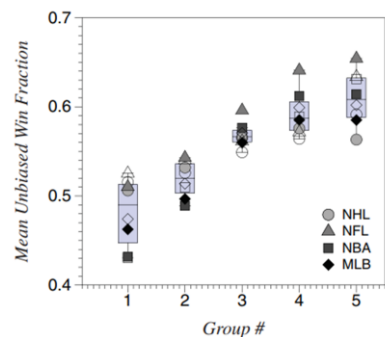


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Tuesday, October 15, 2019

AM FX

Brent Donnelly, Spot FX Trader
1 (212) 525-8469
brent.x.donnelly@us.hsbc.com



US courts have ruled that fantasy sports is a game of skill.

Experience leads to a higher win rate in FanDuel, for example. The chart above shows FanDuel player win% by experience level.

Group 1: Least experienced,
Group 5: most experienced

Current Views

Flat

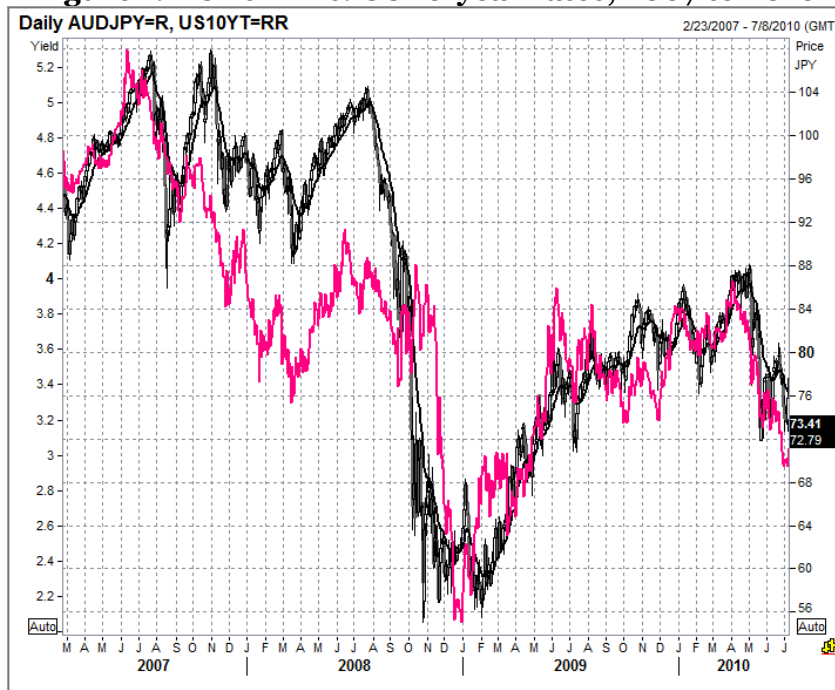
Forexplainer #8

Why is the yen a safe haven?

Welcome to Forexplainer #8. As I wrote on March 12 ([AM/FX: Forexplainer #1](#)): Once per month, around the 12th or so, I will publish an educational piece called "Forexplainer". Sometimes it will be something I read elsewhere, and sometimes it will be something I write myself. Today we tackle a perennially popular question: Why is the yen a safe haven currency? This is probably the most common question non-FX people ask me about foreign exchange trading.

Anyone who has watched FX markets in the last 20 years or so is familiar with the strong positive correlation between global risk appetite and X/JPY¹. When risky assets perform well, X/JPY performs well. When fear hits, X/JPY goes down. Figures 1 and 2 show you this relationship in practice. Figure 1 shows the ultimate safety barometer (US 10-year rates) vs. AUD/JPY in the period where the yen's behavior as a safe haven was most dominant (2007 to 2010):

