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Economic sentiment shocks and fluctuations in real activity in the Euro Area.

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Abstract

This study contributes to the literature on business cycle analysis by integrating survey data into an analysis of the euro area business cycle . More specifically we assess to which extent business cycle in the euro area is affected by shocks in consumer and producers business cycle evaluations, as summarized in the Economic Sentiment Indicator of the European Commission. We develop a VAR model to analyse these propagations of shocks to economic sentiment, industrial production, retail sales and unemployment in the euro area.

JEL Codes: C22, E32, E66, F42

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1. Introduction

The concept of “economic sentiment” and changes therein -while intuitive in real world to citizens, business man, practioners in financial markets and politicians e.g.- has not find clear footage in mainstream modern macroeconomics. Clearly, controversial economists such as Keynes and Minsky and others, did recognize the presence of sentiment and put a lot of emphasis on sudden sentiment changes to explain business cycle fluctuations in their writings, but their ideas have not been fully appreciated/incorporated into mainstream economics. One of the problem with such explanations, results from the unclear, undefined content of the concept. Relatedly, it is not obvious to observe and quantify such a variable.

Keynes refers to sentiment as “ “ and his interpretation is usually referred to as “animal spirits”. In Keynes’ analysis, sentiment of consumers and producers plays a key role in explaining economic fluctuations. The interpretation of economic sentiment as an additional macroeconomic variable may appear strange at first sight, but would come close to interpretations of e.g. Keynes’s “animal spirits”. While basically gone lost in mainstream interpretations of Keynes’s work, it is clear that he himself attached strong importance to the role of consumer and producer sentiment in the economy as as a sort of gyriating forces, both in terms of booms and recessions.

Even if the economic sentiment as a concept may not have been embraced entirely in mainstream economics, the recent financial and economic crisis appears to be fraught with aspects can appear to be related to sentiment. A strong decline in economic sentiment has certainly contributed to the size and rapidness outburst of financial turbulence and the substantial economic slowdown. Clearly if economic sentiment falters, the first adjustments that agents typically make is to slowdown spending, shift out of risky assets to money, stop hiring and postpone capital investing. Output would fall and unemployment rise. On its turn, if economic agents are made/getting more aware of financial turmoil, economic slowdown and adverse unemployment dynamics –even it would not directly affect themselves-, they are likely to revise downward economic sentiment, adding additional momentum to the slowdown.

In a recent book, Akerlof and Shiller (2010) reconsider the role of “animal spirits” during the financial crisis and refine the concept. In their approach, “animal spirits” are linked to confidence, fairness, corruption and bad faith, money illusion and stories. Changes in these aspects may trigger a change in animal spirits and economic sentiment in general. Cycles of overoptimism and overpessimism of economic agents may then be driving (speculative) boom-bust cycles along the lines of Minsky’s Panics and Manias. Traditional macroeconomics mostly would ignore these more psychological factors and their effects on business cycle fluctuations.

This study includes economic sentiment into an analysis of the recent period of financial turmoil and economic slowdown in the euro area in an attempt to give an own role for this role in explaining business cycles fluctuations during the recent economic slowdown. In order to so, we include the Economic Sentiment Indicator (ESI) into a small-scale VAR model that also contains industrial production, retail sales and unemployment. The ESI is an indicator of economic sentiment and confidence based on a broad scale survey data analysis and it will be used as our proxy for sentiment and its effects. More specifically we assess to which extent sentiment shocks affect business cycle conditions in the euro area . This is done by analysing the impulse response functions and variance error decomposition propagation of shocks to economic sentiment, industrial production, retail sales and unemployment in the euro area and EU. In addition, the setup allows also to investigate the impact of economic conditions on economic sentiment. It is clear that apart from such psychological factors, economic sentiment is clearly also affected by business cycle conditions

Our analysis is also based on a recent literature that analyses ‘news’ shocks in financial markets, following Beaudry (2004). Clearly, economic sentiment is linked to information flows and its processing by agents. While the ‘news’ shock literature assumes rational agents, in the economic sentiment context a broader interpretation seems more realistic. In particular, we find it intuitively

appealing that notwithstanding a rational approach to news in general, economic agents may start to frame news in case of periods with strongly declining or rising economic sentiment. In that case, economic agents overemphasise news that is in line with their sentiment and tend to downplay news that is not consistent their sentiment. Such a subjective filtering or ‘framing’ may than also be one of the factors at the base of large sentiments shifts.

