# Alpha Returns in Publicly Traded
# Wine and Spirit Companies Worldwide*

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Abstract

We provide estimates of alpha returns for a sample of worldwide public firms in the wine and spirit industry sector. We use an unbalanced panel with quarterly data ranging from 1998q3 to 2076q2 of 414 worldwide publicly traded companies. We find that robust determinants of alpha returns are U.S. dollar skewness, climate extreme index and temperature changes to low extremes, Google quiry terms "global warming" and "renewable energy," and environmental regulation in the US. In our sample, companies that are in the wine business do not command a significant alpha return.

Keywords: *asset pricing, multifactor models, CAPM*
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# 1 INTRODUCTION

The wine and spirit industry is well-established worldwide with several publicly traded traditional firms producing a wide array of alcoholic beverages from wine to sake to champagne and other liquors. The risk-return trade-offs in this industry may be investigated in the framework of the capital asset pricing model (CAPM) of Sharpe (1964), Lintner (1965) and Mossin (1966). In this paper, we provide empirical evidence on the potential alpha returns of companies in the wine and spirit industry worldwide.

In particular, we engage in estimations of alpha returns for a sample of worldwide public firms in the wine and spirit industry sector. We use an unbalanced panel with quarterly data ranging from 1998q3 to 2017q2 of 414 worldwide publicly traded companies that operate in the spirits production, distribution and related activities, and that include wineries and wine related activities. We estimate alpha returns by subtracting beta returns from well-established Fama and French (1993, 2004, 2015) three and five factors. We then test hypothesis for a set of potential determinants of alpha returns, including firm diversification of products, the trade weighted US dollar index, variables measuring climate extremes and environmental concerns and weather, controlling for business cycles and time and firm heterogeneity.

We find that robust determinants of alpha returns in the wine and spirit industry worldwide across all model with well-established beta factors are U.S. dollar skewness, climate extreme index and temperature changes to low extremes, environmental concerns via Google quiry terms "global warming" and "renewable energy," and a dynamic factor of environmental regulations in the U.S. In our sample, companies that are in the wine business do not command a significant alpha return relative to the ones that do not, but the more complex the description of the company activity the higher the abnormal returns in one specification.

Our results indicate that increases in abnormal returns are obtained via US dollar skewness, where crash risk matters in a potential export sector; and U.S. environmental regulation increase abnormal returns via increased confidence of market participants. Decreases in abnormal returns are obtained via extreme temperatures so that extreme weather matters for abnormal returns in this industry; and Google quiry terms "global warming" and "renewable energy" so that environmental sentiments and environmental concerns may affect the industry abnormal returns negatively.

TBC…

The remainder of the paper is as follows. Section 2 provides a literature review. Section 3 describes the methodology and section 4 describes the data. Section 5 is the core econometric analysis of the estimation and section 6 concludes.

## 2  LITERATURE REVIEW

According to the classic capital asset pricing model of Sharpe (1964), Lintner (1965) and Mossin (1966) the premium of equity is proportional to the market premium. Early empirical tests of the CAPM by Lintner (1965), Black, Jensen and Scholes (1972), Fama and MacBeth (1973, 1974) provided evidence of rejection of the model. Fama and MacBeth (1973, 1974), and Fama and French (1993, 2004, 2015) provided convincing evidence that additional factors should be included for an empirical explanation of the equity premium.

Our basic approach is to use panel data methods. Barnes and Hughes (2001) focus on the panel nature of financial data and find that the panel approach for the CAPM yields more precise parameter estimates and greater understanding of the significance of both conditional variables and multi-factors. Cheng, Lai, and Lu (2005) use panel methods for a sample of Taiwanese firms and find that they lead to more explanatory power than the traditional OLS methods. In the context of panel data for asset prices, Pesaran and Yamagata (2012) suggest that abnormal profits are earned during episodes of crisis and market inefficiencies.

To be completed…

## 3  METHODOLOGY

The traditional CAPM shows that the expected return of equity $i$ is related to the expected market premium as

$$E[r_{ei}] = r_f + \beta_{ei}(E[r_M] - r_f)$$

where $E[r_{ei}]$ is the expected equity nominal return of company $i$, $r_f$ is the risk free nominal interest rate, $E[r_M]$ is the expected nominal return on the market and $\beta_{ei} = \frac{cov(r_{ei}, r_M)}{var(r_M)}$ is the beta of the equity. In this paper, we focus on estimating forms of the CAPM empirically to obtain estimates of abnormal returns. The standard CAPM can be estimated, using ex-post observed data, as

$$r_e - r_f = \alpha + \beta_1\{r_M - r_f\} + u$$

thus, it uncovers $\alpha$ as an estimate of the average abnormal returns of the company. We estimate the equation using simple OLS

$$r_{eit} - r_{ft} = \alpha + \beta_1\{r_{Mt} - r_{ft}\} + u_{it} \tag{1}$$

for firm $i$ and period $t$. Given the estimated parameters of the model, we subtract the market risk factor to obtain a noise measure of abnormal returns (alpha) as

$$\hat{\alpha}_{it} = \{r_{eit} - r_{ft}\} - \widehat{\beta_1}\{r_{Mt} - r_{ft}\} \tag{2}$$

for firm $i$ and period $t$.

We proceed to explain the variation of the abnormal returns with a set of company characteristics and aggregate factors relating to potential determinants of firm performance in the wine and spirit industry. We estimate regressions using Newey-West standard errors to adjust for the noise of the predicted abnormal returns,[1] as

$$\hat{\alpha}_{it} = \delta_o + \sum \delta_i company\ characteristics_{it} + \sum \delta_j aggregate\ factors_t +$$
$$+ \sum \delta_j other\ factors_t + e_{it} \tag{3}$$

where the coefficients, $\delta_k$ represent the effect of the explanatory variable on the average abnormal return of firm $i$ in period $t$.

We repeat procedure (1)-(3) for the Fama-French 3-factor model including value and size, the Fama-French 5-factor model adding profitability and investment.


## 4. DATA

We have an unbalanced panel with quarterly data ranging from 1998q3 to 2017q2 of 414 worldwide publicly traded companies that operate in the spirits production, distribution and related activities, and that include wineries and wine related activities.[2] Table A1 shows the companies with their respective country of incorporation and country of issue of stock (to be added…). There are a total of 54 countries of incorporation and 53 countries of issue of stock. The table (to be added) also provides a short description of their activities. Figure 1a shows the distribution of countries of incorporation ordered by

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[1] Merton (1980) shows that in estimating CAPM models of the expected market return, estimators which use realized returns should be adjusted for heteroscedasticity. We proceed in a two-stage fashion to mitigate bias at the cost of some loss in efficiency.

[2] The panel is from Bloomberg data services.

frequency. The countries with largest number of incorporated firms are Cayman Islands, Japan, China, Moldova, U.S., Hong Kong, India, France, and Australia.

