Stock Market Risk Premiums, Business Confidence and Consumer Confidence: Dynamic Effects and Variance Decomposition

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Abstract

This study is set up to assess the dynamic effects of business confidence and consumer confidence on stock market risk premiums and to determine the relative importance of business confidence and consumer confidence in forecasting the variability of stock market risk premiums though a variance decomposition. The results show that the response of stock market risk premiums becomes positive immediately following the shocks to business confidence and consumer confidence. Based on the variance decomposition analysis, the variability of stock market risk premiums is 95% due to its own shock and the rest is due to the shocks to business confidence (1%) and consumer confidence (4%) for the 3-month horizon. For the 6-month horizon, the variability of stock market risk premiums is 93% due to its own shock, 2% due to business confidence shock and 5% due to consumer confidence shock. The forecast error of stock market risk premiums is 90% due to its own shock and the rest is due to the shocks to business confidence (4%) and consumer confidence (6%) for the 12-month horizon. The results from the OLS time-series regression show that business confidence and consumer confidence jointly explain around 7.42% of the variation of stock market risk premiums.

Keywords: business confidence, consumer confidence, stock market risk premiums

1. Introduction

Gross investment by businesses and private consumption by consumers are vital to a country's overall economic health and sustainable growth in addition to government spending and net exports. Consumer confidence is significantly linked to future real GDP growth rate and the probability of the economy entering into a recession (Howrey, 2001). When businesses and consumers hesitate to invest and spend, the economy can slip into a recession (Bernanke, 1983). For example, an argument by Romer (1990) suggests that consumer confidence is linked to the late October 1929 stock market crash. This argument is echoed by Otoo's (1999) study which shows a correlation between stock prices and consumer sentiment. Blanchard (1993) finds a high connection between the early 1990s recession and consumption shocks. Fisher and Statman (2003) empirically show that stock market returns are highly correlated with consumer confidence. In addition, Cevik, Korkmaz and Atukeren (2012) examine the effect of business confidence on stock returns and find that the ISM manufacturing index, a proxy for business confidence, has an effect on the regime-switching probabilities during the bull and bear periods of the U.S. stock market. Jansen and Nahuis (2003) find that changes in sentiment and stock returns are highly correlated; similar evidence is reported in a study conducted by (Lemmon & Portniaguina, 2006). Furthermore, Chen (2011) shows that lower consumer confidence has a significant impact on stock market performance during the bear-market periods.

Up to this point, very little is known about the dynamic effects of business and consumer confidence on stock market risk premiums. Consequently, it is the objective of this study to assess the dynamics effects of business confidence and consumer confidence on stock market risk premiums and to determine the relative importance of business confidence and consumer confidence in forecasting the variability of stock market risk premiums though a variance decomposition. This study is warranted because empirical evidence of the joint effect of business and consumer confidence on stock market risk premiums is little known in the current literature. Finally, this study also provides important implication for stock market valuation, investment and risk management.

2. Method and Data

This study employs the vector autoregressive analysis framework, a system of equation 1, 2 and 3, to assess the dynamic effects of business confidence and consumer confidence on stock market risk premiums and to determine the relative importance of business confidence and consumer confidence in forecasting the variability of stock market risk premiums though a variance decomposition. In addition, a joint analysis of the effect of business confidence and consumer confidence on stock market premiums is conducted using the OLS time series regression (Equation 4).

$$R_{mt} - R_{ft} = \alpha + \sum_{i=1}^{p} \phi_i (R_{mt-i} - R_{ft-i}) + \sum_{i=1}^{p} \lambda_i \Delta BC_{t-i} + \sum_{i=1}^{p} \varphi_i \Delta CC_{t-i} + \varepsilon_t \tag{1}$$

$$\Delta BC_t = \alpha + \sum_{i=1}^{p} \phi_i (R_{mt-i} - R_{ft-i}) + \sum_{i=1}^{p} \lambda_i \Delta BC_{t-i} + \sum_{i=1}^{p} \varphi_i \Delta CC_{t-i} + \varepsilon_t \tag{2}$$

$$\Delta CC_t = \alpha + \sum_{i=1}^{p} \phi_i (R_{mt-i} - R_{ft-i}) + \sum_{i=1}^{p} \lambda_i \Delta BC_{t-i} + \sum_{i=1}^{p} \varphi_i \Delta CC_{t-i} + \varepsilon_t \tag{3}$$

$$R_{mt} - R_{ft} = \alpha + \beta \Delta BC_t + \gamma \Delta CC_t + \varepsilon_t \tag{4}$$

Where:

R_{mt} = return on the stock market index in month t.

R_{ft} = the return on a thirty day T-bill in month t.

