IMPLEMENTING FISCAL OR MONETARY POLICY IN TIME OF CRISIS? RUNNING GRANGER CAUSALITY TO TEST THE PHILLIPS CURVE IN SOME EURO ZONE COUNTRIES

Gianluigi Nico
Department of Philosophical, Pedagogical, and Economic-Quantitave Sciences, University ,"G.D'Annunzio" of Chieti-Pescara, Pescara, Italy.
gianluigi.nico@unich.it

Abstract: *This paper aims to provide empirical evidence about the theoretical relationship between inflation and unemployment in 9 European countries. Based on two major goals for economic policymakers namely, to keep both inflation and unemployment low, we use the ingredients of the Phillips curve to orient fiscal and monetary policies. These policies are prerogative for the achievement of a desirable combination of unemployment and inflation. More in detail, we attempt to address two basic issues. One strand of the study examines the size and sign of the impact of unemployment rate on percentage changes in inflation. In our preferred econometric model, we have made explicit the evidence according to which one unit increase (%) in unemployment reduces inflation of roughly 0.73 percent, on average. Next, we turn to the question concerning the causal link between inflation and unemployment and we derive a political framework enables to orient European policymakers in the implementation of either fiscal or monetary policy. In this context, by means of the Granger causality test, we mainly find evidence of a directional causality which runs from inflation to unemployment in 4 out of 9 European countries under analysis. This result implies that political authorities of Austria, Belgium, Germany and Italy should implement monetary policy in order to achieve pre-established targets of unemployment and inflation. In the same context, a directional causality running from unemployment to inflation has been found in France and Cyprus suggesting that a reduction in the unemployment level can be achieved through controlling fiscal policy. However, succeeding in this goal may lead to an increasing demand for goods and services which, in turn, might cause a higher inflation than expected. Finally, while there is no statistical evidence of a causal link between unemployment and inflation in Finland and Greece, a bidirectional causality has been found in Estonia. This implies that pre-established targets of inflation and unemployment can be achieved by political authorities by coordinating the monetary and fiscal policy.*

Keywords: *Econometric Analysis; Fiscal Policy; Inflation; Monetary Policy; Unemployment.*

JEL classification: *C01; E52; E31; E52; E62;E63.*

1. Introduction and aim of the study

This article is grounded on the view that, especially during recessions, GDP can be raised through stimulating aggregate demand. Boosting aggregate demand during hard economic times represents, therefore, a key challenge to be put at the top of the political agenda if unemployment is intended to be reduced to the pre-crisis levels. As a starting point for discussion, we base this paper on the Keynesian general theory and combine the ingredients of the Phillips curve. Given this theoretical framework, we here propose a basic econometric model to be used while deciding between monetary and fiscal policy. The overarching goal of this paper implies developing a theoretical and econometric framework which helps policymakers to understand if it is aggregate demand that reduces unemployment or if it is a low level of unemployment that boosts aggregate demand. Understanding the causal link is central while implementing macroeconomic policies. The objective of this paper is therefore twofold: on the one hand we preliminary estimates the pure effects of unemployment on percentage changes in inflation. On the other hand we try to estimate what leads to what namely, if it is a low level of unemployment that causes inflation -via aggregate demand- or vice-versa. The provision of factual evidences about the causal link should, in turn, reflect in a sort of trade-off between monetary and fiscal policy. In order to discuss the above mentioned topic, this paper is organized as follows: section 2 reviews the literature by enquiring into the stylized facts characterizing the linkage between unemployment and inflation. It also highlights *why* the theories underlying such a relationship are crucial in terms of policy responses to high unemployment rate. Section 3 approaches econometric techniques in order to both estimate pure effects of unemployment on percentage changes in inflation and the direction between inflation and unemployment. Section 4 concludes and discusses policy responses at the country level.