Figure 1: AUDJPY vs. US 10-year rates, 2007 to 2010

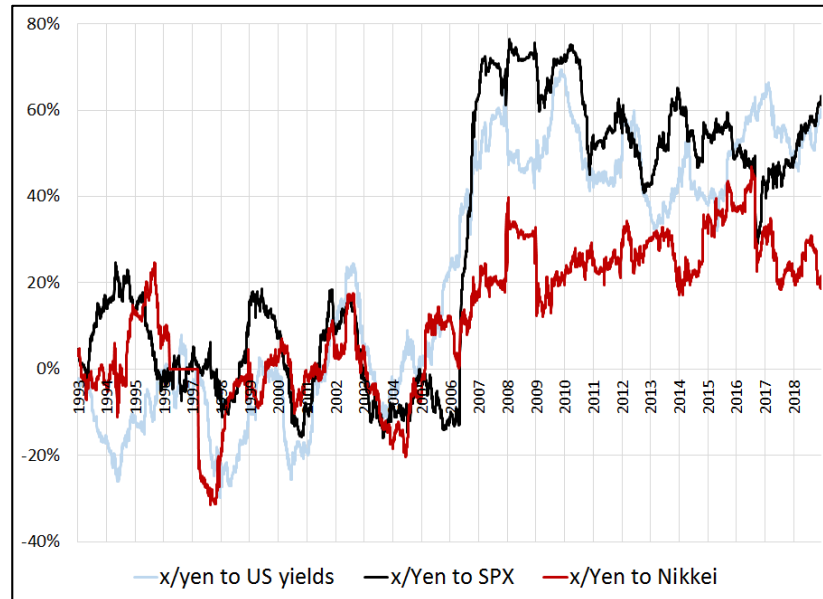


¹ X/JPY means "cross/JPY" or any basket of currencies against the JPY. For example, X/JPY is comprised of USD/JPY, EUR/JPY, AUD/JPY, CAD/JPY, MXN/JPY etc.

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Figure 2 shows the rolling 1-year correlation of **1)** (daily changes in a basket of USD/JPY, EUR/JPY and USD/JPY) and **2)** (daily changes in stocks and bonds):

Figure 2: Rolling 1-year correlation of X/JPY to stocks and bonds



Using daily changes in a basket of USD/JPY, AUD/JPY, EUR/JPY for X/JPY and 2's, 5's and 10's for yields

Four things to note here:

1. Yen as a safe haven is mostly a thing only since 2006. Even when the yen carry trade was huge in the late 1990s, yen was barely correlated to stocks and bonds.
2. I used the three piece yen basket instead of just USDJPY because otherwise you get periods where the USD effect dominates USDJPY regardless of risk appetite (like 2016). I wanted to isolate the risk appetite / safe haven aspect as much as possible.
3. Yields are more important than stocks for USDJPY but stocks are more important than bonds for AUD/JPY and EUR/JPY. When dealing with X/JPY as a basket, yields and stocks are of roughly equal importance.
4. The relationship between gold and yen is unstable. People think of gold as a safe haven but empirically this is an unreliable model for gold. Gold often acts more as a liquidity proxy and can frequently move in lockstep with risky assets. When central banks provide significant liquidity, gold and stocks both go higher. When liquidity is withdrawn, they both go lower. On the other hand, when geopolitical or financial system risks are in focus, stocks can go down while gold rallies. **Gold is not a reliable safe haven like bonds and yen. Gold often trades like a risky asset, not a safe haven.**

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Confirming the simplistic analysis in Figure 1 and 2 which I use to conclude X/JPY trades like a safe haven, [this paper](#) also comes to the conclusion that JPY (and CHF) trade as safe havens:

Based on the recent literature on volatility and liquidity risk premia, we use a factor model to capture linear and non-linear linkages between currencies, stock and bond markets as well as proxies for market volatility and liquidity. We document that the Swiss franc and Japanese yen appreciate against the US dollar when US stock prices decrease and US bond prices and FX volatility increase. These safe haven properties materialize over different time granularities (from a few hours to several days) and non-linearly with the volatility factor and during crises. The latter effects were particularly discernible for the yen during the recent financial crisis.

So now that we have confirmed that the yen (and CHF) behave as safe haven currencies, let me explain why. This question is not as simple as one might think; there is a group of related theories and explanations. Let me synthesize them as best as I can.