R_{mt-i} = return on the stock market index in month $t-i$.

R_{ft-i} = the return on a thirty day T-bill in month $t-i$.

ΔBC_t = change in the index of business confidence by taking the first difference; that is the value of business confidence index in month t less month t-1.

ΔCC_t = change in the index of consumer confidence by taking the first difference; that is the value of consumer confidence index in month t less month t-1.

ΔBC_{t-i} = change in the index of business confidence in month $t-i$.

ΔCC_{t-i} = change in the index of consumer confidence in month $t-i$.

Monthly changes of the U.S. business and consumer confidence indices from 1978:M2 to 2012:M5 are obtained from the Global Financial Data database. These business and consumer confidence indices are constructed by the Organization for Economic Co-operation and Development (OECD). Readers are strongly encouraged to access the OECD's website located at http://stats.oecd.org/ to read about how those indices are constructed in details. The monthly excess returns on CRSP value-weighted index from1978:M2 to 2012:M5 obtained from Kenneth R. French data library located at http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/ data_library.html.

3. Results

Table 1 and 2 provide a summary of descriptive statistics and correlations among the variables. As shown in Figure 1 and 2, the results show that the response of stock market risk premiums becomes positive immediately following the shocks to business confidence and consumer confidence. As shown in Table 3, the variability of stock market risk premiums is 95% due to its own shock and the rest is due to the shocks to business confidence (1%) and consumer confidence (4%) for the 3-month horizon. For the 6-month horizon, the variability of stock market risk premiums is 93% due to its own shock, 2% due to business confidence shock and 5% due to consumer confidence shock. The forecast error of stock market risk premiums is 90% due to its own shock and the rest is due to the shocks to business confidence (4%) and consumer confidence (6%) for the 12-month horizon.

As shown in Table 5, the results show that an average of 102 basis points (β = 1.02824, t = 2.71) increase in stock market risk premiums is associated with one unit increase in the change of business confidence holding consumer confidence constant. Likewise, as a result of one unit increase in the change of consumer confidence, stock market premiums experience an average increase of 184 basis points (γ = 1.84661, t = 3.82) when business confidence is held constant. Business confidence and consumer confidence jointly explain around 7.42% of the variation of stock market risk premiums.

Table 1. Descriptive statistics

Variables	Mean	Standard Deviation	# of Obs
R_{mt}- R_{ft}	0.5791262	4.631675	412
ΔBC	-0.0046478	.6182492	412
ΔCC	-0.0016845	.4845916	412

Table 2. Correlations

	R_{mt}- R_{ft}	ΔBC	ΔCC
R_{mt}- R_{ft}	1		
ΔBC	0.2031	1	
ΔCC	0.2400	0.3406	1

Table 3. Variance decomposition of stock market risk premiums, business confidence and consumer confidence

Horizon (In Months)	$Rm-Rf$	S.E	ΔBC	S.E	ΔCC	S.E
3	0.95	0.021	0.01	0.010	0.04	0.019
6	0.93	0.024	0.02	0.014	0.05	0.028
9	0.92	0.025	0.03	0.016	0.05	0.019
12	0.90	0.027	0.04	0.018	0.06	0.021

Order of VAR: Rm-Rf, ΔBC, ΔCC.

Table 4. Granger causality wald tests

Regressors	Dependent Variables		
	$Rm-Rf$	ΔBC	ΔCC
$Rm-Rf$	0.000	0.265	0.023
ΔBC	0.051	0.000	0.000
ΔCC	0.002	0.000	0.000

The p-values for F-statistics for joint tests on lags are reported here.

Table 5. OLS time-series regression results

	Coefficient	**Std. Err.**	*t*	**Sig.**
Constant	0.58701	0.22009	2.67	0.000
ΔBC_t	1.02824	0.37909	2.71	0.007
ΔCC_t	1.84661	0.48365	3.82	0.000
R-Square	0.0742			
Adj. R-Square	0.0697			
F(2, 409)	16.40			0.000

Number of observation = 412; Durbin-Watson d-statistic (3, 412) = 1.976973.