Figure 1a: Distribution of Country of Incorporation
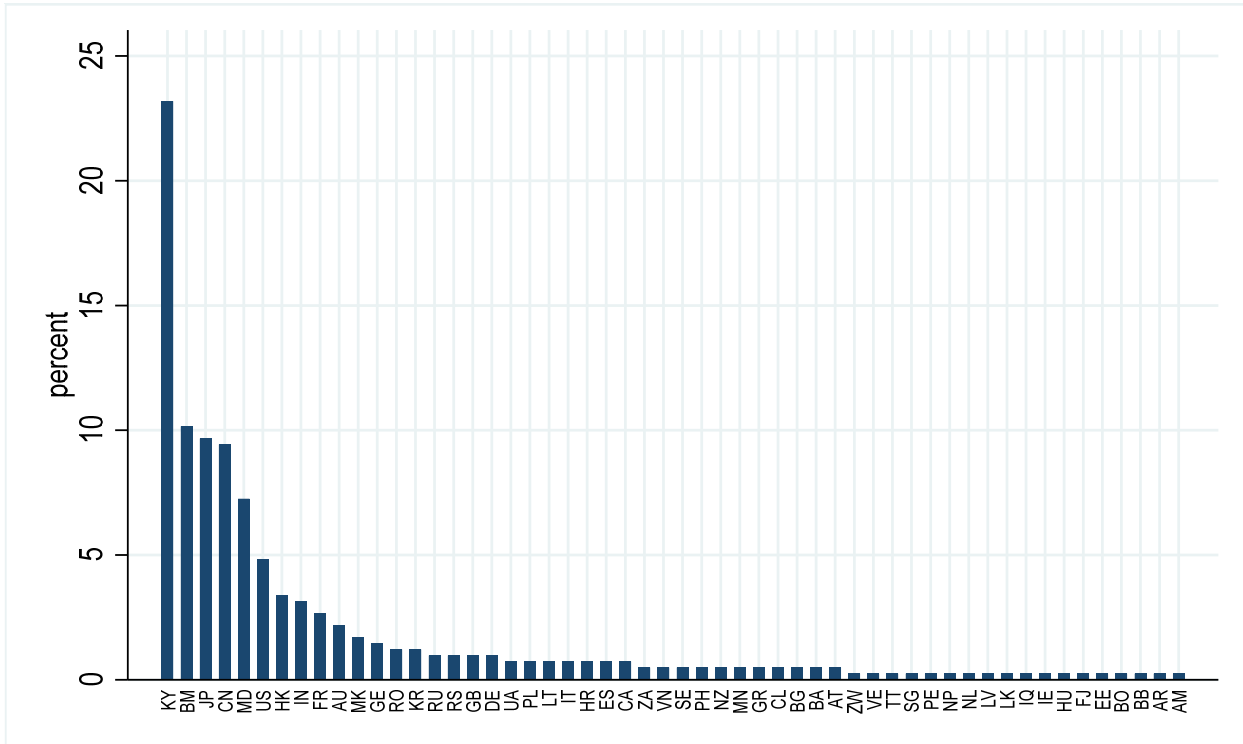


Based on the description of the activities, we compile a textual word count to capture how complex and diversified the company is. We assume that a more detailed and longer description of a firm implies more activities and potentially more complex. We also compile a dummy variable which is one if the company is in the wine business and zero otherwise.

Table 1 provides the summary statistics of the variables used in the empirical analysis. All nominal variables are denominated in US dollars. The variable *prem_co* is the quarterly return of the stock minus the one month US Treasury return, or the company stock market premium. The *prem_mkt* is the return on a region's value-weight market portfolio minus one-month US Treasury return, or the market stock market premium. The *prem_mkt* and the next variables were obtained directly from Kenneth French's data library and represent global Fama and French (1993, 2004, 2015) factors for size (*smb*), value (*hml*), profitability (*rmw*), and investment (*cma*).

The variable *count* is the compiled word count of the company description that captures complexity, where the median firm has about 24 words of description and the standard deviation is about 13. Figure 1 shows the distribution of *count*. We note that The *wine* variable is 1 if the company is in the wine business and we note that about 50% of the companies in our sample are in the wine business.

Figure 1b: Distribution of the Textual Description of Firm Activity
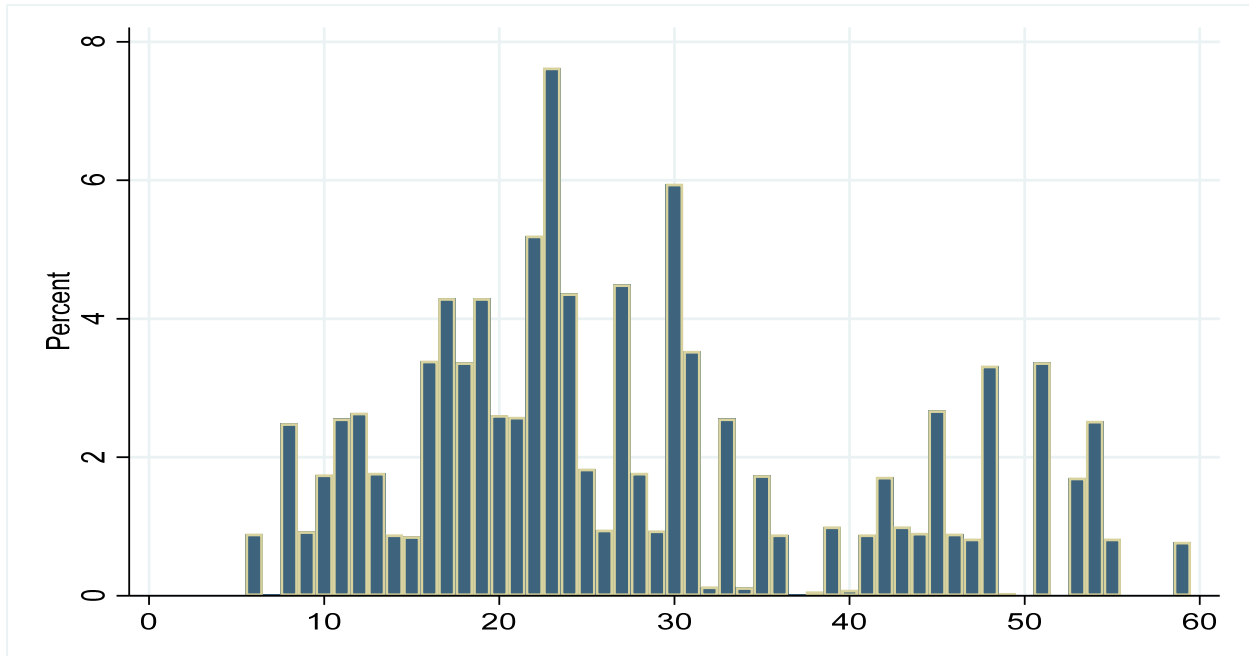


The next four variables refer to the trade weighted US dollar index from FRED. A higher (lower) value of the index indicates an appreciation (depreciation) of the dollar. This is a weighted average of the foreign exchange value of the US dollar against the Euro Area, Canada, Japan, United Kingdom, Switzerland, Australia, and Sweden. The moments refer to samples of rates of change of daily observations (FX) within each quarter: *_mean* is the average, *_sd* is the standard deviation, *_skewness* is the third moment and *_kurtosis* is the fourth moment.

The next set of variables refer to environmental concern and weather. First, we have quarterly averages of the weekly Google compilations of frequency of terms in the subject of environmental concerns. *term_clim_ch* is the term "climate change," term_glo_w~g is the term "global warming," and term_renew~y is the term "renewable energy."[3] The variable *ch_temp_be~w* is from the National Centers for Environmental Information (NOAA) and is an indicator of occurrences of

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[3] We also included a "term pollution," but this proved to be correlated with the other terms and statistically irrelevant.

temperatures that are much below normal (outside the 10th percentile value) over a period of record. *cei* is the index of climate extremes of NOAA as well. Finally, the variable *f_RGL* is a dynamic factor estimation of three indicators of regulation stringency in the US: number of enforcement cases on civil cleanup, the Clean Air Act and the Clean Water Act.

