FX Trading

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Reference: The Art of Currency Trading

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FX 101

A Very Brief History of FX

History of Currency Market

- It's criminal offense for US citizens to own or trade gold from 1933 to 1975
- The end of WW II marked the end of the British pound as the dominant global reserve currency and the ascent of the US Dollar.
- In 1944, the Bretton Wood System of monetary management established a fixed gold exchange standard for the major currencies.
    - International balances were settled in dollars using fixed conversion rate of $35/ounce for gold.
    - As global trade increased after WW II, then the Vietnam War and OPEC embargoes hit, the pressure on the system became unsustainable.
    - The system is secure and robust as long as money was flowing to the US, but when money flowed out because of US balance of payment deficits, the system broke down.
- On 15th August 1971, Richard Nixon announced the end of the gold standard and the implementation of new wage and price controls.
- By 1973, exchange rates were flexible and currency trading began.
- With no intrinsic backing, the value of currencies floats based on market perception of relative value.
- Examples of coordinated FX intervention include:
    - 1985 Plaza Accord：Nations agreed to intervene to hold down the skyrocketing dollar.
    - 1987 Louvre Accord：Nations put a bottom under the dollar as it fell too far, too fast.
    - 1998：Fed, BoJ and Bundesbank intervened in USDJPY as they believed the move higher had become too speculative in nature.
    - 2000：ECB, BoJ and Fed intervened to support the euro as the market questioned its viability as a hard currency.
    - 2011：G7 intervened to support USDJPY after the Fukushima Earthquake.

  Generally, the G7 and G20 stance is that currency levels should be set by markets but extreme volatility or perceived misalignment will sometimes lead to intervention.

Short History of Currency Trading

Technology and regulation have reshaped the landscape many times.

- The Telex Era (1971 to 1981)
    - Banks traded with each other direct, asking prices via telex and telephone and using brokers on the telephone to execute trades.
    - Currency futures were launched on May 16, 1972, as the IMM started trading seven currency futures contracts. This gave non-bank players a way to get involved in currency markets.
- The Direct Dealing Era (1981 to 1992)
    - In 1981, Reuters launched a computerized dealing monitor service that streamlined the FX trading process.
    - Traders still used human brokers (also known as voice brokers) for the majority of transactions, but could also call other banks and request a two-way price at any time.
- The Electronic Era (1992 to 2001)
    - In 1992, Reuters launched Dealing 2000, an on-line trading and matching platform that allows banks to show buying and selling interest (bids and offers) to other banks electronically. Around the same time, EBS (Electronic Brokerage Services, now a division of Nex) launched a similar product and the electronic era of FX trading began.
    - Electronic platforms increased liquidity and transparency, the direct market between banks closed down because there was no longer a need for banks to trade directly.
- The Algo Era (2001 to Present)
    - Data Trading: read economic data release and trade instantaneously based on estimated market move
    - Market Making: attempt to earn a spread and profit form intra-day noise
    - Correlation: watch correlated markets and trade FX
    - Arbitrage: attempt to profit from disparities in price between venues
    - Trend Following
    - Mean Revision
    - Gamma Trading: buy options and then trade the gamma to generate income in excess of the option costs

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FX Trading Basics

The Quotes

Currency Priority: EUR, GBP, AUD, NZD, USD, CAD, CHF, JPY；Standard currency pairs always have the higher-ranked currency on top.

American Terms	European Terms	Other Conventions
EURUSD	USDJPY	EURNOK
AUDUSD	USDCAD	EURSEK
NZDUSD	USDCHF	USDMXN
GBPUSD	USDSEK	USDZAR
	USDNOK	EURJPY
		EURCHF
		EURGBP

Figure 3.1 Standard quoting convention for major currency pairs.

[1] 1 AUD and 1 NZD were worth more than 1 USD when they floated in the 1970s, but their values have fallen significantly since then.

Top 10 currencies pairs by volume

Currency Pair	% of Daily Trading Volume
EURUSD	23.0
USDJPY	17.7
GBPUSD	9.2
AUDUSD	5.2
USDCAD	4.3
USDCNY and USDCNH	3.8
USDCHF	3.5
USDMXN	2.1
USDSGD	1.6
NZDUSD	1.5

Source: BIS 2016 Triennial Survey.

Figure 3.2 Top 10 Currency Pairs by Volume.

Spreads

Wholesale spreads are narrower than retail spreads, although spreads have converged gradually over the years as transparency has increased. Spreads are expressed in pips, which for most pairs means 0.0001. In JPY pairs, a pip is 0.01.

"Price" in the context of FX trading is the "spread". millions are called "bucks", billions are called "yards".

FX trading is a negative-sum because of spreads and commissions. Tight spreads are crucially important to minimizing trading friction.

The Roll

It's the difference in interest earned on the currency you're long versus the interest you must pay on the currency you're short. The exact amount of the roll is calculated using forward points, which are set by the market but heavily influenced by central bank policy rates. The roll is sometimes called tom/next (T/N) and is usually quoted in pips.

The roll is calculated based on balances at exactly 5PM NY time (except NZD, which rolls at 7AM Wellington Time, which is 1PM or 3PM NY time).

If you enter an exit a trade the same day, there is no roll earned or paid.

When there is a weekend or holiday, the roll will cover multiple days.

If you go long higher interest currency at 4:59PM NY time, you still get the roll.

Order Types

- Risk Price: (similar to "Market Order", also called "Crossing the spread" or "risk transfer")

  Immediately gives you position.

  - hitting the bid: sell
  - paying the offer: buy

- Market Order (also know as "at best")

  Mostly used for large, wholesale transactions. Market orders are an efficient way to deal when you trust the counter-party you are trading with.

- Limit Order

  The advantage: you don't cross the spread; The disadvantage: you are not guaranteed to get filled.

  Limit orders are best when you are in no hurry and you don't think the market is going to move much, or if you have a specific entry price in mind.

  The less liquid the currency, the more important is the decision whether to leave a limit order or simply cross the spread.

  - If done order: once executed, created another order
  - Loop order: creates only new limit orders and it creates them over and over, not just once. Loop orders are usually used by traders who own options.

- Stop Loss Orders

  An order to buy higher or sell lower if price moves to a certain level. It can be used to enter new positions (called: stop enter)

  The rate is not guaranteed because the stop loss simply becomes a market order when the level is triggered.

- OCO order (one cancels the other)

  The trader sends a take profit and a stop loss for the same position and if one side get executed, the other side is canceled.

- TWAPs and VWAPs

  Algo orders are used primarily for large, wholesale FX transactions. These orders are managed electronically by slicing a large order up into smaller pieces and executing the trade over a given time frame.

  The advantage: it leaves very little market footprint; The disadvantage: it takes a long time and the market can move significantly against the execution as time passes (significant market risk if the market does not cooperate, the order might never get done).

  The ideal time for a TWAP is when the market is not moving or when you expect it to move gradually in favor of the trade.

  The amounts of TWAP executed are sliced into pieces that match the amount of volume being transacted in the market.

- Iceberg Orders

  A type of limit orders used only in wholesale FX. It shows a small amount to the market but automatically refreshes the order until a larger amount has been filled.

  When you use icebergs, you are constantly getting sent to the back of the line instead of participating in the full volume at your price. After each clip of an iceberg, you must go to the back of the line and wait for all other orders at the same rate to be executed before your next clip will transact. Icebergs are popular in less-liquid currencies, although they have been adopted more and more even in deeper markets like EURUSD and USDJPY.

- Dark Pool

  It's available only in the wholesale market.

  Traders show an interest to buy or sell an amount of currency but do not assign a price to the order. When a match occurs, both sides of the trade are filled in mid-market (as derived from a separate primary market price feed).

Market Structure

The heart of FX market is made up of 2 primary ECNs (electronic communication networks): EBS and Reuters. Each ECN broadcasts a price around the world as various participants leave orders to buy and sell.

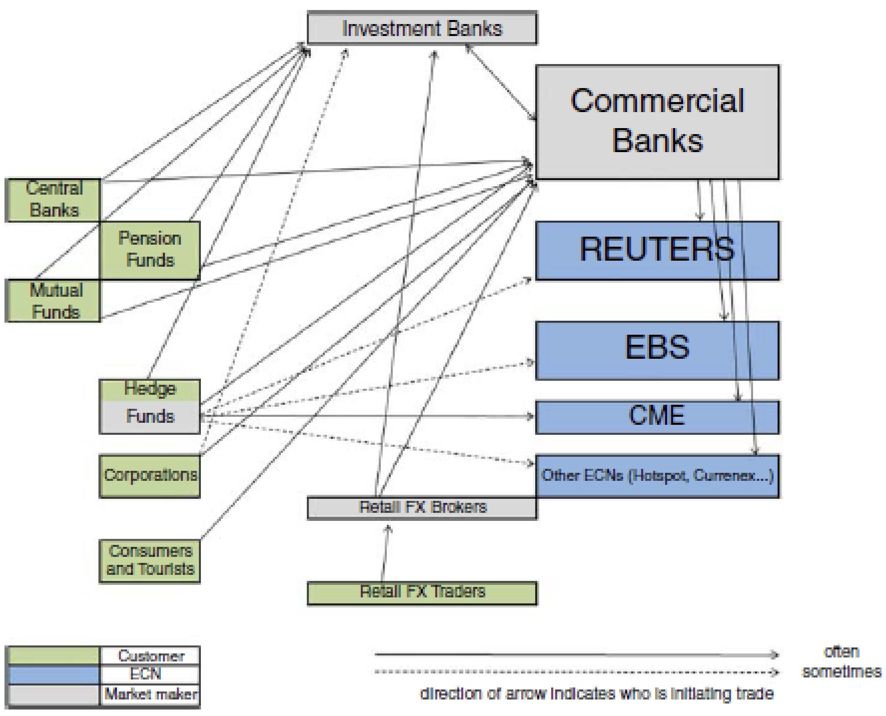


Figure 3.3 The decentralized structure of the currency trading market.

Understand Currency Market

Currency Personalities

Currencies that have similar personalities will tend to be correlated.

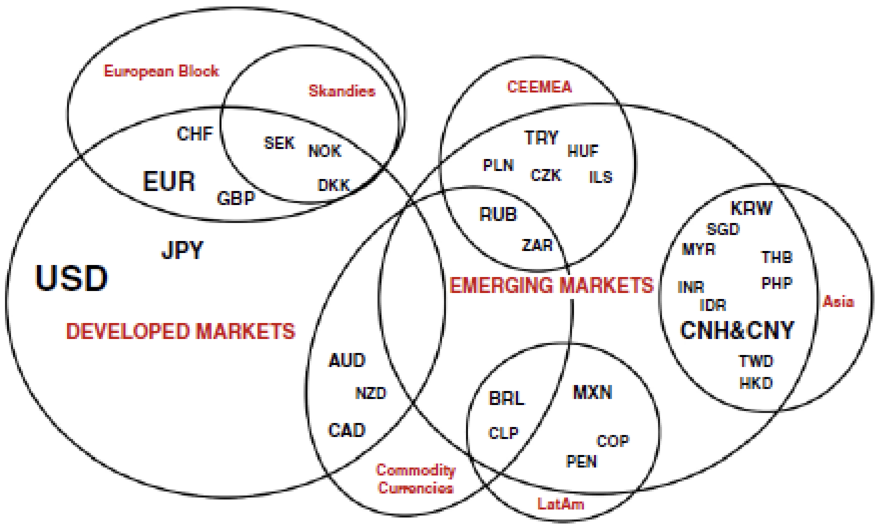


Figure 4.8 Venn diagram of relationships between major global currencies.

