

Layoffs and economic crises: A VAR approach on the Italian labour market

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Motivations

- After the economic crises of 2007 in Italy the level of GDP falls of 5 percentage points followed by production, employment and wages (*ISTAT 2015*)
- This scenario underlines the weakness of the Italian labour market and a significant recourse to layoffs especially during downswing
- The effects should be the use of layoffs as a policy to anticipate the economic cycle

Our Contribution

- In the literature many works analyse the relationship between aggregate supply and labour
- Although the positive impact of labour on aggregate supply is well documented, less is known about the effects of layoffs on the economic cycle
 - By using VAR and VECM models we measure the effect of layoffs to support the labour market

The Italian labour market

Compared with other European countries the Italian labour market has lower activity and employment rates, whilst the unemployment rate is relatively higher

The sectorial structure is traditional; the agricultural employment is still higher compared with the industrial sector

Important differences are present within the country between the Northern and the Southern regions

Italian labour market: layoffs (I)

The layoffs (cassa integrazione guadagni) are established by the law and they are designed to replace or supplement the salary of workers suspended from work, they are also devoted to people working in a reduced number of hours due to production difficulties of the firm

In Italy there are three different types of layoffs: ordinary (ordinaria), extraordinary (straordinaria) and notwithstanding (in deroga) layoffs

Italian labour market: layoffs (II)

The ordinary layoffs is devoted to firms with temporary and transitory difficulties

The extraordinary layoffs is devoted to help during particular periods such as: crises, restructuration, reorganization, privatization, etc.

The notwithstanding layoffs is a wage subsidy to help firms and workers not beneficiary of the other two types of layoffs

Data

- Italian data are derived from EUROSTAT and INPS database
- The period covers from 2005M1 to 2014M5 for a total of 221 monthly observations

Variables

The analysis focuses on the following time series:

- Industrial production index (*ipi*)
- Ordinary layoffs (*lfs_ord*)
- Extraordinary layoffs (*lfs_exord*)
- Notwithstanding layoffs (*lfs_der*)

Empirical Approach

The empirical analysis is conducted by applying the VAR models and the Granger Causality Test

Whilst, the VECM approach is used to investigate the cointegration relationship within the series

VAR model to test the relation ipi-lfs_ord

	Δ_{ipi_t}	$\Delta_{lfs_ord_t}$
$\Delta_{ipi_{t-1}}$	0.021 (0.81)	-3.477*** (1.096)
$\Delta_{lfs_ord_{t-1}}$	-0.015** (0.0079)	0.056 (0.091)
dum1	-0.02** (0.008)	-0.09* (0.013)
AIC	-5.99	
BIC	-5.89	
HQC	-5.95	
ARCH Test	First eq.	Second eq.
Ljung-Box Q' Test	0.9	0.62
	First eq.	Second eq.
	0.536	0.369

VAR model to test the relation ipi-lfs_extraord

	Δipi_t	Δlfs_exord_t
Δipi_{t-1}	0.038 (0.134)	-0.10 (0.88)
Δlfs_exord_{t-1}	0.008 (0.009)	-0.32** (0.13)
dum1	-0.02*** (0.008)	-0.04** (0.001)
AIC	-6.37	
BIC	-6.28	
HQC	-6.33	
ARCH Test	First eq.	Second eq.
Ljung-Box Q' Test	0.13	0.21
	First eq.	Second eq.
	0.79	0.47

Granger Causality Test

Variables	Optimal Lags ^a (p.value)	6 Lags (p.value)	10 Lags (p.value)	12 Lags (p.value)
$\Delta_{ipi_t} \rightarrow \Delta_{lfs_ord_t}$	0.003***	0***	0.001***	0.008***
$\Delta_{lfs_ord_t} \rightarrow \Delta_{ipi_t}$	0.054*	0.065*	0.0391**	0.0104**
$\Delta_{ipi_t} \rightarrow \Delta_{lfs_exord_t}$	0.943	0.833	0.076*	0.015**
$\Delta_{lfs_exord_t} \rightarrow \Delta_{ipi_t}$	0.496	0.177	0.341	0.426

Note: Ho: No Granger-causality. ^a The information criteria of Akaike (AIC), Schwartz Bayesian (BIC) and Hannan-Quinn (HQC) were used to select the optimal number lag that is equal to one. In the table are reported the *p-values*. (*), (**), (***) respectively indicate significance at the 10%, 5% and 1% level.

Causality Test based on VECM

	Short term	Long term	VECM	
	Effect	Effect		
	Wald Test	EC_{t-1}	Short term	Long Term
Dependent Variable:	1.03	-1.79***	$ipi \neq lfs_der$	$ipi = lfs_der$
Δlfs_der	(2.94)	(0.55)		
Dependent Variable:	0.005	0.0032	$Lfs_der \neq ipi$	$lfs_der \neq ipi$
Δipi	(0.098)	(0.018)		

The standard errors are shown in the brackets. (*), (**), (***) respectively indicate significance at 10%, 5% and 1%.

Results

- The VAR estimation underlines that in the short term the industrial production index is negatively influenced by the variation of ordinary layoffs and vice versa
- Moreover the VAR estimation shows that in the short run there is no relation between industrial production index and extraordinary layoffs
- Granger Causality Test confirms in the short run a two-way relation from the industrial production index to ordinary layoffs and it shows a one-way relation from the industrial production index to extraordinary layoffs delayed up to a period from 10 to 12 months
- The VECM model reveals that industrial production index influences notwithstanding layoffs only in the long-run

Conclusions and Policy Implications

- The results suggest that layoffs except for ordinary layoffs cannot be used as a policy to anticipate the economic cycle but only to support the labour market
- However, since the purpose of the ordinary layoffs is to support firms and workers for a transitory and temporary period, whilst the extraordinary layoffs has the purpose to sustain them during a longer period (e.g. crises) it seems that in Italy the extraordinary layoffs is not sufficient to help firms and workers surviving during a crisis such as the one started in the 2007

Future steps

To investigate whether a different impact is present in the four Italian macro-areas: North-West, North-East, Centre and South and Islands

To investigate whether a different impact is present in different industrial sector

As a robustness check to use the GDP series instead of IPI index

Thank you for your attention!

Comments are welcome!

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