

Who Influences Who? The Relation Between Index Returns and Consumption Surveys

Paolo Miranda
Purdue University Northwest

The consumption model of asset prices is based on consumption expectations being the determinant of asset prices. By using consumer and business confidence surveys for 10 countries, with the corresponding stock market indexes, it is shown the stock market indexes to influence the surveys more than the other way around. This result suggests consumers and businesses using the stock market as a barometer for the state of the economy, which could affect the results of regressions where the return on the stock market is the dependent variable and consumption changes the independent variable.

INTRODUCTION

The consumption model of asset prices presented in Lucas (1978), Breeden (1979), Grossman and Shiller (1981), and Hansen and Singleton (1982), posit changes in consumption to be the determinants of asset prices. In such theory, investment in assets provide payoffs in the future; these payoffs are then used to buy goods and services, consumption in short. In this theory, the price of any asset is given by the following equation:

$$p_{t-1} = E_{t-1}[m_t x_t] \quad (1)$$

Where p_{t-1} is the price of the asset at $t-1$, m_t is the stochastic discount factor at time t , and x_t is the payoff offered by the asset at time t . The stochastic discount factor under a power utility function depends on the ratio of consumption at time t to consumption at time $t-1$, which can be expressed as the stochastic discount factor depending on changes in consumption. Equation 1 also shows the price of any asset to depend on the expectations investors have about future asset payoffs and future consumption (through the stochastic discount factor), conditional on the information available at the time the asset is bought. Since future asset payoffs are uncertain, the trading strategy ensuring a given level of consumption in the future cannot be determined with certainty. Furthermore, Hall (1978) shows consumption to be a random walk if consumers maximize their utility, as in the life cycle permanent income hypothesis. He also expresses that regressions of stock returns against changes in consumption yield coefficients statistically different than zero, which should not happen since both stock returns and changes in consumption are random walks. Most of the studies done on the consumption based theory of asset prices utilize changes in realized consumption as the independent variable, with asset returns being the dependent variable. The use of realized consumption to test a theory based on expectations presuppose consumers having a perfect knowledge about the future assets payoffs, in which case expected consumption will equal realized consumption.

Cochrane 2005 shows the distributional properties of asset returns being better suited to regression analysis than those of asset prices, thus equation (1) is modified as follows for testing purposes:

$$1 = E_{t-1} \left[\frac{1+r_t}{(1+r_c)^y} \right] \quad (2)$$

Where r_t is the return on the asset at time t and r_c is the return on consumption. Equation (2) shows asset returns and changes in consumption to be positively correlated. If the return on assets diminishes, the return on consumption should diminish also, albeit in different proportion. From the perspective of prices and consumption, an increase in consumption should be matched with an increase in the stock market index value.

To avoid using realized consumption to test the relationship between consumption and stock returns, I use consumer confidence surveys for ten countries, the idea being that higher consumer confidence in the future of the economy should be reflected in higher future consumption (Jansen and Nahuis 2004), hence higher asset returns according to Equation (2).

Not only consumers but also businesses are asked what their expectations are about the future of the economy. The results of the business confidence surveys can, along with consumer confidence surveys, be used to assess the effects of expectations on stock returns. An increase in confidence in the future from the part of businesses implies increased demand for materials or services in the future (Jansen and Nahuis 2004), which should lead to an increase in stock returns according to Equation (2).

EMPIRICAL RESULTS AND ECONOMETRICS

The data is monthly consisting of consumer confidence surveys, business confidence surveys, and stock market indexes spanning the years 1978 to 2013 for United States; 1985 to 2013 for Germany, France, Italy, United Kingdom, Spain, Belgium, and the Netherlands; 2001 to 2013 for Mexico; and 1996 to 2013 for Sweden. The surveys are the “Consumer Opinion Survey, Economic Situation, Future Tendency”, henceforth Consumer Survey, and the “Business Tendency Survey for Manufacturing, Confidence Indicators”, henceforth Business Survey, administered by the European Commission in conjunction with the Organization for Economic Cooperation and Development (OECD). The Consumer Survey asks the question: “How do you expect the economic situation in this country to develop over the next 12 months?” (<http://stats.oecd.org/mei/default.asp?lang=e&subject=7>) while the Business Survey is the weighted average of the answers to the questions “Do you consider your current overall order books to be: more than sufficient, sufficient, less than sufficient” and “How do you expect your firm total employment to change over the next 3 months?”

<http://stats.oecd.org/mei/default.asp?lang=e&subject=7>).

The answers to these surveys are qualitative and are transformed into quantitative data by using an algorithm described in “Business Tendency Surveys: A Handbook” published by the OECD.

Equation (2) suggests return on assets and changes in consumption to be related in the long run, the kind of relationship between the variables determines the model to be used. To decide whether a regular OLS regression suffices or if a Vector Autoregressive or Vector Error Correction Model is necessary the following tests are applied. First a Dickey-Fuller (Dickey and Fuller 1979) test to determine if any of the series present unit roots. Then, a Johansen cointegration test is performed to determine if the series are cointegrated.

The results of the Dickey-Fuller test, presented in Table 1, show the stock indexes to be A(1) for all the countries involved while the Business and Consumer Surveys do not present unit roots.