European currencies include EUR, CHF, SEK, NOK and DKK. These currencies are highly correlated and the USD exchange rates are determined mostly by EURUSD.

"Skandies" is a catchword for SEK, NOK and DKK.

EUR and CHF will always be somewhat correlated because of significant economic linkages between the 2 economies.

- DM currencies Vs. EM currencies:
  - DM currencies (G10 or G7 FX, although CHF/DKK are not G7/G10 members)

USD	AUD	CHF
EUR	NZD	SEK
JPY	CAD	NOK
GBP		DKK

Figure 4.2 The G10 currencies.

  - EM currencies (EMFX)

Asia	Emerging Europe	LATAM
CNH and CNY	**ZAR**	**MXN**
KRW	**TRY**	**BRL**
SGD	**RUB**	CLP
INR	**HUF**	COP
MYR	**PLN**	PEN
PHP	ILS	
TWD	CZK	
THB		
IDR		

Figure 4.4 Important emerging market currencies (actively traded currencies in bold).

- The Majors

  EURUSD, USDJPY, GBPUSD, AUDUSD, USDCHF, USDCAD

- Commodity Currencies

  AUD, CAD, NZD, BRL, ZAR and CLP.

Country	Top Exports	% of total exports
Australia	Iron Ore	20%
	Coal	15%
	Gold	5%
New Zealand	Milk powder, butter and cheese	25%
	Meat	12%
	Logs and wood	7%
Canada	Energy	24%
	Metals and Minerals	16%
	Motor Vehicles	12%

Figure 4.3 Major commodity exports of Australia, New Zealand, and Canada.

- <u>High Yield Vs. Low Yield</u>

  The yield difference is called "Carry". Market generally prefers to own high-yielding currencies and sell low-yielding currencies, leading to structural appreciation and positioning in higher-yielding currencies that can unwind rapidly. Carry Trades go up the escalator and down the elevator.

- Manged Currencies

  CNY/CNH, KRW, SGD, RUB and CHF (sometimes JPY).

  Knowledge of the central bank's policy, strategy, and thinking is much more important than any exogenous macro analysis.

  New traders should avoid trading managed currencies and stick to the majors.

The Dollar Smile

The USD appreciates when the US economy is doing very well, or very poorly, and the USD depreciates when the US economy is in between.

- The USD tends to rally when the US economy is ripping and the Fed is hiking.
- The USD tends to rally into US recessions because when the US economy goes into recession, investors fear that the global economy will follow and USD is a safe heaven (Buy USD assets, e.g. US treasuries, etc). Also, global trade is financed in USD, so less global trade means fewer USD in circulation globally and hence a possible dollar shortage.
- The USD tends to sell off in periods of moderate US growth as long as global growth is decent.

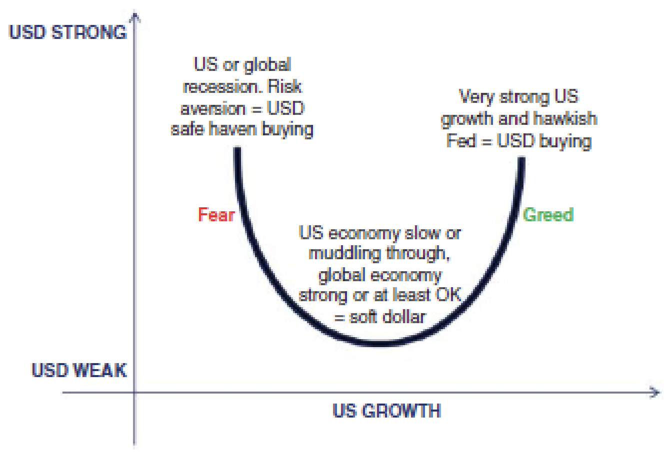


Figure 4.7 The dollar smile.

Volatility and Liquidity

The best currencies to trade have high liquidity and high volatility, but there is often a trade-off between the two.

Trading the illiquid currencies is difficult and can't rely much on stop losses in those currencies, so risk management is problematic.

Volume Rank		1-year volatility	Liquidity
1	USD	8.3	10
2	EUR	7.7	10
3	JPY	8.3	9
4	GBP	9.9	7
5	AUD	9.6	8
6	CAD	7.5	7
7	CHF	7.3	7
8	CNH	6.9	5
9	SEK	9.8	6
10	MXN	14.5	4
11	NZD	9.9	6
12	SGD	5.0	8
13	HKD	1.0	10
14	NOK	9.3	7
15	KRW	9.3	7

Figure 4.9 Volume, volatility, and liquidity for the Top 15 currencies.

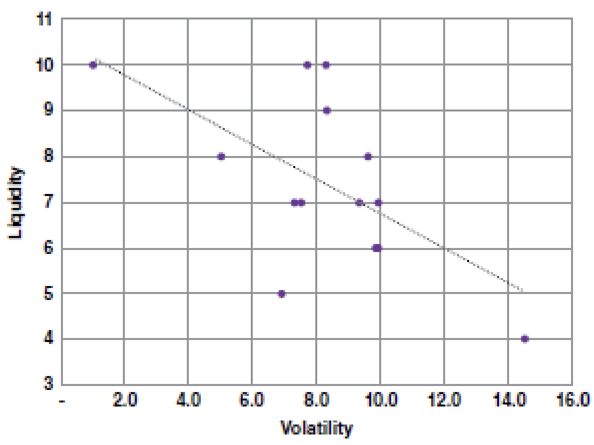


Figure 4.10 The relationship between volatility and liquidity for the Top 15 currencies.

<u>Volatility and liquidity vary by regimes and by time of the day.</u>

Volatility tends to trend lower in slow motion and then skyrocket when there's a disturbance.

Figure 4.11 Currency volatility, 2002–2018.
Source: CVIX Index (Bloomberg).

The LDN/NY overlap is the beating heart of every FX day.

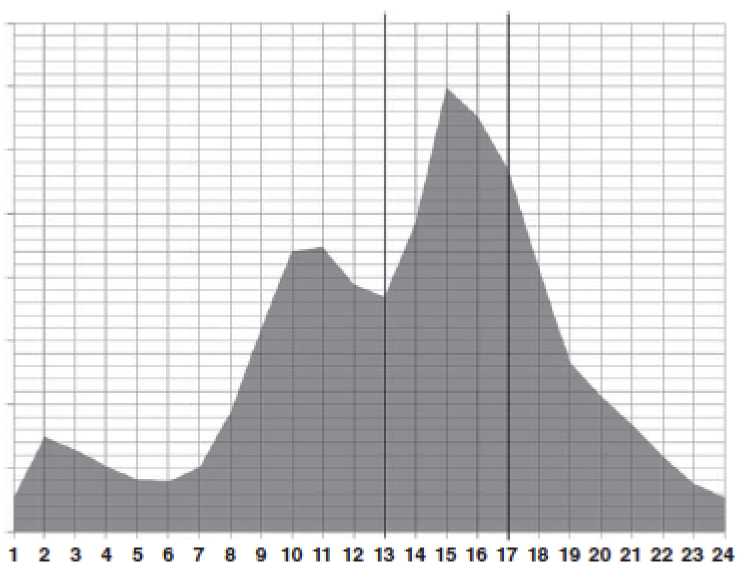


Figure 4.13 Average hourly volumes in EURUSD by time of day (GMT) February–April 2014.

The Key Times to Observe

GMT TIME (chart)	EVENT	LONDON TIME	NEW YORK TIME
7	London Open	7AM	2AM
12	New York Open	Noon	7AM
15	Options Expiry	3PM	10AM
16	WMR Fix	4PM	11AM
17	London Goes Home	5PM	Noon

[8]Note that when the clocks change for daylight savings time, the difference between time zones can change for a few weeks. You can always Google "Current time in London" or "Current time GMT" to make sure you know what the difference is.

Ranking currencies for short-term trading

ccy	Range/Spread
EURUSD	100
USDJPY	62
GBPUSD	52
AUDUSD	47
EURGBP	44
USDCAD	35
NZDUSD	28
USDCHF	22
EURCHF	16
EURNOK	11
EURSEK	9

(a)

Indexed to EURUSD = 100

ccy	Range/Spread
USDMXN	100
USDZAR	99
USDSGD	97
USDTRY	85
USDRUB	83
EURPLN	41
EURHUF	29
USDILS	25
EURRON	18
EURCZK	10

(b)

Indexed to USDMXN = 100

Figure 4.17 (a) Ranking currencies by daily range compared to spread. In other words: volatility vs. transaction cost. In other words: What currencies are best for short-term trading? G10. (b) Emerging markets. Bid/offer data estimated and liquidity and volatility are not static, so these charts are meant as a rough guide to comparative trading attractiveness, not a definitive and permanent answer.

Time of Day

You should actively trade the LDN/NY overlap and do something else when volumes are low.

Focus on the 5-hour sweet spot of teh LDN/NY overlap and either ignore the rest of the day or try the best not to over-trade when volumes are thin.

G10 FX Daily Schedule

Time EST	Time GMT	Event	Notes
2:00	7:00	**London Open**	
7:00	12:00	**New York Open**	
8:15	13:15	**ECB fix**	
8:30	13:30	**Most major US economic data**	
10:00	15:00	Option expiry	
		Second tier US economic data	
11:00	16:00	**WMR benchmark fix**	
12:00	17:00	**Bank of Canada noon rate fix**	
15:00	20:00	CME close	Many CTAs mark to this level
17:00	22:00	**New York Close / Asia Open**	
		Tokyo fix	8:55AM Tokyo
		China Fix	9:15AM Beijing

FX market closes 5PM NY time Friday and reopens 7AM Wellington time Monday (1PM, 2PM, or 3PM Sunday New York time, depending on the time of year)

Figure 4.15 Key times of day for G10 FX.

The 4pm WMR Fix essentially marks the end of the London trading session and the end of best liquidity, so many systematic and some discretionary traders use the period leading into that fix to square up or to transact their large deals of day. WMR is the last surge of liquidity of the day and then volumes drop off dramatically into the NY afternoon.

Watch for crazy moves around 4pm LDN on the last day of every month. The hours leading up to the month-end fix also see a fair amount of craziness as traders and hedgers try to pre-position for the inevitable flurry in the WMR window.

