CENTER OF PLANNING AND ECONOMIC RESEARCH

No. 119

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July 2011

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Is 2% an optimal inflation rate? Evidence from the Euro Area.

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Abstract

Recent studies have shown that the inflation-Relative Price Variability (RPV) relationship can have monetary policy implications concerning the optimal rate of inflation. This paper examines this issue for the (first) 16 Euro Area (EA) countries, for the period between January 1997 and October 2010. We employ semi-parametric estimations using monthly data for the Harmonized Index of Consumer Prices (HICP) and find that the relationship between inflation and RPV exhibits a U-shape functional profile for the majority of the countries. The optimal inflation rate, defined as the HICP rate that minimises RPV, is also derived for EA individual countries and for EA aggregates (EA, EA12 and EA16). It is formally shown that although the European Central Bank's "below but close to 2%" inflation target is (almost) optimal for the EA average, it is not close to the optimum inflation rate for most of the EA countries.

Keywords: Euro Area, monetary policy, relative price variability, semi-parametric estimation.

JEL classification: E31, C23

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Acknowledgments

Mª Ángeles Caraballo acknowledges financial support from Junta de Andalucía (CICE, Proyecto de Excelencia SEJ-4546).

1. Introduction

Over a decade has passed since the introduction of the Euro and many issues are still examined in the relevant literature. One of these regard to the level of the explicit Euro Area (EA) wide inflation target goal set by the European Central Bank (ECB). In accordance to the Maastricht treaty (1992), the ECB's main task is to ensure price stability and initially its official inflation rate target was 2%. In May 2003, the ECB formally redefined its definition of price stability as "below, but close to 2% over the medium term".[1] However, despite the ECB's insistence in achieving low inflation, evidence has been provided that this is not always the case. For example, Fendel and Frenkel (2009) examine the ECB's monetary strategy for 1999-2005 and find that when EA inflation differentials were high, the ECB was reluctant to combat inflation.

Most central banks have adopted a 2% inflation target as it had been generally agreed "that low or zero inflation is the appropriate long run goal for monetary policy" (Kahn, 1996). As there is a well-known positive bias in inflation measurement, a 1-2% target for measured inflation corresponds to actual inflation close to zero (Wynn and Rodriguez-Palenzuela, 2002). However, a number of authors argue that a larger inflation rate is optimum. Blanchard *et al* (2010) and Leigh (2009) point out that central banks should target a 4% inflation rate during periods of positive economic growth to allow for nominal rate decreases during recessions.

There is a consensus in the literature as to the welfare costs caused by the distorting impact of inflation on Relative Price Variability (*RPV*), given that if an increase in inflation raises the dispersion of prices, the costs of getting accurate information about prices for consumers are going to increase as well, e.g. due to menu costs (e.g. Benabou, 1992; Rotemberg, 1983), signal-extraction misperception (e.g. Lucas, 1973) or buyers incomplete information as to the prices offered by different sellers (e.g. Head and Kumar, 2005).[2] Therefore, the optimal inflation rate that minimises costs for consumers can be considered as the one that minimises the *RPV*.

[1] According to the ECB (2004), this policy shift was partially motivated by the implications of inflation differentials amongst the EA countries.
[2] For a detailed discussion on these issues see see Rotemberg (1983), Caplin and Leahy (1991) and Becker and Nautz (2009).

Many authors have supported that the inflation-*RPV* relationship is positive (Jaramillo, 1999).[3] However, recent findings have shown that this relationship could be both non-linear and unstable depending on monetary policy and inflation regimes. More precisely, Caraballo and Dabús (2010) for Spain, Fielding and Mizen (2008) for USA and Choi (2010) for USA and Japan show evidence of a U-shape profile for the inflation-*RPV* relationship. These findings have relevant implications for monetary policy. If the inflation-*RPV* relationship is linear, then the lower inflation, the lower the *RPV* will be and therefore the optimal inflation rate which minimises the welfare costs of price dispersion is zero. However, this implication is not valid if the inflation-*RPV* relationship is non-linear, e.g. it exhibits a U-shape. If this is the case, the inflation rate that minimises *RPV* is positive and therefore reducing inflation beyond a critical point (the minimum of the U-shape) could be harmful (Bruno and Easterly, 1998).