**TABLE 1
TEST STATISTICS FOR DICKEY-FULLER TEST**

Country	Business Survey	Consumer Survey	Stock Index	First difference,
United States	-4.97 (0.00)	-3.66 (0.00)	1.52 (0.99)	-19.91 (0.00)
Germany	-2.12 (0.24)	-2.57 (0.10)	-0.09 (0.95)	-18.50 (0.00)
France	-2.68 (0.08)	-3.66 (0.01)	-0.24 (0.93)	-23.93 (0.00)
Italy	-2.91 (0.04)	-4.16 (0.00)	-1.04 (0.74)	
Mexico	-2.69 (0.07)	-3.72 (0.00)	2.69 (0.99)	-14.70 (0.00)
United Kingdom	-3.20 (0.02)	-4.11 (0.00)	0.16 (0.97)	-19.66 (0.00)
Belgium	-2.74 (0.07)	-4.04 (0.00)	-0.95 (0.77)	-13.55 (0.00)
The Netherlands	-3.08 (0.03)	-3.12 (0.02)	-0.56 (0.88)	-19.11 (0.00)
Sweden	-2.87 (0.05)	-2.73 (0.07)	1.43 (0.99)	-19.99 (0.00)
Spain	-2.57 (0.10)	-3.10 (0.03)	-1.30 (0.63)	-13.57 (0.00)

Dickey Fuller test statistics with p-value in parentheses. The statistics are for the Business Survey, the Consumer Survey, the stock market index corresponding to the country, and the first difference in the stock market index. The Dickey-Fuller test null is “existence of unit roots”. The 1%, 5%, and 10% critical values are -3.446, -2.873, and -2.570 respectively.

In order to assess the existence of long term relationships between the time series used, the Johansen cointegration test (Johansen, 1991) is performed. The test results are presented in Table 2 for all three variables combined. Also, it is necessary to test separately for the existence of cointegration between consumer confidence and returns on the stock market, and business confidence and the return on the stock market. These last results are presented in Table 3.

The results from the Johansen cointegration test, presented in Table 2, suggest the existence of cointegration between the three variables used in this study, thus prompting the use of a Vector Error Correction Model (VEC) to determine the relationships between them. Lutkepohl (2007) states that the VEC model coefficients are difficult to interpret; for this reason, variance decomposition and impulse-response functions, stemming from the results of the VEC model, are used. The cointegration test shows one or more cointegrating equations for all the countries used in this study, pointing to long term

**TABLE 2
JOHANSEN COINTEGRATION TEST RESULTS FOR ALL VARIABLES**

country	Johansen statistic	1 % critical value	maximum rank
U.S.A.	29.13*	6.95	2
Germany	9.51*	6.65	2
France	7.53*	6.65	2
Italy	7.64*	6.65	2
Mexico	18.57	20.04	1
United Kingdom	11.52*	6.65	2
Belgium	9.27*	6.65	2
The Netherlands	9.42*	6.65	2
Sweden	7.19*	6.65	1
Spain	4.81	6.65	1

Table presenting the Johansen cointegration test results. * indicates significance at the 1% level. The null of the test is: “N or less cointegrating equations”, where N is the maximum rank.

relationships between some of the variables. Table 3 shows both the Consumer Survey and the Business Survey to be cointegrated with the stock market returns for all the countries in this study, hence prompting the use of a VEC model to characterize the relationship between these variables.

TABLE 3
JOHANSEN COINTEGRATION TEST RESULTS FOR CONSUMER AND BUSINESS CONFIDENCE WITH STOCK MARKET.

country	Johansen statistic for	Johansen statistic for	maximum rank
U.S.A.	23.11	32.02	1
Germany	11.66	12.97	1
France	14.83	9.36	1
Italy	11.96	10.49	1
Mexico	10.38	9.79	1
United Kingdom	14.9	7.31	1
Belgium	14.48	9.51	1
The Netherlands	9.42	9.26	1
Sweden	7.19	9.01	1
Spain	7.67	5.09	1

Table presenting the Johansen cointegration tests for consumer confidence with stock market returns and business confidence with stock market returns. The null of the test is “N or less cointegrating equations”, where N is the maximum rank. The 1% critical value is 6.65.

The existence of cointegration between the Consumer Survey, the Business Survey, and the stock market returns prompts for the use of a VEC model, which can be expressed as:

$$\Delta y_t = \Pi y_{t-1} + \Gamma \Delta y_{t-1} + \varepsilon \quad (3)$$

For this study, Equation (3) can take two forms, depending on the specific combination of variables. In one form, the y vector is composed of the return on stock market indexes and the results from both surveys. In such case, the vector y contains three variables, namely the return on stock indexes, the result of the Consumer Survey, and the result of the Business Survey.

The second case is when the effect of the Consumer Survey results on the stock market returns is studied separately from the effect of the Business Survey on the stock market returns. In the second case, y is a vector consisting of two variables, either the returns on stock indexes and the results from the Consumer Survey, or the return on stock indexes and the results of the Business Survey. For both cases the matrix of coefficients Π represent the long run relationship between the variables while the matrix Γ represents, loosely, the short term relationships between the variables, ε is the vector of error terms.

The natural logarithm of the variables is taken before running the VEC model. Since the main objective is to study the long run relationships between the expectations held by consumers and businesses and the returns on the stock market, only the coefficients corresponding to the long run relationship are presented for all countries.