China Fix (9:15 AM Shanghai/Beijing/Hongkong)

When the CNY/CNH is inplay, the China Fix is key. Unlike ECB, WMR and most other fixes, China Fix is not set by a series of transactions in the market; it's set in somewhat arbitrary fashion by the Chinese government using a formula that factors in both G10 FX USD moves and political and strategic considerations.

NYMEX Open and Close

9:00AM NY and 2:30PM NY are critical times of day for crude oil traders, so it's also important for CAD, NOK and MXN traders.

Friday Close

Currency markets close at 5PM NY on Friday. Liquidity tends to dry up after 3PM NY, so if you have a large position, keep this in mind. Be aware that any position held into the close of Friday is subject to potentially significant gap risk. Prudent short-term traders reduce risk before the close on Friday.

Sunday Open

Currency markets open Monday morning 7:00AM Wellington, New Zealand Time (1PM or 3PM NY time depends on winter or summer).

Liquidity is extremely poor for the first few hours until Tokyo and Singapore come in.

If there's major news over the weekend, the Sunday open can be very interesting as the market attempts to find a new equilibrium price that incorporates the news.

Twilight Zone

Most NY banks run minimal staff from 5PM to 6PM NY, and Tokyo is not in the office yet. Most market-making algos are off because bank systems fun their end-of-day process at 5PM.

Liquidity is at its absolute worst during the Twilight Zone. It's not advisable to trade in this period regardless of your size.

Jump Risk

Jump risk is the size of the gap after a news event such as:

- Economic Data
- Central Bank Announcement
- Weekends

Research has estimated that jumps account for 25% to 40% of FX returns on a 1 to 3 months time horizon. Always be aware of jump risk and square up or size your position accordingly ahead of time.

- Estimating Jump Risk
  - Look at historical data for a given event and take the statistics of the moves.
  - A more accurate way is to use the options market.

  The difference between volatility pricing for the day before an even and the day of an event can be used to extract an approximate jump risk for the currency.

- Weekend Gaps

  Some weekend gaps can be predicted (elections, Chinese data, etc) but some can't (Saddam's capture, China revalues currency, etc.)

Trade Currency Market

5 branches of analysis ---> 5-star trade ideas：

Fundamentals, Technicals, Correlation, Behavioral Finance, News

Fundamental Analysis

The most common model used for FX valuation is PPP (Purchasing Power Parity). The theory behind PPP is that if an item is cheaper in one country than in another, consumers will buy more of the good in the cheaper locale and less in the more expensive location. But this all rests on the assumption that every good is tradable, transaction costs are zero and taxes are not important.

The reason that fair value measures are not useful for currency traders is that currencies can stay over-or under- valued for years or even decades. It's useful, though, to understand why a currency is over- or under- valued so that you know under what conditions the currency might move.

For those trading shorter time horizons, you should always be equally comfortable long or short a currency, no matter how cheap or expensive it's on a long-term basis. This flexibility will provide much more edge than any bias toward long-term mean reversion.

Valuation matters in the super long-term, while positioning and momentum matter much more in the short-term.

FX Fundamentals can be Global or Domestic

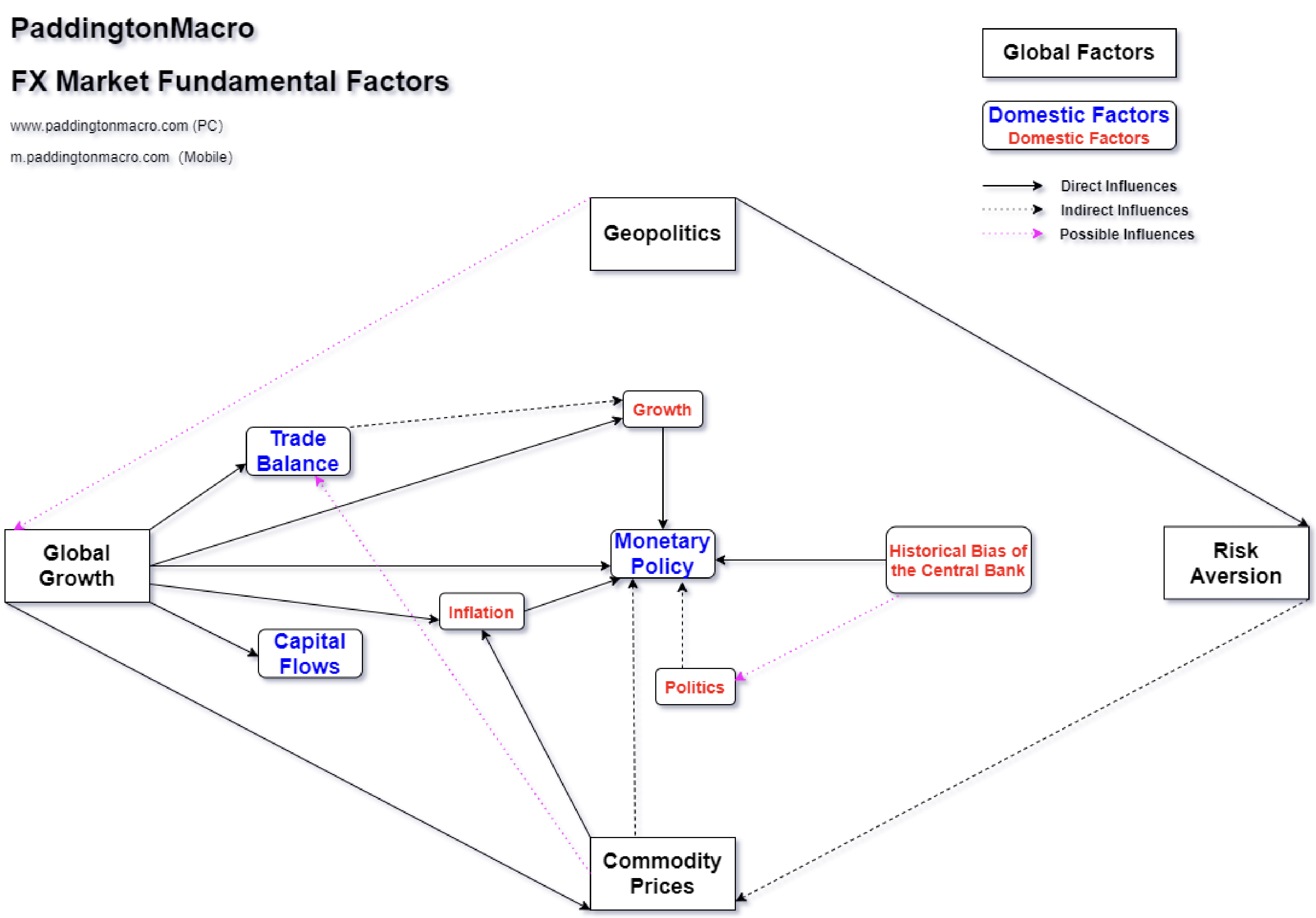
Market oscillates back and forth, sometimes focusing mostly on domestic conditions and other times focusing mostly (or only) on global factors.

When the world is stable, changes in local economies and domestic interest rate policy can be the dominant driver of currencies.

It's important to understand the difference between the absolute level of fundamentals and the delta (change) of those fundamentals. The market trades off the delta, not the level.

Prices in financial markets are set at the margin.

The most important aspect of any new information that arrives is not whether it's weak or strong relative to the past, but whether it's weak or strong relative to market expectations.



Global Drivers

- <u>Global Growth</u>

  It influences the flow of money. When global growth is strong, exporters like China, Korea, and Brazil tend to do well and when global growth is weak, money tends to flow into safe haven currencies such as JPY, CHF, USD.

- <u>Commodity Prices (and Terms of Trade)</u>

  Commodities are usually driven by global growth but they also move based on other factors such as climate, supply/production, idiosyncratic demand factors, and popularity of commodities as an asset class.

  - Commodity exporters such as Brazil, Canada, and Australia benefit from commodity price strength
  - Importers like Turkey and India are hurt by high commodity prices.

- <u>Risk Aversion</u>

  Fluctuations in global risk appetite and risk aversion often cause FX moves regardless of underlying domestic fundamentals of individual countries.

- <u>Geopolitics</u>

  It can influence global risk appetite and can trigger specific currency moves in affected countries.

  E.g. Instability in Russia will drive selling of RUB, PLN and TRY.

Domestic Drivers

- <u>Monetary Policy</u>

  For trading purpose, as a general rule, higher rates attract capital and lower rates trigger outflows of capital. The rule works most of the time in developed markets but less often in EM.

  A normal and steep yield curve is generally bullish for a currency as it implies an accommodative central bank and a bullish longer-term economic outlook. When looking at interest rates, it's always important to compare one country to another.

Bullish for the currency	Bearish for the currency
High rates	Low rates
Rising rates	Falling rates
Steep yield curve	Flat or inverted yield curve
Steepening yield curve	Flattening yield curve

It's the No.1 domestic driver of currency values most of the time. It's often a reflection of **growth and inflation expectations**, but can also hinge on other economic, political and socio-political considerations.

Growth - Key metrics of growth include:

- GDP, Industrial Production, Retail Sales, and Housing Statistics

Inflation - More ambiguous and can be good or bad for a currency, especially confusing for EMFX:

- Rising inflation is good for a currency when the country's central bank is credible and willing to raise rates in response to inflation. This applies to most G10 countries, most of the time. Same of falling inflation, which is generally bad for currencies in developed nations.
- Rising inflation can be bad for country if the market perceives that the central bank is behind the curve and will not respond fast enough with interest rate hikes. Same of falling inflation, which can be good for a currency if the central bank of that country is perceived to be impotent or unwilling to act.

In order to understand how changes in inflation will affect a currency, you first need to understand the central bank's reaction function.

e.g. Japanese real estate bubble burst in the late 1980s. Investor's perception was that since interest rates were already 0, Japanese authorities were powerless to fight deflation and therefore the yen appreciated for many years. As Japan headed from disinflation into outright deflation, the yen rallied more and more. This all changed in 2012 when BoJ declared war on deflation and promised to massively expand their balance sheet by printing yen to buy Japanese stocks and bonds (more deflation = more printing = bearish yen, by reestablishing credibility, the BoJ was able to break the deflationary spiral).

Trading EM inflation requires a strong knowledge of the country's central bank and investor positioning and preferences.

As a general rule, try to stay away from trading EM FX after inflation data releases because the moves often confusing and random.

- When the market is heavily invested in the long-dated bonds of a country, higher interest rates can be a disaster for a currency
- If the market is not heavily invested, higher rates can attract capital to the country and lead to buying of the currency.

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2 main policy levers

- Interest Rates
- Balance Sheet Size

Central bank bias is often well known and reflected in the central bank's monetary policy pronouncements. You'll often see a currency react strongly to a central bank's change in bias and then by the time the central bank actually moves, the currency barely reacts because the move was fully priced in (expected) by that point.