Fundamental characteristics of a safe haven currency

There are various features that most researchers agree are necessary for a currency to act as a safe haven. After reading the academic papers on this topic² I would narrow down the four main characteristics of a safe haven currency to:

1. Strong external financial position
2. Low interest rates
3. Large and liquid financial markets
4. Stable, developed country (not EM)

After researching global data for points one and two, I created the big table at right, Figure 3. Japan and Switzerland immediately stand out, as they are the two to best tick both of the first two boxes (strong external position / low yields). Taiwan looks good on the first two metrics, too, but fails on number 3 and [maybe](#)

Figure 3: NIIP and yields for selected large economies

	Net International Investment Position	2 year yield
Japan	3,067,264	(0.31)
People's Republic of China	1,747,082	2.64
Taiwan	1,180,824	0.46
Switzerland	839,313	(0.93)
Norway	732,542	1.10
Singapore	635,296	1.55
South Korea	278,485	1.22
Canada	140,242	1.64
Sweden	80,567	(0.57)
United Kingdom	(113,000)	0.50
New Zealand	(120,159)	0.78
Turkey	(356,149)	3.87
India	(436,400)	5.61
Mexico	(482,209)	2.17
Europe	(663,998)	(0.56)
Brazil	(716,566)	1.99
Australia	(738,897)	0.70
United States	(9,929,100)	1.59

² This paper is the best one I read: <https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1288.pdf> . This one is good, but kinda states the obvious—JPY and CHF are safe havens! https://papers.ssrn.com/sol3/papers.cfm?abstract_id=999382

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on number 4. Norway is close but does not have the large financial markets or low rates required of a safe haven (the Swiss stock market is 10th biggest in the world; Norway's is 28th). Sweden has the low rates but not the external position.

Because they tick all four boxes, Japan and Switzerland are important safe haven currencies.

What is the mechanism for yen appreciation and depreciation?

The macroeconomic mechanism for the yen vs. risk relationship is simple, in theory. Japanese investors own the largest pool of savings in the world. Their domestic interest rates are very low so they are incentivized to invest abroad. When they feel confident, they go global, searching for higher yields on their huge pool of savings. When they buy foreign assets with higher yields, they sell yen and buy foreign currencies. When they get nervous, they bring the money home (sell foreign currencies and buy back the yen).

This manifests at all sorts of levels, triggering predictable behaviors from economic actors of various size and shape. From Mrs. Watanabe in retail FX worrying about a drop in the Nikkei, right on up to the CIOs of the massive Japanese pension funds worrying about a global economic downturn, Japanese buying and selling of yen is often driven by risk appetite.

A second mechanism that drives yen as a safe haven is the usage of the yen as a funding currency. In times of low volatility, funds and traders around the world buy high-yielding currencies and pay for them by borrowing and selling low-yielding currencies (like yen) to capture the difference in yield. This is called "the carry trade"³.

As these carry trade positions build, the market borrows and sells more and more yen and owns more and more higher-yielding currencies. When volatility suddenly turns higher, these trades are less attractive and so a rapid rise in volatility (which usually means risk aversion) will trigger a rapid move toward the exits. The semi-regular twilight zone TRY/JPY flash crashes are a salient example of this.

People say the carry trade goes "up the escalator and down the elevator" because of the notable skew in the distribution of price movement. Carry trades accumulate profit slowly and drawdown rapidly.

³Note that risk aversion and volatility move together—when risk appetite is strong, volatility is almost always lower than during periods of risk aversion.

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Whenever there is risk aversion, volatility goes up and those that borrowed yen to fund their carry trades must buy the yen back.

In 2006, volatility was low and the yield differential between AUD and JPY was very high (4% to 5%). The NZD vs. JPY differential was even higher (5% to 6%). So if you stayed long NZD/JPY for a year and it didn't move, you made more than a 5% return. With a bit of leverage, the carry trade can yield very attractive returns.

The combination of low volatility and high carry in 2006 attracted huge pools of money to the long AUD/JPY and NZD/JPY carry trade and the strategy performed very well. Very well, that is, until the first tremors of the global financial crisis shook the earth and speculators decided all at once to unwind their carry trades as volatility roared from abnormally low levels. This resulted in a colossal unwind of all carry trades and saw AUDJPY fall from 107.50 to 86.00 in about a month in the summer of 2007.

In the chart below, you can see the slow, grinding appreciation of AUDJPY from 2005 to mid-2007 and then the brutal unwind. This is why people say the carry trade is like "picking up nickels in front of a steam roller".