The long run stationary relationship between the three variables is described by an equation of the form $x_1 + ax_2 + bx_3 + \text{cons}$, where the variables x_1 , x_2 , and x_3 correspond to the index return, Consumer Survey result, and Business Survey result respectively. The coefficients a and b correspond to the Consumer Survey and Business Survey variables respectively, cons is the intercept. The coefficient for x_1 is normalized to one.

When characterizing the long run stationary relationship between two of the variables, be it the return on the index and the Consumer Survey, or the return on the index and the Business Survey, the equation to be used is of the form $x_1 + ax_2 + \text{cons}$; where the coefficient for x_1 is normalized to one. In both cases presented on the previous paragraphs, the coefficients (a and b) and the constant (cons) form the matrix II. The coefficients corresponding to the cointegration part of the VEC model are presented in table 4.

TABLE 4
COINTEGRATION COEFFICIENTS FOR THE COUNTRIES INVOLVED IN THIS STUDY

Country	Consumer Survey	Business Survey	model P value
U.S.A	-0.029 (0.063)		0.063
		0.007 (0.557)	0.557
Germany	-0.005 (0.75)	-0.027 (0.095)	0.186
		0.015 (0.265)	0.265
	0.023 (0.27)		0.273
France	0.065 (0.054)	-0.072 (0.080)	0.149
		0.016 (0.424)	0.424
	-0.019 (0.421)		0.421
Italy	-0.025 (0.390)	0.018 (0.553)	0.691
		-0.004 (0.807)	0.807
	-0.028 (0.311)		0.311
Mexico	-0.027 (0.382)	0.032 (0.432)	0.641
	-10.504 (0.148)		0.148
		0.461 (0.917)	0.917
Spain	-13.712 (0.010)	3.641 (0.411)	0.035
	-0.038 (0.053)		0.053
		0.003 (0.904)	0.904
United Kingdom	-0.042 (0.128)	0.017 (0.601)	0.229
		0.011 (0.360)	0.36
	-0.038 (0.014)		0.014
Belgium	-0.023 (0.145)	-0.002 (0.913)	0.314
	0.012 (0.584)		0.584
		0.013 (0.656)	0.656
Netherland	0.004 (0.885)	0.011 (0.776)	0.873
		0.033 (0.108)	0.108
	-0.039 (0.008)		0.008
Sweden	-0.041 (0.025)	0.073 (0.225)	0.078
		0.017 (0.642)	0.642
	-0.047 (0.232)		0.232
	0.022 (0.657)	-0.079 (0.075)	0.159

Table presenting the cointegration coefficients for all the countries studied with the coefficient for the stock market return normalized to one. The p-values for the coefficients are presented in parentheses and the p-values for the whole cointegration part of the model are presented in the column "model p-values".

Table 4 suggest a long term relationship between the Consumer Survey and the return on the index at a significance level of 10% or less for the United States, Germany, Mexico, Spain, the United Kingdom,

and the Netherlands. The results presented in Table 4 also suggest a long term relationship between the Business Survey and the return on the index at a significance level of 10% or less for the United States, Germany, and Sweden. In this sample, the Consumer Survey influences the return on the indexes in more countries than the Business Survey does.

The possibility exists, as suggested in Jansen and Nahuis (2003), of the surveys to be influenced by the stock market results. To test this second possibility the VEC model is run again in two separate configurations. First the Business Survey coefficient is normalized to one, hence showing the influence of the stock market returns on the Business Survey. Then the Consumer Survey coefficient is normalized to

TABLE 5
COINTEGRATION COEFFICIENTS FOR THE COUNTRIES IN THIS STUDY

Country	Business Survey	Consumer Survey	Index return	model P value
U.S.A	n/a	1	-33.46 (0.000)	0.00
	1	n/a	147.53 (0.00)	0.00
	1	0.188 (0.75)	-36.25 (0.00)	0.00
Germany	n/a	1	43.82 (0.00)	0.00
	1	n/a	68.34 (0.00)	0.00
	-1.104 (0.002)	1	15.24 (0.00)	0.00
France	1	n/a	62.50 (0.00)	0.00
	n/a	1	-53.48 (0.00)	0.00
	1	-1.37 (0.254)	54.68 (0.00)	0.00
Italy	1	n/a	-247.10 (0.00)	0.00
	n/a	1	-35.47 (0.00)	0.00
	1	-0.848 (0.291)	30.91 (0.00)	0.00
Mexico	n/a	1	-0.095 (0.00)	0.00
	1	n/a	2.16 (0.00)	0.00
	1	-3.766 (0.004)	0.274 (0.00)	0.00
Spain	n/a	1	-25.95 (0.00)	0.00
	1	n/a	294.57 (0.00)	0.00
	1	-2.43 (0.031)	57.48 (0.00)	0.00
United Kingdom	1	n/a	93.97 (0.00)	0.00
	n/a	1	-26.06 (0.00)	0.00
	1	14.31 (0.137)	-616.32 (0.00)	0.00
Belgium	n/a	1	84.18 (0.00)	0.00
	1	n/a	76.16 (0.00)	0.00
	1	0.358 (0.849)	90.83 (0.00)	0.00
Netherland	n/a	1	-25.58 (0.00)	0.00
	1	n/a	29.95 (0.00)	0.00
	-1.787 (0.119)	1	-24.51 (0.00)	0.00
Sweden	n/a	1	-21.02 (0.00)	0.00
	1	n/a	58.24 (0.00)	0.00
	-3.65 (0.03)	1	46.19 (0.00)	0.00

Table presenting the cointegration coefficients with the coefficient for either the Business Survey or Consumer Survey normalized to one. The p-values are presented for the total model and each of the coefficients. When the coefficient is normalized to one there is no p-value associated to it. n/a signify the variable not being used in the particular regression.

one, showing the influence of the stock market returns on the Consumer Survey. The results of this second set of regressions are presented in Table 5.