2. Unemployment and inflation: a brief literature review and some theoretical implications

The history teaches us that from time to time negative fluctuations in the GDP growth exacerbate the economic cycle. Short periods of stagnation and recession are however followed by periods of rapid economic growth, boom or expansion. Frankel and Rapetti (2009), for instance, explain the current global economic crisis as a period in which "*the tranquility of states of full-employment gradually leads to a diminishing perception of risks and increasingly optimistic expectations about the future. It is also during periods of tranquil expansion that 'profit-seeking financial institutions invent and reinvent "new" forms of money, substitutes for money in portfolios, and financing techniques for various types of activity*" (Minsky, 1986, p.199). "*As financial innovation and optimistic expectations develop, additional demand for goods and assets is created. Asset prices increase, giving rise to additional profit opportunities which attract new investors. This positive feedback characterises the booming phase of the cycle. (…) At some point, some events calls agents' attention to the high degree of exposure to risk in the system and a phase of financial distress begins.(…). In this contractive phase, pessimistic expectations are dominant and negative feedbacks are the rule. The deflationary developments in the financial markets make most agents either liquidity-constrained or bankrupt, in both cases affecting their spending decisions negatively. Private consumption falls and investment collapses, further fuelling the deflationary trends. What started as a contraction in the financial sector has now spread to the whole economy: (…). In Minsky's view, government regulation cannot eradicate this cyclical pattern completely, but can soften it considerably so as to prevent great crises from happening (again)*" (Frenkel and Rapetti, 2011, p.687).Some stylized facts can be inferred from the above mentioned studies: the first one relates to upwards and downwards movements of average consumer prices during the phases of boom and

recession, respectively. The second one relates to high levels of unemployment during the phases of recession and low level during periods of boom or expansion. As a corollary of these features, we may use the above framework to theoretically explain causes of the current economic crisis. We may also want to describe a stable empirical relationship concerning the patterns of unemployment and average consumer prices that may serve for advising policy actions. There is a sizable literature shedding light on the relationship between these two variables. The most important study clearly refers to the Phillips curve. In 1958 New Zeland born economist, Alban William Housego Phillips, regressed data on unemployment and the rate of change of money wage rates in the United Kingdom from 1861-1957. He found an inverse relationship and stated that lower unemployment in an economy is correlated with a higher rate of inflation. Looking at figure 1 below, we can find evidence of such a relationship in a set of European countries during the period 1980-2012

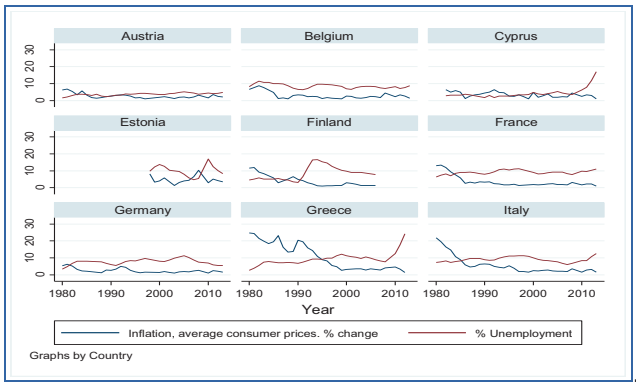

Figure 1: Trend in inflation and unemployment in nine European countries (Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece and Italy.) from 1980 to 2012.
Source: Own elaboration based on IMF statistics (World Economic Outlook, 2013).

The implications behind that study were that governments or monetary authorities can control either inflation or unemployment by means of Keynesian policies. In other words, after deciding the best combination between unemployment and inflation, they could tolerate a given target of inflation in order to lower unemployment. They can, however, contract aggregate demand in order to get lower inflation rates, but at the cost of higher unemployment. In this regard, fiscal policy (i.e., deficit spending) and monetary policy are the two main tools used by governments to raise aggregate demand. As a consequence, they can have prominent effects not only on the aggregate demand but also on output, employment and on the inflationary process.

3. Measuring the impact of inflation on unemployment rate: a basic econometric estimation

Official data interpolated through economic techniques give us a sort of stylized picture of the overall relationship between inflation and unemployment rate. As a starting point for discussion, figure 2 below suggests that 1 unit positive percentage change in inflation causes -β* 0, 01 reduction in unemployment. This is to say, when monetary authorities inject liquidity into the economic system through leveraging on the interest rate, 1 percentage point increase in the inflation rate reduces unemployment of roughly 0.85 percent, on average.