Table 1: Variables in the Sample and Descriptive Statistics

| Variable | Mean | Median | StdDev | Skewness | Kurtosis | N |
|---|---|---|---|---|---|---|
| prem_co | 0.002179 | 0.002387 | 0.32371 | 0.6223 | 54.2681 | 5519 |
| prem_mkt | -0.001567 | 0.0019396 | 0.02814 | -0.7268 | 3.34457 | 8426 |
| smb | 0.4039845 | 0.2866667 | 1.4427 | 0.11077 | 2.72769 | 65 |
| hml | 0.3164255 | 0.2666667 | 2.1301 | 0.83588 | 5.25308 | 65 |
| rmw | 0.407614 | 0.15 | 1.87594 | 1.09255 | 7.25495 | 65 |
| cma | 0.3648387 | 0.2633333 | 1.4712 | 1.23639 | 5.785 | 65 |
| count | 27.58081 | 24 | 12.996 | 0.6275 | 2.4601 | 125 |
| wine | 0.4992963 | 0 | 0.50003 | 0.00281 | 1.00001 | 125 |
| FX_mean | -7.00E-06 | 6.80E-05 | 0.00061 | -0.084 | 2.49696 | 65 |
| FX_sd | 0.00441 | 0.00418 | 0.00145 | 1.73245 | 8.84835 | 65 |
| FX_skewness | -0.0266 | -0.029 | 0.32636 | -0.436 | 3.30906 | 65 |
| FX_kurtosis | 2.94346 | 2.73014 | 0.61064 | 1.25497 | 4.72162 | 65 |
| term_clim_ch | 8.31333 | 8.16667 | 3.33429 | 0.73355 | 3.35771 | 50 |
| term_glo_w~g | 24.6333 | 18.5 | 16.7775 | 1.60926 | 5.44108 | 50 |
| cei | 25.196 | 23.9 | 8.16998 | 0.54648 | 2.84604 | 65 |
| term_renew~y | 5.60667 | 5.33333 | 1.44073 | 0.75513 | 3.08552 | 50 |
| f_RGL | 0.304269 | 0.483574 | 1.7371 | -0.0985 | 2.25951 | 49 |
| lpe_ratio | 3.169388 | 3.085893 | 1.22355 | 0.20864 | 7.36521 | 2343 |
| lev_ebitda | 2.333453 | 2.311693 | 0.74062 | -0.0818 | 11.7817 | 1420 |
| lfin_lev | 0.665126 | 0.54893 | 0.46991 | 2.46448 | 16.7457 | 2635 |
| z_normaliz~e | 0 | -0.02742 | 1 | 33.7642 | 1198.25 | 2345 |
| ch_wti_r | 0.00002 | 0.0295 | 0.12211 | -0.7144 | 4.99509 | 65 |
| f_econ | -0.1273 | 0.61115 | 2.22641 | -2.2932 | 8.04939 | 65 |

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Legend:
prem_co=quarterly return of the stock minus the three month US Treasury return
prem_mkt= excess return on the region market index (from Kenneth French global
data)
smb=small minus big
hml=high minus low
rmw=robust minus weak
cma=conservative minus active
count= compiled textual count
wine= 1 if the company is in the wine business
FX_mean= average dollar exchange rate change
FX_sd=standard deviation of exchange rate change
FX_skewness=skewness of exchange rate change
FX_kurtosis=kurtosis of exchange rate change
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term_clim_ch=term "climate change"
term_glo_w~g=term "global warming"
term_pollu~n=term "pollution"
term_renew~y= term "renewable energy"
cei=climate extreme index
f_RGL=environmental regulation stringency in the US
lpe_ratio=the price to earnings ratio (in logarithms)
lev_ebitda= the (logarithm of) the enterprise value over earnings before
interest taxes, depreciation and amortization
lfin_lev= the logarithm of financial leverage
z_normaliz~e= z-score of the company return on equity
ch_wti_r=quarterly change of West Texas Intermediate crude oil deflated by US
energy core price index.
f_econ= dynamic factor of the macroeconomic factors in the US: the unemployment
rate, GDP growth, inflation of the CPI.
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The variables idiosyncratic to each company are the financial multiples *lpe_ratio,* the price to earnings ratio (in logarithms), *lev_ebitda* is the (logarithm of) the enterprise value over earnings before interest taxes, depreciation and amortization, *lfin_lev* is the logarithm of financial leverage since companies that are highly leveraged may have a greater risk of bankruptcy, and *z_normaliz~e* is the z-score of the company return on equity.

Finally, the variable *f_econ* is a dynamic factor of the macroeconomic factors in the US: the unemployment rate, GDP growth, inflation of the CPI; and the variable *ch_wti_r* is the quarterly change of the West Texas Intermediate crude oil price deflated by the core energy U.S. price index.

## 5. ECONOMETRIC ESTIMATIONS

In this section we present the basic alternative estimations and results of our econometric models for the abnormal returns.

### 5.1 Estimation of Abnormal Returns

We estimate abnormal returns with two alternative models via OLS. The results are shown in table 2a. The first column refers to the traditional Fama-French 3-factor CAPM where the market premium is projected on the company premiums,

$$prem\_co_{it} = \alpha_2 + \beta_1 prem\_sp500_t + \beta_2 smb_t + \beta_3 hml_t + u_{it}. \qquad (4a)$$

The estimated $\beta_1$ is small and marginally significant and well below unity and the alpha is statistically significant. Following the procedure in expressions (1)-(3), we obtain the noise alpha from this model, denoted *alpha~3f*, whose descriptive statistics are presented in the second column of table 2b and its distribution in the right side of Figure 2. The abnormal return predicted by this model has an average of positive 0.3% per quarter and a standard deviation of 32%, the distribution is mildly skewed to the right with heavy tails.

**Table 2a: OLS Regressions for mapping risks on company returns – CAPM FF-3 Factors, FF-5 Factors Weighted by Size**

| | (1) | (2) |
|---|---|---|
| Dependent Variable | | |
| | prem_co | prem_co |
| Model | FF-3 Factors | FF-5 Factors |
| prem_mkt | 0.264+ | -0.156 |
| smb | -0.0135** | -0.0175*** |
| hml | 0.0110*** | 0.0137*** |
| rmw | | -0.0128*** |
| cma | | 0.00280 |
| _cons | 0.0347*** | 0.0393*** |
| N | 4455 | 4455 |
| r2_a | 0.0125 | 0.0163 |
| aic | -1215.0 | -1230.3 |
| bic | -1189.4 | -1191.9 |

+ p<0.10, * p<0.05, ** p<0.025, *** p<0.001
**Standard errors clustered by firm**
Legend:
prem_co=quarterly return of the stock minus the three month US Treasury return
prem_mkt= return on the US broad Russell 2000 minus the three month US Treasury return
smb=small minus big
hml=high minus low
rmw=robust minus weak
cma=conservative minus active

**Table 2b: Descriptive Statistics of Predicted Alphas**

| | alpha~3f | alpha~5f |
|---|---|---|
| mean | .0033176 | .0081239 |
| median | .0040144 | .0094431 |
| sd | .3234607 | .3231216 |
| skewness | .680488 | .6723452 |
| kurtosis | 55.18516 | 55.11248 |
| N | 5418 | 5418 |

Legend:
alpha~3f=predicted alpha from Fama-French 3-factor
alpha~5f=predicted alpha from Fama-French 5-factor

**Figure 2: Distributions of Noisy Alphas**
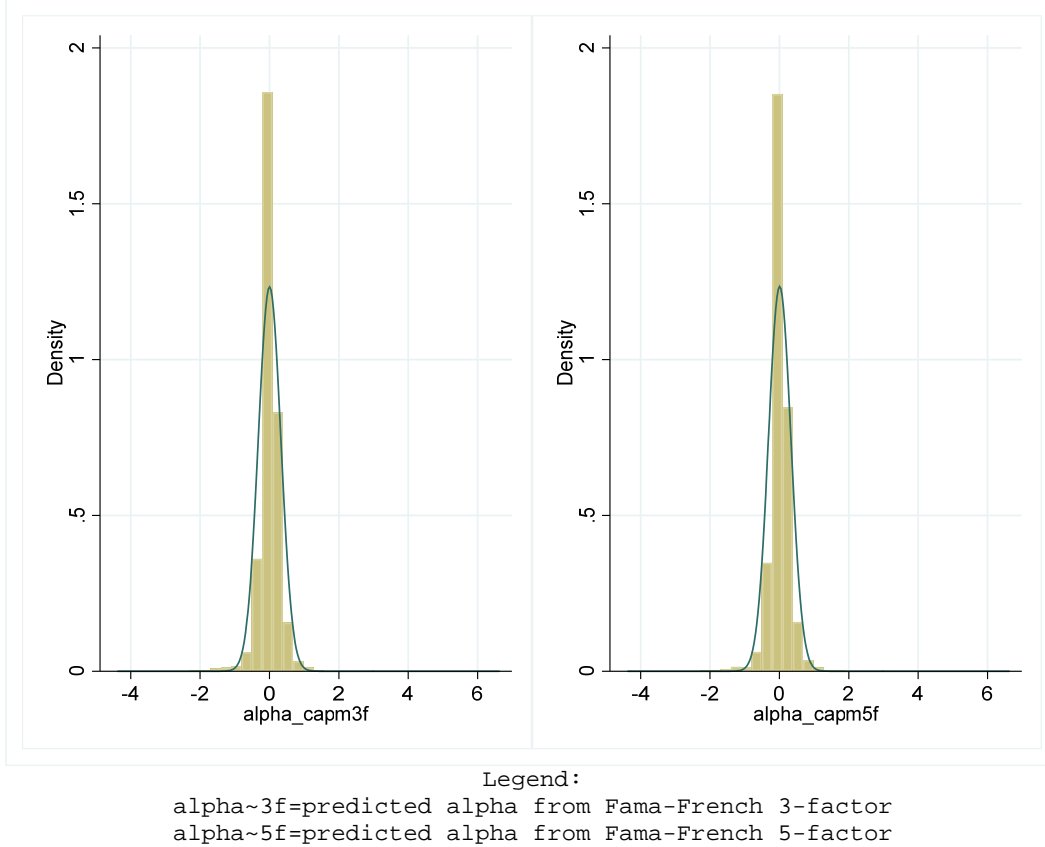
The second column of table 2a refers to the Fama-French 5-factor model,

