Limits to sushi-arbitrage

– *Lorenzo La Posta*

The Efficient Markets Hypothesis implies that as soon as a mispricing of certain assets appears, arbitrageurs would exploit this inefficiency and bring the assets back to their equilibrium prices. However, this is sometimes prevented by structural and behavioural barriers; hence some arbitrage opportunities manage to survive much longer than they theoretically should.

Once a week, I have sushi for lunch. The shop near my office sells an underpriced box with 3 nigiri and 4 uramaki for £4 and a overpriced box with 6 nigiri or 6 uramaki for the same price. This presents a clear arbitrage opportunity: I could buy 2 underpriced boxes (thus having 6 nigiri, 8 uramaki) for £8, redistribute 6 nigiri in one box, 6 uramaki in another box and sell these two for £4 each, leaving me with 2 uramaki for no cost. So why am I not exploiting this arbitrage opportunity, given that in theory I should be able to? The single most important reason is that in practice I would not be able to sell the overpriced boxes at their shop-price of £4 each, simply because I am not a sushi shop. People would require a discount on these products to compensate for my lower trustworthiness and this would most likely outweigh the harvestable profit.

As much as this is an isolated story, it is representative of the very well-known limits to arbitrage in today's financial markets.

The first and best-known limit is from the bid-ask spread: the higher it is, the more expensive trading a certain pair will be. Once trading costs exceed the potential gain, no arbitrageur will be willing to push the price back to its equilibrium price and the inefficiency will persist (as with my sushi-arbitrage). Thus, very illiquid markets will generally have more unexploitable opportunities than high-volume high-liquidity markets such as large-cap equities or currencies. Secondly, given that arbitrageurs are sometimes required to short-sell an asset, the borrowing costs on the short position also affect the total profit-and-loss profile of the transaction and these might outweigh the potential gain. Finally, stronger limits to arbitrage include outright bans on short-selling or regulations preventing specific types of investors from accessing certain markets.

In addition, exploiting an arbitrage opportunity can be extremely dangerous as investors are generally unable to bear adverse market movements for prolonged periods of time. A famous quote from the economist John Keynes states that "Markets can remain irrational longer than you can remain solvent". The clearest example of it is Long-Term Capital Management, a former leading hedge fund who in 1998 fell victim of a prolonged period of market irrationality. They had a highly leveraged exposure to the spread between certain bonds that in theory was supposed to narrow (it did, eventually); sudden political turmoil and panicking investors caused the spread to widen even more and eventually margin calls required LTGM to close their position and suffer extreme losses.

The main conclusion from all this is that arbitrage opportunities are easy to spot but hard to exploit. Despite their seemingly risk-free features, investors should be aware of the potentially large risks that arbitrage strategies carry before building any type of exposure to them. Furthermore, barriers and limitations make these market inefficiencies more persistent than expected, while concurrently creating an opportunity for active managers willing (and able) to bear such risks in a controlled and effective manner

Weekly Digest 11 June 2018

The Marketplace

- War of words unfolds at G7 summit
- US composite PMI jumps to three year high
- Japan GDP declines in Q1 2018
- NASDAQ composite hits all-time high

Market Focus

US

- A war of words unfolded between the US and its allies at the weekend G7 summit with President Trump rejecting a joint communique.
- The US composite PMI rose to 56.6 in May; the highest level in over three years and a jump from the 54.9 reading in April.
- President Donald Trump is due to meet North Korean leader Kim Jong-un in Singapore on Tuesday.
- US equities gained 2.8% in the week, with the NASDAQ composite hitting a record high intra-week. On a trade weighted basis the US Dollar fell 0.5%.

UK

- The UK government released its proposal for a backdrop arrangement to avoid a hard border between Northern Ireland and the Republic of Ireland. The UK expects the future arrangement to be implemented by December 2021 at the latest.
- UK equities returned 0.2% in the week while gilts sold off 2.0%. UK 10 year gilt yields rose 9.1 basis points to 1.39%, while 2 year gilts rose 8.1 basis points to 0.74%.

Europe

- After significant political turbulence last week in Italy, Guiseppe Conte, the newly sworn-in Prime Minister, stated leaving the euro was not up for discussion. This follows recent polls suggesting only 29% of Italian people are in favour of leaving the currency bloc.
- The euro area composite PMI fell to 54.1 in May from 55.1 in April.
- Continental European equities advanced 0.7% while government bonds fell 0.9%, underperforming high yield credit which returned 0.1%.

The rest of the world

- Argentina secured a USD 50 billion financing deal with the IMF to support its economy, an amount that is more than double the typical stand-by agreement.
- In Japan, real GDP contracted 0.6% in the first quarter of 2018; the first contraction in over two years. In addition to this, year-on-year real wage growth flat lined in April after an encouraging 0.7% reading in March.