The results presented in Table 5 suggest the return on the index to influence both the Consumer Survey and the Business Survey. For all countries we can see a p-value of zero for the coefficient on stock market return when the coefficient for either the Consumer Survey or the Business Survey is normalized to one. This result suggest both consumers and businesses using the stock market as a barometer for the future state of the economy, opening the possibility of the return on the stock market to be a determinant of expected consumption in durable and non-durable goods.

As stated, the results presented in Table 5 suggest the stock market to influence the confidence in the economy of both businesses and consumers. Also, Jansen and Nahuis (2004) show both the Consumer Survey and the Business Survey to have valuable information about future consumption growth.

The combination of Jensen and Nahuis (2004) and the results presented on Table 5 suggest the stock market to influence future consumption by businesses and consumers.

To further assess the relative influence of the stock market, Consumer Survey, and Business Survey, both variance decomposition and impulse response analyses are performed assuming 20 months into the future. Instead of showing the variance decomposition results in a table, figures will be used. The Business Survey, Consumer Survey, and market return are used as impulses separately. The results for the variance decomposition are presented in Figures 1 to 4.

FIGURE 1
VARIANCE DECOMPOSITION WITH BUSINESS SURVEY AS IMPULSE

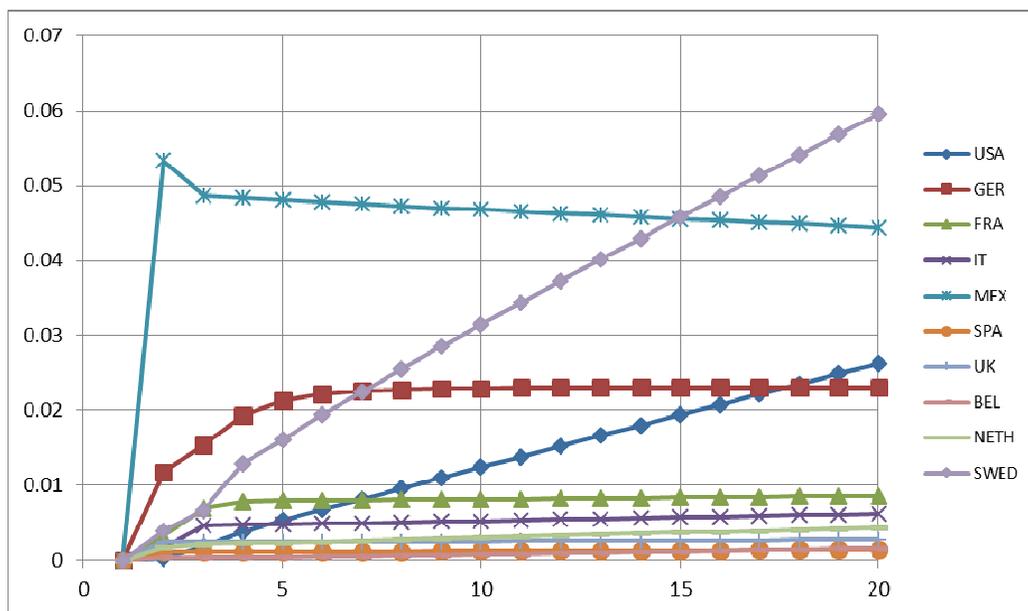


Figure presenting the fraction of the index return variance explained by the Business Survey. The x-axis represents months after the impulse.

Figure 1 shows the fraction of the index return variance explained by the Business Survey to differ across countries. For most of the countries, less than 1 percent of the index return variance can be attributed to the Business Survey. Also, for the majority of the countries, the influence of the Business Survey on the variance of the index return stabilizes in about five months while for both the U.S. and Sweden this influence increases over time. For all cases the Business Survey influences at the most 6 percent of the variance of the stock market return.

Figure 2 shows the Consumer Survey to influence at the most 4 percent of the stock market return variance across all countries considered in this study. The influence of the Consumer Survey over the market return variance grows over time for six of the eight countries.

The Business Survey influences, on average, 1.31 percent of the index return variance across all the countries while the Consumer Survey influences, on average, 1.42 percent of the index return variance. The very similar percentage of the predicted index return variance attributable to each survey suggest the expected demand from businesses and personal consumption to have approximately the same influence in the determination of stock prices. Overall, the effect of both the Business and Consumer Surveys on the stock market return is small but not negligible, suggesting that the expectations of both businesses and consumers are priced by the stock market but their influence is small.

Despite the very similar numerical effect of the Business and Consumer Surveys on the stock return variance, it is noteworthy that the Consumer Survey influence on the stock return variance grows over time for most of the countries, while the Business Survey influence remains steady after about five months. After studying the influence of the Consumer Survey and the Business Survey on the index return variance, the influence of the index return on the variance of both the Consumer and the Business Surveys is studied. The objective is to determine whether the stock market influences the assessment of the future of the economy made by businesses and consumers. The influence of the index returns on the variance of the Consumer and the Business Surveys are presented in Figures 3 and 4.