$$prem\_co_{it} = \alpha_3 + \beta_1 prem\_sp500_t + \beta_2 smb_t + \beta_3 hml_t + \beta_4 rmw_t + \beta_5 cma_t + u_{it}. \qquad (4b)$$

The estimated $\beta_1$ is not statistically significant, the alpha is statistically significant and the noise alpha from this model, denoted *alpha~5f*, has an average of positive 0.8% per quarter and a standard deviation of 32%, the distribution is mildly skewed to the right with heavy tails.

## 5.2 Determinants of the Abnormal Returns

We estimate the abnormal returns of the sample of wine and spirit companies by subtracting the market risk and well-established risk factors suggested by Fama and French. We proceed by proposing and testing several potential determinants of the estimated abnormal returns for the alcoholic beverages sector.

Specifically, we use the dummy variable whether the company is in the wine business or not, the measure of complexity of the company in terms of the array of products and business it operates, the interaction between them and several other interactions. We also use company fixed effects to control for other firm heterogeneity in the panel estimation and control for size in the

Newey-West estimator. Other potential factors influencing the firms in the sector is exchange rates. We use first and higher order moments of the U.S. dollar index to capture potential gains associated with changes in the terms of trade and risks associated with those changes, we also add interactions of skewness with the wine dummy and the measure of complexity. Temperature changes may influence the quality of crops for wineries and the consumption of alcoholic beverage in general, thus we use one measure of change in temperature below averages and an index of extreme climate, and interactions with the wine dummy and complexity.

Environmental concerns may affect how consumers perceive the quality of the different wine brands and other industry concerns, and we use several measures of environmental concerns and environmental regulation, and interactions with the wine dummy and complexity. We use the change in the oil prices capturing a potential transportation cost channel since many of the brands are for both domestic and export markets. Finally, we use an index of macroeconomic factors for the US economy and time fixed effects as a control for business cycles.

In the estimation, we weight observations by the firm average market capitalization in the period denominated *size*. The regressions take the general form

$$\hat{\alpha}_{it} = \delta_o + \delta_1 wine_i + \delta_2 count_i + \delta_3 wine * count_i + \delta_4 FX_{mean_t} + \delta_5 FX_{sd_t} +$$

$$\delta_6 FX_{skewness_t} + \delta_7 FX_{kurtosis_t} + \delta_8 FX_{skewness} * wine_{it} + \delta_9 FX_{skewness} * wine * count_{it} +$$

$$\delta_{10} ch_{temp_{be}} \sim w_t + \delta_{11} ch_{temp_{be}} * wine_{it} + \delta_{12} ch_{temp_{be}} * wine * count_{it} + \delta_{13} term_{glo_w} \sim g_t +$$

$$\delta_{14} term_{glo_w} * wine_{it} + \delta_{15} term_{glo_w} * wine * count_{it} + \delta_{16} term_{renew} \sim y_t + \delta_{17} term_{clim_{ch_t}} +$$

$$\delta_{18} f_{RGL_t} + \delta_{19} f_{RGL} * wine_t + \delta_{20} f_{RGL} * wine * count_t + \delta_{21} ch\_wti\_r_t + \delta_{22} f\_econ_t + \gamma_{1i} + \gamma_{2t} +$$

$$u_{it} \tag{5}$$

where $\gamma_{1i}$, $\gamma_{2t}$ are company and time fixed effects (when approprriate), and $\hat{\alpha}_{it}$ is *alpha~3f* the predicted alpha from Fama-French 3-factor and *alpha~5f* is the predicted alpha from Fama-French 5-factor. We estimate six separate models for each abnormal return by imposing restrictions on the $\delta's$.

Table 3a shows the results for the alphas predicted by the Fama-French 3-factors model where coefficients are all standardized to reflect statistical and economic significance. The first column focusses on the dollar exchange rate and climate factors. On average, the stronger the mean dollar exchange rate the lower the abnormal returns, but skewness of the dollar exchange rate commands a positive effect on abnormal returns.[4] Extreme climate index, extreme lower temperatures, the terms

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[4] The recent paper by Bianconi and Sammon (2017) present thorough evidence of the US dollar as a pricing factor.

global warming, renewables and the weather factor all have a statistically and most have an economic significant negative effect on abnormal returns. The term climate change, the environmental regulation factor and emissions of CO2 have statistically significant and, most have a significant economic positive effect on abnormal returns. The second column adds the firm idiosyncratic factors as controls for general economic activity of the firms. The exchange rate effects are absent when firm idiosyncratic factors are included. The third column includes the wine activity and the complexity measure which are not statistically significant. The fourth column adds idiosyncratic factors to the third column, making the complexity effect positive and statistically and economically significant. The last two columns include several interaction terms which render the wine and complexity effects irrelevant.

   In summary, the abnormal returns are mostly negatively impacted by extreme climate index, extreme lower temperatures, the terms global warming, and renewables. The abnormal returns are positively impacted by exchange rate skewness, the term climate change, and the U.S. environmental regulation factor. The overall results of each column are compatible both qualitatively and quantitatively with each separate column thus confirming the key results that dollar skewness and U.S. environmental regulation increase abnormal returns, and extreme temperatures, quiry terms "global warming" and "renewable energy" all decrease abnormal returns.

