (IRC) for retained and uninsured coverage layers i.e. losses in excess of policy aggregates and limits.

- This recognizes that there is a real, though not obvious, financial cost to an organization created by the possibility of unexpected losses.

- ECOR therefore calculates the true cost of retaining and transferring risk and the volatility surrounding expected losses.

- The program with the lowest ECOR is in theory the optimum structure.

\[
\text{TCOR} = \text{expected retained losses} + \text{insurance premium.}
\]

\[
\text{ECOR} = \text{TCOR} + \text{volatility charge for the retention of retained and tail losses.}
\]
Networking Coffee Break

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