Deep Dive

Realindex Investments

A Realinsights Note

Realinsights #01-20 | February 2020

‘Sin’ Stocks: Two Studies[1]

Summary

The two papers we examine look into the historically strong performance (and recent weak performance) of what are known as “sin” stocks; typically those that produce alcohol, tobacco and weapons. They find that while the outperformance has been strong, it is entirely driven by common return factors embedded in well-known models. Interestingly, ESG ratings for sin stocks are quite good.

Recent papers by Blitz and Fabozzi (Robeco, 2017) and Jorgensen (UBS, 2019) discuss the impact of excluding what are known as “sin” stocks from a portfolio. Here we summarise the conclusions of those two papers.

What are sin stocks?

“Sin” stocks are usually considered to be those whose activities are dominated by what would be considered unethical or immoral activity.There are a few different definitions that have been used to classify these stocks, but the most common stems from Fabozzi, Ma and Oliphant (2008) [FMO2008]: alcohol, tobacco, gambling, adult entertainment and weapons.

As noted by Blitz and Fabozzi (2017), the website www.sinstocksreport.com/contains a further description:

> **“...stocks of publicly traded companies that sell something that might be considered taboo, prohibited, or highly restricted, and perhaps has a social stigma attached to it.”**

We could therefore include profit-from-crime stocks (e.g. for-profit prisons) or some financial stocks (e.g. predatory lenders), or even companies that employ sweatshop labour. We could go even further and include stocks which are associated with high CO_2 production and other environmental issues.

This list of issues can then include “values based exclusions” and be potentially quite subjective – for example, firms that supply contraception products and services.

The two papers we look at here restrict their universe to the simpler FMO2008 definition to avoid too much subjectivity or overlap with broader ESG studies, and to directly address market anecdotes on these stocks.

The data in both papers is drawn from Kenneth French’s data library[2]. This breaks the universe of stocks into groups based on the SIC (Standard Industrial Codes) groups, which is how Compustat™ has historically classified stocks. This yields the following classifications:

Table 1: Sin Stock Classifications

SECTOR	Kenneth French Industry Name	SIC Industry Name	SIC Sector Number	SIC Sector Name
TOBACCO	“Smoke”	Tobacco products	2100-2199	Tobacco Products
ALCOHOL	“Beer”	Beer & Liquor	2080-2080	Beverages
			2082-2082	Malt Beverages
			2083-2083	Malt
			2084-2084	Wine
			2085-2085	Distilled and Blended Liquors
WEAPONS	“Guns”	Defence	3760-3769	Guided missiles and space vehicles and parts
			3795-3795	Tanks and tank components
			3480-3489	Ordnance & accessories

Note that this approach identifies only the manufacturers of these goods, and indeed only firms for which manufacturing their product is their primary business. There are of course many other stocks which do not manufacture these goods but are involved in other ways, such as:

- Manufacture of equipment or delivery of services which support these industries
- Retail or distribution of the product

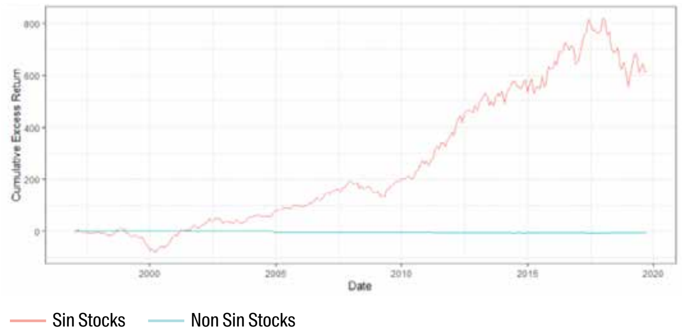
These stocks with wider involvement can be identified through ESG data providers, such as Sustainalytics. The Sustainalytics data has been constructed in such a way that it allows us to look very closely at the severity of exposure within each group. This means we can identify exposures in portfolios and control to a considerable level of granularity if needed.[3]

1 This note is primarily for information. It discusses ideas that are important to the Realindex investment process and clients, but may not be implemented in the ways discussed here.
2 https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html
3 For example, in MSCI World, there are 15 stocks in the Alcohol sector. However, Sustainalytics identifies 34 names involved in direct production, another 17 in supply of products and services and 175 in distribution. A later note in this series will discuss this.

Performance of sin stocks in history.

Chart 1 below (from the UBS paper) shows that these stocks have had very strong performance from the early 2000s to about 2016 or 2017. In fact they state that over the past 43 years, a cap weighted benchmark of the largest 50 "sin" stocks has outperformed the MSCI World by nearly 5% per year. The chart also plots the excess return of a portfolio of the MSCI ex these 50 names, to see what performance drag we would have had from excluding them. The answer is – very little. In fact, the portfolio of MSCI World ex the 50 sin stocks only underperforms the MSCI World itself by about 6bps per year. Table 2 is also from UBS and shows this effect very clearly.