FIGURE 2
VARIANCE DECOMPOSITION WITH CONSUMER SURVEY AS IMPULSE

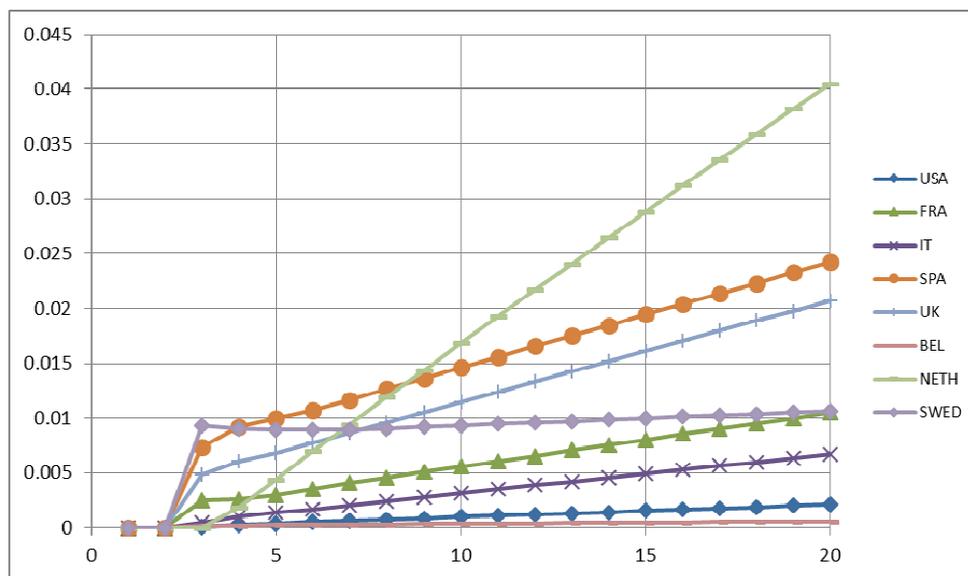


Figure showing the fraction of the index return variance explained by the Consumer Survey.

FIGURE 3
VARIANCE DECOMPOSITION WITH RETURN ON THE MARKET AS THE IMPULSE

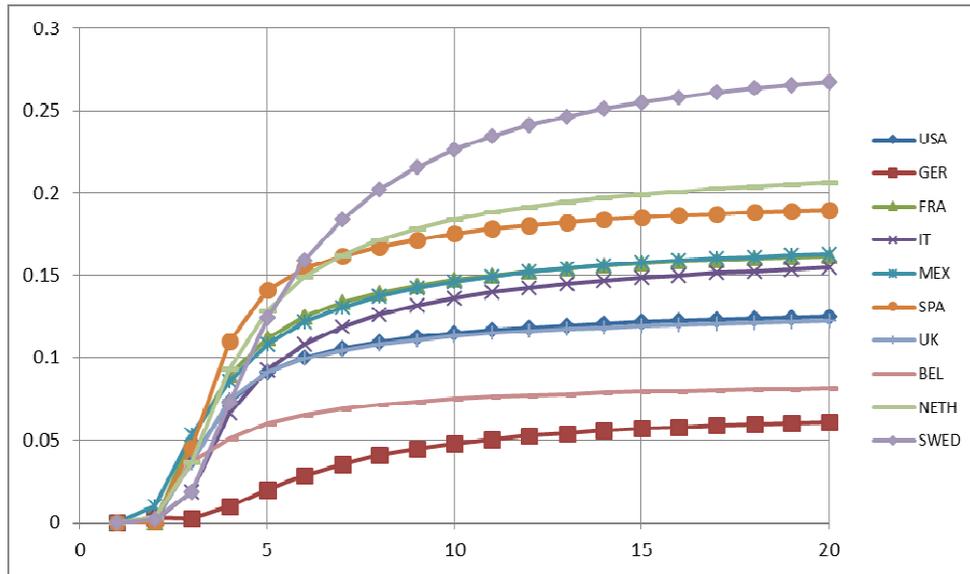


Figure presenting the fraction of the Business Survey variance explained by the index return. The x axis represent months after the impulse is applied.

Figure 3 shows the return on the market to explain between 5 and 27 percent of the Business Survey variance between all the countries involved, the average being 10.5 percent. One can also see the influence of the market return to stabilize over time.

The Business Survey explains between, roughly, 1 and 6 percent of the index return variance while the stock market return explains between 6 and 27 percent of the Business Survey variance. These results suggest that, rather than the stock market using consumption by businesses as a main determinant of prices, it is the businesses which use the stock market as an indicator of the future state of the economy and adjust their consumption based on it.

Also, even though the stock market seems to be considered as an indicator for the future of the economy by businesses, the importance given to it varies greatly between countries.

The results presented in Figure 4 suggest the stock market to influence how consumers perceive the future of the economy. The return on the market influences 5 to 35% of the Consumer Survey variance, with the bulk being between 5% and 20%, while the Consumer Survey affects at the most 4% of the index variance as was shown in Figure 2. The results presented in the previous paragraphs suggest, once again, for consumption not to be a main determinant of the stock market return, but the stock market return to greatly influence the behavior of consumers. Also, a comparison between Figures 4 and 2 suggest the influence of the stock market returns on the Consumer Survey to be more volatile than the effect of the Consumer Survey on the stock market.