The goal of the paper is to analyse the features of the inflation-*RPV* relationship for the EA as a whole and for each individual EA country for the 1997-2010 period. It will allow to obtain the optimal inflation rate[4] that minimises *RPV* for each country during this period and to compare the differences between the actual monetary policy and the monetary policy that would be preferred by individual member countries. If such differences are particularly large, it is likely that the ECB will be under political pressure for changes in its target (Sturm and Wollmershuser, 2008).

The main results show that the relationship between inflation and *RPV* exhibits a U-shape functional profile for the majority of the countries examined (Austria, Belgium, Finland, France, Germany, Greece, Ireland, Luxembourg, and Spain), a W-shape for three countries (Cyprus, Italy and Slovenia), an always increasing relationship for another two (Malta and Slovakia), while another two (Portugal and Netherlands) are outliers where this relationship is always decreasing.[5]

The paper is organized as follows. Section 2 presents a brief description of the data and the variables used. Section 3 discusses the methodologies used and the empirical results regarding the optimal inflation rates for the EA countries and country aggregates. Section 4 concludes.

[3] Parks (1978) was the first to empirically explore this issue.

[4] Obviously, other criteria for the optimal rate of inflation could be examined. For example, Leigh (2009) conducts simulations to examine how the inflation rate impacted the growth rates of Japan.

[5] These results are just one more indication that the EA is not an optimal currency area as defined by Mundell (1961).

2. Data and variables

This paper uses the HICP, which consists of harmonized indices of consumer prices for a standardized basket of goods and services consumed by a country, where weights are based on household expenditures. Instead of Consumer Price Indices (CPI), HICPs are used as they are more appropriate for the purposes of this paper, as they are specifically designed for comparisons between EA countries. Furthermore, they have been constructed specifically to reflect pure inflation as they control for differences (or changes in) cross-country consumer behaviours. Finally, as the ECB conducts a common monetary policy for the whole monetary union, it uses (targets) the EA HICP to assess price stability.[6]

All data are from Eurostat and cover the EA as a whole (changing composition),[7] the EA16, EA12[8] and each individual EA country for the period from January 1997 to October 2010 (monthly data).[9] The EA16 consists of Austria (AT), Belgium (BE), Cyprus (CY), Finland (FI), France (FR), Germany (DE), Greece (GR), Ireland (IE), Italy (IT), Luxembourg (LU), Malta (MT), Netherlands (NL), Portugal (PT), Slovakia (SK), Slovenia (SI) and Spain (ES).

The analysis is conducted separately for two sets of data. The first includes the twelve main HICP categories (henceforth 2-digit level)[10] and the other includes further detailed HICP data consisting of 118 subcategories (henceforth 3-digit level).[11] The inflation rate is calculated as the annual log-difference of the HICP. *RPV* is a measure of the non-uniformity of the variations of individual prices, relative to the average inflation rate. To obtain the *RPV* a modified version of the

[6] To be precise, the ECB targets the Monetary Union Index of Consumer Prices (MUICP) which is calculated by taking the weighted average of the HICPs from each country within the Euro Area.
[7] As our data sample ends in 2010, Estonia is not included as it joined the EA in 2011.
[8] The EA12 is a subset of the EA16, that is, the EA12 is the EA16 minus Cyprus, Malta, Slovakia and Slovenia as these countries joined the EA after 2001.
[9] Although Eurostat provides HICP data from 1995, there were missing observations for many countries. Therefore, our sample starts from 1997.
[10] The HICP subcategories are Food and non-alcoholic beverages (CP01), Alcoholic beverages, tobacco and narcotics (CP02), Clothing and footwear (CP03), Housing, water, electricity, gas and other fuels (CP04), Furnishings, household equipment and routine maintenance of the house (CP05), Health (CP06), Transport (CP07), Communications (CP08), Recreation and culture (CP09), Education (CP10), Restaurants and hotels (CP11), and Miscellaneous goods and services (CP12).
[11] A detailed list can be found on Eurostat's website.