Chart 1: Sin Stocks Performance v Benchmark:



Source: UBS. Chart: experiental "sin" stock portfolio, & MSCI world excluding the 50 "sin" stocks.

Table 2: Summary Statistics of Portfolios of Sin Stocks, MSCI World ex Sin Stocks and the MSCI World itself.

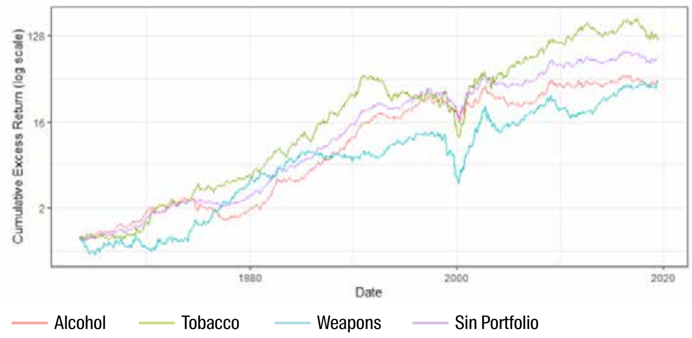
"Sin" Stocks	"Sin" Stock Portfolio	MSCI excl. "Sin" Stocks	Benchmark
Annualised geometric return (%)	11.20%	6.87%	6.93%
Annualised Volatility (%)	15.06%	15.44%	15.33%
Maximum drawdown	-0.42	-0.54	-0.54
Annualised Sharpe ratio	0.78	0.51	0.52

Source: UBS Quantitative Research. Time period is Jan 1996-Aug 2019.

The reason for this is clear – these stocks only actually represent a small component of the investible universe. Blitz and Fabozzi (2017) state that the size of these stocks in Developed Markets portfolios is not large: "… the combined weight of the sin sectors averages 2.1% for the United States, 3.5% for Europe, 1.6% for Japan, and 2.2% for global." The UBS paper also notes that "… the low market capitalisation of these sectors means that, in practical terms, excluding them does not lead to significant change in performance."

Recently, the outperformance of sin stocks has reversed, with a portfolio of 50 sin stocks down about 6% per year for 2017 – 2019. Chart 2 (again from UBS) shows the stocks' outperformance by SIC sector categorisations above, over a much longer horizon than Chart 1. The sin stock groupings here are alcohol, tobacco and weapons, which are easier to capture over a long period. All three sectors have participated in this alpha, with tobacco the best. The 1960–1990 period is truly remarkable, with the aggregate sin portfolio creating approximately 16x the wealth of investing in the broader stock market.

Chart 2: Sin Stocks Outperformance by Sector

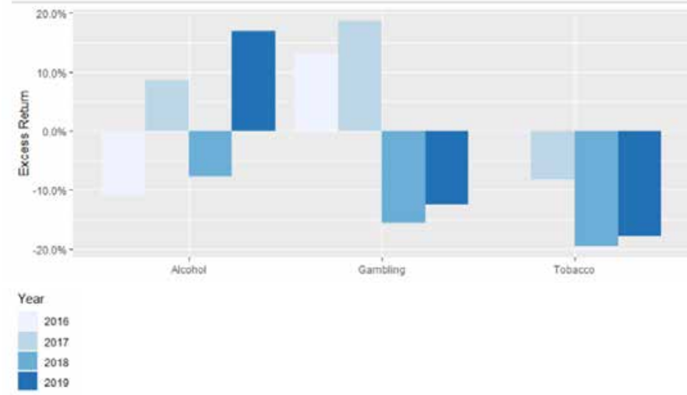


Source: UBS Quantitative Research. Data is Jan 1979-Sep 2019.

Recent performance of sin stocks

As noted, sin stocks have sold-off very strongly over the last three years. Chart 3 shows the annual returns of each sector. The main recent underperformance is in the tobacco and gambling sectors.

Chart 3: Annual Outperformance for each sector 2016-2019



Source: UBS Quantitative Research. 2019 is 1 Jan to 30 Aug.

There appear to be three reasons for this:

- Increased regulatory oversight in tobacco and gambling sectors (especially online gambling)[4]
- Growth of the use of e-cigarettes (number of "vapers" grew from less than 10m globally in 2011 to more than 40m in 2018)[5]
- Increased selling of these stocks due to exclusions from investor portfolios[6]

Was there ever any alpha?

The above charts and tables would suggest that significant alpha would have been earned by an aggressive holding in these sectors. However, the two papers agree conclusively that this alpha – while apparent in simple excess return calculations – does not survive analysis which takes into account common factors.