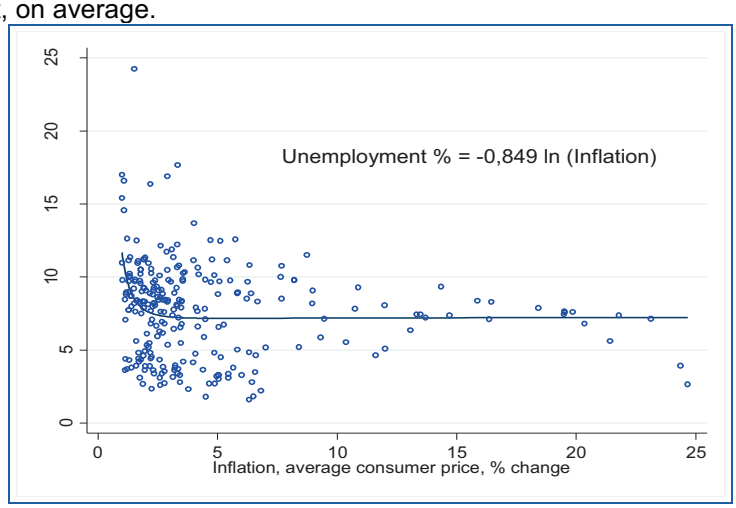

Figure 2. Relationship between unemployment rate and percentage change in inflation for 9 European countries (Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece and Italy). Time series 1980-2013.
Source: Author's elaboration based on *IMF statistics (World Economic Outlook 2013)*.

It is straightforward that by using the nonlinear equation in figure 2, we can only get a naive regression. At the country level, some drawbacks are both related to constraints in estimating average effects of inflationary process on the unemployment rate and in the understanding of the most suitable policy response to be implemented. With this frame of reference, we intend to progress as follows. 1) We preliminary use more appropriate econometric techniques in order test pure effects of unemployment on inflation rate in 9 pilot European countries. 2) We then check for robustness of what leads to what. More in detail, we test Granger causality in the same 9 pilot European countries in order to validate the idea according to which a higher inflation reduces unemployment (or vice-versa).

3.1 Estimating pure effects of unemployment on percentage changes in inflation using RE or FE model

A basic approach to analyze the relationship between percentage changes in inflation and the unemployment rate draws heavily on the baseline equation (1):

$$\%_{i,t,} = \alpha + \beta_1 U_{i,t} + \gamma_t + c_i + \varepsilon_{i,t} \qquad [1]$$

Where index $i$denotes country and $t$denotes time (from 1980 to 2012), $U$is the unemployment rate, ΔInfstands for the percentage change in inflation from one year to the next, $\gamma$is a time effect, c is a country effect and ε is the error term. Both predictor and outcome variables are measured in percentage points.

The inclusion of longitudinal data within our dataset suggests developing a model that includes random or fixed effects (hereafter RE and FE, respectively). The intent here is to control for omitted characteristics, including unobserved characteristics of country. From a very general perspective, the idea behind the use of a RE or FE model is to estimate that coefficient which represents the average effect of Δinf when U changes across time and between countries by one unit

Table 1: Estimated coefficients by means of both RE and FE models. Results obtained using fixed-effects (FE) estimators with cluster-robust standard errors (clustering by country). Asterisks denote significance levels: (**): significant at 5%. Hausmann test is reported at the foot of the table.

	FE last square dummy variable	**FE**	**RE**
Explanatory variables	Inflation, consumer price, percentage change		
Unemployment rate	-.7329523** (.0869501)	-.7329523** (.0869501)	-.6719924** (.0956051)
Belgium	3.845947**		
Cyprus	1.124.548		
Estonia	6.498206**		
Finland	4.873054**		
France	4.90494**		
Germany	2.675665**		
Greece	1.213173**		
Italy	6.781328**		
Intercept	5.527627**	10.23372**	9.802691**
Adj. R2	3,013888889		
Pr>F	0.0000	0.0000	0.0000
Within		1,54166667	1,5416667
Between		1,39166667	1,3916667
Overall		0,12708333	0,1270833
TEST			
Correlation between predictor and entity's error term		-0.5031	0 (assumed)
Hausmann Test	0.000		

Source: author's elaboration and calculation

For the FE model the estimated equation becomes:

$$\Delta Inf_{i,t,} = \beta_1 U_{i,t} + c_i + \varepsilon_{i,t} \qquad [2]$$

Where c_i (i= 1, 2…9) is the unknown intercept for each country. It is worth noting that the slope coefficient is the same from one country to the next. What is varying in this equation is the c_i term (that varies across country but not over time). It is also interesting to notice that by estimating a FE least square dummy variable (LSDV) model we can absorb country specific effects. The first column in table 1 above lists estimated coefficients.
On average, one unit percentage change in unemployment reduces inflation of roughly 0.73 percent. Figure 3 below provides a graphical exploration at the country level