- Central Bank preference for weak or strong currency
- What the central bank wants
- What data the central bank watches
- What constraints (political/others) might influence the bank's tactics

Not all central banks are fully independent. In general, politicians prefer a more dovish central bank, because low rates make it easier for governments to borrow and spend freely and keep the economy humming along.

Intervention and reserve recycling

Direct Intervention

On rare occasions.

e.g. SNB put a floor under EURCHF, promising to sell "unlimited quantities" of CHF to ensure EURCHF would not fall below 1.2000.

Signaling

It's expensive and risky for central banks to intervene directly, so a more common approach is for a CB to signal a desire for a stronger or weaker currency to the market and hope the market does the work for them. It can work if the CB is credible.

e.g. ECB in 2014 signaled its preference for a lower EUR.

As a rule, you don't bet against the central bank when it clearly outlines a preference for its currency.

FX reserves tend to be denominated mostly in USD because currency market interventions are usually against USD.

As CBs' reserves grow and shrink, the CBs need to buy and sell currencies in order to keep a steady percentage of their reserves diversified.

When a large CB intervenes in an EM currency, you should be mindful of the potential contagion to G10 currencies. Strong USD versus EM will often lead to a stronger USD versus G10 simply because of the mechanical nature of recycling flows.

- Capital Flows

  FDI, M&A, and equity and bond flows can be important drivers of FX rates. While M&A has a short-term, immediate impact on FX, portfolio flows can last months or even years. While capital flows are rarely the No.1 FX driver, it's important to keep them on your radar.

  The problem with using capital flows to forecast FX is that these flows are fickle and hard to predict. You'll often see flows as an ex-post explanation for currency moves. Capital flows are much more important in EMFX.

- Trade Balance (and Current Account Balance)

  It's long-run determinants of currency rates but have little influence in the short run. A large percentage of cross-border FX flows are driven by global trade. It's often argued that these balances are influenced by FX, not the other way round.

  Furthermore, during times of risking global and US interest rates, investors may become hyper-focused on current account balances as they are a useful indicator of potential financing pressure on a country.

- Fiscal Policy

  It can be important at times and irrelevant at others. Over time, the market has found the relationship between fiscal policy and FX to be much less reliable. Sometimes, loose fiscal policy can be good for growth and the currency. Other times, it can trigger worries about credit quality.

US Economic Data Releases and Global Economic Data Watch

The market tends to focus on 3 aspects of economic data: Time-lines, Relevance, and Reliability. The most important thing for trading economic data is that the only thing the market cares about is how the number compares to expectations. Strong or weak is defined by this. You need to get a feel for the size of the average miss so that you can appreciate whether a given release is a major surprise or not.

e.g. standard deviation of (actual-expected) for Non-farm Payrolls is about 75K, so a 20K miss is not a major surprise.

When there are multiple time periods for the same release at the same time (MoM, YoY), the shorter time period is always the most important.

PaddingtonMacro - US Indicators Table (document reference)
www.paddingtonmacro.com

Indicators	Importance	Release	Statistics (Appendix-FactSheets)	Brief Definition	Memo1	Memo2
Non-farm Payroll	5 Star	1st Friday of the month (few exceptions)	Miss Stat Summary; FX Vol(Range) on release date, after 5/15/30/60/240 min of release,	Each month, BLS surveys about 145K businesses and government agencies, representing about 557K individual worksites to provide data on employment, hours and earnings.	Mother of all US Economic releases	www.bls.gov
Initial Claims	3 Star	Every Thursday	Miss Stat Summary; FX Vol(Range) on release date, after 5/15/30/60/240 min of release,	Number of people filing for unemployment beneifts for the 1st time.	Timeliest of all major indicators	Leading indicator for Unemployment Rate
Continuing Claims	2 Star	Every Thursday	Miss Stat Summary; FX Vol(Range) on release date, after 5/15/30/60/240 min of release,	Entire roster of all the individuals whoe are currently unemployed and receiving benefits.	Less volatile than Initial Claims	Gets less focus from traders
GDP	5 Star	Quarterly	Miss Stat Summary; FX Vol(Range) on release date, after 5/15/30/60/240 min of release,	3 versions: Advance, Preliminary, Final.	"Advance" is the most important	Tends to deviate from estimate and creates market volatility
Core PCE	4 Star	Quarterly	Miss Stat Summary; FX Vol(Range) on release date, after 5/15/30/60/240 min of release,	Excludes food and energy prices; revealing underlying inflation trends.	Fed's preferred measure of inflation	
CPI	3 Star	Monthly (Mid-month)	Miss Stat Summary; FX Vol(Range) on release date, after 5/15/30/60/240 min of release,	Measure of changes in prices for the average urban consumer.	When CPI is volatile, the release is harder to forecast and tends to move the market more	
Consumer Confidence	4 Star	Monthly (Mid-month)	Miss Stat Summary; FX Vol(Range) on release date, after 5/15/30/60/240 min of release,	Based on consumer's perception of current business and employment conditions, as well as their expectations for 6 months.	Tends to move in sync with equities (and Risk)	Conference Board Consumer Confidence Index
Retail Sales	4 Star	Monthly	Miss Stat Summary; FX Vol(Range) on release date, after 5/15/30/60/240 min of release,	Based on the Advance Monthly Retail Trade and Food Services Survey.	A good measure of consumer spending, consumer confidence and the overall health of economy	www.census.gov
ISM Manufacturing/Non-Manufacturing	4 Star	First Business Day of Every Month	Miss Stat Summary; FX Vol(Range) on release date, after 5/15/30/60/240 min of release,	Based on information submitted by purchasing and supply executives across the US. Subcomponents: New Orders, Production, Emloyment, Supplier Deliveries, Inventories, Prices, Order Backlog, Exports&Imports, Customers' Inventories.	Market focuses most on the headline ISM releases	
Industrial Production	3 Star	Monthly	Miss Stat Summary; FX Vol(Range) on release date, after 5/15/30/60/241 min of release,	The monthly index and the related capacity indexes and capacity utilization rates cover manufacturing, mining, and electric and gas utilities.	Industrial production together with construction accounts for the bulk of the variation in national output over the course of the business cycle	Fed
Durable Goods Orders (MoM, ex-transportation)	3 Star	Monthly	Miss Stat Summary; FX Vol(Range) on release date, after 5/15/30/60/240 min of release,	Compiled from US Census Bureau's Manufacturers' Shipments, Inventories and Orders survey, providing statistics on value of shipments, new orders, end-of-month order backlog, end-of-month total inventory, and inventories by stage of fabrication.	Headline number is influenced to the extreme by one-off or very large orders. So, ignore headline numbers and focus only on the MoM change in durable goods ex-transportation.	www.census.gov
Building Permits; Housing Starts; Pending Home Sales; New Home Sales; NAHB Housing Index	2-4 Star	Monthly	Miss Stat Summary; FX Vol(Range) on release date, after 5/15/30/60/240 min of release,		Should focus on MoM data in these series. Useful when housing is meaningful driver or headwind for the economy right now.	www.nahb.org

PaddingtonMacro - Global Indicators Table (document reference)
www.paddingtonmacro.com

Europe	UK	Japan	Canada	Australia	New Zealand	Norway	Sweden	Switzerland
Germany ZEW Survey	Retail Sales	Tankan Survey	Net Employment Change and Unemployment	Net Employment Change	Employment Change	CPI	GDP	CPI
Germany IFO Survey	CPI	Trade Balance	CPI	GDP	Unemployment Rate	GDP	CPI	GDP
Germany GDP	GDP	GDP	Retail Sales	CPI (RBA Trimmed Mean)	GDP	Retail Sales	Industrial Production	KOF Leading Indicators
Germany Factory Orders	Claimant Count Change (Similar to US Initial Claims)	Machinery Orders	GDP	Retail Sales	Retail Sales	PMI	Retail Sales	Manufacturing PMI
Germany IP	Manufacturing Production	Industrial Production	Ivey PMI	Trade Balance	CPI		Manufacturing Confidence	
Germany Inflation (Core CPI)	Average Earnings	CPI	Building Permits		Trade Balance			
Germany Retail Sales	Manufacturing and Non-Manufacturing PMI		Manufacturing Shipments					
Euro Area PMI (Composite and Manufacturing)	Exports		BoC Business Outlook (Future Sales)					
Eurozone Inflation (Core CPI)	Current Account Balance							

Technical Analysis

Does technical analysis work? No conclusive evidence. When use technical analysis, simpler is always better. Technical analysis is just a fine-tuning device. It's one more clue, not the answer.

Technical Analysis should be used as a tactical and risk management tool and not as a trade selection or forecasting tool.

Come up with the trade ideas elsewhere and then go to the technicals to determine optimal tactics such as entry level, stop loss, take profits, and position size. Techs give you clear cut risk management levels and allow you to maximize your leverage and determine the point at which you have to admit you're wrong.

Never do a trade just because a chart looks good.

The tighter you can fine-tune your entry point and stop loss, the larger position you can take and the greater returns you can achieve if you make the correct call and do not get stopped out. However, there's always a tension between keeping a tight stop loss and the risk of getting prematurely stopped out by random noise. The tighter your stop, the more likely you are to fall victim to "bad luck" (Note: it's actually not "bad luck", it's still because of picking the wrong level of stop).

Basic Indicators

Support and Resistance

4 main explanations for the existence of support and resistance:

1. Large Limit Orders

   It creates pockets of liquidity that can stop the market.

2. Self-fulfilling Prophecy

   It works because people think it will work.

3. Option-related

   Option strikes and barriers create certain hedging needs around specific levels. If there's a large option interest at a given level, there will often be large interest to buy or sell near there.

4. Round Numbers

   Highs and lows are more often made on round numbers than on non-round numbers.

   Implication: if you're a buyer, you should leave your buy orders just above the round numbers and if you're a seller, you should leave your orders just below the round numbers.

The more times a level or zone holds, the more likely the market is focused on it. To avoid trading with the herd, you need to think a bit outside of the box and leave your orders away from where the herd leaves orders.

Moving Averages

Moving averages give good signals in trending markets and are worse than useless in range-bound markets.

- The main point of using moving averages is to identify and stick with trends.
- It can also be used as support or resistance.
- It's better to fit moving averages to trading time horizon than to obsess over which particular moving average worked best in the past.
- Wait for a specified moving average to turn up (or down) and then enters a new trade when price returns to the moving average (entering on pullback to trending moving average).

Measuring Momentum - overbought and oversold

Candlestick Charts

Market Profile

Fibonacci Numbers

Caution: too often traders recognize them and talk about them after they hold, not before.