**Table 3a: Alpha predicted via FF 3-factors**
**Weighted by Size**

| | (1) alpha_capm3f Panel FE | (2) alpha_capm3f Panel FE | (3) alpha_capm3f Newey-West | (4) alpha_capm3f Newey-West | (5) alpha_capm3f Newey-West | (6) alpha_capm3f Newey-West |
|---|---|---|---|---|---|---|
| **FX** | | | | | | |
| _mean | -0.104* | -0.021 | -0.108+ | -0.023 | -0.109+ | -0.007 |
| _sd | 0.061 | -0.029 | 0.054 | -0.061 | 0.052 | -0.045 |
| | | | | | | |
| _skewness | 0.140** | 0.035 | 0.141** | 0.022 | 0.175** | 0.281+ |
| skew_wine | | | | | 0.037 | -0.167 |
| skew_wine_~t | | | | | -0.094 | -0.135 |
| | | | | | | |
| _kurtosis | -0.021 | -0.069 | -0.031 | -0.065 | -0.032 | -0.047 |
| | | | | | | |
| cei | -2.998*** | -3.565** | -2.982*** | -3.478*** | -2.954*** | -3.318*** |
| | | | | | | |
| cei_wine | | | | | -0.327 | -0.487 |
| cei_wine_c~t | | | | | 0.337 | 0.071 |
| | | | | | | |
| ch_temp_be~w | -0.248*** | 0.006 | -0.245*** | 0.013 | -0.301*** | -0.063 |
| cbt_wine | | | | | 0.042 | 0.069 |
| cbt_wine_c~t | | | | | 0.046 | 0.004 |
| | | | | | | |
| term_clim_ch | 0.242+ | 0.592** | 0.243* | 0.560** | 0.242+ | 0.561** |
| | | | | | | |
| term_glo_w~g | -0.331** | -0.736** | -0.338** | -0.691*** | -0.139 | -0.367+ |
| tgw_wine | | | | | -0.195 | -0.336 |
| tgw_wine_c~t | | | | | -0.243 | -0.093 |
| | | | | | | |
| term_renew~y | -0.904*** | -0.470* | -0.912*** | -0.467* | -0.998*** | -0.318 |
| tre_wine | | | | | 0.251 | 0.153 |
| tre_wine_c~t | | | | | 0.155 | -0.441 |
| | | | | | | |
| f_RGL | 1.422*** | 0.888+ | 1.416*** | 0.849+ | 1.420*** | 0.835+ |
| f_RGL_wine | | | | | 0.130+ | -0.003 |
| f_RGL_wine~t | | | | | -0.150* | -0.056 |
| | | | | | | |
| f_weather | -0.102** | -0.162 | -0.096+ | -0.161+ | -0.095+ | -0.148+ |
| | | | | | | |
| ch_co2emis~n | 0.248*** | 0.058 | 0.232** | 0.043 | 0.233** | 0.076 |
| | | | | | | |
| wine | | | -0.017 | 0.117 | 0.221 | 0.694 |
| count | | | 0.017 | 0.234*** | 0.040 | 0.263 |
| count_wine | | | | | -0.320 | 0.269 |
| | | | | | | |
| lpe_ratio | | 0.155 | | -0.062 | | -0.064 |
| lev_ebitda | | 0.000 | | 0.169+ | | 0.167+ |
| lfin_lev | | -0.156+ | | -0.420*** | | -0.346** |
| z_normaliz~e | | 0.186*** | | 0.231*** | | 0.239*** |
| | | | | | | |
| ch_wti_r | -0.016 | -0.154 | -0.028 | -0.167 | -0.029 | -0.133 |
| size | | | 0.083** | 0.270*** | 0.092** | 0.272*** |
| macro_f | -0.444* | -0.122 | -0.470** | -0.181 | -0.467** | -0.114 |
| **N** | 3205 | 743 | 3205 | 743 | 3205 | 743 |
| **F** | 167.1 | 15884314.7 | 7.835 | 144.2 | 9.521 | 80.54 |

Standardized beta coefficients
+ $p<0.10$, * $p<0.05$, ** $p<0.025$, *** $p<0.001$
Newey-West standard error with truncation parameter=3

Legend:
alpha~3f=predicted alpha from Fama-French 3-factor
complexity~x= compiled complexity index
wine= 1 if the company is in the wine business

```
comp_wine=interaction complexity*wine
FX_mean= average dollar exchange rate change
FX_sd=standard deviation of exchange rate change
FX_skewness=skewness of exchange rate change
FX_kurtosis=kurtosis of exchange rate change
skew_wine=FX skewness*wine dummy
skew_wine_~p=FX skewness*wine dummy*complexity
term_glo_w~g=term "global warming"
tgw_wine= term"global warming" * wine dummy
tgw_wine_c~p=term "global warming" * wine dummy * complexity
term_pollu~n=term "pollution"
term_renew~y= term "renewable energy"
term_clim_ch=term "climate change"
cei=climate extreme index
cei_wine= change temperature below average*wine dummy
cei_wine_c~p=change temperature below average * wine dummy * complexity
f_RGL=environmental regulation stringency in the US
f_RGL_wine= environmental regulation stringency in the US*wine dummy
f_RGL_wine~p= environmental regulation stringency in the US*wine dummy*complexity
ch_wti_r=quarterly change of West Texas Intermediate crude oil deflated by US energy core price index.
f_econ= dynamic factor of the macroeconomic factors in the US: the unemployment
rate, GDP growth, inflation of the CPI.
```

Table 3b shows the results for the alphas predicted by the Fama-French 5-factors model where coefficients are all standardized to reflect statistical and economic significance. The results are very much comparable to the 3-factor case that dollar skewness and U.S. environmental regulation increase abnormal returns, and extreme temperatures, quiry terms "global warming" and "renewable energy" all decrease abnormal returns.

To sum, controlling for firm heterogeneity, time fixed effects and business cycles, the robust determinants of alpha returns in the wine and spirit industry worldwide across all models with well-established beta factors in tables 3a-3b are U.S. dollar skewness, climate extreme index and temperature changes to low extremes, Google quiry terms "global warming" and "renewable energy," environmental regulation in the U.S. In our sample, companies that are in the wine business do not command a significant alpha return, but the more complex the description of the company activity the higher the abnormal returns in one specification.

**Table 3b: Alpha predicted via FF 5-factors**
**Weighted by Size**

| | (1) alpha_capm5f Panel FE | (2) alpha_capm5f Panel FE | (3) alpha_capm5f Newey-West | (4) alpha_capm5f Newey-West | (5) alpha_capm5f Newey-West | (6) alpha_capm5f Newey-West |
|---|---|---|---|---|---|---|
| **FX:** | | | | | | |
| _mean | -0.103+ | -0.010 | -0.107+ | -0.012 | -0.108+ | 0.004 |
| _sd | 0.067 | -0.021 | 0.060 | -0.054 | 0.058 | -0.038 |
| | | | | | | |
| _skewness | 0.128** | 0.019 | 0.129** | 0.006 | 0.164** | 0.266+ |
| skew_wine | | | | | 0.037 | -0.167 |
| skew_wine_~t | | | | | -0.094 | -0.136 |
| | | | | | | |
| _kurtosis | -0.040 | -0.089 | -0.050 | -0.085 | -0.051 | -0.067 |
| | | | | | | |
| cei | -2.961*** | -3.584** | -2.945*** | -3.502*** | -2.917*** | -3.341*** |
| cei_wine | | | | | -0.327 | -0.485 |
| cei_wine_c~t | | | | | 0.338 | 0.068 |
| | | | | | | |
| ch_temp_be~w | -0.261*** | -0.009 | -0.258*** | -0.001 | -0.314*** | -0.078 |
| cbt_wine | | | | | 0.042 | 0.071 |
| cbt_wine_c~t | | | | | 0.046 | 0.003 |
| | | | | | | |
| term_clim_ch | 0.237+ | 0.595** | 0.238+ | 0.563** | 0.237+ | 0.564** |
| | | | | | | |
| term_glo_w~g | -0.309** | -0.725** | -0.316** | -0.679*** | -0.117 | -0.353+ |
| tgw_wine | | | | | -0.196 | -0.335 |
| tgw_wine_c~t | | | | | -0.244 | -0.097 |
| | | | | | | |
| term_renew~y | -0.867*** | -0.450* | -0.874*** | -0.448* | -0.961*** | -0.299 |
| tre_wine | | | | | 0.254 | 0.147 |
| tre_wine_c~t | | | | | 0.154 | -0.432 |
| | | | | | | |
| f_RGL | 1.356*** | 0.827+ | 1.350*** | 0.787+ | 1.355*** | 0.773+ |
| f_RGL_wine | | | | | 0.131+ | -0.004 |
| f_RGL_wine~t | | | | | -0.150* | -0.055 |
| | | | | | | |
| f_weather | -0.091** | -0.151 | -0.084 | -0.150+ | -0.084+ | -0.136+ |
| | | | | | | |
| ch_co2emis~n | 0.270*** | 0.081 | 0.253** | 0.066 | 0.255** | 0.099 |
| | | | | | | |
| wine | | | -0.017 | 0.119 | 0.219 | 0.696 |
| count | | | 0.017 | 0.236*** | 0.040 | 0.261 |
| count_wine | | | | | -0.319 | 0.271 |
| | | | | | | |
| lpe_ratio | | 0.148 | | -0.063 | | -0.066 |
| lev_ebitda | | -0.004 | | 0.168+ | | 0.164+ |
| lfin_lev | | -0.158+ | | -0.423*** | | -0.350*** |
| z_normaliz~e | | 0.183*** | | 0.230*** | | 0.237*** |
| | | | | | | |
| size | | | 0.083** | 0.272*** | 0.092** | 0.273*** |
| ch_wti_r | -0.013 | -0.146 | -0.025 | -0.160 | -0.026 | -0.125 |
| macro_f | -0.394+ | -0.068 | -0.420** | -0.127 | -0.417** | -0.060 |
| N | 3205 | 743 | 3205 | 743 | 3205 | 743 |
| F | 148.9 | 14232421.5 | 8.624 | 142.4 | 10.05 | 78.71 |