Business cycle analysis uses already quite often also business and consumer survey data on economic agents’ judgements about current and future economic developments even if these data have a number of conceptual limitations compared to hard business cycle data. Their assessment provide policy-makers, economists and business managers with useful information about the current state of the economy and may be used in forecasting short-term developments.

At the same time, we argue, innovations to economic sentiment can be seen as an independent source of macroeconomic shocks: shocks to consumer and producer confidence may induce changes in the consumption and productions decisions made by them. This issue is very relevant in the context of the current recession as the sudden drop in consumer and producer confidence due to the turmoil in the financial markets and banking sector can be considered as crucial factors in the transmissions from the financial shocks to real economic activity, in particular output, sales and employment. In that sense, economic sentiment indicators may guide policymakers in a similar way as inflation expectations: sentiment indicators may provide valuable information for macroeconomic policy design by providing indications of the expectations of consumers and producers.

Implicitly or explicitly, survey data are usually assumed to be leading variables relative to business cycles (typically a lead of approximately 4 to 6 months is assumed by analysts): following the notions of the rational expectations hypothesis, the expectations of consumers and producers could be interpreted as unbiased estimators of the business cycle as rational agents will process all relevant information in their decision making. This also explains the usefulness of using such survey data in business cycle analysis: this property of leading indicator would provide a gauge about the business cycle in the near future. At an empirical level, the degree of leading in survey data, however, is less of certitude and subject to empirical verification: the amount of leading may differ between countries and subject to change over time. In fact, one can not rule out that lagging elements are also entering survey data as some agents may base their expectations of current and future business cycle dynamics about the experiences in the (recent) past, therefore forming expectations and reacting more along the line therefore of the adaptive expectations hypothesis.

Section 2 establishes the main stylised facts concerning business cycle synchronisation in the euro area. Section 3 analyses business cycle synchronisation between the euro area and non-euro area countries. Section 4 uses dynamic correlation analysis to further refine the temporal aspects of business cycle synchronisation. Section 5 concludes the paper by summarising the main findings.

2. Analysing business cycles and economic sentiment : methodology and stylised facts for the euro area

In this section, a set of stylised facts concerning business cycle and business cycle sentiment in the euro area and EU is provided.

2.1 Methods of estimating the business cycle: patterns of leading and lagging variables

Our dataset encompasses the EU Commission’s economic sentiment indicator (ESI), and three other business cycle indicators: industrial production (IP), retail sales (RET) and unemployment (UNE). Data are monthly and collected for all EU27 countries and the euro area and EU27 aggregate. The ESI is composed of the industrial, services, consumer, construction and retail trade confidence indicators; the industrial confidence indicator has a weight of 40%, the services confidence indicator a

weight of 30%, the consumer confidence indicator a weight of 20% and the two other indicators a weight of 5% each. Confidence indicators are arithmetic means of seasonally adjusted balances of answers to a selection of questions closely related to the reference variable they are supposed to track (e.g. industrial production for the industrial confidence indicator). Surveys are defined within the Joint Harmonised EU Programme of Business and Consumer Surveys. The economic sentiment indicator (*ESI*) is calculated as an index with mean value of 100 and standard deviation of 10 over a fixed standardised sample period, values of the economic sentiment indicator above (below) 100 indicate above-average (below-average) economic sentiment. Currently, mean and variance are fixed over the period 1990-2007. Figure 1 plots the ESI and its subcomponents for the Euro Area aggregate:

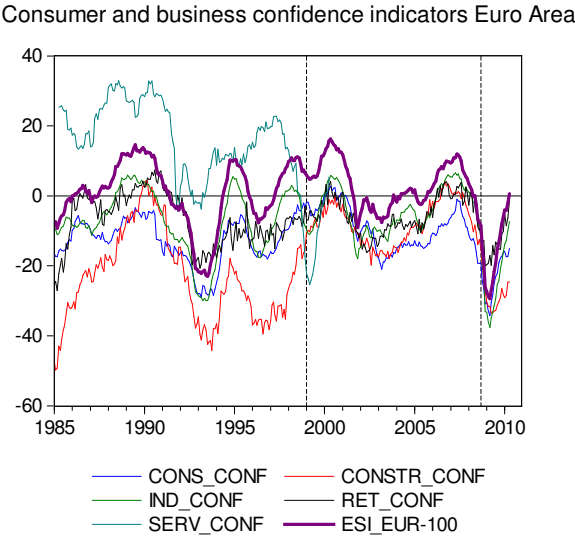


Figure 1

Correlations between the subcomponents are high except for the services confidence indicator:

	CONS_CONF	CONSTR_CONF	IND_CONF	RET_CONF	SERV_CONF
CONS_CONF	1.00				
CONSTR_CONF	0.70	1.00			
IND_CONF	0.83	0.65	1.00		
RET_CONF	0.61	0.82	0.58	1.00	
SERV_CONF	-0.01	0.11	0.38	0.32	1.00

Table 1

The industrial production index (*IP*) shows the output and activity of the industry sector. It measures changes in the volume of output on a monthly basis. Data are compiled according to the Statistical classification of economic activities in the European Community, (NACE Rev.2, Eurostat). Industrial production is compiled as a "fixed base year Laspeyres type volume-index". The current base year is 2005 (Index 2005=100). The index is presented in seasonally adjusted form.

The index of deflated turnover for retail trade (*RET*) shows the monthly activity in volume of the retail trade sector. It is a short-term indicator for consumer demand. Data are compiled according to the Statistical classification of economic activities in the European Community, (NACE Rev.2, Eurostat). Deflated turnover for retail trade are compiled as a "fixed base year Laspeyres type volume-index". The current base year is 2005 (Index 2005=100). The index is presented in seasonally adjusted form.

Unemployment plays a key role in macroeconomic transmissions: reflecting labour market adjustment it will reflect the production (the supply side) and consumption (the demand side) decisions

in the economy. On its turn we will let sentiment shocks affect the decisions of producers and consumers.

Figure ? displays the ESI and the growth rates of industrial production, retail sales and number of unemployed. These variables will constitute the endogenous variables in the small VAR model of the Euro Area –viz. small macroeconomic model- that will be used in the next section to analyse the impact of sentiment shocks. By including the sentiment indicator as one of its variables, it becomes to analyse such sentiment shocks and their impact.