coefficient of variation (CV) is implemented using the weighted sum of individual prices inflation rate. At time t, the *RPV* can be defined as follows:

$$RPV_t = \frac{\left(\sum_i w_{it} (IN_{it} - IN_{t-12})^2 \right)^{1/2}}{|1 + IN_t|} \tag{1}$$

where w_{it} is the weight of price i in the price index, IN_{it} the inflation rate of group i and IN_t the overall inflation rate at time t. Equation (1) is preferred to the simple variance or standard deviation because it is not spuriously correlated with the mean of the distribution, that is, the inflation rate. Furthermore, equation (1) can be defined when inflation is close to zero or in periods of deflation, which is important as the sample used includes countries with low rates of inflation (e.g. Germany). The traditional formula of CV would not be appropriate as it implies that when inflation is near zero, *RPV* tends to infinity.[12]

3. Empirical results

3.1 Basic regression analysis

As it is common in the literature, a first approach to the relation between inflation and the *RPV* is obtained through a simple OLS regression.[13] Using the Akaike criteria, the optimal number of lags for the EA is selected, which is used for all countries in order to compare results. Thus we estimate the following equation:

$$RPV_t = \alpha + \beta_1 AIN_t + \beta_2 RPV_{t-1} + \beta_3 AIN_{t-1} \tag{2}$$

where *AIN* is the absolute value of inflation. The results for all countries and country aggregates are presented in Table 1. In addition to the coefficient estimates, Table 1 reports the p-value of the Quandt-Andrews structural change test.[14]

[12] This technical detail regarding the CV formula may drive the negative inflation-RPV relationship found in some studies (e.g. Reinsdorf, 1994 and Silver and Ioannidis, 2001).
[13] The stationarity of all series was examined using the ADF test. The results are available upon request.
[14] The Quandt-Andrews breakpoint test is used to identify one or more unknown structural breakpoints in an equation's sample. This test is equivalent to performing single Chow breakpoint tests at every observation,

	EA	EA12	EA16	AT	BE	CY	DE	ES	FI
C	3,16E-05 (0,0792)	0,0002 (0,108)	3,10E-05 (0,0917)	0,0003 (0,0007)	0,0003 (0,0134)	0,0005 (0,0049)	3,92E-05 (0,1659)	0,0004 (0,0522)	0,0002 (0,0866)
AIN_t	0,0118 (0,0056)	0,0184 (0,0269)	0,0122 (0,0064)	0,0087 (0,1274)	0,0005 (0,9571)	0,0034 (0,5075)	0,0170 (0,0001)	-0,0051 (0,5492)	0,0074 (0,1911)
AIN_{t-1}	-0,0109 (0,0033)	-0,0131 (0,0798)	-0,0113 (0,0039)	0,0004 (0,939)	0,0091 (0,3157)	-0,0013 (0,779)	-0,0159 (0,0004)	0,0029 (0,7061)	-0,0068 (0,2151)
RPV_{t-1}	0,9393 (0)	0,6650 (0)	0,9408 (0)	0,4837 (0,0016)	0,5363 (0,006)	0,6534 (0)	0,9389 (0)	0,6672 (0)	0,8104 (0)
Adj R^2	0,8986	0,5284	0,9001	0,3361	0,4272	0,4431	0,8871	0,4604	0,6581
DW	2,0620	2,5381	2,0722	2,2202	2,4652	2,4367	2,1011	2,3140	2,4078
Q-A	1,0000	0,0026	1,0000	0,9512	0,7896	0,7691	0,9780	0,1664	0,0562
	Terms into brackets are the p-values. AIN = absolute value of inflation RPV = relative price variability DW = Durbin-Watson statistic value Q-A = Quandt-Andrews p-value for the Maximum LR F-statistic. The full results from the Quandt-Andrews tests are available upon request.								