Identify the Regime

Zooming out a bit, we need to make an assessment of whether the market trading in a range or a trend regime. *To determine whether or not the current regime will remain in force (trend or range), we need to overlay the fundamental view.*

Positioning tends to matter more during range bound markets because longer-term players back away and short-term speculators and weak hands are left to fight it out. This is contrast to trending markets where large and persistent corporate, central bank, real money and investor flows trend to dominate and so positioning is not as important.

Range Bound Market

Range-bound market are the most difficult to trade.

- The range is not well defined and we don't really know it's a range until quite a bit of time and range bound price action has already transpired.
- Quite often by the time we realize it's a range, the range is ready to break.
- Range bound regimes are characterized by many false breaks

Trending Market

Definition of trendiness depends on your time horizon.

Trending markets are easier to trade, and the real profits come from trending markets provided you believe in the reasoning behind the trend and you don't get on board too late.

When observing a trend market, always take note of how it trades around the big levels. The better it behaves, the more you can believe in the trend.

2 features of solid trends:

- they hold important support(up trends)/resistance (down trends)
- when they break out, up trends hold above/down trends hold below the break level

2 main ways to trade trending markets:

- **Trade pullbacks**

  Tail the stop loss as the trend moves in your favor.

- **Trade breakouts and continuation patterns.**

  advantage: with the directional momentum of the market

  disadvantage: often sell low and buy high

  - flag pattern: break the flag and then a measured move
  - pennants (similar to flags, but are triangular instead of rectangular)
  - triangles (similar to pennants except they have no flagpole)

Reversal Patterns

When trading trends, you need to be one alert for reversal patterns because they can signal a turn before the fundamentals do. Wait for technical reversal pattern and then jump in. Have the fundamentals and the technicals on your side before you enter.

Each time the same level prints as the high or low, more people notice it, so by the time you get a triple or quadruple top, the level takes on importance simply because everyone is watching it.

7 Deadly Setups

Slingshot Reversal

False break and reverse - Slingshot Reversal Pattern

When an important support or resistance level breaks temporarily but then fails to hold, fails to follow through, runs out of momentum, and reverses back into the old range.

It must happen around a level of very high importance (many people are watching the level and orders are likely to be clustered around it).

Looking for them when you have a strong counter-trend view.

Shooting starts and hammers

They give a strong reversal signal and a clear exit point so you can size your position with a decent amount of leverage and know exactly where you're wrong.

Looking for them when you have a strong counter-trend view.

Extreme deviation from a moving average (Deviation)

It's one of many ways to measure whether the market is overbought or oversold.

When trading overbought and oversold, you must understand that you're going against a strong trend. No matter how crazy the move is so far, things can always get crazier. You must have a strong fundamental reason to fade the trade and you need to be careful and disciplined.

Deviation is also a good indicator for take profits on winning trades.

Volume spike at a price extreme

When trading FX market, can use futures' volume as a proxy, because actual volume is not important and what matters is relative volume.

Large volume spike at a price extreme is indicative of capitulation as the market transact high volumes in a short span. Many positions are transfered very quickly, usually moving risk from weak hands to strong hands.

The way to trade volume spikes is to stay out of the way until the dust settles. When seeing a huge volume spike, wait until you can see 2 or 3 bars of falling volume.

Broken (breakout) triangles

When a triangle is broken, it shows the way for either a continuation of the trend or a reversal.

Double and triple top

Trading near simple support or resistance levels is good, because you can leverage your position aggressively without risking too much.

Sunday gaps

It's one of the most reliable but also one of the most difficult setup to trade. It arises when there is major news out over the weekend and the market reopens at a new level on Sunday.

The stunning feature of Sunday Gaps is that they almost always fully reverse within 48 hours. This happens because the market gets overextended and out of balance as it attempts to find a new equilibrium in a thin market where there are only buyers or sellers and nobody to take the other side.

Inter-market Correlations

The Objective: watching other assets for direction in FX to find large divergences and expect the currency to catch up to where it "should be". This strategy is sometimes called "Lead/Lag" - you are watching one variable lead and expecting the other to move in the same direction.

Whenever you see or read about a correlation in financial markets, you need to ask yourself:

1. Does the correlation make any econometric/logical sense?
2. Is the correlation likely to continue into the future?
3. Are there periods of both rising and falling prices in the sample? Spurious correlation.
4. What 3rd variables might be influencing the movement in your 2 variables?

   There's mostly likely a 3rd explanatory variable driving both asset prices with indeterminate lags and can trade off those lags.

There is no magical way to determine which correlation will remain stable and persistent. The 1st step is to apply a simple logical filter and do regression analysis second.

Think of the correlated variable as one measure of fair value. Correlated variables suggest short-term fair value, not long-term fair value, and so can be exploited profitably.

Correlation of One Currency Pair versus Another Currency Pair

EURUSD is the most liquid and important currency pair in the world. Many speculators will use it to express their view on the dollar. Get a feel for general dollar direction and identify which currencies are leading and lagging.

Correlation of One Currency versus Interest Rates in Each Country

The most consistent driver of currencies has been changes in relative interest rates. So a move higher in rates is often a good predictor of an upcoming move higher in the currency.

Currencies react so violently to unexpected moves in interest rates.

Correlation of One Currency Pair versus Commodities

Commodities are mostly priced in USD, there tends to be a strong and persistent correlation between commodities prices and the USD. A weaker dollar tends to equate to higher commodity prices.

Correlation of One Currency Pair versus an Equity Index

The most reliable Equity-versus-FX correlations has been the Nikkei-versus-USDJPY.

Because Japanese citizens hold the largest pool of savings in the world. When things look good, they buy foreign assets and sell JPY. When things look bad, they repatriate money.

Another way to look at the equity-fx correlation is to use the relative equity performance to determine possible direction for the currency pair.

e.g. AUDCAD VS. Austrailian/Canadian equity index ratio.

Correlation of a Currency Pair versus Single Name Equities or ETFs

Canada: Crude producers like Suncor, Encana, and Cenovus.

Australia: Mining stocks like BHP, Freeport / China A-shares ETF (FXI)

Double Check:

e.g. AUDUSD Vs Copper divergence is double checked with BHP performance.

Understand the Regime

- In the late 1990s, the US Internet Bubble, when equities rallied, it was seen as a sign of dollar strength (money flowing to the US stocks).
- "Risk-on, Risk-off Regime":

  From 2003 to 2010, the relationship ran the other way.

  There was a strong relationship between risky high-yielding currencies and equity performance.

e.g. AUDUSD Vs. Nasdaq

Trading the Correlation

Flipping through overlays to look for major dislocations as a starting point and then drill deeper via other methodologies (tech, fundamental, positioning, etc). Better to understand the logical explanation for the divergence.

PaddingtonMacro - Currency Drivers/Inter-market Overlays (document reference)

www.paddingtonmacro.com

	Driver 1	Driver 2	Driver 3	Driver 4
USD	US 2/5/10-year yield	US Equity (S&P, Nasdaq)	Gold	ISM/Consumer Confidence
EURUSD	US/Germany Rate Differential	Gold	Oil	
USDJPY	Nikkei	US 2/5/10-year yield	Gold	S&P
USDCHF	US 2/5/10-year yield	Gold	Switzerland Equity (SMI Index)	
EURCHF	Germany Yields	Global Risk Appetite	European Banking Stocks (Index)	
GPBUSD	UK/US Rate Differential	Oil		
EURGBP	Germany/UK Rate Differential			
AUDUSD	AU/US Rate Differential	Gold	Copper, Iron Ore	BHP, FCX, China A Shares
AUDNZD	AU/NZ Rate Differential	AU/NZ Relative Equity Performance		
NZDUSD	NZ/US Rate Differential	Dairy Prices (MMRA)		
USDCAD	Oil	US/Canada Rate Differential	Canadian Oil Equities (SU, etc)	Gold
EURNOK	Oil	Germany/Norway Rate Differential		
EURSEK	Germany/Sweden Rate Differential	Sweden Equities (OMX)		

Note: Better to compare relative equity performance and yield differences with currency pair.

Regime and Relevant Correlations

Correlation regimes come and go. The best way to understand what correlations matter right now is to listen to the market/news. Very often perception is just as important as reality. Most real, sustainable correlations have a logical fundamental underpining.

Stop Losses and Discipline

Trading Pitfall: If entering a trade based on a divergence and that divergence widens, you're tempted to add. *It's a recipe for disaster*

The key to avoid the pitfall/trap is that part of the plan when initiating a trade is to decide on a firm stop loss level and stick to it. Always employ stop losses on every position you trade. Always!

FAQs about Correlation Trading

- What causes divergences?

  FX flows and orders are often executed for players who are trading a complete different set of variables and time horizons and this creates the frequent divergences and dislocations between correlated variables and FX.

- Which variable is right or wrong?

  If multiple variables pointing in one direction, you have a better trade.

  Don't touch when one variable is rallying hard and the other is selling off aggressively. This is the most confusing of all.

  Generally, the variable with the most momentum wins. Essentially, looking for moments when the FX market is out of line or half asleep and other variables are suggesting it should wake up soon.

- Doesn't the magnitude of the move and the direction of the divergence depend on how the chart is scaled?

  Yes.

  The key is to be consistent with the choice of scales. The scaling should fit your time horizon.

  One other way of scaling is to capture a specific regime period.

  We only want correlation where it meant something to the market.

- How to forecast Lead/Lag?

  Use leaders to forecast.

  Use sub-indices/sub-components to forecast the main-indices.

Behavioral Finance

Positioning and Sentiment

Only look for points when positioning is extreme and fundamentals are turning and positioning is turning and there's a clear technical reversal pattern.

You can't escape the madness of crowds by dogmatically rejecting them... The most important thing of all is not to oppose the crowd but to think for yourself. -- Peter Thiel, Zero to One

Positioning and sentiment are part of the picture, not the whole picture.

Sentiment is how people view the market. Positioning is a metric that measures actual positions.

It does not pay to be a reflexive contrarian all the time. You'll miss almost every major trend and you will find yourself fighting the fundamentals way too often.

You analyze sentiment and positioning only to justify selective extremes when excessive positioning or sentiment pose out-sized risks to the prevailing trend and justify taking a counter-trend position.

Most of the time, sentiment and positioning will match fairly closely, but it's the times when they do not match that can be most important.

Why would a market see extreme sentiment but no extreme positioning?

- The theme is new

  It takes a while for positions in one direction to become extreme. Sentiment moves faster than positioning.

- Major event risk upcoming

  This is one of the most common and highly profitable setups.

  Traders generally are just waiting for the event to get out of the way and did not really care about the outcome of the event.

  If you can identify moments where the market has a very strong view but does not have the position yet because they are waiting for an upcoming event to pass, you can often profit by simply putting on the position faster than others once the event is out of the way.

- Time of year

  E.g. As getting close to the end of the year, traders like to reduce risk and book profits to start the new year with a clean slate.

- Positioning clear-outs

  From time to time, crowded positions will get rinsed by sharp counter moves. While traders still hold the macro view, they can't afford to hold the position any longer and so they cut it. This is called a stop loss run.