Recapitulating, the results suggest both consumers and businesses using the stock market as an indicator for the future of the economy and possibly shaping their future consumption based on it instead of the stock market determining prices based on consumption expectations.

FIGURE 4
VARIANCE DECOMPOSITION WHEN THE RETURN ON THE MARKET IS THE IMPULSE

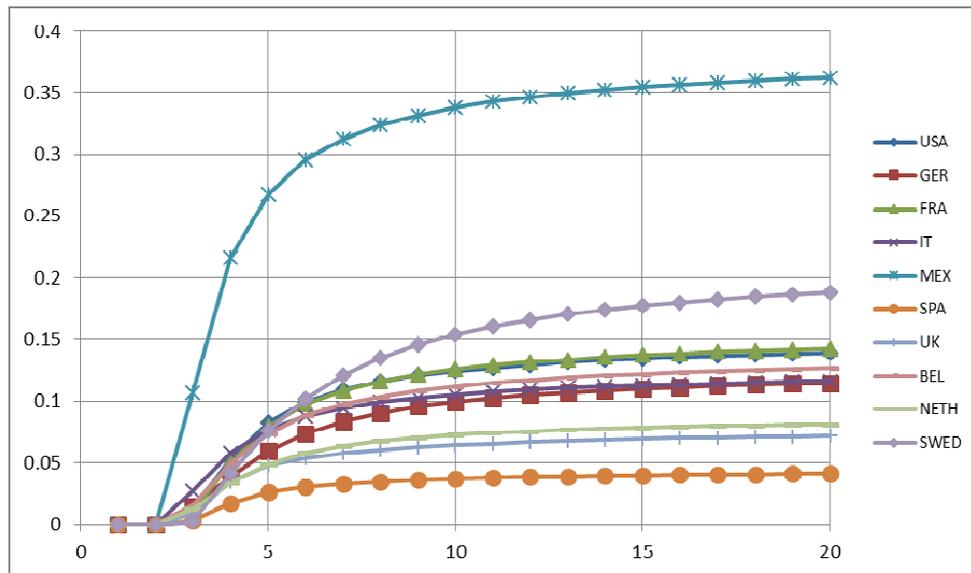


Figure presenting the fraction of the Consumer Survey variance explained by the stock market returns. The x-axis represent months after the impulse is applied.

Next, an impulse response analysis is performed. This analysis applies a shock to one of the variables to estimate the response of the other variables in the system. The impulse response functions are presented in figures 5 to 8.

The results presented in Figure 5 show the effect in the market index return of a sudden change in the Business Survey to vary across countries. Almost all the countries, with the exception of France and the U.K., experience a positive change in the market return as a response to a sudden positive change in the Business Survey. A positive change in the market return is the expected response to a sudden positive change in the Business Survey according to Equation (2). For most of the countries, after about five months, the changes in the Business Survey have been incorporated by the stock market, provoking a long term change on its returns ranging from -6 to 3 percent. The dispersion of long range responses to a sudden positive change in the Business Survey suggest that not all stock markets give the same weight to the sentiment expressed by consumers. Next an impulse to the Consumer Survey is applied, the results are presented in Figure 6.

Figure 6 shows the response of the stock market returns to sudden changes in the Consumer Survey to be very similar to the response to changes in the Business Survey, between -6 to 4 percent. The response of the stock market to the Consumer Survey varies across countries, suggesting lack of uniformity when pricing the results of the Consumer Survey.

The impulses applied to both surveys produce negative responses from the stock market returns in some countries, which does not mean the stock market turns negative due to either the Consumer or the Business Survey, it just means a decrease on the stock market return in the long run due to an impulse in either of the Surveys.

FIGURE 5
IMPULSE RESPONSE FUNCTION, THE IMPULSE IS BUSINESS SURVEY

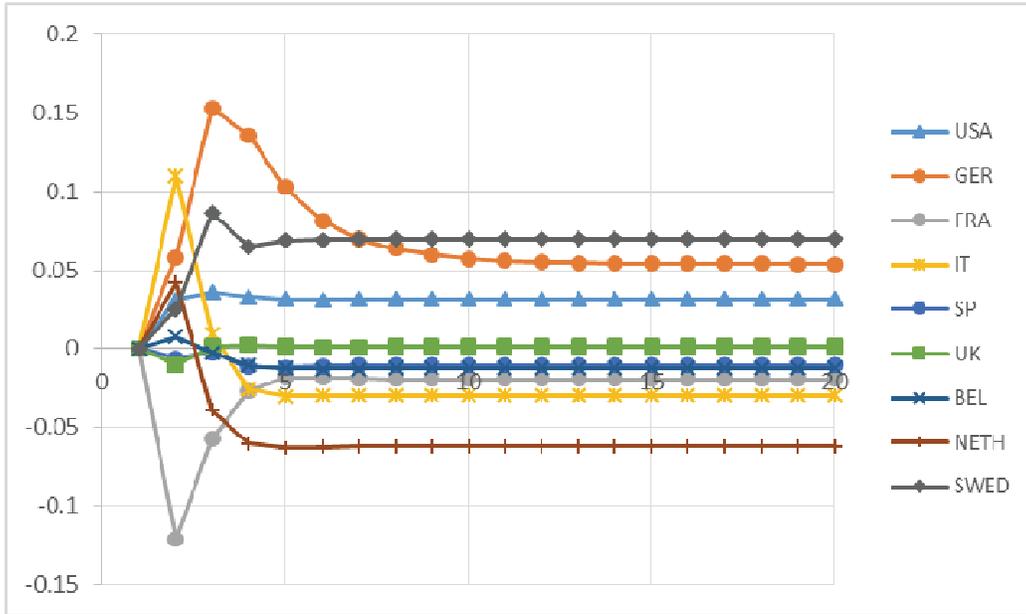


Figure showing the response of the return on the index when the impulse is the Business Survey. X-axis is number of months.