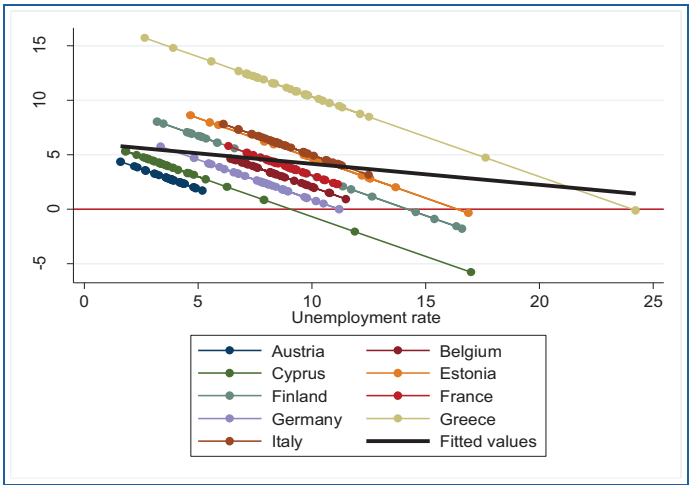

Figure 3. FE with LSDV model. Fitted values.
Source: author's elaboration based on estimations in table 1 (first column).

By contrast, the rationale behind the use of a RE model is the assumption (validated by statistical test)[1] that entity's error term is not correlated with the explanatory variable. By using a RE model, the estimated equations becomes:

$$\Delta Inf_{i,t,} = \beta_1 U_{i,t} + u_{it} + \varepsilon_{i,t} \qquad [3]$$

Where $u_{it}$is the between-entity error. This model allows including time invariant variables.
The estimated coefficient in the RE model reveals that one unit percentage change in unemployment rate reduces inflation by 0.67 percent, on average. Another interesting result inferred by the above reported estimations relates to the intercept. The intercept in the model suggests the average value of inflation (% changes) when the total labour force is engaged in productive activities[2]. From an economic perspective, such a situation involves inflation rising as a consequence of positive changes in GDP growth and a fall in unemployment rate up to 0 percent. In this context, the economy would move along the Phillips curve. We finally point out that according to the Hausmann test the FE model is strongly preferred. It is worth noting that our data validate the Phillips curve thus suggesting a sort of trade-off for decision makers.

3.2 From unemployment to inflation: what leads to what? Testing Granger causality

Deciding between a fiscal or a monetary policy means to understand what leads to what, *i.e.* investigating the empirical causality between unemployment and inflation (or vice-versa). According to the Phillips curve, decision makers may decide to stimulate aggregate demand through implementing instrumental variables (public expenditure or interest rate) in order to reduce unemployment (or inflation). More specifically, while policy actions should be constrained with low levels of unemployment and high inflation, they should be boosted with high level of unemployment and low inflation. The above implemented model has provided us with information about the position and slope of the Phillips curve: on the one hand, the position identifies the attainable goals. On the other

[1]See test reported in table 1 above.
[2]Statistically, the unemployment rate equals 0.

hand, the slope of the curve identifies the trade-offs since a steep curve involves a big change in inflation for a small change in unemployment. A flat curve implies a small change in inflation for a big change in unemployment. As a consequence, once both the position and slope of the Phillips curve has been identified (and the quantifiable target established), policymakers act on either fiscal or monetary policy. In this context, our dilemma is based on the causal link of the relationship. To provide a meaningful example, let us assume that a low level of unemployment would boosts aggregate demand that, in turn, will cause a high level of inflation. It is straightforward that the established targets of unemployment and inflation need to be achieved through stimulating fiscal policy and by means of public spending that encourages economic activities. By contrast, assuming that the causal link run from inflation to unemployment, then the proper policy to be limplemented is the monetary one. As a corollary of this preamble the following analysis intends to investigate the causal relationship between unemployment and inflation. The approach used to explore this link is to use the Granger causality test which allows us to determine whether positive percentage changes in inflation causes low rates of unemployment or vice-versa. The Granger causality test is structurally shaped in the form of a Vector Autoregressive model (hereafter VAR). Conceptually, such a test allows us to determine if lagged values of a time series X might cause a time series Y. The Granger test can be used as a prove of causality especially when the economic theory does not provide us with enough information. We preliminarly specify a very general possible relationship between percentage changes in inflation and unemployment according Loganathan *et al.* (2011):