Standardized beta coefficients
+ p<0.10, * p<0.05, ** p<0.025, *** p<0.001
Newey-West standard error with truncation parameter=3

Legend:
alpha~3f=predicted alpha from Fama-French 3-factor
count= compiled complexity index
wine= 1 if the company is in the wine business
count_wine=interaction complexity*wine
FX_mean= average dollar exchange rate change
FX_sd=standard deviation of exchange rate change

```
FX_skewness=skewness of exchange rate change
FX_kurtosis=kurtosis of exchange rate change
skew_wine=FX skewness*wine dummy
skew_wine_~p=FX skewness*wine dummy*complexity
term_glo_w~g=term "global warming"
tgw_wine= term"global warming" * wine dummy
tgw_wine_c~p=term "global warming" * wine dummy * complexity
term_pollu~n=term "pollution"
term_renew~y= term "renewable energy"
term_clim_ch=term "climate change"
cei_r=temperatures that are much below normal
cei_wine= change temperature below average*wine dummy
cei_wine_c~p=change temperature below average * wine dummy * complexity
f_RGL=environmental regulation stringency in the US
f_RGL_wine= environmental regulation stringency in the US*wine dummy
f_RGL_wine~p= environmental regulation stringency in the US*wine dummy*complexity
ch_wti_r=quarterly change of West Texas Intermediate crude oil deflated by US energy core price index.
f_econ= dynamic factor of the macroeconomic factors in the US: the unemployment
rate, GDP growth, inflation of the CPI.
```

## 4. SUMMARY AND CONCLUSIONS

We find that the robust determinants of alpha returns in the wine and spirit industry worldwide across all models with well-established beta factors are U.S. dollar skewness, climate extreme index and temperature changes to low extremes, Google quiry terms "global warming" and "renewable energy," environmental regulation in the US. Surprisingly, companies that are in the wine business do not command a significant alpha return, but the more complex the description of the company activity the higher the abnormal returns in one specification. Our results imply that more US dollar skewness increases abnormal returns indicating that crash risk matters in export sector. Extreme temperature and low extremes shows that extreme weather impacts on the abnormal returns. Environmental sentiment via the terms Google quiry terms "global warming" and "renewable energy" impact substantively on abnormal returns. Finally, the environmental regulation in the U.S. effect indicates that market participants increase confidence impacting in firm abnormal returns.

There are several potential avenues for future research…

TBC…

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**APPENDIX**

**Table A1: Firms in the Sample**

| |
|---|
| 1 AID Partners Technology Holdings Ltd |
| 2 AWG Ltd |
| 3 Abrau-Durso PJSC |
| 4 AcrossAsia Ltd |
| 5 Advini |
| 6 African Distillers Ltd |
| 7 Agrofirma Cimislia SA |
| 8 Agromedimurje dd Cakovec |
| 9 Agrovin Bulboaca SA |
| 10 Akhmeta Winery JSC |
| 11 Alita Group AB |
| 12 Ambra SA |
| 13 Andrew Peller Ltd |
| 14 Angostura Holdings Ltd |
| 15 Anhui Golden Seed Winery Co Ltd |
| 16 Anhui Gujing Distillery Co Ltd |
| 17 Anhui Kouzi Distillery Co Ltd |
| 18 Anhui Yingjia Distillery Co Ltd |
| 19 Anyksciu Vynas |
| 20 Api SA |
| 21 Apu JSC |
| 22 Asahi Soft Drinks Co Ltd |
| 23 Auscann Group Holdings Ltd |
| 24 Australian Vintage Ltd |
| 25 Badel 1862 d.d. |
| 26 Baguio Green Group Ltd |
| 27 Bank of Jinzhou Co Ltd |
| 28 Baron de Ley |
| 29 Beijing Beida Jade Bird Universal Sci-Tech Co Ltd |
| 30 Beijing Enterprises Holdings Ltd |
| 31 Berentzen-Gruppe AG |
| 32 Bodegas Bilbainas SA |
| 33 Bodegas Esmeralda SA |
| 34 Bodegas Riojanas SA |
| 35 Bodegas y Vinedos de la Concepcion SA |
| 36 Bohae Brewery Co Ltd |
| 37 Boso Oil & Fat Co Ltd |
| 38 Boutaris J & Sons Holdings |
| 39 Boyaa Interactive International Ltd |
| 40 Bright Smart Securities & Commodities Group Ltd |

| | |
|---|---|
| 41 | Brown-Forman Corp |
| 42 | Byte Power Group Ltd |
| 43 | C&C Group PLC |
| 44 | CA Ron Santa Teresa SACA |
| 45 | CITIC Guoan Wine Co Ltd |
| 46 | CL Group Holdings Ltd |
| 47 | Calpis Co Ltd |
| 48 | Capevin Holdings Ltd |
| 49 | Castle Brands Inc |
| 50 | Century Sage Scientific Holdings Ltd |
| 51 | Cheuk Nang Holdings Ltd |
| 52 | Chigo Holding Ltd |
| 53 | China 33 Media Group Ltd |
| 54 | China Assurance Finance Group Ltd |
| 55 | China Bio Cassava Holdings Ltd |
| 56 | China Daye Non-Ferrous Metals Mining Ltd |
| 57 | China Demeter Financial Investments Ltd |
| 58 | China Fire Safety Enterprise Group Ltd |
| 59 | China Fortune Investments Holding Ltd |
| 60 | China Ground Source Energy Industry Group Ltd |
| 61 | China Innovationpay Group Ltd |
| 62 | China Innovative Finance Group Ltd |
| 63 | China Netcom Technology Holdings Ltd |
| 64 | China New Borun Corp |
| 65 | China Ouhua Winery Holdings Ltd |
| 66 | China Packaging Holdings Development Ltd |
| 67 | China Primary Energy Holdings Ltd |
| 68 | China Railway Group Ltd |
| 69 | China Shengmu Organic Milk Ltd |
| 70 | China Technology Solar Power Holdings Ltd |
| 71 | China Tontine Wines Group Ltd |
| 72 | China Wood Optimization Holding Ltd |
| 73 | Chinese Strategic Holdings Ltd |
| 74 | Chuan Holdings Ltd |
| 75 | Chukyo Coca-Cola Bottling |
| 76 | Cinderella Media Group Ltd |
| 77 | Coca-Cola Bottlers Japan Inc |
| 78 | Coca-Cola East Japan Co Ltd |
| 79 | Cogobuy Group |
| 80 | Combinatul de Vinuri din Taraclia SA |
| 81 | Constellation Brands Inc |
| 82 | Corby Spirit and Wine Ltd |
| 83 | Cowell e Holdings Inc |