	FR	GR	IE	IT	MT	NL	PT	SK	LU
C	0,0002 (0,0144)	0,0005 (0,0129)	0,0003 (0,0053)	7,67E-05 (0,0871)	0,0003 (0,0594)	0,0006 (0,2178)	0,0003 (0,0004)	8,32E-05 (0,0471)	0,0003 (0,0187)
AIN_t	0,0113 (0,0261)	0,0076 (0,4042)	-0,0033 (0,7121)	-0,0078 (0,2326)	0,0012 (0,8269)	0,0186 (0,6791)	-0,0020 (0,8124)	0,0279 (0)	0,0030 (0,7634)
AIN_{t-1}	-0,0067 (0,1444)	-0,0064 (0,4142)	0,0010 (0,9035)	0,0085 (0,1878)	-0,0002 (0,9716)	-0,0278 (0,556)	-0,0023 (0,79)	-0,0259 (0)	-0,0012 (0,8939)
RPV_{t-1}	0,6646 (0)	0,5741 (0,0001)	0,8616 (0)	0,8811 (0)	0,7910 (0)	0,9110 (0)	0,7352 (0)	0,8995 (0)	0,6639 (0)
Adj R^2	0,5442	0,3238	0,7716	0,7888	0,6182	0,8753	0,6428	0,9246	0,4467
DW	2,3841	1,9894	1,7547	2,2484	2,1155	1,9411	2,1667	2,0734	2,2277
Q-A	0,6703	0,0489	0,1038	0,8191	0,9887	0,0029	0,9874	0,7083	0,0162
	Terms into brackets are the p-values. AIN = absolute value of inflation RPV = relative price variability DW = Durbin-Watson statistic value Q-A = Quandt-Andrews p-value for the Maximum LR F-statistic. The full results from the Quandt-Andrews tests are available upon request.								

The results show that for twelve countries *AIN* is not significant and therefore there is no evidence in favour of a linear relationship between *RPV* and the rate of inflation. As this result is in conflict with the existing literature which finds a positive inflation-*RPV* relationship even with simple regression analysis, in the following subsection semiparametric estimation is used in order to analyse if there is a non linear relationship between both variables.

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where the null hypothesis is that there are no breakpoints for the period examined. To avoid beginning and end of sample problems, the sample was trimmed by 15%.

3.2 Semi-parametric approach and optimal inflation

In order to derive the shape of the inflation-*RPV* function, a partially linear model is applied.[15] To be able to compare with the findings from the previous section, the same number of lags for *RPV* and inflation (IN) have been used as in (2):

$$RPV_t = \theta_1 RPV_{t-1} + \theta_2 IN_{t-1} + g(IN_t) + \varepsilon_t \qquad (3)$$

where $g(IN_t)$ is an unknown smooth differential function that attempts to capture the non-linear impact of inflation on *RPV* at time t. Therefore, the goal is to estimate $g(IN_t)$ in (3). The $g(IN_t)$ function is estimated semi-parametrically in two stages. In the first stage, the parameters λ_k are estimated from the regression equation:

$$RPV_t = \lambda_1 \overline{RPV}_{t-1} + \lambda_2 \overline{IN}_{t-1} + \eta_t \qquad (4)$$

where $\overline{RPV}_{t-1}$ and $\overline{IN}_{t-1}$ are the residual series from a non-parametric regression of RPV_{t-1} and IN_{t-1} on IN_t respectively. In the second stage, the $g(IN_t)$ function is estimated non-parametrically from the regression:

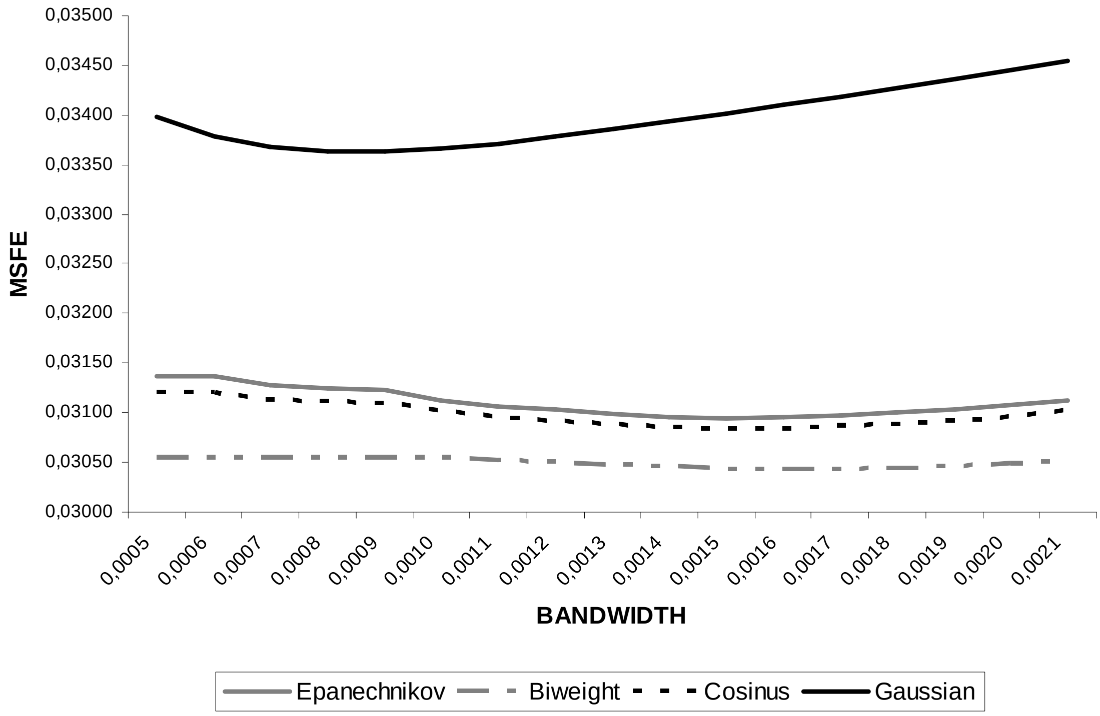
$$\hat{\eta}_t = g(IN_t) + v_t \qquad (5)$$