Figure 4: Daily AUDJPY, 2005 to 2007



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The AUDJPY unwind of 2007 was epic but paled in comparison to what happened next, as the pair dropped all the way from 105.00 to 60.00 in 2008. Check out Figure 5, which shows AUD/JPY from the same starting point as Figure 4, but with an end point of early 2009 instead of early 2008:

Figure 5: Daily AUDJPY, 2005 to Q1 2009



AUD/JPY in 2007/2008 is an extreme example of how high-yielding currencies tend to trade. They appreciate gradually in times of low and falling volatility and then sell off quickly when volatility picks up. Like a fire in a disco, there is not enough time for everyone to get out of carry trades all at once and this leads to panic.

There is a third mechanism that drives the yen vs. risky asset correlation: Self-fulfilling prophecy. Having witnessed the consistent correlation between the yen and risky asset prices since 2006, human and algorithmic speculators respond in real time to movements in risky assets by buying and selling X/JPY in real time. If stocks drop 1% in a straight line, traders and algos will reflexively sell X/JPY. If China signs a yuge trade deal with the United States, FX traders will buy X/JPY. This creates a self-

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fulfilling prophecy where well-known correlations persist because traders and systems incorporate them into their analysis and trade them in real time.

You see capital flow in action at various levels of the fractal economic universe when, for example, stop losses triggered by risk aversion go through in the retail FX market, or Japanese pension funds hedge their foreign assets due to fears of an economic slowdown, or systematic hedge funds unwind their carry trades by selling X/JPY because the stock market is crashing. For the record, though, the [IMF tried to connect the dots](#) between the yen and these capital movements in 2013 and found no discernable relationship. They favor the self-fulfilling prophecy argument.

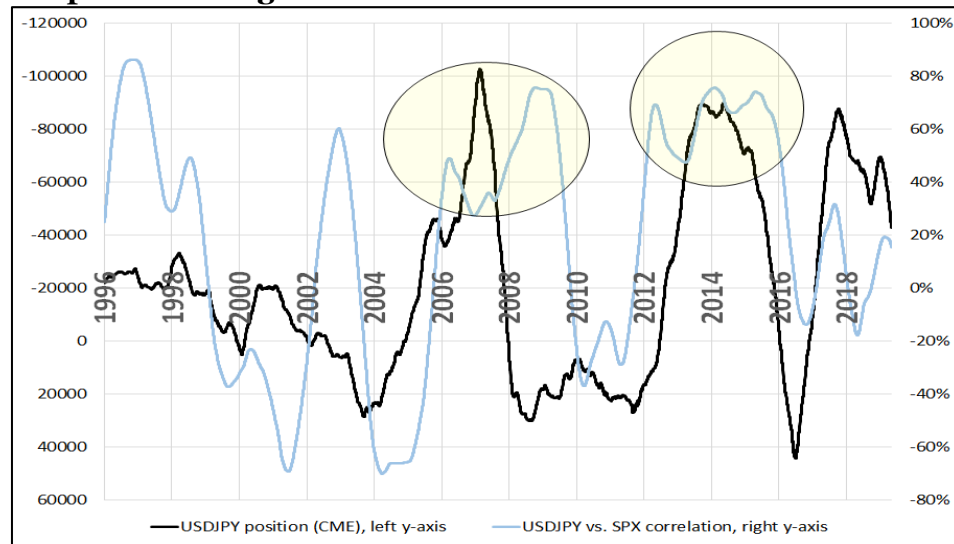
My feeling is that even if you cannot accurately measure the impact of capital flows, the moves in X/JPY are almost certainly driven by a mix of both capital flows and speculation. The capital flows definitely happen—I've seen them! Anyway, here is the abstract for the IMF Working Paper: [The Curious Case of the Yen as a Safe Haven Currency: A Forensic Analysis](#).

During risk-off episodes, the yen is a safe haven currency and on average appreciates against the U.S. dollar. We investigate the proximate causes of yen risk-off appreciations. We find that neither capital inflows nor expectations of the future monetary policy stance can explain the yen's safe haven behavior. In contrast, we find evidence that changes in market participants' risk perceptions trigger derivatives trading, which in turn lead to changes in the spot exchange rate without capital flows. Specifically, we find that risk-off episodes coincide with forward hedging and reduced net short positions or a buildup of net long positions in yen. These empirical findings suggest that offshore and complex financial transactions should be part of spillover analyses and that the effectiveness of capital flow management measures or monetary policy coordination to address excessive exchange rate volatility might be limited in certain cases.