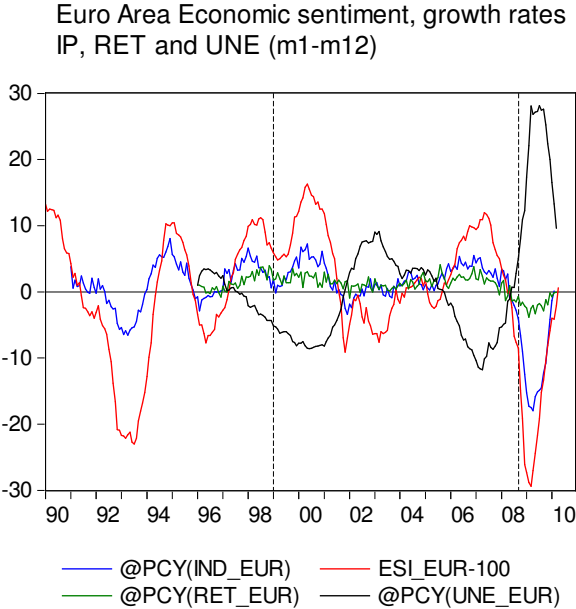


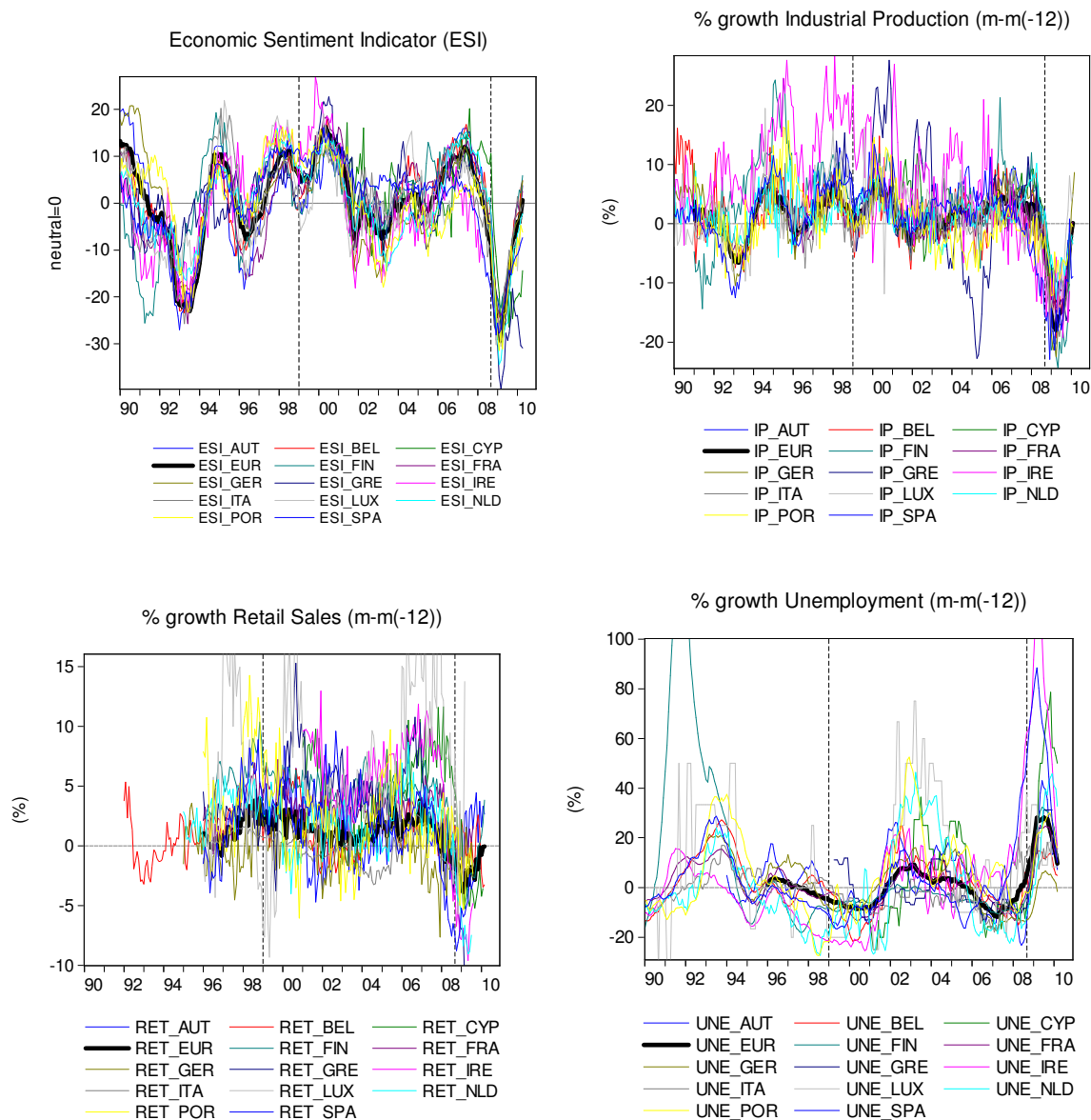
Figure 2

Contemporaneous Correlations between these variables are high:

	@PCY(IND_EUR)	ESI_EUR-100	@PCY(RET_EUR)	@PCY(UNE_EUR)
@PCY(IND_EUR)	1.00			
ESI_EUR-100	0.90	1.00		
@PCY(RET_EUR)	0.79	0.79	1.00	
@PCY(UNE_EUR)	-0.86	-0.88	-0.74	1.00

A positive association appears to exist between economic sentiment and production viz. retail sales, whereas unemployment displays a negative relation. Inspection of the autocorrelation suggests in addition patterns of small leads and lags between these variables, as can be seen in Table

It is important to note that behind the Euro Area aggregate data are the individual data of the Member States. In Figure 3 we display the ESI, IP, RET and UNE indicators.



(a) euro-area 16 countries

Synchronisation of sentiment in the euro areas seems to be high and comparable to the synchronisation of output. The synchronisation of output in the euro area has been studied in a large literature on business cycle synchronisation in the euro area, since business cycle synchronisation is a crucial prerequisite for a well-functioning monetary union. This literature –see e.g. ?- has indeed established that business cycle synchronisation is high in the euro area. Retail sales and unemployment dynamics are also synchronised mostly, however to a somewhat lower degree. Synchronisation of economic sentiment may be relevant from a policy perspective: if sentiment shocks indeed can be seen as an independent source of macroeconomic fluctuations in the euro area, it is of quite some relevance to know that economic sentiment and shocks therein are sufficiently synchronised. It could also reflect as a rapid diffusion or contagion inside the euro area of economic sentiment shocks. It would also make us confident to focus in the next section on the euro area analysis rather than having to analyse each individual country.¹

¹ To be on the safe side we however compared the results for the euro area in the next section with the outcomes of the same model in case of Germany.

3. A VAR model of Business cycle (sentiment) synchronisation in the EU

III. Identification and Estimation Strategy

At a macroeconomic level, causality between consumer and producer confidence –such as e.g. measured by the ESI variable introduced above- and macroeconomic variables –here in particular unemployment (UNE), industrial production (IP), and retail sales (RET) may run both ways: increased confidence may boost spending, production and employment, at the same time increased production, employment and incomes may boost confidence. This aspect suggests that a VAR model may be the most appropriate tool if one is interested in studying the interaction between confidence indicators and macroeconomic adjustments.