| | |
|---|---|
| 84 Crimson Wine Group Ltd | |
| 85 Crystal-1887 JSC | |
| 86 Cuidao Holding Corp | |
| 87 DG-Tikves Kavadarci Inc | |
| 88 DTD Nistru SA | |
| 89 DX.com Holdings Ltd | |
| 90 Dah Sing Financial Holdings Ltd | |
| 91 Davide Campari-Milano SpA | |
| 92 Dawine Ltd | |
| 93 Delegat Group Ltd | |
| 94 Denox Environmental & Technology Holdings Ltd | |
| 95 Devoran SA | |
| 96 Diageo PLC | |
| 97 Diamond Estates Wines & Spirits Ltd | |
| 98 Diaset-Vin SA | |
| 99 Dionisimus SA | |
| 100 Dionysos-Mereni SA | |
| 101 Distell Group Ltd | |
| 102 Distil PLC | |
| 103 Distilleries Co of Sri Lanka PLC | |
| 104 Duggans Distillers Products Corp | |
| 105 Dukang Distillers Holdings Ltd | |
| 106 DyDo Group Holdings Inc | |
| 107 Dynasty Fine Wines Group Ltd | |
| 108 EFT Solutions Holdings Ltd | |
| 109 ELL Environmental Holdings Ltd | |
| 110 Easy Repay Finance & Investment Ltd | |
| 111 Empee Distilleries Ltd | |
| 112 Emperador Inc | |
| 113 Emperial Americas | |
| 114 FASTBRICK ROBOTICS Ltd | |
| 115 Fabrica de Vin Cojusna SA | |
| 116 Feodosiyskiy Zavod Conyakiv ta Vin OJSC | |
| 117 Fersped Skopje | |
| 118 First China Financial Network Holdings Ltd | |
| 119 Focus Media Network Ltd | |
| 120 Foley Family Wines Ltd | |
| 121 Founder Holdings Ltd | |
| 122 Fountain SET Holdings Ltd | |
| 123 Fruta Fruta Inc | |
| 124 Fu Shou Yuan International Group Ltd | |
| 125 Fuji Coca-Cola Bottling Co | |
| 126 Fuji Oil Holdings Inc | |

| |
|---|
| 127 Fulum Group Holdings Ltd |
| 128 GA Holdings Ltd |
| 129 GCL New Energy Holdings Ltd |
| 130 GET Holdings Ltd |
| 131 GM Breweries Ltd |
| 132 GOLD PAK Co Ltd |
| 133 Gansu Huangtai Wine-Marketing Industry Co Ltd |
| 134 Global Link Communications Holdings Ltd |
| 135 Global Mastermind Holdings Ltd |
| 136 Globus Spirits Ltd |
| 137 Glorious Sun Enterprises Ltd |
| 138 Glory Flame Holdings Ltd |
| 139 Gold-Finance Holdings Ltd |
| 140 Grand Marnier |
| 141 Grand Peace Group Holdings Ltd |
| 142 Greater China Financial Holdings Ltd |
| 143 Grozd AD Strumica |
| 144 Guolian Securities Co Ltd |
| 145 Gurktaler AG |
| 146 Guru Online Holdings Ltd |
| 147 Gusbourne PLC |
| 148 HMV Digital China Group Ltd |
| 149 Hainan Yedao Co Ltd |
| 150 Hang Ten Group Holdings Ltd |
| 151 Hebei Hengshui Laobaigan Liquor Co Ltd |
| 152 Hepok DD Mostar |
| 153 Hi-Level Technology Holdings Ltd |
| 154 Hidili Industry International Development Ltd |
| 155 Himalayan Distillery Ltd |
| 156 Hing Lee HK Holdings Ltd |
| 157 Hite Jinro Co Ltd |
| 158 Hokkaido Coca-Cola Bottling Co Ltd |
| 159 Honen Corp |
| 160 Hong Kong Economic Times Holdings Ltd |
| 161 Hong Kong Life Sciences and Technologies Group Ltd |
| 162 Hsin Chong Group Holdings Ltd |
| 163 Huayi Tencent Entertainment Co Ltd |
| 164 Huge China Holdings Ltd |
| 165 Human Health Holdings Ltd |
| 166 Hung Fook Tong Group Holdings Ltd |
| 167 Hung Hing Printing Group Ltd |
| 168 Hydoo International Holding Ltd |
| 169 ICO Group Ltd |

| | |
|---|---|
| 170 | IM Ceba-Vin SA |
| 171 | IM Ciumai SA |
| 172 | IRICO Group New Energy Company Ltd |
| 173 | ITE Holdings Ltd |
| 174 | Ilustrato Pictures International Inc |
| 175 | Imperial Vin SA |
| 176 | Indage Vintners Ltd |
| 177 | Industrial & Commercial Bank of China Ltd |
| 178 | Innovative Pharmaceutical Biotech Ltd |
| 179 | Interactive Entertainment China Cultural Technology Investment Ltd |
| 180 | International Entertainment Corp |
| 181 | Intreprinderea Mixta Fabrica de Vinuri Vinaria Bardar SA |
| 182 | Italian Wine Brands SpA |
| 183 | Ito En Ltd |
| 184 | Jagatjit Industries Ltd |
| 185 | Japan Food & Liquor Alliance Inc |
| 186 | Japan Foods Co Ltd |
| 187 | Javgurvin SA |
| 188 | Jia Meng Holdings Ltd |
| 189 | Jiande International Holdings Ltd |
| 190 | Jiangsu King's Luck Brewery JSC Ltd |
| 191 | Jiangsu Yanghe Brewery Joint-Stock Co Ltd |
| 192 | Jinhui Liquor Co Ltd |
| 193 | Jinro Distillers Co Ltd |
| 194 | JiuGui Liquor Co Ltd |
| 195 | Jujiang Construction Group Co Ltd |
| 196 | Jun Yang Financial Holdings Ltd |
| 197 | KTL International Holdings Group Ltd |
| 198 | KVB Kunlun Financial Group Ltd |
| 199 | Kadoya Sesame Mills Inc |
| 200 | Kazayak-Vin SA |
| 201 | Keen Ocean International Holding Ltd |
| 202 | Key Coffee Inc |
| 203 | Kingbo Strike Ltd |
| 204 | Kinki Coca-Cola Bottling Co Ltd |
| 205 | Kirin Beverage Corp |
| 206 | Kirin Group Holdings Ltd |
| 207 | Kniazia Trubeckoho PJSC |
| 208 | Kook Soon Dang Brewery Co Ltd |
| 209 | Ktima Kostas Lazaridis SA |
| 210 | Kuaijishan Shaoxing Wine Co Ltd |
| 211 | KuangChi Science Ltd |
| 212 | Kumazawa Seiyu Sangyo Co Ltd |

| | |
|---|---|
| 213 Kweichow Moutai Co Ltd | |
| 214 LT Group Inc | |
| 215 Lam Soon Hong Kong Ltd | |
| 216 Lanson-BCC | |
| 217 Latvijas Balzams AS | |
| 218 Laurent-Perrier | |
| 219 Leovin SA | |
| 220 Li Bao Ge Group Ltd | |
| 221 Linda Nektar AS | |
| 222 Lombard et Medot | |
| 223 Lucas Bols NV | |
| 224 Luzheng Futures Co Ltd | |
| 225 Luzhou Laojiao Co Ltd | |
| 226 Mackmyra Svensk Whisky AB | |
| 227 Madison Wine Holdings Ltd | |
| 228 Major Holdings Ltd | |
| 229 Marani Brands Inc | |
| 230 Maraska dd Zadar | |
| 231 Marie Brizard Wine & Spirits SA | |
| 232 Martens SA Galati | |
| 233 Marusan-Ai Co Ltd | |
| 234 Masi Agricola SpA | |
| 235 Media Asia Group Holdings Ltd | |
| 236 Mei Ah Entertainment Group Ltd | |
| 237 Mercian Corp | |
| 238 Messan for Food Industries | |
| 239 Midland IC&I Ltd | |
| 240 Mikasa Coca-Cola Bottling | |
| 241 Mikuni Coca-Cola Bottling Co Ltd | |
| 242 Milesti - Vin SA | |
| 243 Minth Group Ltd | |
| 244 Miramar Hotel & Investment | |
| 245 Montalvo Spirits Inc | |
| 246 Muhak Co Ltd | |
| 247 Natural Dairy NZ Holdings Ltd | |
| 248 New City Development Group Ltd | |
| 249 New Silkroad Culturaltainment Ltd | |
| 250 New Universe Environmental Group Ltd | |
| 251 Nikka Fats & Oil Co Ltd | |
| 252 Nikka Whiskey Distilling Co Ltd/The | |
| 253 Ningxia Western Venture Industrial Co Ltd | |
| 254 Nirvana Asia Ltd | |
| 255 Nisshin Oillio Group Ltd/The | |