Table 6. Durbin's alternative test for autocorrelation

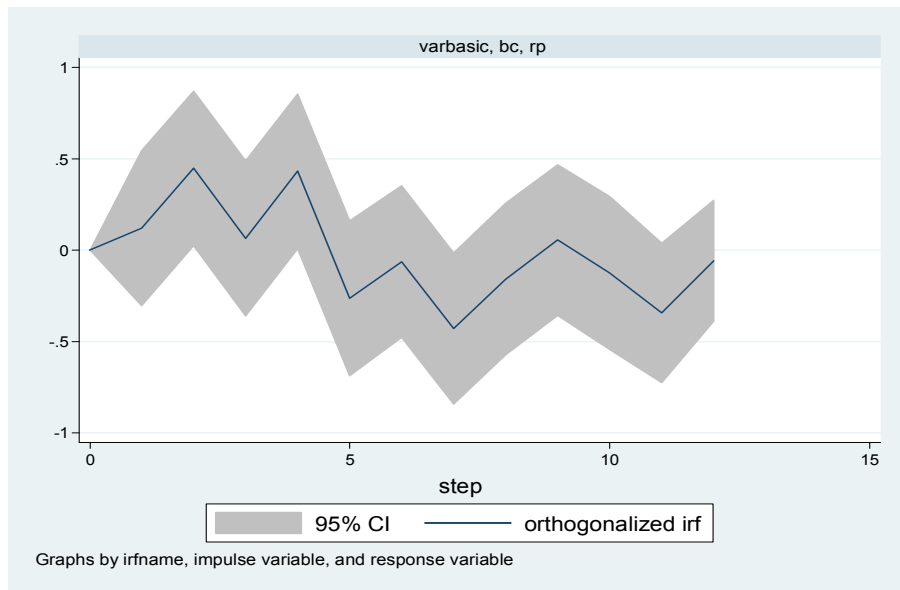| lags(p)	chi2	df	Prob > chi2
1	0.031	1	0.8604

Null Hypothesis: no serial correlation.

Figure 1. The orthogonal impulse response functions (OIRF) of stock market risk premiums to business confidence shock
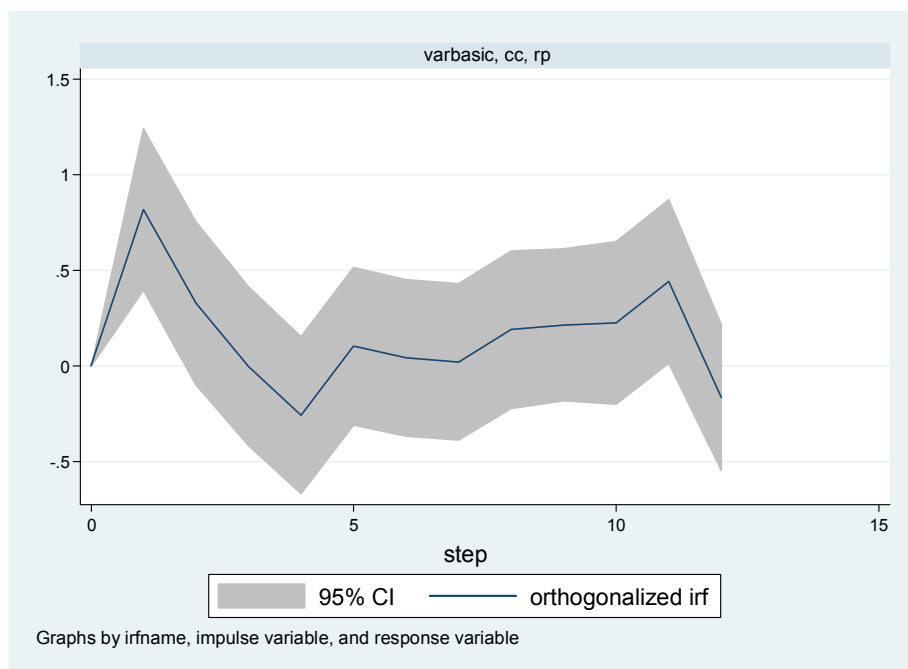

Figure 2. The orthogonal impulse response functions (OIRF) of stock market risk premiums to consumer confidence shock

4. Conclusion

Because very little is known about the effect of business and consumer confidence on stock market risk premiums; consequently, the problem of this study to assess the dynamics effects of business confidence and consumer confidence on stock market risk premiums and to determine the relative importance of business confidence and consumer confidence in forecasting the variability of stock market risk premiums though a variance decomposition. The results show that the response of stock market risk premiums becomes positive immediately following the shocks to business confidence and consumer confidence. Based on the variance

decomposition analysis, the variability of stock market risk premiums is 95% due to its own shock and the rest is due to the shocks to business confidence (1%) and consumer confidence (4%) for the 3-month horizon. For the 6-month horizon, the variability of stock market risk premiums is 93% due to its own shock, 2% due to business confidence shock and 5% due to consumer confidence shock. The forecast error of stock market risk premiums is 90% due to its own shock and the rest is due to the shocks to business confidence (4%) and consumer confidence (6%) for the 12-month horizon. The results from the OLS time-series regression show that business confidence and consumer confidence jointly explain around 7.42% of the variation of stock market risk premiums.

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