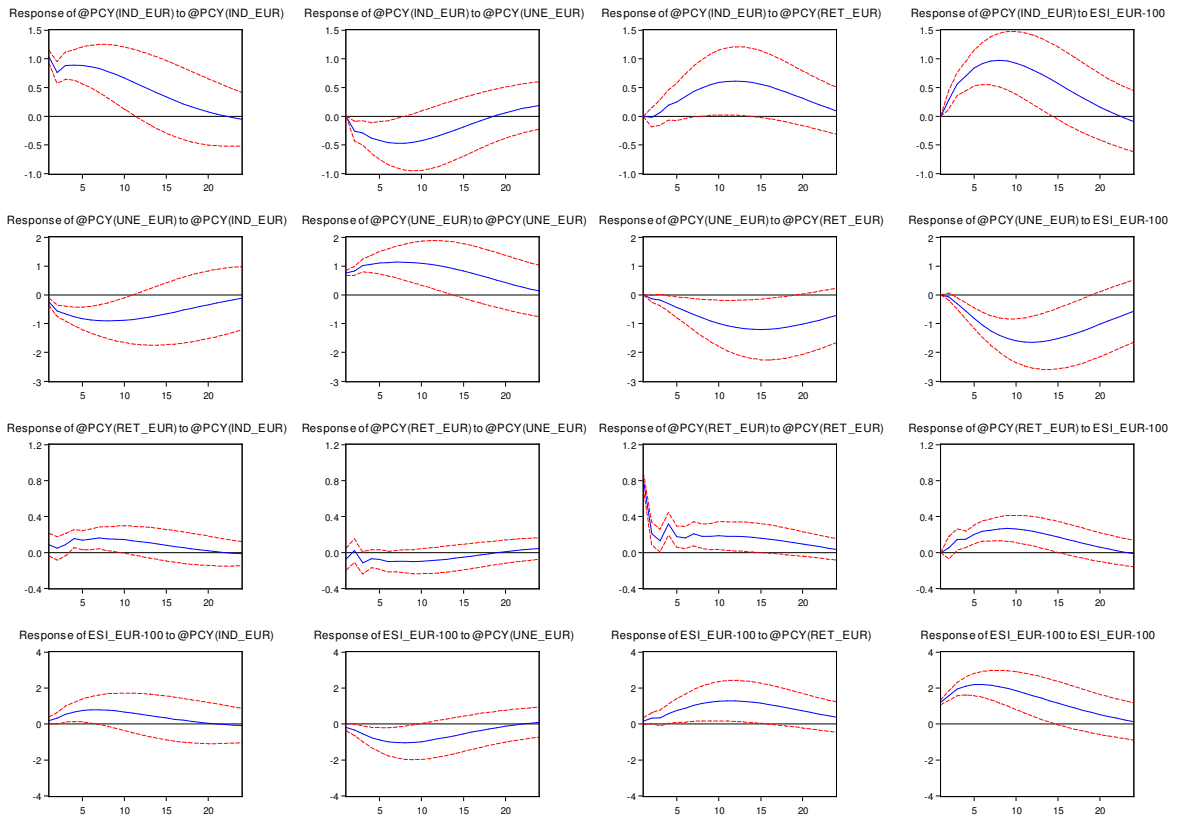
$$\begin{bmatrix} \Delta IP_{m-12} \\ \Delta UNE_{m-12} \\ \Delta RET_{m-12} \\ ESI \end{bmatrix} = [A] \begin{bmatrix} \Delta IP_{(m-12)-1} \\ \Delta UNE_{(m-12)-1} \\ \Delta RET_{(m-12)-1} \\ ESI_{-1} \end{bmatrix} + \begin{bmatrix} e^{IP} \\ e^{UNE} \\ e^{RET} \\ e^{ESI} \end{bmatrix} \quad (1)$$