FIGURE 6
IMPULSE RESPONSE FUNCTION, IMPULSE IS THE CONSUMER SURVEY

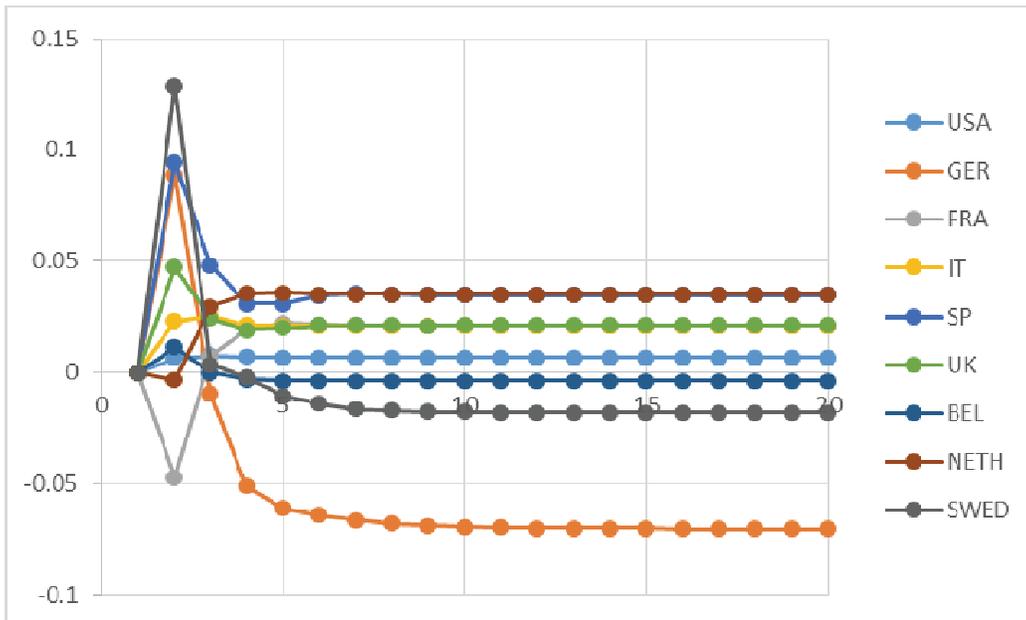


Figure presenting the impulse-response function when the impulse is the Consumer opinion Survey and the response is the return on the stock market.

Figures 5 and 6 show the stock market response to a sudden change in either of the surveys to peak between months 2 and 3 after the impulse is applied. After the peak, though, the response achieves a steady state lower than the peak, thus suggesting the influence of consumers on the stock market not to be long lasting.

The variance decomposition results suggested the stock market to influence the view both consumers and businesses have about the future of the economy, which views could translate into consumption by both businesses and individuals. The next sections show whether the results found by using variance decomposition still stand when using impulse response functions, where an unexpected impulse is applied to one variable to study the response of the other variables.

The next set of impulse response functions use the return on the stock market as impulse and the Consumer and Business Surveys as responses. The Business Survey response to an impulse applied to the stock market is presented in Figure 7.

One can see the response from the Business Survey to an impulse applied to the stock market to reach a steady state after five months without the peak, and posterior fall, occurring when the Business Survey is the impulse. This result suggests the stock market having a long lasting impact on the view Businesses have about the future of the economy. The results, presented in Figure 7, also show the response of the Business Survey to a sudden change in stock market returns to vary across countries, with the highest response being the U.S.A. and the lowest the Netherlands, giving a dispersion of 50%. These results suggest the importance businesses give to the stock market as an indicator of the future of the economy to vary across countries reinforcing the findings from the variance decomposition. All the countries show a positive Business Survey response to an impulse in the stock market return, suggesting the market to be considered a credible barometer for the economy by businesses. When comparing with the response of the stock returns to an impulse on the Business Survey one can see how the response of the stock market is smaller in magnitude and less disperse, about 13% dispersion with a maximum response of 7%.

The response of the Consumer Survey to an impulse in the stock market return is presented in Figure 8. We observe a very similar shape in the curves and a similar dispersion to the one obtained when the Business Survey is the response, about 50% dispersion.