Positioning

Many proprietary positioning indicators published by the major banks and there is COT report.

Most research shows that it's generally more profitable to go with COT positioning, not go against it.

A few observations:

- Positions and price normally trend in the same direction.
- Positioning often leads price at turning points.

  You should always keep on the lookout for moments when price and positioning diverge. This is an early warning that a long-running and crowded trend is ready to turn.

- Positioning can trend for a long time.
- Absolute levels of positioning mean less than the rate of change of positioning.

The most useful signals come when sentiment and positioning are both extreme and at a turning point. The theory is that the elevated sentiment and positioning readings will fuel the correction that you have been waiting for.

SENTIMENT	BULL MARKET	BEAR MARKET
HIGH and STABLE	Bullish	
HIGH and RISING	Very bullish	
HIGH but FALLING	BEARISH	
LOW and STABLE		Bearish
LOW and FALLING		Very bearish
LOW but RISING		BULLISH

Sentiment almost always follows price. If you're looking to use sentiment to take the other side of a trend, look for situations where sentiment diverges from the price action (very rare), like the Bold Caps conditions in the above table.

Cognitive Bias

2 main reasons to understand cognitive bias:

- You can see others acting irrationally and capitalize on it.
- You can recognize yourself acting irrationally and stop it.

From time to time, individual humans act in a way that's not rational. And as a group, humans can sometimes act in totally insane ways. Make sure you're on the winning side of these dislocations. Instead of acting as part of the feedback loop problem, be greedy when others are fearful, be a strong hand, not a weak one.

List of cognitive bias:

- **Confirmation Bias**

  You believe what you want to believe. Traders go searching for information that supports a weak starting hypothesis.

- **Overconfidence Bias**

  It can blind to your weakness and over-estimate your edge. This can lead to all sorts of faulty behaviors such as over trading, confirmation bias, and improper position sizing.

  Be confident in your view but remain open minded.

- **Extrapolation Bias**

  People tend to assume that whatever is happening right now will continue to happen in the future.

  Traders overemphasize recent price action and the current theme and fail to see new themes that could be just around the corner.

  Humans in general are bad at forecasting.

  It's easy to get caught up in a theme for too long, especially when the price action supports it.

  The inverse of extrapolation bias is the Gambler's Fallacy: e.g. "Euro is down 7 days in a row, you have to be long!"

  NO, YOU SHOULDN'T!

- **Asymmetric Loss Aversion**

  Humans will take more risk to avoid a loss than they will take in pursuit of gains.

  But the thing is : most successful traders take many, many small losses and achieve fewer but larger gains.

  So you need to turn off this instinctive loss aversion and embrace the idea of taking frequent but small losses. You need to ride your profitable trades and get out of your losers as quickly as possible.

- **Emotions: greed and fear**

  Greed and fear are such powerful forces that they can be the primary market driver at times. Economics and fundamentals can go completely out the window when people hit extreme levels of greed or fear. The market doesn't have to make sense, quite often, it won't! Markets are driven by much, much more than economic fundamentals or logic.

  You need to recognize these moments and take the other side. When you are taking the other side of a market that is gripped by extreme fear or greed: make sure your position is not too big. Smaller positions allow you to ride out the extra volatility that usually accompanies highly emotional market moves.

- **Anchoring Bias**

  Once a human being is given an initial starting number for something that they're trying to estimate or value, they have a hard time moving away from that starting point.

Anchoring makes it difficult for traders and investors to sell/buy an asset below/above they initially paid for it. This is not rational. The market doesn't care where you got it and neither should you. If you change your mind on a position, get out. Don't wait for it to get back to your entry level. Just get out.

- **Round Number**

  Human behave as through round numbers are more important than non-round numbers. Round number bias shows up frequently in financial markets.

- **Favorite/Longshot**

  Human beings overvalue longshots and undervalue favorites.

  Longshots are tempting because of high payoff odds but are generally bad value because people systematically overpay for them and overestimate the chance they will pay off. Market loves to buy lottery tickets and hates selling them.

  e.g. Financial markets has a consistent bias to overpay for tail options and tail trades that offer high leverage. Tail options tend to be overpriced because there is no natural seller, but always plenty of natural buyers.

  Success comes from repeatedly executing trades with high expected value, not form the occasional monster trade.

- **Herding Bias**

  It's easier to run with the pack. It's safer to be wrong with everyone else than to try to be right on your own.

Anecdotal Evidence

- **Magazine Cover Indicator**

  When a financial story or market theme is displayed on the cover of a magazine, that theme or the related trend is near exhaustion.

- **The Skyscraper Indicator**

  When a country builds the world's tallest skyscraper, it's a sign of overconfidence and a potentially imminent financial crisis.

- **The Cheer Hedge**

  The reason is that cheering and yelling happens at emotional extremes.

  When you find yourself counting up how much money you are going to make on a trade as it goes you way, be ALERTED.

- **The WTF(What the fudge) Indicator**

  Watch for moments when the market is angry and confused about a move. EXPECT THAT MOVE TO CONTINUE.

- **The IPO Indicator**

  A massive IPO can be a sign of a top in a specific industry or for the stock market as a whole.

Trading the News/Events/Data Releases

Critical concept: understand what's priced in/buy the rumor, sell the fact.

When the news gets priced over time, the announcement of the news is not a surprise and it triggers profit taking and a reversal.

"Buy the rumor, sell the fact" is only applicable when an event is highly anticipated, the result comes in as expected, and the market has been moving in the direction of pricing that specific outcome for some time.

<u>News Pivot: the level instant before the news release. It's a very important and effective reference point.</u> How prices are behaving around the news pivot is critical.

Overnight option break-even prices will give a decent estimate of how much the market will move on any given event.

Trading Economic Data

The only thing that matters when you are trading economic data is the *actual release* compared to *what was expected*.

Now there's far less money to be made by humans after data release.

<u>Still profitable ways to trade around economic release:</u>

Trade the Extreme Data

Algos will take out the 1st pocket of liquidity when economic data are released, but there are still opportunities for profit when important data come in extremely strong or extremely weak. First wave of algo trades can be followed by more waves of macro and hedge fund trades in the same direction.

This strategy of going with an economic release works best when the number is extremely counter to expectations and the market has a strong bias and a big position the wrong way into the number. The simplest way to measure extremes is to look at the standard deviation of the data. A miss or beat of more than 2 standard deviations on any major economic release is important.

e.g. Trading US retail sales release in Apr 2015:

- The Setup:

  The US economy is performing well, there's an expectation that money saved from oil collapse will be spent on other items, which should boost retail sales. Despite positive momentum in the economy, retail sales have been consistently weak over the past 12 months, so there's a expectation for a catch up.

  Adding up the 12-month cumulative difference between Actual and Expected Retail Sales over time, we get below chart.

  The Chart shows: on average, retail sales have missed significantly month after month since mid-2014.

  Thus, the market expects a rebound (mean reversion) in the data because the weakness in Retail Sales doesn't appear to match the strength in the rest of the economy.

  The market is structurally long dollars and has been adding to longs ahead of the release on the assumption the data will be strong.

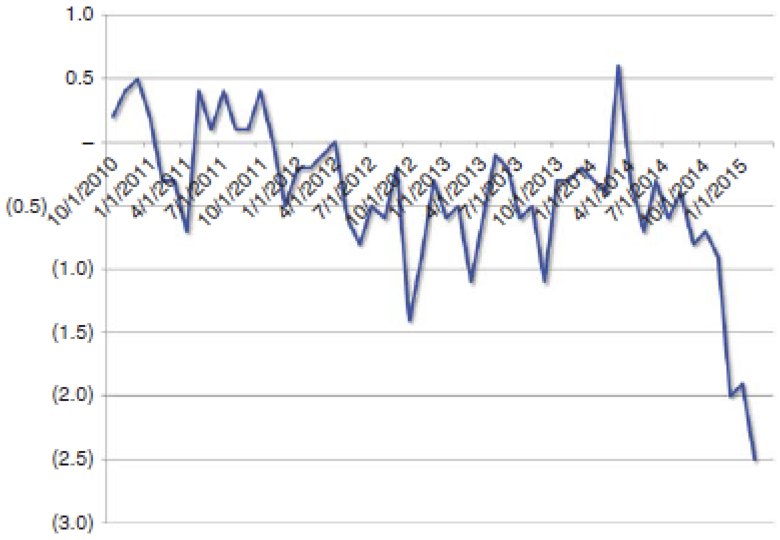


Figure 10.5 12-month cumulative miss in US Retail Sales (ex-autos and gas), October 2010 to March 2015.

- The Result:

  The number comes in weak. The market is caught wrong-footed.

  - Point 1: the moment immediately upon release
  - Point 2: the market consolidated and pulled back and this rally hadn't been above the News Pivot level, *this is where human traders should sell, knowing the market hasn't yet found equilibrium*.
  - Point 3: take profit level (using some tech analysis guidance)

Figure 10.6 1-minute USDJPY, April 14, 2015.

Going the Other Way after Economic Data; Beat the Algos!

Take the other side (or fade) the initial knee-jerk move form economic data release. It's a scary strategy because you're going against short-term momentum and against the theoretically logical direction dictated by the economic release.

Often, the opportunity comes *when the headline is not representative of the full story*. Algos and humans often pile based on the initial reading of headlines, but there are quite often times when the details are not telling the same story.

Always be on the lookout moments when things don't move the way you would expect them to. This counter intuitive price action can provide clues as to future direction and it gives important information about underlying supply and demand.

Trading Central Banks

The evolution of a central bank's thinking is mostly communicated via speeches and official statements and therefore you need to read every single one. The longer you follow a central bank, the more of a feel you get for their bias, tactics, and communication strategy.

Central Banks' Levers:

- Interest Rates
- Balance Sheet Management
- Forward Guidance

Know central bank's interest rate view (dove/hawk), currency view, and other economic or financial market comments.

Positioning into a Central Bank Meeting

The key is that you need to have a view that differs from the market.

Trading the Outcome of a Central Bank Meeting

Unexpected central bank moves are a go with, not a fade. Never fade unexpected central bank moves. Jump on them.

Central Bank Speeches

It can be viewed as miniature versions of a central bank meeting. There can be edge in trading central bank speeches because traders are not always ready for them and speeches can't easily be traded by algos.

Event Evaluation Example

The market is 40/60 on Norges Bank's rate cut. I think the odds are 65/35. So, i have a different view than the market so i want to bet on a Norges Bank cut.

EURNOK is always the best way to play Norway monetary policy. Now, i have a subjective probability of event to be assigned, now i need a outcome estimate, which is the move under each scenario of EURNOK.

The ability of assigning probability for an event is subjective and this capability comes from experiences and diligent work (e.g. keeps following the central bank).