$\Delta Inf_t = f(U_t)$ or vice-versa [4]

Where ΔInf_t is the percentage change in inflation from 1980 to 2012 and U_t is the unemployment rate in the same period. Before testing the causal relationship, it is important to perform the unit root test, namely the Dickey Fuller one, for each variable in the analysis. The importance to check for the presence of unit roots mainly deals with possible non-stationary processes of the variables in the model. When it happens, we need to make them stationary by taking the first, second or even higher differences. Such a test is reported in table 2 below

Table 2: Dickey-Fuller test for unit root with critical values at 1% (*), 5%(**) and 10% (***).

Augmented Dickey Fuller Test for unit root (constant and trend)							
Country	**Variable**	**Difference**	**Test statistic**	**1%**	**5%**	**10%**	**MacKinnon approximate p-value for Z(t)**
Austria	% Inflation	**Δ**	-5.405*	-4.38	-3.6	-3.24	0.000
	% Unemployment	**Δ**	-4.672*	-4.38	-3.6	-3.24	0.008
Belgium	% Inflation	**Δ**	-3.167**	-4.38	-3.6	-3.24	0.021
	% Unemployment	**Rate**	- 3.715**	-4.38	-3.6	-3.24	0.003
Cyprus	% Inflation	**Δ**	-3.442**	-4.38	-3.6	-3.24	0.009
	% Unemployment	**Δ**	-2.720***	-4.38	-3.6	-3.24	0.070
Estonia	% Inflation	**Δ**	-3.807**	-4.38	-3.6	-3.24	0.009
	% Unemployment	**Δ**	-3.875**	-4.38	-3.6	-3.24	0.008
Finland	% Inflation	**Δ2**	-3.094**	-4.38	-3.6	-3.24	0.027
	% Unemployment	**Δ**	-2.958***	-4.38	-3.6	-3.24	0.039
France	% Inflation	**Δ**	-3.102**	-4.38	-3.6	-3.24	0.026
	% Unemployment	**Δ**	-3.283**	-4.38	-3.6	-3.24	0.015
Germany	% Inflation	**Δ**	-4.092**	-4.38	-3.6	-3.24	0.006
	% Unemployment	**Δ**	-3.247***	-4.38	-3.6	-3.24	0.075
Greece	% Inflation	**Δ2**	-4.278**	-4.38	-3.6	-3.24	0.003
	% Unemployment	**Δ**	-3.693**	-4.38	-3.6	-3.24	0.002
Italy	% Inflation	**Δ**	-3.674**	-4.38	-3.6	-3.24	0.024
	% Unemployment	**Δ**	-3.701**	-4.38	-3.6	-3.24	0.022

Source: author's elaboration and calculation.

We have pointed out that the Granger causality theory specifies whether lagged values of a time series (let us say Y) causes a time series X. Based on this assumption we now turn to question concerning the optimal lag order to be included in the Granger causality analysis. The most common approach to select and pre-estimate the lag order for a Vector Autoregressive (VAR) model deals with the use of "*information criterion"*. We display in table 3 below the results of the most common approaches used while deciding about the lag length in a VAR. They are Akaike's information criterion (AIC) and Hannan-Quinn information criterion (HQIC). It is important to notice that the lag with the smallest value is the order selected by each criterion and the asterisk, "*", appearing next to the statistics indicates the optimal lag to be included in the Granger analysis (the confidence interval was set at 95%).

Table 3: Information Criterion for length selection in VAR equations. Statistical significance at critical value of 5 percent.