I tried to map JPY positioning against the yen's correlation to risky assets and there is some truth to the idea that positioning matters. When the market is heavily short JPY, the yen is more highly-correlated to SPX and the Nikkei. Figure 6 shows a graph of rolling yen/SPX correlation vs. rolling JPY positioning:

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Figure 6: Large CME short JPY positions (long USDJPY positions) lead to more persistent high correlation between stocks and USDJPY

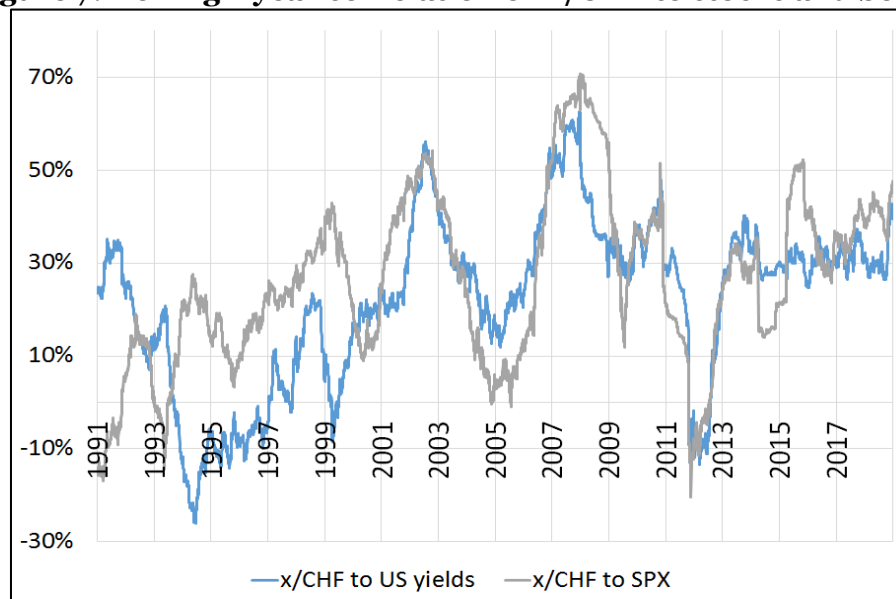


Black line going up is JPY selling (long USDJPY)

You can see in those yellow circles that the periods when JPY shorts were large (i.e., when USDJPY longs were large), JPY vs. SPX correlation remained persistently high compared to periods when JPY positioning was smaller or when the market was long JPY (short USDJPY). This makes sense. Big short JPY positions mean the market is aggressively using JPY as a funding currency.

OK... So that's the JPY covered. What about the CHF? Historically, it has been an even more reliable safe haven than the yen, as you can see in Figure 7:

Figure 7: Rolling 1-year correlation of X/CHF to stocks and bonds



Using USDCHF, EURCHF and AUDCHF daily changes correlated

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Two things to note here:

1. CHF as a safe haven was a thing even before 2006. You can see its role as a safe haven peaked after the tech bubble burst (2001), during the GFC (2008) and during the Eurozone crisis (2011). You can also see that its role as a safe haven broke down when the 1.2000 floor was inserted by the SNB in September 2011 (obviously).
2. Going forward, recent episodic interventions by the SNB appear to be timed in an effort to break the transmission from risk aversion to the CHF. Given the already-deeply-NIRPy state of Swiss interest rates and the failed attempt to defend 1.2000 earlier this decade, there is not much the SNB can do to weaken the CHF at this point, besides a bit of smoothing.

I hope this piece helps you understand why the yen acts as a safe haven. The yen's role as a funding currency, along with Japan's huge foreign investment position and highly-liquid Japanese financial markets make the yen a natural safe haven. This is exaggerated and accelerated by speculators who trade the correlation in real time. Until Japanese savers start spending or Japanese interest rates skyrocket, the yen is likely to remain an important safe haven currency far into the foreseeable future.

Thanks for reading this month's Forexplainer. Back to normal AM/FX tomorrow.