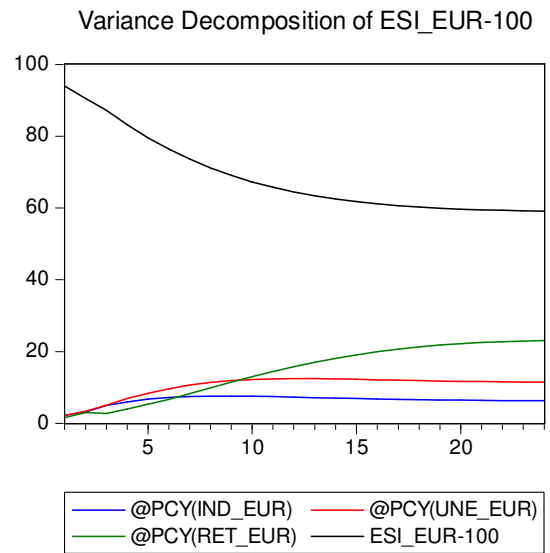
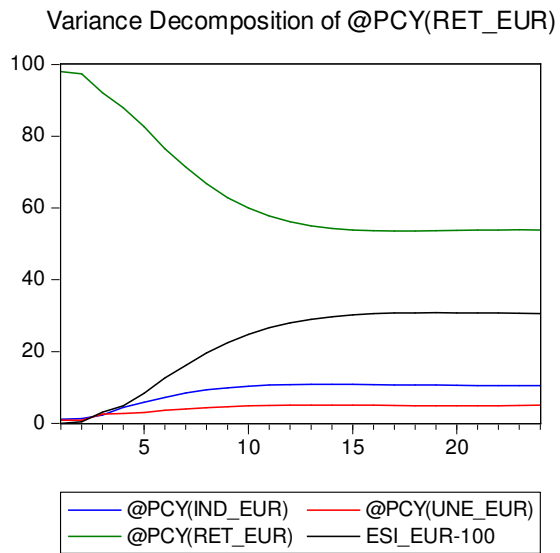
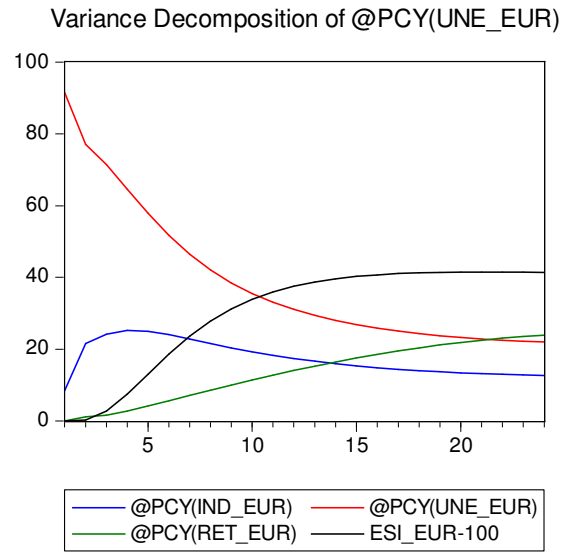
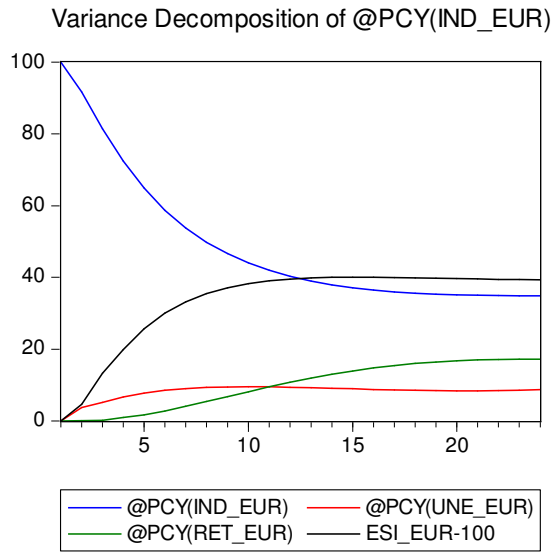
The VAR model if interpreted as a small scale reduced from macroeconomic model, therefore includes the dynamics of production, consumption –retail sales can be thought of as a broad proxy for consumption-, labour markets and economic sentiment.

Lag length tests suggest that including 3 lags into the specification is appropriate. Changing the ordering of the variables or using generalized impulses does hardly change the results in Figure 1, providing some confidence about the robustness of these results.

Another very informative instrument tool is the Variance Error Decomposition; this instrument can be used to see if sentiment shocks eg. have some importance in explaining fluctuations in the other variables and if on its turn the level of economic sentiment is affected by shocks to the business cycle measures.

Response to Cholesky One S.D. Innovations ± 2 S.E.