where $\hat{\eta} = RPV_t - \lambda_1 \overline{RPV}_{t-1} - \lambda_2 \overline{IN}_{t-1}$ In both stages, the regressions are estimated using kernel regressions which are non-parametric techniques that aim to find non-linear relationships between two random variables, In particular, the conditional expectation of random variables are estimated. For the purposes of this paper, the Nadaraya-Watson kernel regression estimator is implemented. As the results of non-parametric regression are very sensitive to the set value of the bandwidth parameter (h), which functions as a smoothing parameter, this parameter is selected using a Mean Squared Forecast Error (MSFE) criterion. Moreover, to derive how the estimation of $g(IN_t)$ is affected by the treatment of extreme values of inflation, an unbounded Gaussian kernel and outlier-robust Epanechnikov, Biweight and Cosinus kernels are used.

[15] This methodology is similar to that of Fielding and Mizen (2008), Caraballo and Dabús (2010) and Choi (2010).

Initially, the methodology presented is applied for the EA. Figure 1 illustrates the results concerning to MSFE for different values of h in the semi-parametric estimation.[16]

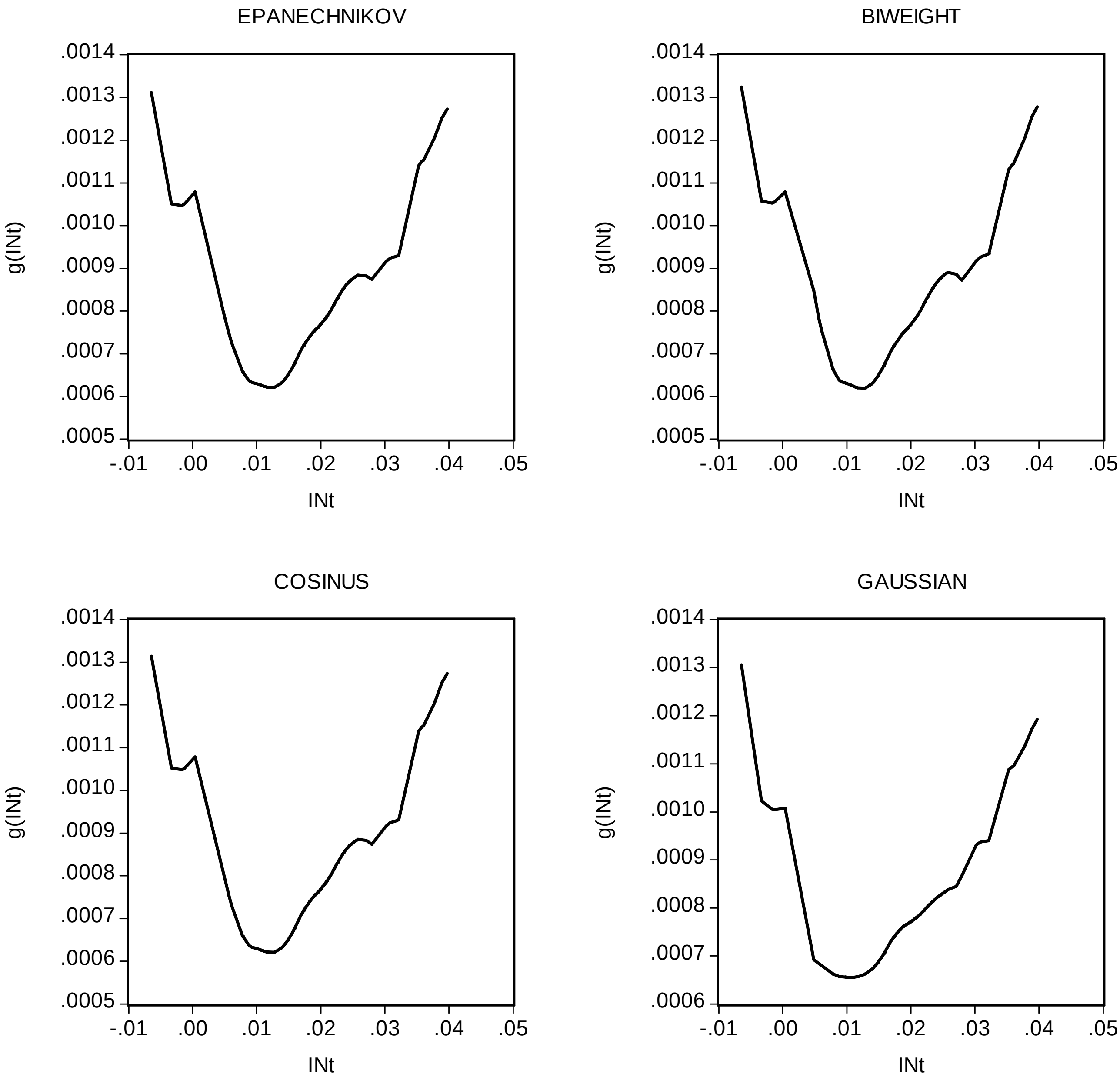
FIGURE 1. OPTIMAL BANDWIDTH FOR THE EA



From Figure 1 it is clear that the optimal bandwidth parameter is higher for the three outlier-robust kernels. The optimal bandwidth parameter is 0,0015 for Epanechnikov and Cosinus, 0,0016 for Biweight and 0,0008 for Gaussian. Figure 2 illustrates the $g(IN_t)$ function for the optimal bandwidth for each kernel.

[16] In Figure 1, MSFE has been multiplied by 10^6.

FIGURE 2. THE EA's g(INt) FUNCTIONS



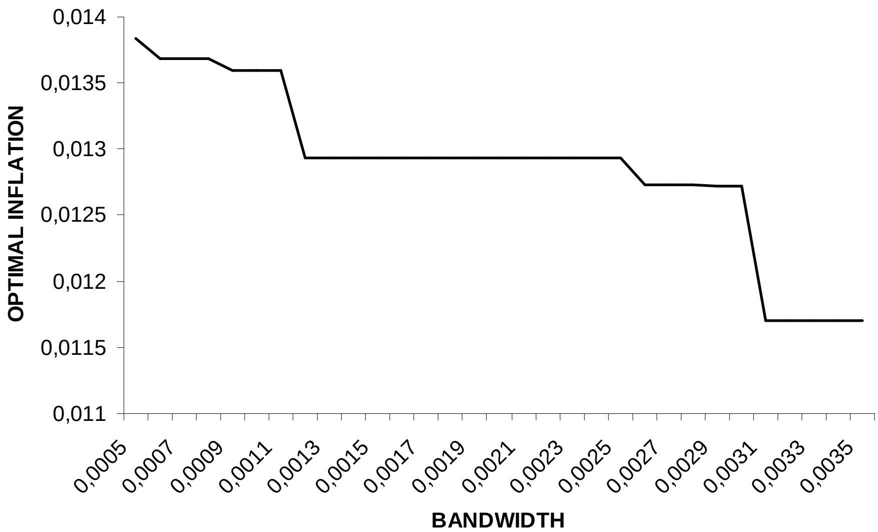
Having estimated $g(IN_t)$, the next step is to calculate the derivative of the $g(IN_t)$ function, as it captures the sensitivity of the *RPV* to marginal increases in inflation. If $g'(IN_t) > 0$ ($g'(IN_t) < 0$), then *RPV* is increasing (decreasing) with inflation, while the optimal inflation rate, i.e., the one that minimises *RPV,* is given by $g'(IN_t) = 0$. To check the robustness of the results, whether they are sensitive to the chosen HICP disaggregation, the same methodology is applied using the 2-digit HICP subcategories. Table 2 summarises the results.