Good Luck ↑↓ Be Nimble

P.S.: What About the Dollar?

The USD does not have the characteristics of a normal safe haven. Sure, there are deep financial markets here, but the US has high interest rates and the worst net international investment position in the world by a thousand miles. So why is the US dollar a safe haven?

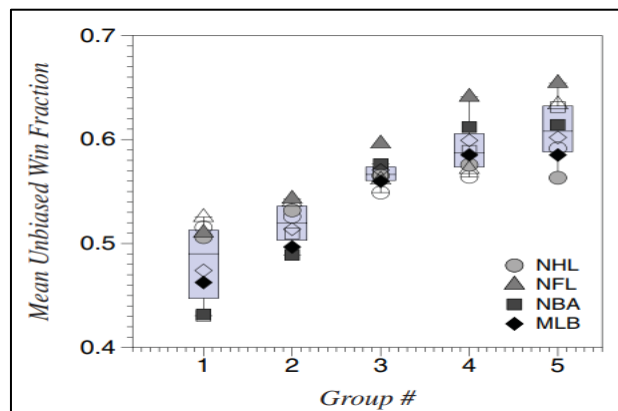
When there is a single global reserve currency, as is the case with the US dollar today, that currency is a safe haven. There are multiple reasons: US assets (especially Treasuries) are highly liquid and the majority of international invoices and debts are priced in US dollars.

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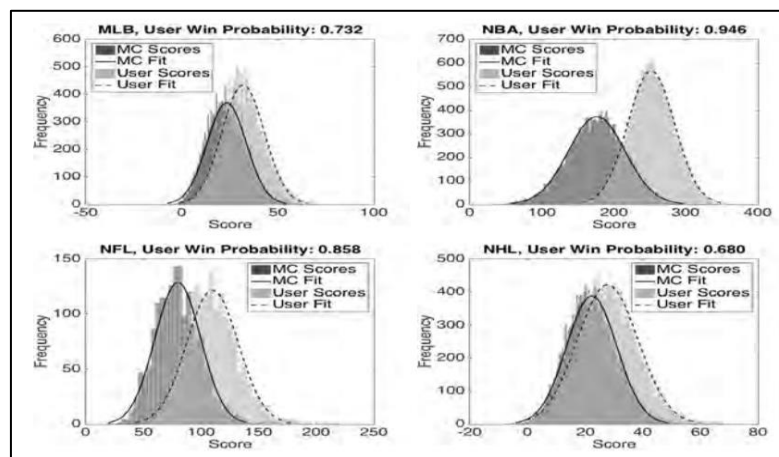
Below are the three key figures from the MIT paper that helped legalize Fantasy Sports by showing they are games of skill, not luck:

Luck and the Law: Quantifying Chance in Fantasy Sports and Other Contests

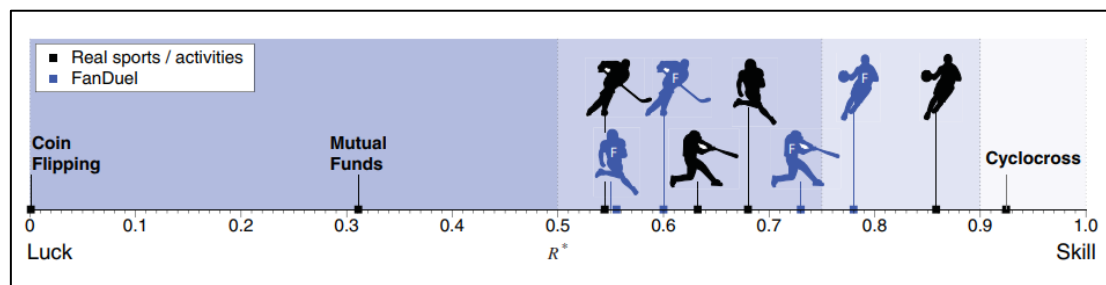
(Getty, Li, Yano, Gao, Hosoi)



FanDuel: Win% by experience level (1: Least experienced, 5: most experienced)



Random vs. skilled lineups in FanDuel. Dark gray = random, light gray = player lineups. NBA is most skill (real life and FanDuel)



Distribution of various activities on the luck/skill continuum

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