Past performance is not indicative of future returns.

Source: Bloomberg. Returns in local currency unless otherwise stated.

IMPERIUMCAPITAL

momentum

Weekly Digest

11 June 2018

Asset Class/Region	Currency	Currency returns			
		Week ending 8 June 2018	Month to date	YTD 2018	12 months
Developed Market Equities					
United States	USD	2.8%	2.8%	4.6%	15.8%
United Kingdom	GBP	0.2%	0.2%	1.8%	6.7%
Continental Europe	EUR	0.7%	0.7%	-0.1%	0.2%
Japan	JPY	2.0%	2.0%	-1.0%	14.4%
Asia Pacific (ex Japan)	USD	1.8%	1.8%	1.4%	16.1%
Australia	AUD	0.6%	0.6%	1.6%	11.2%
Global	USD	2.2%	2.2%	2.7%	13.2%
Emerging markets equities					
Emerging Europe	USD	-0.2%	-0.2%	-8.1%	6.6%
Emerging Asia	USD	2.2%	2.2%	1.8%	17.6%
Emerging Latin America	USD	-3.3%	-3.3%	-11.4%	-0.3%
BRICs	USD	1.2%	1.2%	1.0%	21.0%
MENA countries	USD	2.0%	2.0%	10.3%	13.6%
South Africa	USD	0.3%	0.3%	-11.5%	8.8%
India	USD	-0.2%	0.1%	-2.8%	7.6%
Global emerging markets	USD	1.4%	1.4%	-1.2%	14.0%
Bonds					
US Treasuries	USD	-0.6%	-0.6%	-1.7%	-1.4%
US Treasuries (inflation protected)	USD	-0.4%	-0.4%	-0.9%	0.6%
US Corporate (investment grade)	USD	-0.7%	-0.7%	-3.3%	-0.7%
US High Yield	USD	0.5%	0.5%	0.3%	2.8%
UK Gilts	GBP	-2.0%	-2.0%	-1.0%	-1.4%
UK Corporate (investment grade)	GBP	-0.9%	-0.9%	-2.3%	-1.3%
Euro Government Bonds	EUR	-0.9%	-0.9%	-1.1%	-0.8%
Euro Corporate (investment grade)	EUR	-0.3%	-0.3%	-0.9%	0.2%
Euro High Yield	EUR	0.1%	0.1%	-1.2%	1.5%
Japanese Government	JPY	-0.1%	-0.1%	0.6%	1.2%
Australian Government	AUD	-0.6%	-0.6%	0.7%	0.9%
Global Government Bonds	USD	-0.5%	-0.5%	-1.2%	1.1%
Global Bonds	USD	-0.4%	-0.4%	-1.7%	1.1%
Global Convertible Bonds	USD	1.2%	1.2%	1.8%	3.1%
Emerging Market Bonds	USD	-0.4%	-0.4%	-5.5%	-4.6%

Source: Bloomberg. Past performance is not indicative of future returns

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11 June 2018

Asset Class/Region	Currency	Currency returns			
		Week ending 8 June 2018	Month to date	YTD 2018	12 months
Property					
US Property Securities	USD	1.7%	1.7%	-1.9%	0.6%
Australian Property Securities	AUD	-0.6%	-0.6%	-0.7%	0.7%
Asia Property Securities	USD	2.0%	2.0%	2.9%	10.2%
Global Property Securities	USD	1.3%	1.3%	0.1%	7.3%
Currencies					
Euro	USD	0.9%	0.9%	-2.1%	5.0%
UK Pound Sterling	USD	0.9%	0.9%	-0.8%	3.6%
Japanese Yen	USD	-0.7%	-0.7%	2.8%	0.5%
Australian Dollar	USD	0.5%	0.5%	-2.7%	0.7%
South African Rand	USD	-3.1%	-3.1%	-5.4%	-1.3%
Swiss Franc	USD	-0.1%	-0.1%	-1.2%	-1.8%
Chinese Yuan	USD	0.1%	0.1%	1.7%	6.0%
Commodities & Alternatives					
Commodities	USD	-0.9%	-0.9%	6.4%	20.0%
Agricultural Commodities	USD	-1.8%	-1.8%	4.7%	0.9%
Oil	USD	-1.5%	-1.5%	14.3%	59.8%
Gold	USD	-0.3%	-0.3%	-0.6%	1.7%
Hedge funds	USD	0.4%	0.4%	-0.2%	3.1%

Source: Bloomberg. Past performance is not indicative of future returns

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