PaddingtonMacro - Event Trading Evaluation Template

www.paddingtonmacro.com

Event:	**18 Jun, 2015 Norges Bank Meeting**			
EURNOK Spot:	8.7300			
Lot Size (betting size)	**10**	*according to risk management budget*		
	Estimated Probability - P (subjective prob)	**Market's Probability (market pricing)**	**Esimated Move, Stop Level - E (from Option's market)**	**PNL = P*E (subjective)**
Norges Bank - Cut	65%	40%	8.8500	98,712
Norges Bank - No Cut	35%	60%	8.6500	(35,435)
Expected Value				**63,277**

Other Headlines and News Events

Unscheduled central bank actions

Similar to normal central bank moves but have a larger impact because they are completely unexpected.

Any unscheduled central bank action is a "go with". Jump on it and do not get out unless the market goes back through the initial News Pivot.

Correlated news release

The market is not always ready to jump on the correlated product the way they would be ready to trade the primary one.

e.g. USDCAD: OPEC meeting, DOE inventory data; NZDUSD: biweekly milk auctions

Sympathy plays

Global central banks often move in the same direction at approximately the same time as they react to global conditions in similar ways.

If one CB starts to move aggressively in one direction, the probability of other central banks doing the same rises.

Geopolitical Events

Natural Disasters

Risk Management

Risk Management is much, much more important than trade selection when it comes to long-run trading success. A clear risk management plan before every single trade is very necessary and priority number one is to avoid ruin. The framework should be flexible but systematic so that you reduce volatility and risk when things are going poorly and increase risk in a controlled way as PNL builds.

Establish a clear, rule-based risk management approach

You control the process but you don't control the outcome.

Free Capital and Trade Analysis

Set Goals

Set yearly PNL targets and manage risk and PNL on a monthly basis. Break yearly goals into monthly chunks and set objectives and stop loss limits for each month.

- It gives regular mental reset and you can get fresh outlook for the new month and you are not bogged down by emotions.
- Every month, PNL targets and risk limits start over, based on previous and current trading results. Monthly goal and risk management is not static depending largely on YTD PNL.

When hitting the monthly stop loss, stop trading completely or only trade in the smallest size and wait for the calendar to roll over.

When hitting the monthly PNL target, don't stop, but do the very best to slow down a bit and protect the successful month.

Trading PNL tends to mean revert. If you're overheating for a period, there's a point where you want to reduce risk in anticipation of a pullback.

Track and Analyze PNL

- Daily PNL
  - Open, High, Low and Close PNL for each trading day
  - Create a chart on daily and YTD data

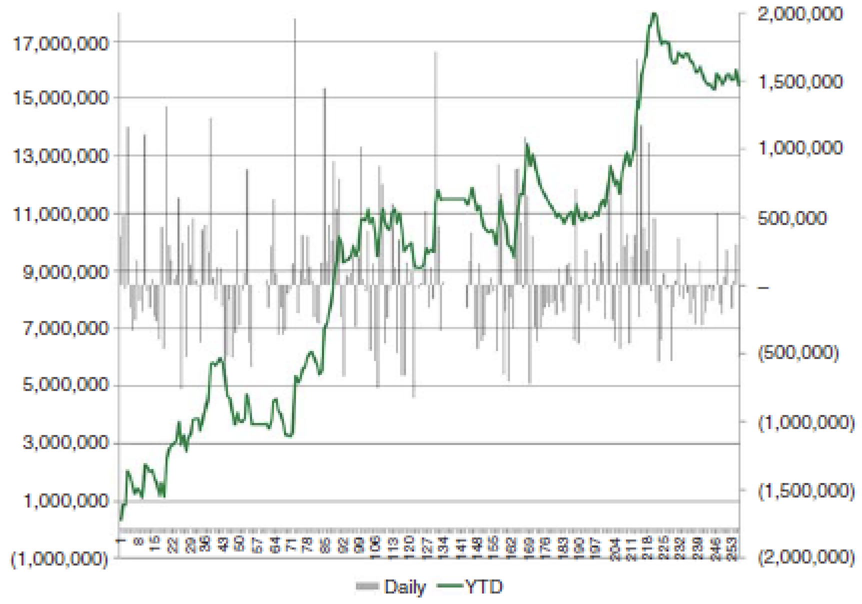
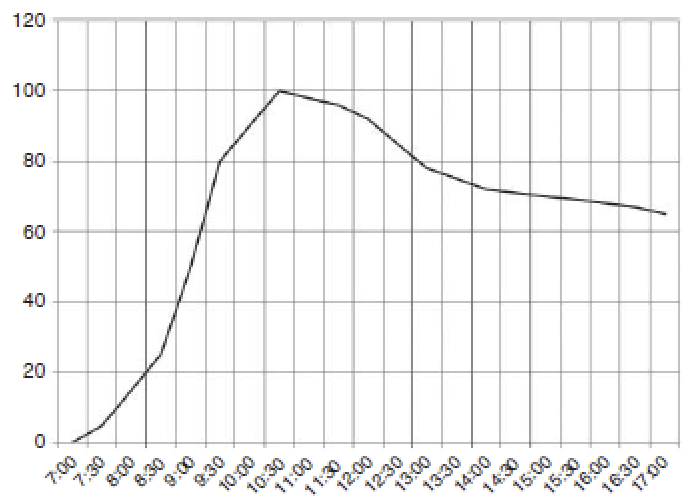


Figure 11.1 Sample P&L chart showing daily and year-to-date P&L.

  - PNL by Time of Day



- Month-to-date PNL

  Luck may have a significant influences on daily PNL, whereas monthly and yearly performance is primarily determined by skill.

- Year-to-date PNL

You need to behave like a call option.

- Win% & Average G/L

  This combination determines the ultimate success.

- Rolling Drawdown

  Create a chart of current PNL - YTD highest PNL

- Sharpe Ratio

- Fat Tails and Risk of Ruin

  Get used to the rising frequency of tail events since 2008.

  Anything can happen. The 1st consideration for every trader should be to avoid risk of ruin. Live to fight another day.

  Tail risks can be known in advance (like the EURCHF on 15th Jan 2015) or can come out of nowhere (like the GBPUSD flash crash on 6th Oct 2016).

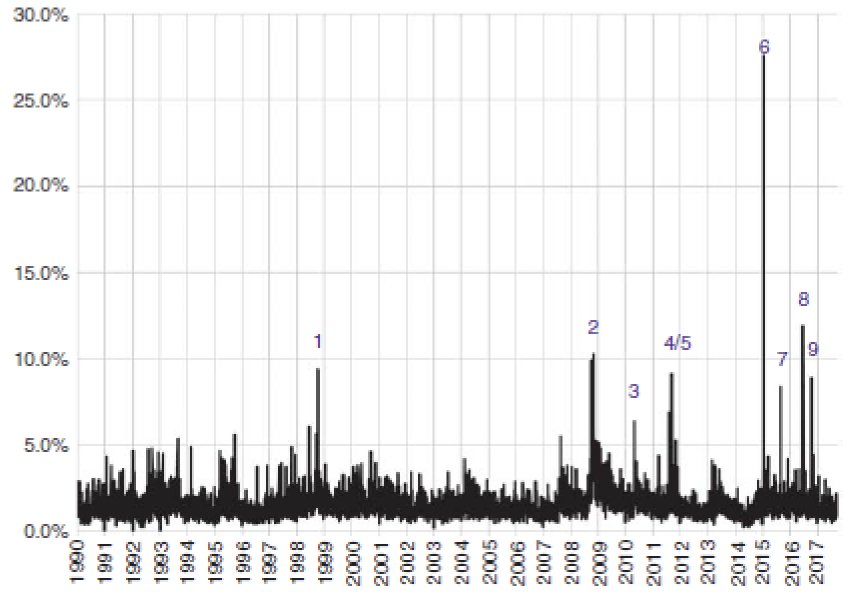


Figure 11.6 Largest range of the day for US dollar vs. G7 currencies (1990 to 2017).

Data from Bloomberg.

	Event	Date	Currency	Trigger	Other Cause 1	Other Cause 2
1	Asia Crisis, LTCM unwind	October 8, 1998	NZD and USDJPY	LTCM unwind	Asian Financial Crisis	Central banks sold USDJPY
2	GFC	October 2008	AUD and NZD	Financial crisis	US politics (TARP rejected)	
3	US stock market flash crash	May 6, 2010	USDJPY	Stock market flash crash		
4	US down-graded	August 9, 2011	USDCHF	S&P downgrade of USA	Government shutdown	
5	SNB puts in the floor	Sep 6, 2011	USDCHF	SNB		
6	SNB removes the floor	January 15, 2015	USDCHF	SNB	Positioning	
7	China reval	August 24, 2015	NZDUSD	PBoC		
8	UK votes to leave EU	June 24, 2016	GBPUSD	UK voters		
9	Flash crash	October 7, 2016	GBPUSD	Stop losses	Time of day	Human error

Data from Bloomberg.

Figure 11.7 USD vs. G7 moves of 6% or more since 1990.

Keep a Trading Journal

A journal helps tract the evolution of your trading and captures emotions, themes, and thoughts throughout the process. It gives you a chance to be honest with yourself.

Things become more concrete, more real and firmer when you write them down. The more you write down, the more you can go back later and investigate various hypothesis and answer questions about your trading.

The process of writing down your plan also filters out some bad trades in advance because you realize as you write out the plan that the idea is not solid enough to deserve an allocation of risk capital.

Sample Trading Journal

PaddingtonMacro - Trading Journal Template

www.paddingtonmacro.com

Data: fundamental evaluations; Behavioral: sentiment, positioning and market bias; Gut: personal psychology evaluation

Profile			Entry							Factor Buckets						PNL			
Entry Date&Time	Exit Date&Time	Hours Held	Product	Direction	Entry	Lot	Exposure	TP	SL	Data	Tech	Corr	Behavioral	Gut	Stars	TargetPNL	RiskValue	Actual Exit	Actual PNL
10/22/2015 8:55AM	10/24/2015 6:56AM	46	USDJPY	Long	119.91	50	50,000,000	120.6	120.2	Yes	Yes	Yes	No	No	3	320,000	125,000	120.3	195,000

Quick Rationale	Notes after closing the trade
I bought USDJPY after the dovish comments during the ECB press conference (implying higher probability of further BoJ easing). I took half of the position off at 120.16 pretty quickly and the 2nd half at 120.41.	Took profit before the TP goal was hit because of a big turn around in the bond market. USDJPY went to my target 4 hours later so I left some money on the table.

Position Sizing

Position sizing as a % of capital. 4 primary factors determining position size (setting risk allocation rules around these 4 factors):

1. amount of free capital
2. conviction level (how many starts?)

   Fundamental (Data), Technical, Correlated Markets, Behavioral (Sentiment and positioning), Gut feeling (Psychology evaluation)
3. currency volatility

   https://www.investing.com/tools/forex-volatility-calculator
4. stop loss level (hard limit)
   - Write the stop loss down in the trading journal.