That is, **there is no specific alpha in these names**. The alpha is captured by well-known return factors, and so their factor exposure (and performance) could be replicated by a portfolio of other ("non-sin") stocks[7].

4 For example, online casinos were banned in Australia in March 2017
5 https://www.bbc.com/news/business-44295336
6 For example, First Sentier Investors officially banned all tobacco stocks from holdings in 2019. Also in 2019, Dutch pension funds dropped tobacco holdings: https://www.assetnews.com/asset-owners/dutch-investors-snuff-out-tobacco
7 Care would need to be taken to exclude sin stocks from these portfolios but the nature of common factors suggests this is perfectly feasible.

The return factors used to capture any alpha (or detect unique insights) stem from the Fama and French class of models. Both Blitz and Fabozzi (2017) and UBS (2019) use the market return itself (Market) plus six other return premium factors:

Size: smallest stocks over largest stocks, by market cap

Value: cheapest stocks over most expensive stocks (measured using Book to Price)

Momentum: highest 12 month momentum stocks over lowest 12 month momentum stocks

Low beta (or "betting against beta": Low beta stocks over high beta stocks

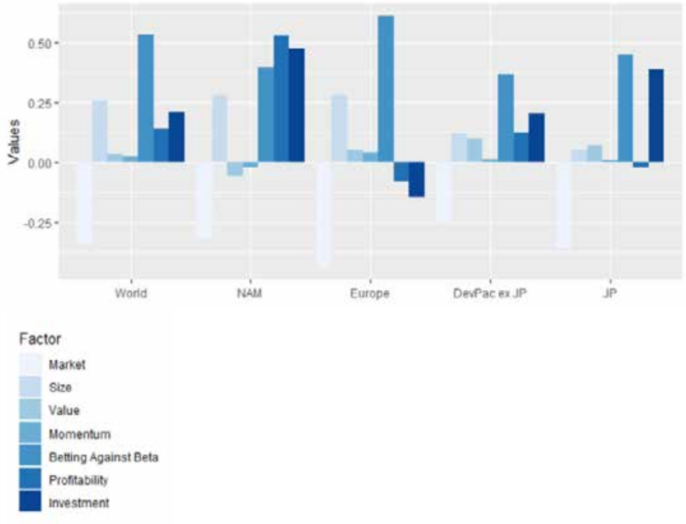
Profitability: highest profit margin stocks over lowest profit margin stocks

Investment (or "over investment"): lowest asset growth stocks over highest asset growth stocks

The papers calculate alphas for these stocks using a series of "nested" regressions and show that the alpha becomes progressively smaller, and is non-existent or even negative if all of these factors are taken into account. Rather than bombard the reader with these results, we will summarise with a very insightful chart (Chart 4 in the UBS paper) which shows the factor exposures of the portfolio of sin stocks in various regions. The results in the chart are portfolio exposures rather than values.

A summary table of regression results (again from UBS) showing absent or even negative alpha if these factors are taken into account appears in Table 3.

Chart 4: Factor Exposures of Sin Portfolio by Region



Source: UBS Quantitativ Research.

There are several consistent results here:

- Sin stocks are low beta, shown by both a negative exposures to Market and a positive exposure to Betting against beta
- They have little exposure to Value or Momentum
- They are smaller cap than average (Size exposure is positive)
- Investment is positive (except in Europe)
- Profitability exposure is positive (except in Europe and Japan)

Table 3: Sin stocks' alpha and the impact of known return premia: MSCI World

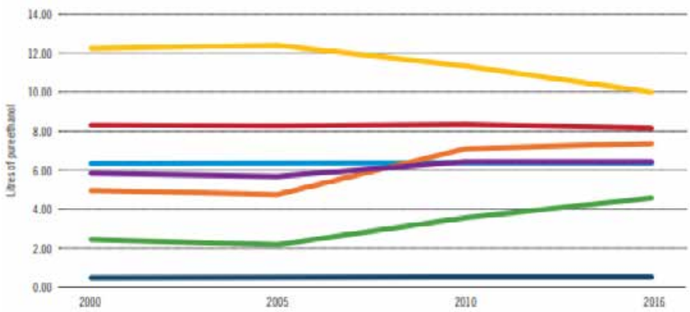
"Sin" Portfolio	CAPM	+Fama French	+BAB	+RWM	+CMA
Alpha	**0.38%**	0.05%	-0.35%	-0.53%	-0.74%
Market	**-0.37**	**-0.37**	**-0.38**	**-0.38**	**-0.34**
Size		**0.28**	**0.23**	**0.26**	**0.26**
Value		-0.01	0.05	0.09	0.03
Momentum		0.05	0.02	0.02	0.03
Betting against beta			**0.55**	**0.56**	**0.53**
Profitability				0.10	0.14
Investment					0.21
Adjusted R-Square	17%	19%	44%	43%	44%

Source: UBS Quantitative Research. Bold indicates significant at a 5% significance level.