Pre-estimation tests		Lag order selection		AIC	HQIC
Austria	% Inflation	**Δ**	2	2.75486*	2.77168*
	% Unemployment	**Δ**	1	1.47654*	1.48141*
Belgium	% Inflation	**Δ**	1	2.9711*	2.99054*
	% Unemployment	**Rate**	2	1.57247*	1.60163*
Cyprus	% Inflation	**Δ**	1	3.54144*	3.55386*
	% Unemployment	**Δ**	1	2.09276*	2.10445*
Estonia	% Inflation	**Δ**	3	3.04049*	2.56297*
	% Unemployment	**Δ**	3	3.12803*	2.74601*
Finland	% Inflation	**Δ2**	3	3.13835*	3.14676*
	% Unemployment	**Δ**	3	3.47884*	3.50407*
France	% Inflation	**Δ**	1	2.42675*	2.44357*
	% Unemployment	**Δ**	2	1.92351*	1.94875*
Germany	% Inflation	**Δ**	3	1.67347*	1.62881*
	% Unemployment	**Δ**	2	2.07404*	2.04725*
Greece	% Inflation	**Δ2**	0	4.76248*	4.7755*
	% Unemployment	**Δ**	1	2.07523*	2.10127*
Italy	% Inflation	**Δ**	1	2.63819*	2.66523*
	% Unemployment	**Δ**	2	1.37*	1.41057*

Source: author's elaboration and calculation.

Having performed crucial statistical tests, we can now develop the overall econometric framework to be tested for Granger causality:

$$5\begin{cases} \Delta Inf_{t_{Austria}} = \alpha_1 + \delta_1 t + \Phi_{11}\Delta Inf_{t-1_{Austria}} + \cdots + \Phi_{1p}\Delta Inf_{t-p_{Austria}} + \beta_{11}\Delta U_{t-1_{Austria}} + \cdots + \beta_{1q}\Delta U_{t-q_{Austria}} + \varepsilon_{1t} \\ \Delta U_{t_{Austria}} = \alpha_2 + \delta_2 t + \Phi_{21} + \Delta U_{t-1_{Austria}} + \cdots + \Phi_{2p}\Delta U_{t-p_{Austria}} + \beta_{21}\Delta Inf_{t_{Austria}} + \cdots + \beta_{2q}\Delta Inf_{t-q_{Austria}} + \varepsilon_{2t} \end{cases}$$

$$6\begin{cases} \cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots \\ \cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots. \end{cases}$$

$$13\begin{cases} \Delta Inf_{t_{Italy}} = \alpha_1 + \delta_1 t + \Phi_{11}\Delta Inf_{t-1_{Italy}} + \cdots + \Phi_{1p}\Delta Inf_{t-p_{Italy}} + \beta_{11}\Delta U_{t-1_{Italy}} + \cdots + \beta_{1q}\Delta U_{t-q_{Italy}} + \varepsilon_{1t} \\ \Delta U_{t_{Italy}} = \alpha_2 + \delta_2 t + \Phi_{21} + \Delta U_{t-1_{Italy}} + \cdots + \Phi_{2p}\Delta U_{t-p_{Italy}} + \beta_{21}\Delta Inf_{t_{Italy}} + \cdots + \beta_{2q}\Delta Inf_{t-q_{Italy}} + \varepsilon_{2t} \end{cases}$$

Table 4 below reports the result of the Granger analysis while a discussion of both results and policy implication is provided in the concluding remarks.

Table 4: Granger causality test: linking inflation to unemployment (and vice-versa).

Type of relationship= inverse	***Null Hypothesis***	*Prob> chi2*	***Decisi on***	***Timing effects of policy***	***Type of policy to be implemented***
Equation 5 (Causality:Austria)	**ΔUnemployment** does not Granger cause **ΔInflation**	0.708	not rejecte d	**More than 1 years later**	**Monetary policy**
	Δinflation does not Granger cause **ΔUnemployment**	0.068	rejecte d		
Equation 6 (Causality:Belgiu m)	**ΔUnemployment** does not Granger cause **ΔInflation**	0.563	not rejecte d	**More than 1 years later**	**Monetary policy**
	Δinflation does not Granger cause **ΔUnemployment**	0.002	rejecte d		