     Don't let the emotional mind override that original, rational mind that wrote down the stop.
   - Don't keep changing the stop loss level as the market moves.

     You can always discover new technical levels or excuses to let a losing trade run. Don't do it.

     You can always put the trade back on later but it's totally different from moving your stop over and over (the especially difference is the cooling-off period).
   - Automate the stop loss process as much as possible.

   Good reasons to move stop loss level:

   - Upcoming event risk
   - Tailing to lock in decent profits
   - Risk management trigger reached

   Bad reasons to move stop loss level:

   - This trade might be a winner if i survive longer.
   - I didn't notice this new major tech level before, i better move it looser.
   - My other trades are doing well, so i can let it run against me a bit longer.

Dynamic sizing based on capital and conviction levels automatically increase risk when you are doing well and reduces risk when you are struggling.

As PNL builds, per-month and per-trade limit increase and if trading in a slump, per-month and per-trade risk allocations fall. Always trade looser when PNL builds and tighter when equity goes down. It helps avoid risk of ruin and opens up the right tail.

When putting more than one trade, you need to think about correlation between trades and the overall PNL risk if all the trades go wrong at once.

No matter how confident, never break the risk limits setting by your rules.

If you're a day trader or very short-term trader, you can simply allocate risk to each day instead of on an individual trade.

Sample as below:

A	B	C	D	E	F	G	H	I	J
Date	**Starting Capital**	**Risk/trade or per day**	**Main Theme**	**Overnight**	**HIGH**	**LOW**	**CLOSE**	**MTD**	**YTD**
21-Apr	500,000	**5,000**	CAD CPI + French election this weekend	3,250	8,500	(3,300)	**4,400**	4,400	**4,400**
24-Apr	504,400	**5,044**	French Election was Sunday	2,760	10,140	2,760	**8,940**	13,340	**13,340**
25-Apr	517,740	**5,177**	USDCAD breaks 1.36 on lumber tarriffs	3,440	10,600	3,000	**10,160**	23,500	**23,500**
26-Apr	541,240	**5,412**	Trump tax plan comes out, USDJPY rally and sell off	-	4,880	(1,200)	**320**	23,820	**23,820**
27-Apr	565,060	**5,651**	ECB meeting + Home Capital Group	(640)	7,560	(3,220)	**520**	24,340	**24,340**
28-Apr	589,400	**5,894**	Month end	(5,200)	6,600	(7,360)	**5,940**	30,280	**30,280**
1-May	619,680	**6,197**	London holiday, quiet	(2,340)	5,500	(4,440)	**4,880**	35,160	**35,160**
2-May	654,840	**6,548**	Quiet, USDCAD new highs	(3,000)	(1,600)	(4,560)	**(1,700)**	33,460	**33,460**
3-May	688,300	**6,883**	FOMC	(2,000)	3,500	(5,440)	**2,200**	35,660	**35,660**
4-May	723,960	**7,240**	Health care vote	(1,400)	5,780	(3,600)	**3,900**	39,560	**39,560**
5-May	763,520	**7,635**	NFP	1,200	2,280	(8,900)	**(7,740)**	31,820	**31,820**
8-May	795,340	**7,953**	Quiet with OPEC headlines	2,000	3,750	(280)	**3,640**	35,460	**35,460**
9-May	830,800	**8,308**	USD ripping	5,000	10,460	2,840	**8,800**	44,260	**44,260**
10-May	875,060	**8,751**	RBNZ and Comey fired	2,000	5,760	1,020	**5,360**	49,620	**49,620**
11-May	924,680	**9,247**	Bank of England	2,500	3,460	(5,400)	**(5,200)**	44,420	**44,420**
12-May	969,100	**9,691**	CPI and Retail Sales	1,400	1,420	(7,580)	**(5,360)**	39,060	**39,060**
15-May	1,008,160	**10,082**	OPEC Headlines	(6,080)	(5,080)	(6,080)	**(5,460)**	33,600	**33,600**
16-May	1,041,760	**10,418**	EUR breakout	500	600	(3,220)	**(1,700)**	31,900	**31,900**
17-May	1,073,660	**10,737**	Impeachment headlines	(340)	4,580	(1,180)	**(220)**	31,680	**31,680**
18-May	1,105,340	**11,053**	More Trump news	(2,800)	(940)	(4,980)	**(4,460)**	27,220	**27,220**
19-May	1,132,560	**11,326**	Canada CPI	(1,100)	(520)	(6,020)	**(5,060)**	22,160	**22,160**
22-May	1,154,720	**11,547**	Merkel says euro too weak	-	980	480	**920**	23,080	**23,080**
23-May	1,177,800	**11,778**	Schaeuble comments, EUR tops	-	4,600	(760)	**4,400**	27,480	**27,480**
24-May	1,205,280	**12,053**	Draghi and FOMC minutes	-	1,100	(4,040)	**(1,820)**	25,660	**25,660**
25-May	1,230,940	**12,309**	End of OPEC meeting	(360)	3,400	(1,660)	**3,320**	28,980	**28,980**
26-May	1,259,920	**12,599**	USDJPY drops as bonds rally	3,860	6,460	1,000	**4,120**	33,100	**33,100**
29-May	1,293,020	**12,930**	Memorial Day	2,600	3,020	1,500	**2,000**	35,100	**35,100**
30-May	1,328,120	**13,281**	EUR hawkish comments	2,200	5,850	-	**4,620**	39,720	**39,720**
31-May	1,367,840	**13,678**	Month end dollar selling	-	1,200	(8,400)	**(4,700)**	35,020	**35,020**

Figure 12.1 Sample risk management spreadsheet for a novice trader.

Know Yourself

You need to understand your weakness (and your strengths) and develop a systematic process so that you don not make the same mistakes over and over.

All good traders need self-discipline.

Characteristics of a Successful Traders

- Finds the balance between risky behavior and discipline

  The combination of mega risk appetite and disciplined personality is rare.

- Thinks independently

  Don't follow the crowd, but also don't be a reflexive contrarian. Do your own work and come to your own conclusions.

- Know your edge

  If you don't know who the sucker at the table, the sucker is probably you.

  If you can't say with a straight face that you know exactly where your edge comes from, you are in serious trouble.

- Trade one time horizon

Master one explicitly chose time horizon in one explicitly chose product first. You should stick to one time horizon.

- Control emotions/Act like a robot/Self-aware

  when getting emotional, take a step back, reduce your position size, regardless of happiness or frustration.

- Implement a consistent daily routine

  Be totally prepared before you start trading. Have a process and plan before hitting the keys.

  e.g. Prepare a daily sheet before market open, evaluating your emotional state and putting all necessary numerical brackets around you for the trading day.

- Happy to be flat
- Understand tight/aggressive

  Wait until you have great cards and then go for it.

- Self-understanding and mega-cognition

  Your state of mind can provide warning ahead of potentially bad trading decisions.

- Love trading

  You can't win if you're trading just for money.

- Learn and adapt

  Identify new market regimes and understand whether the current process will work as the regime shifts.

- Gut + Analysis

  When strong analysis intersects with a strong gut feel, you have yourself a winner.

  The longer you have been trading, the more you can trust your gut.

  Be honest with yourself and look for information that both backs up your idea and contradicts it.

Common Weakness in Trading

- Poor risk management, bad discipline, and negative risk/reward

  Run the losing trades too long, cut winners too fast, and pile new losses onto prior losses.

- Trading for the wrong reasons

  Over-trading, gambling, entertainment, addiction

- To feel smarter than anyone else

  Try to pick "tops and bottoms" all the time. Avoid the strong trends because you always think that everyone else is already on board.

  You goal is not to be the smartest trader, you goal is to make money in a healthy and repeatable way.

- FOMO (fear of missing out)

  Don't get married to a view. You'll miss many, many trades, but there are infinitely more opportunities ahead.

- Waiting for the perfect trade

  There is no such thing as a perfect trade.

- Invincibility/Overconfidence

  Set up conditional formatting in your PNL spreadsheets to highlight over-earning significantly relative to budget. Those cells can tell you to settle down and reduce risks.

- Directional bias

  If you're a long-term trader, you are much more likely to be successful maintaining the same view for a long period. If you're a short-term trader, you should be flexible and able to trade both the long and the short side.

  Don't married to a view.

Trading Slumps

The 1st key to dealing with slumps is good SELF-AWARENESS. Recognize physical signs of frustration and acknowledge them.

Once realized in a slump, the 1st thing is to SLOW DOWN. The object at this point is not to make money but to reset your emotions while still maintaining a connection to the market.

See trading slumps as blessings as you can do some research projects or other meaningful things that you don't have time for when you're in the zone trading.

Trading is very much about probabilities and process, don't stay in defensive mode too long. Once feeling okay, go back to normal size.

Don't let externalities ruin you. Know when to trade and when not to trade. If a slump is triggered by something outside the market (e.g. health, financial security, marriage, relationships, mental well-beings, etc), get flat right away and figure things out before you come back.

Steps to Handle Slumps

1. **Square up**
2. **Trade smaller**
3. **Talk about the slump**

   Frustration boils inside but releases when you open up.
4. **Read and do research**
5. **Get some perspective**

   You need to ride out the tough times and stay resilient and optimistic.

   Focus on trading when you are at work and focus on relationships and activities you love when you are not at work.

   If you have a good day, feel good about it. Be happy. Go celebrate.

   Every loss is a lesson, every gain is a blessing. Stay positive.

   Don't break the rules. You run into problems when your risk management is bad and it spills into the next day. Following the rules!

Donnelly's 25 Rules of FX Trading

1. **Don't blow up. Avoid risk of ruin above all else.**
2. **Adapt or die.**
3. **Do the work. Read the speeches. Analyze, read and study.**
4. **If you look hard enough, you can always find a tech level to justify a bad trade!**
5. **"It's a big level" is not a good enough reason to put on a trade.**
6. **No more FOMO. Never worry about missing it. There will always be another trade.**
7. **Flat is the strongest position. When in doubt, get out.**
8. **It doesn't always have to make sense.**
9. **Never fade unexpected central bank moves. Jump on them!**
10. **Making money is hard. Keeping it is harder.**
11. **Successful traders make more money on up days than they lose on down days.**
12. **Anything can happen.**
13. **Keep a trading journal. Thoughts are abstract and fuzzy. Writing is concrete and solid.**
14. **There is a time and place to go bit.**
15. **Good traders vary bet size.**

16. **It's always looks bid at the highs. It always looks heavy at the lows.**
17. **You control the process but you don't control the outcome.**
18. **Each trade is a drop of water. The market is an ocean.**
19. **Know your edge.**
20. **Know your time horizon.**
21. **Good traders have a plan. They may not always stick to the plan but they always have one.**
22. **Tight/aggressive wins.**
23. **Be flexible. Don't get married to a view.**
24. **Don't let random, low-conviction trades kill you.**
25. **Have fun. If you don't enjoy it, what's the point?**