TABLE 2. The optimal annual inflation rate for the EA

	RPV 3-digit level		RPV 2-digit level	
Kernel	Optimal bandwidth	Optimal IN	Optimal bandwidth	Optimal IN
Epanechnikov	0,0015	0,0129	0,0016	0,0092
Biweight	0,0016	0,0129	0,0018	0,0089
Cosinus	0,0015	0,0129	0,0016	0,0092
Gaussian	0,0008	0,0092	0,0009	0,0061

The effects of changes in bandwidth are examined thoroughly using the Epanechnikov kernel function, as it is used for the rest of the paper. As the bandwidth increases, the optimal inflation rate declines at a slow rate. For example, for the 3-digit level, for a bandwidth of 0,0005, the optimal inflation rate is 0,0138 while for a bandwidth of 0,0035 it is 0,0117 (Figure 3).

FIGURE 3. OPTIMAL INFLATION AND BANDWIDTH FOR THE EA



Having estimated the optimal inflation rate for the EA, the same rate for each individual member country and for the EA16 and EA12 aggregates is estimated. For all countries the Epanechnikov kernel is used.[17] The optimal bandwidth is calculated using the same methodology as before, for both the *RPV* 3-digit and the *RPV* 2-digit level. Furthermore, $g(IN_t)$, $g'(IN_t)$ and the optimal inflation rate are calculated. Finally, the optimal inflation corresponding to the optimal

[17] The Epanechnikov kernel is the most common kernel function used in the relevant literature. Moreover, a number of authors note that it is not the choice of the kernel function that is important, but rather the choice of the bandwidth parameter.

bandwidth for the EA is estimated for each country.[18] These results are reported in Tables 3 and 4.[19] From the results it is clear that for the majority of the countries[20] and the aggregates (EA, EA16 and EA12), the inflation-*RPV* relationship exhibits a U-shape function. For Malta and Slovakia this relationship is always increasing, while there is no clear relationship for the Netherlands (it seems to be decreasing until 4%).[21] For Portugal this relationship seems to be decreasing, while Cyprus and Italy exhibit a W-shape function.

Regarding the optimal inflation rate as reported in Tables 3 and 4, there is a discrepancy between countries. The results show that the ECB's "below, but close to 2%" target is appropriate for the EA, the EA16, the EA12, Belgium, Ireland and Luxemburg. However, this target is too low for Finland, Greece and Spain and too high for Austria, France and Germany. Therefore, although the ECB's target is indeed optimal for the EA as a whole (EA, EA16 and EA12), it may be hurtful for some countries. However, it is interesting to note that for the countries with higher than 2% optimal inflation rates (Finland, Greece and Spain), the actual average inflation rate for the period in question was very close (within a 0,5% deviation) with the optimal inflation rates. Furthermore, the actual average inflation rates for the countries with lower than 2% optimal inflation rates (Austria, Germany and France) were actually closer to the 2% target set by the ECB.

[18] For all countries and aggregates the results for the 2-digit and 3-digit HICP subcategories are identical regarding the function shapes of the inflation-RPV relationships and there are only minor differences regarding the optimal inflation rates for countries that exhibit a U-shaped inflation-RPV relationship form.

[19] To minimize clutter only the final results are presented.

[20] The countries are Austria, Belgium, Finland, France, Germany, Greece, Ireland, Luxembourg, Portugal and Spain.

[21] For all countries and aggregates the results for the 2-digit and 3-digit HICP subcategories are identical regarding the function shapes of the inflation-RPV relationships and there are only minor differences regarding the optimal inflation rates for countries that exhibit a U-shaped inflation-RPV relationship form. The rest of the analysis is based on the 3-digit HICP level.