Equation 7 (Causality: Cyprus)	**Δ Unemployment** does not Granger cause **Δ Inflation**	0.006	Rejected	**More than 1 year later**	**Fiscal policy**
	Δ inflation does not Granger cause **Δ Unemployment**	0.695	Not rejected		
Equation 8 (Causality: Estonia)	**Δ Unemployment** does not Granger cause **Δ Inflation**	0.000	rejected	**2 years later**	**Bidirectional causality: coordination of fiscal and monetary policies**
	Δ inflation does not Granger cause **Δ Unemployment**	0.002	Rejected		
Equation 9 (Causality: Finland)	**Δ Unemployment** does not Granger cause **Δ Inflation**	0.437	Not rejected		**No empirical evidence of causality**
	Δ inflation does not Granger cause **Δ Unemployment**	0.795	Not rejected		
Equation 10 (Causality: France)	**Δ Unemployment** does not Granger cause **Δ Inflation**	0.006	Rejected	**More than 1 year later**	**Fiscal policy**
	Δinflation does not Granger cause **Δ Unemployment**	0.280	Not rejected		
Equation 11 (Causality: Germany)	**Δ Unemployment** does not Granger cause **Δ inflation**	0.063	Not rejected	**1 year later**	**Monetary policy**
	Δ inflation does not Granger cause **Δ Unemployment**	**0.000**	Rejected		
Equation 12 (Causality: Greece)	**Δ Unemployment** does not Granger cause **Δ inflation**	0.065	Not rejected		**No empirical evidence of causality**
	Δ inflation does not Granger cause **Δ Unemployment**	**0.772**	Not rejected		
Equation 13 (Causality: Italy)	**Δ Unemployment** does not Granger cause **Δ inflation**	**0.503**	Not rejected	**More than 1 year later**	**Monetary policy**
	Δ inflation does not Granger cause **Δ Unemployment**	**0.001**	Rejected		

Source: author's elaboration and calculation.

4. Concluding remarks and policy implications

Economic implications behind Phillip's discovery relates to an important political framework: the short-run inverse relationship between unemployment and inflation which leads policymakers to make hard decision. In this regard, lowering one variable results in raising the other. The two-step analysis discussed earlier has been central in understanding the magnitude of the effects of unemployment on inflation and the causal link between inflation and unemployment. In this regard, in our preferred model, *i.e.* the FE one, we have found evidence that one unit percentage increase in unemployment reduces inflation of roughly 0.73 percent, on average. Although the estimated parameter of interest is useful to detect average changes in inflation when one unit change in unemployment occurs, the presented model does not inform us about the causal link between the two variables of interest. The existence of a causal link from inflation to unemployment, and vice-versa, has therefore been detected by means of the Granger

causality test (results are reported in table 4). The econometric framework reveals a directional causality running from inflation to unemployment in 4 out of 9 European countries namely, Austria, Belgium, Germany and Italy. Such a causality implies that the monetary policy is the most suitable one since by acting on the interest rate monetary authorities may decide the desired combination between unemployment and inflation. Indeed, since high levels of unemployment are mainly caused by low inflation, injection of liquidity -through lowering the interest rate- may improve labour market outcomes. It is however worth noting that the timing effects of the monetary policy can be strongly different from one country to another due to country specific characteristics. The above econometric scenario also suggests a directional causality going from unemployment to inflation. This is likely to be evident in France and Cyprus: in these countries, a reduction in the unemployment level will likely boost aggregate demand via an increase in the marginal propensity to consume. The rationale behind this assumption can be summed-up as follows: as the job creation mechanism is generated (through fiscal policy actions), national output tends to increase. This causes a positive effects in nominal wages. Consumers demand more goods and services which reflects in an increasing average consumer prices of goods and services. Finally, given the biderectional causality detected in Estaonia, a coordination of the monetary and fiscal policy would be highly reccomended.

Acknowledgments
I'm particularly grateful to Professor Emiliano Colantonio (University of Chieti-Pescara) and Professor Paolo Paesani (University of Rome "Tor Vergata") for their input and stimulating guidance in the delivery of this paper.

References

Frenkel, R. and Rapetti, M. (2009) *A developing country view of the current global crisis: what should not be forgotten and what should be done*. Cambridge Journal of Economics 2009, 33, 685–702.

Loganathan, N., Muhammad, N.S., Mori, K. (2011) *Dynamic causal relationship between trade balance and unemployment scenario in Malaysia: Granger non-causality analysis*. Economics and Finance Review 04/2011; 1:13-20.

Minsky, H. (1986) *Stabilizing an Unstable Economy*, New Haven, CT, Yale University Press.

Phillips, A.W. (1958) *The Relation between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861-1957*, Economica, New Series, Vol.25, No 100 (Nov., 1058), 283-299.