FIGURE 7
IMPULSE RESPONSE FUNCTION, IMPULSE IS THE STOCK MARKET

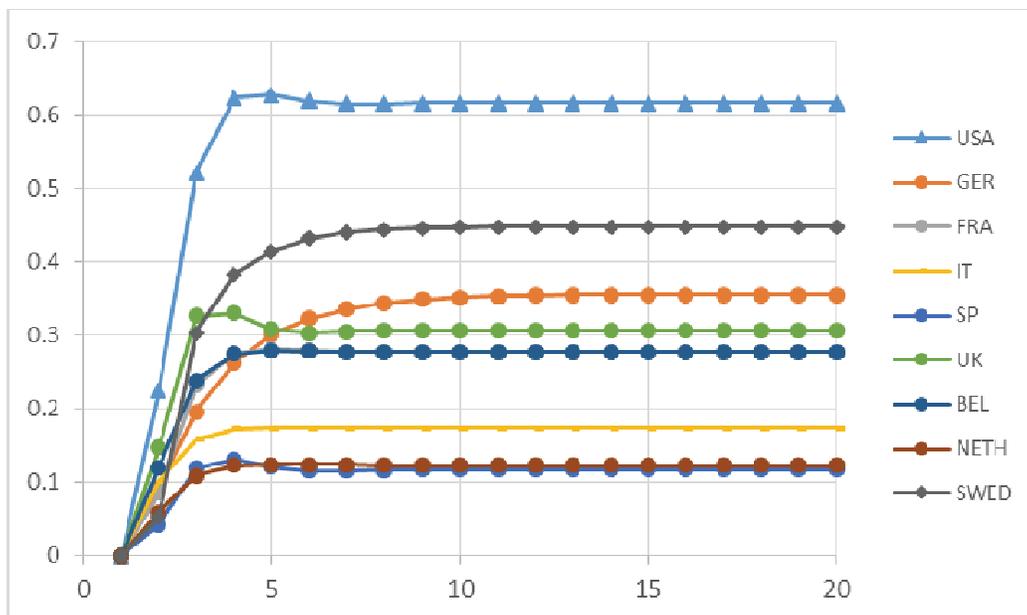


Figure presenting the response of the Business Survey to a stock market impulse.

The response of the Consumer Survey to a sudden change in the stock market is long lasting, attaining a steady state after 5 months for all the countries. Also, a sudden change in the stock market provokes a response of a magnitude ranging from 30% to 80% of the impulse. Compare with the response by the Business Survey to a change in the stock market, which range from 10% to 60% of the impulse. The difference in magnitude between the Business and Consumer surveys responses to a sudden change in the stock market suggest individual consumers to be more influenced than businesses by the stock market. The higher credibility given by consumers to the stock market as a barometer of the economy, as opposed to businesses, may be a result of the latter having sources of information not available to the former, possibly due to the cost of these sources. It is also of note here the almost nonexistence of the peak found when the impulse is either the Business or the Consumer Survey.

FIGURE 8
IMPULSE RESPONSE FUNCTION, IMPULSE IS THE STOCK MARKET

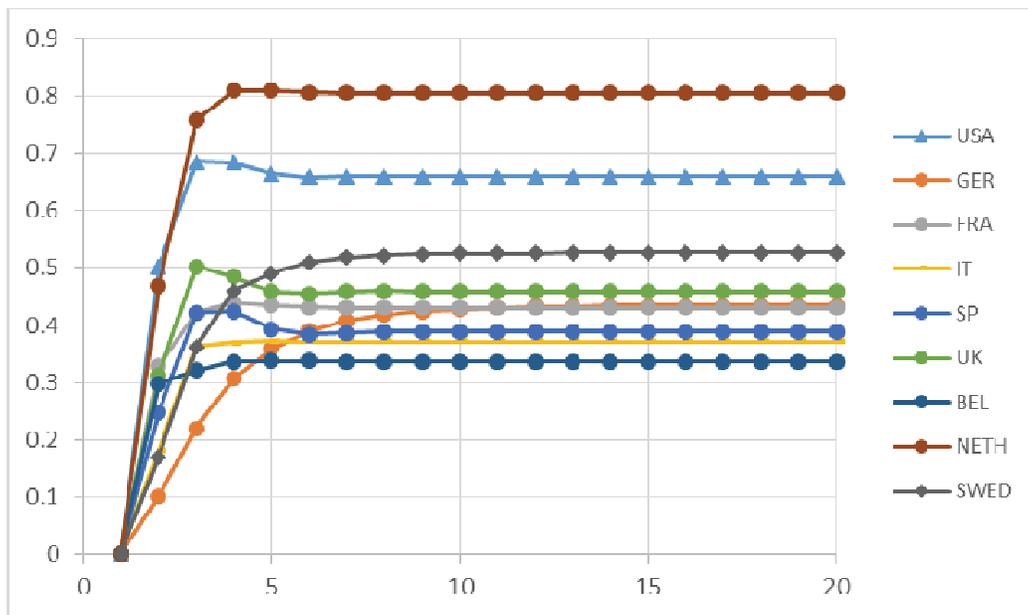


Figure presenting the response of the Consumer Survey to a stock market impulse

CONCLUSIONS

The consumption model of asset prices posits consumption to be a determinant of asset prices. The results presented in this paper suggest the stock market to influence expected consumption by businesses and individuals rather than the other way around. Both the impulse response functions and variance decomposition support the notion of the stock market being a driver of consumer and business confidence, which could lead to future consumption. The strong effect produced by the stock market in the expectations of consumers, both businesses and individuals, suggest that regressions of stock market returns on consumption could produce inaccurate results. The stronger the explanatory power of the stock market returns on consumption, the lower is the coefficient and t-statistic of a regression where the stock market is the dependent variable and consumption the independent variable.

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