| | |
|---|---|
| 256 | North Asia Strategic Holdings Ltd |
| 257 | North Mining Shares Co Ltd |
| 258 | O2Micro International Ltd |
| 259 | OOH Holdings Ltd |
| 260 | Odella Leather Holdings Ltd |
| 261 | Oenon Holdings Inc |
| 262 | One Media Group Ltd |
| 263 | Oppmann Immobilien AG |
| 264 | Oriental Explorer Holdings Ltd |
| 265 | Oriental University City Holdings HK Ltd |
| 266 | Oriental Watch Holdings |
| 267 | Pacific Century Premium Developments Ltd |
| 268 | Paradise Beverages Fiji Ltd |
| 269 | Peace Map Holding Ltd |
| 270 | Pernod Ricard SA |
| 271 | Pervomaiscoe - Vin SA |
| 272 | Phoenitron Holdings Ltd |
| 273 | Pincon Spirit Ltd |
| 274 | Pinestone Capital Ltd |
| 275 | Pioneer Distilleries Ltd |
| 276 | Pokka Sapporo Food & Beverage Ltd |
| 277 | Pol Roger et Cie |
| 278 | Popova Kula Demir Kapija |
| 279 | Premium Water Holdings Inc |
| 280 | Prijedorcanka AD Prijedor |
| 281 | Prodvinalco |
| 282 | Public Holdings Australia Ltd |
| 283 | Q'SAI Co Ltd |
| 284 | Qinghai Huzhu Barley Wine Co Ltd |
| 285 | Radico Khaitan Ltd |
| 286 | Raphael Michel SA |
| 287 | Ravi Kumar Distilleries Ltd |
| 288 | Remy Cointreau SA |
| 289 | Resourcehouse Pty Ltd |
| 290 | Roma Group Ltd |
| 291 | Royal Century Resources Holdings Ltd |
| 292 | Rubin AD Krusevac |
| 293 | Ruifeng Petroleum Chemical Holdings Ltd |
| 294 | SFK Construction Holdings Ltd |
| 295 | SHOT Spirits Corp |
| 296 | SOHO China Ltd |
| 297 | SOM Distilleries And Breweries Ltd |
| 298 | SPI-RVVC |

| | |
|---|---|
| 299 | Sage International Group Ltd |
| 300 | Saigon Beer Western JSC |
| 301 | Sanyo Coca-Cola Bottling |
| 302 | Sarajishvili JSC |
| 303 | Schagrins Inc |
| 304 | Scheid Vineyards Inc |
| 305 | Schloss Wachenheim AG |
| 306 | Schlumberger AG |
| 307 | Scud Group Ltd |
| 308 | Season Pacific Holdings Ltd |
| 309 | Sektkellerei J. Oppmann AG/New |
| 310 | Settsu Oil Mill Inc |
| 311 | Shandong Hiking International Co Ltd |
| 312 | Shandong Luoxin Pharmaceutical Group Stock Co Ltd |
| 313 | Shanghai Qingpu Fire-Fighting Equipment Co Ltd |
| 314 | Shanxi Xinghuacun Fen Wine Factory Co Ltd |
| 315 | Shengda Mining Co Ltd |
| 316 | Shikoku Coca-Cola Bottling Co Ltd |
| 317 | Sichuan Swellfun Co Ltd |
| 318 | Sichuan Tuopai Shede Wine Co Ltd |
| 319 | Sihuan Pharmaceutical Holdings Group Ltd |
| 320 | Silver Base Group Holdings Ltd |
| 321 | Sincere Watch Hong Kong Ltd |
| 322 | Sing Lee Software Group Ltd |
| 323 | Sino Haijing Holdings Ltd |
| 324 | Sinomax Group Ltd |
| 325 | Skovin Skopje |
| 326 | Smartac Group China Holdings Ltd |
| 327 | Societatea pe Actiuni Vinaria Volintir |
| 328 | South China Holdings Co Ltd |
| 329 | Spirt Bal Buram JSC |
| 330 | Spring Real Estate Investment Trust |
| 331 | Starlite Holdings Ltd |
| 332 | Stock Spirits Group PLC |
| 333 | Stone Group Holdings Ltd |
| 334 | Straight Up Brands Inc |
| 335 | Strumicko pole s Vasilevo |
| 336 | Suchuang Gas Corp Ltd |
| 337 | Sunlight Real Estate Investment Trust |
| 338 | Sunrise Distilleries Ltd |
| 339 | Suntory Beverage & Food Ltd |
| 340 | Swift International Inc |
| 341 | Swisslion Miloduh ad Kragujevac |

| | |
|---|---|
| 342 | Synergy Group Holdings International Ltd |
| 343 | Synergy PJSC |
| 344 | Takara Holdings Inc |
| 345 | Talvis PJSC |
| 346 | Tbilghvino JSC |
| 347 | Teliani Valley JSC |
| 348 | Teliani Valley Polska SA |
| 349 | Thang Long Wine JSC |
| 350 | Thelloy Development Group Ltd |
| 351 | Thiz Technology Group Ltd |
| 352 | Tianda Pharmaceuticals Ltd |
| 353 | Tilaknagar Industries Ltd |
| 354 | Todoroff AD-Sofia |
| 355 | Tomizone Ltd |
| 356 | Tonghua Grape Wine Co Ltd |
| 357 | Treasury Wine Estates Ltd |
| 358 | Trillion Grand Corporate Co Ltd |
| 359 | Tristate Holdings Ltd |
| 360 | Truett-Hurst Inc |
| 361 | Tse Sui Luen Jewellery International Ltd |
| 362 | Tsyurupinske PJSC |
| 363 | Tyme Technologies Inc |
| 364 | U Banquet Group Holding Ltd |
| 365 | Umida Group AB |
| 366 | Ungheni-Vin SA |
| 367 | Unicafe Inc |
| 368 | Union de Cervecerias Peruanas Backus y Johnston SAA |
| 369 | United Spirits Ltd |
| 370 | Vaziani |
| 371 | Vietnam Manufacturing & Export Processing Holdings Ltd |
| 372 | Vilniaus Degtine |
| 373 | Vina Concha y Toro SA |
| 374 | Vinalcool Arges SA Pitesti |
| 375 | Vinar Glia SA |
| 376 | Vinaria SA |
| 377 | Vinarska Vizba Tikves Skopje |
| 378 | Vindecea LG SA |
| 379 | Vinedos Emiliana SA |
| 380 | Vinia Traian SA |
| 381 | Viniris SA |
| 382 | Vinis - NLG SA |
| 383 | Vino Zupa ad Aleksandrovac |
| 384 | Vinul Codrilor SA |

| | |
|---|---|
| 385 | Vinuri - Ialoveni SA |
| 386 | Vinuri De Comrat SA |
| 387 | Vinuri Si Bauturi SA Miercurea Ciuc |
| 388 | Vinzavod AD-Asenovgrad |
| 389 | Vitis Hincesti SA |
| 390 | Vitis-Lux-Sl SA |
| 391 | Vodka Brands Corp |
| 392 | Vranken-Pommery Monopole SA |
| 393 | Vrsacki vinogradi AD Vrsac |
| 394 | WWPKG Holdings Co Ltd |
| 395 | Wang Tai Holdings Ltd |
| 396 | Wanjia Group Holdings Ltd |
| 397 | Wei Long Grape Wine Co Ltd |
| 398 | West Indies Rum Distillery Ltd/The |
| 399 | Willamette Valley Vineyards Inc |
| 400 | Wuliangye Yibin Co Ltd |
| 401 | Xinjiang Yilite Industry Co Ltd |
| 402 | Yantai Changyu Pioneer Wine Co Ltd |
| 403 | Yau Lee Holdings Ltd |
| 404 | Yerevan Factory of Champagne Wines OJSC |
| 405 | Yip's Chemical Holdings Ltd |
| 406 | Yomeishu Seizo Co Ltd |
| 407 | Yoshihara Oil Mill Ltd |
| 408 | YuanShengTai Dairy Farm Ltd |
| 409 | Yuexiu Real Estate Investment Trust |
| 410 | Zheda Lande Scitech Ltd |
| 411 | Zhejiang Guyuelongshan Shaoxing Wine Co Ltd |
| 412 | Zhou Hei Ya International Holdings Co Ltd |
| 413 | Zwack Unicum Rt |
| 414 | econtext Asia Ltd |