The observation that these stocks have low beta tallies well with our understanding of the nature of their product. We could reasonably expect consumption of alcohol and tobacco to be rather insensitive to economic conditions, and so their stock market prices would be somewhat unrelated to market moves.

For example, economic swings do not seem to affect the consumption of alcohol. Chart 5 shows that alcohol consumption trend over long periods is not dependent on the considerable variation in underlying economic conditions. Consumption has only fallen steadily in Europe, which emerging markets' consumption has risen.

Chart 5: Per Capita Global Alcohol Consumption by Region: Europe (EUR) down, Western Pacific (WPR) and South East Asia (SEAR) up, all others stable[8]



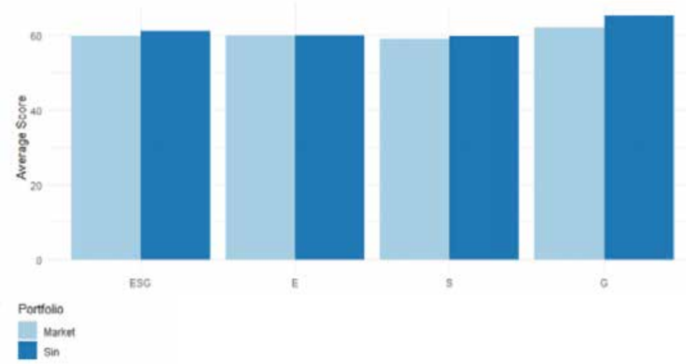
	2000	2005	2010	2016
AFR	6.2	6.3	6.3	6.3
AMR	8.2	8.2	8.2	8.0
EMR	0.4	0.5	0.6	0.6
EUR	12.1	12.3	11.2	9.8
SEAR	2.4	2.1	3.5	4.5
WPR	4.8	4.6	7.0	7.3
World	5.7	5.5	6.4	6.4

8 World Health Organisation data. https://apps.who.int/iris/bitstream/handle/10665/274603/9789241565639-eng.pdf (AFR = Africa, AMR = Americas, EMR = Eastern Mediterranean, EUR = Europe, SEAR = South East Asia, WPR = Western Pacific).

Sin stocks and ESG ratings

Finally, we add a note from the UBS paper that ESG ratings for "sin" stocks are actually very similar to that of the whole market. Using Sustainalytics data, they show the following chart:

Chart 6: ES&G ratings for Sin Stocks and MSCI World



Source: Sustainalytics and UBS Quantitative Research. September 15 2019.

That is, conventional ESG ratings for "sin" stocks do not pick up what we might consider to be unethical or immoral activity. This is perfectly fine, as ESG measures are not designed for this. If portfolio restrictions on stocks of this type are important for clients then a different approach needs to be taken. We address this using Sustainalytics data in a future paper in this series.

Conclusions

We look at two recent papers to examine stocks whose activities are dominated by what might be called immoral or unethical activity. These are known as "sin" stocks. In particular, we try to clarify how they are defined, how they have performed over the long term and look more closely at recent performance.

An important part of these papers is demonstrating that the observed outperformance is subsumed by a set of well-known return factors. Among other things, sin stocks seem to be low beta, are smaller than average and don't seem to have a systematic value or momentum tilt.

Finally, we see that ESG scores for sin stocks are not very different from the benchmark, suggesting that "values based exclusions" like sin stocks are potentially unrelated to usual ESG scores.

References

Blitz, D. and F.J. Fabozzi. "Sin Stocks Revisited: Resolving the Sin Stock Anomaly." The Journal of Portfolio Management, Vol. 44, No. 1 (2017), pp. 105-111.

Fabozzi, F.J., K.C. Ma, and B.J. Oliphant. "Sin Stock Returns." The Journal of Portfolio Management, Vol. 35, No. 1 (2008), pp. 82-94.

Jorgensen, A. ""Sin" Stock Exclusions: What is the Impact?" UBS Global Research, October 2019

Websites:

https://sinstocksreport.com/

https://www.statista.com/

https://www.sustainalytics.com

For further information contact: clientservices@realindex.com.au

Andrew Francis	Chief Executive	andrew.francis@realindex.com.au	+61 2 9303 7079
Iain McLear	Investment Manager	imclear@realindex.com.au	+61 2 9303 6329
Bonnie Chow	Investment Analyst	bonnie.chow@realindex.com.au	+61 2 9303 1734