4. Conclusions

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		SD	auto	Cross correlogram Economic Sentiment Indicator ESI											
				-12	-9	-6	-3	-1	0	1	3	6	9	12	
Austria	IND	4.41	0.8	0.17	0.38	0.63	0.81	0.85	0.83	0.75	0.55	0.18	-0.13	-0.31	
	RET	10.46	0.95	-0.05	0.11	0.3	0.47	0.55	0.57	0.58	0.56	0.44	0.24	0.02	
Belgium	IND	2.06	0.21	-0.22	-0.34	-0.42	-0.4	-0.31	-0.24	-0.16	0.01	0.25	0.4	0.44	
	RET	5.23	0.98	0.09	0.27	0.49	0.66	0.7	0.69	0.62	0.44	0.09	-0.22	-0.4	
Bulgaria	IND	11.25	0.96	0.11	0.27	0.41	0.49	0.47	0.44	0.39	0.25	0.01	-0.22	-0.37	
	RET	2.04	0.81	-0.34	-0.38	-0.4	-0.33	-0.24	-0.18	-0.1	0.08	0.33	0.51	0.59	
Cyprus	IND	7.59	0.87	-0.3	-0.18	0.08	0.43	0.65	0.73	0.73	0.66	0.4	0.09	-0.11	
	RET	13.65	0.92	-0.19	-0.02	0.23	0.5	0.65	0.71	0.7	0.63	0.41	0.16	-0.06	
Czech Rep	IND	7.37	0.94	-0.26	-0.22	-0.11	0.09	0.26	0.35	0.44	0.59	0.67	0.57	0.38	
	RET	4.57	0.54	-0.31	-0.02	0.4	0.8	0.96	1	0.97	0.8	0.4	-0.02	-0.31	
Denmark	IND	16.22	0.91	0.24	0.4	0.54	0.62	0.62	0.6	0.53	0.34	0.07	-0.19	-0.34	
	RET	8.17	0.87	-0.17	-0.37	-0.45	-0.51	-0.37	-0.44	-0.37	-0.2	0.04	0.2	0.24	
Estonia	IND	6.95	0.86	0.12	0.27	0.48	0.66	0.72	0.71	0.65	0.48	0.15	-0.17	-0.38	
	RET	17.62	0.94	0.23	0.19	0.16	0.13	0.1	0.08	0.04	-0.04	-0.15	-0.27	-0.4	
EU27	IND	3.29	0.72	-0.5	-0.5	-0.43	-0.27	-0.1	0	0.12	0.34	0.61	0.74	0.72	
	RET	5.11	0.66	-0.25	-0.12	0.09	0.25	0.42	0.5	0.51	0.47	0.34	0.16	0	
France	IND	16.12	0.91	0.35	0.3	0.16	-0.09	-0.29	-0.38	-0.44	-0.46	-0.35	-0.23	-0.12	
	RET	4.54	0.88	0.31	0.39	0.47	0.57	0.63	0.64	0.64	0.57	0.47	0.41	0.38	
Germany	IND	11.96	0.9	0.03	0.19	0.4	0.63	0.78	0.85	0.83	0.72	0.55	0.41	0.3	
	RET	49.43	0.85	-0.43	-0.42	-0.46	-0.57	-0.6	-0.57	-0.45	-0.26	-0.07	0.1	0.17	
Greece	IND	9.25	0.89	0.28	0.35	0.5	0.68	0.78	0.82	0.78	0.72	0.41	0.23	0.09	
	RET	3.76	0.9	0.12	0.33	0.55	0.75	0.81	0.81	0.74	0.56	0.24	-0.04	-0.25	
Ireland	IND	8.34	0.91	-0.34	-0.46	-0.56	-0.68	-0.68	-0.65	-0.53	-0.29	-0.01	0.17	0.3	
	RET	1.38	0.71	0.17	0.3	0.45	0.59	0.64	0.65	0.57	0.42	0.2	0	-0.12	
Italy	IND														
	RET														
Latvia	IND														
	RET														
Lithuania	IND														
	RET														
Luxembourg	IND														
	RET														
Malta	IND														
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the Netherlands	IND														
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Spain	IND														
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Sweden	IND														
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UK	IND														
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Table 1
Cross-correlogram ESI. Significant correlations in grey. Highest cyclical correlation in boxes