TABLE 3. Optimal inflation

	EA	EA16	EA12	AT	BE	DE
IN-Mean	0,0186	0,0190	0,0187	0,0162	0,0204	0,0143
IN-Maximum	0,0396	0,0397	0,0395	0,03965	0,0573	0,0348
IN- Minimum	-0,0064	-0,0064	-0,0064	-0,0042	-0,0175	-0,0074
Std. Dev.	0,0076	0,0076	0,0076	0,0082	0,0123	0,0077
RPV 2-digit						
IN-EA	0,0092	0,0128	0,0128	0,0048	0,0144	0,0054
IN*		0,0128	0,0128	0,0048	0,0144	0,0044
MSFE-EA	0,0177	0,0172	0,0182	0,0398	0,0223	0,0616
B*	0,0016	0,0017	0,0024	0,0010	0,0012	0,0020
MSFE*		0,0172	0,0179	0,0386	0,0229	0,0709
RPV 3-digit						
IN-EA	0,0129	0,0135	0,0138	0,0020	0,0144	0,0054
IN*		0,0136	0,0138	0,0019	0,0142	0,0054
MSFE-EA	0,0309	0,0297	0,0341	0,0803	0,0779	0,0842
B*	0,0015	0,0010	0,0014	0,0009	0,0009	0,0010
MSFE*		0,0297	0,0341	0,0732	0,0736	0,0838

IN-EA: the inflation rate that minimises the RPV using the optimal bandwidth obtained for the EA.
IN*: the inflation rate that minimises the RPV using the optimal bandwidth for each country.
B*: the optimal bandwidth for each country.
MSFE*: mean squared forecast error for optimal bandwidth for each country.
MSFE-EA: mean squared forecast error using the optimal bandwidth for EA.
Note: MSFE is multiplied by 10^6.

TABLE 4. Optimal inflation

	ES	FR	FI	GR	IE	LU
Mean	0,0263	0,0162	0,0167	0,0342	0,02394	0,0236
Maximum	0,0518	0,0394	0,0461	0,0644	0,0587	0,0563
Minimum	-0,0133	-0,0079	-0,0044	0,0068	-0,0305	-0,0150
Std. Dev.	0,0119	0,0084	0,0098	0,0111	0,0200	0,0137
RPV 2-digit						
IN-EA	0,0303	0,0049	0,0284	0,0321	0,0171	0,0155
IN*	0,0303	0,0048	0,0282	0,0321	0,0171	0,0108
MSFE-EA	0,0261	0,0148	0,0713	0,0568	0,0175	0,0402
B*	0,0019	0,0009	0,0012	0,0022	0,0014	0,0014
MSFE*	0,0261	0,0147	0,0709	0,0563	0,0174	0,0394
RPV 3-digit						
IN-EA	0,0303	0,0058	0,0277	0,0322	0,0191	0,0214
IN*	0,0303	0,0059	0,0284	0,0327	0,0186	0,0149
MSFE-EA	0,0387	0,0370	0,0575	0,1286	0,0558	0,0623
B*	0,0012	0,0013	0,0009	0,0009	0,0018	0,0012
MSFE*	0,0375	0,0365	0,0546	0,1163	0,0552	0,0592

IN-EA: the inflation rate that minimises the RPV using the optimal bandwidth obtained for the EA.
IN*: the inflation rate that minimises the RPV using the optimal bandwidth for each country.
B*: the optimal bandwidth for each country.
MSFE*: mean squared forecast error for optimal bandwidth for each country.
MSFE-EA: mean squared forecast error using the optimal bandwidth for EA.
Note: MSFE has been multiplied by 10^6.

4. Conclusions

This paper examines the relationship between *RPV* and inflation for the EA countries using kernel regressions. The main finding is that for the EA and the majority of the member countries, the inflation-*RPV* relationship exhibits a U-shape functional profile and therefore there is a (non-zero) inflation rate that minimises the costs from inflation. However, a group of countries do exhibit different inflation-*RPV* functional profiles.

As to the actual optimal inflation rate found, this differs across the member countries. Using HICP data on a 3-digit level the results show that the ECB's target of an EA wide inflation rate "below, but close to 2%" is indeed appropriate for EA, the EA16, the EA12, Belgium, Ireland and Luxemburg. However, for the rest of the member countries it is either too low (e.g. Finland, Greece and Spain) or too high (e.g. Austria, France and Germany) which once again raises the question as to whether a common monetary policy is appropriate for the EA.

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