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The effects of exchange rate regimes on economic growth: evidence from propensity score matching estimates

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This is the first study that employs the propensity score matching framework to examine the average treatment effect of exchange rate regimes on economic growth. Previous studies examining the effects of different exchange regimes on growth often apply time series or panel data techniques and provide mixed results. This study employs a variety of non-parametric matching methods to address the self-selection problem, which potentially causes a bias in the traditional linear regressions. We evaluate the average treatment effect of the floating exchange rate regime on economic growth in 164 countries. Time period of the quasi experiment starts in 1970, capturing the collapse of the Bretton Woods fixed exchange rate commitment system. Results show that the average treatment effect of floating exchange rate regimes on economic growth is statistically insignificant. Verifying the results with the Rosenbaum's bounds, our findings are strong and robust. The research states that there is no evidence that employing a floating exchange rate regime compared to a fixed one leads to a higher economic growth for the countries that use this particular policy.

Keywords: propensity score matching; exchange rate regimes; economic growth

JEL Classifications: C14; F31; F43

1. Introduction

The impact of different exchange rate regimes on economic growth is a source of heavy discussion in the empirical macroeconomic literature. Despite a long history of study, research efforts have failed to reach a consensus on a common outcome.

The studies examining the effects of different exchange rate regimes on growth often apply time series or panel data techniques and provide mixed results. On the contrary, matching framework has several advantages compared to the traditional linear regression models due to its properties that deal with the potential bias problems. First, because of the randomization structure of the counterfactual evaluation framework, the results from the matching process are not

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flawed because of a self-selection bias. However, there is a large possibility that the results from the traditional linear regression models may be flawed due to this self-selection bias. Second, the matching process does not need a specific functional form. The necessity of using a specific functional form in the traditional linear regression models may cause the omitted variable bias, as the true model might contain higher order terms or interactions between the various characteristics. Third, the evaluation framework has the advantage of avoiding extrapolation beyond the common support. The linear regression models extrapolate over the non-overlapping regions, which is another cause of additional bias. Fourth, as Blackburn [3] among others offers additional evidence that the matching estimator is useful in dealing with heteroskedasticity. Because matching is a non-parametric process and the estimator does not require a monotonic transformation, we are therefore able to calculate the true percentage difference compared to the retransformation of a heteroskedastic structure. A final advantage of the matching methods is that, compared to the previous studies utilizing the instrumental variable methods, it does not suffer from the problem of choosing instruments that have the potential to give flawed estimates since it is always hard to find good instruments that are both valid and relevant.

This paper is the first study that makes an attempt to examine the average treatment effect of exchange rate regimes on economic growth. To examine this effect, we employ a new data set and a relatively new methodology. We use a variety of recently developed non-parametric matching methods and simulate a randomized experiment to examine this highly debated topic by overcoming the problems of traditional linear regression techniques.

The organization of the study proceeds as follows. Section 2 reviews the empirical literature and discusses the distinction of our study from the prior work to give further insight about how this study can close the gap in the literature. Section 3 defines the data. Section 4 describes the employed methodology and explains the intuitions behind choosing it. Section 5 presents the empirical results. Section 6 concludes.

2. Literature review

The first generation of neoclassical growth models did not use the exchange rate regimes in order to explain growth. The literature about the exchange rate regimes started to grow a short time before the collapse of the Bretton Woods fixed exchange rate commitment system. The study of exchange rate regimes has gained popularity since that time. Friedman [7] and Sohmen [23] claimed for the first time before the collapse of the Bretton Woods fixed exchange rate commitment system that using floating exchange rate should lead to a more stable economy since the flexibility in rates offsets the effect of different national inflation rates on a country's international competitiveness.

After the Bretton Woods fixed exchange rate commitment collapsed in 1973, major exchange rates were allowed to float. However, in the following years the desirability for the floating exchange rate regime gave place to serious concerns. Since then, the literature has rapidly developed to test the relationship between different exchange rate regimes and macroeconomic activity. Yet, there is no common consensus that is ensured in the academic literature about the effects of different exchange rate policies on economic growth.

The pioneer studies that try to clarify the link between the exchange rate regimes and growth frequently employ time series or panel data methods. Weber [25] and Turnovsky [24] argue that the exchange rate regime affects the macroeconomic growth depending on the international mobility of a country's capital. According to the studies of Hausmann and Rodrik [9], Rodrik [16], Prasad *et al.* [15], and Rodrik [17], different exchange rate policies have different effects on economic growth. Levy-Yeyati and Sturzenegger [13] examine a panel data study. They report that flexible exchange rate regime is associated with slower growth as well as with greater output volatility for developing countries. However, for more industrialized countries, their results show that neither fixed nor flexible regimes appear to have any significant impact on growth.

The study of Baxter and Stockman [2] focuses on whether business cycles differ according to the exchange rate regimes. By setting a time series model for a postwar sample of 49 countries, they examine the behavior of economic outcomes under alternative exchange rate systems. They find that employing alternative exchange rate arrangements does not cause any significant difference in terms of economic growth. Flood and Rose [5] study the implications of fixed and floating rates for nine developed countries during the 1975–1990 period. Their study using panel data fails to find any significant difference between the effects of fixed and floating currencies on economic growth. The study of Obstfeld and Rogoff [14] investigates the effects of alternative exchange regimes in the NAFTA and European region. They document that the theoretical arguments do not reach any clear conclusion for different exchange rate regimes in terms of how they affect macroeconomic conditions. Ghosh *et al*. [8] examine the effect of exchange rate regime on inflation and economic growth using data from 136 countries during the years 1960–1989. They do not find any statistically significant differences among exchange rate agreements. Finally, Frankel [6] argues that no single currency regime is best for all countries, and that, even for a given country, it may be that no single currency regime is best all of the time.

3. Data

To the best of my knowledge, the study uses the most comprehensive data set that is built specifically for a quasi-experiment examining the effects of different exchange rate regimes on economic growth. The data set is collected for 164 countries. Considering the time period after the collapse of the Bretton Woods fixed exchange rate commitment system, the date starts in 1970 and continues through 2007. We use the fixed and floating exchange rate regimes as the treatment variables of our matching approaches. We use the economic growth rates as the outcome variable. We employ a group of control variables due to the related literature. We choose these covariates such that different exchange regimes are only employed after some prerequisites are satisfied. Therefore, we choose the covariates of gross capital formation rate, merchandise trade as a share of GDP, industrialization rate, inflation rate, exports as a share of GDP, imports as a share of GDP, and foreign direct investment as a share of GDP. All variables are drawn from the World Development Indicator, the statistical database of the Worldbank. Table 1 shows the summary statistics for the data used in the research.

Table 1. Summary statistics.

Variable	Definition	Obs	Mean	Min	Max
year	Year	3658	1991.751	1970	2007
country	Country index	3658	80.91771	1	164
err	Exchange rate regime	3658	0.42865	0	1
gdpg	GDP growth rate	3658	3.836167	– 31.3	88.96
inf	Inflation rate	3658	42.36654	– 29.17	26762
expr	Exports as a share of GDP	3658	34.23624	1.95	246.15
impr	Imports as a share of GDP	3658	39.52188	2.98	216.31
gcfr	Gross capital formation rate	3658	22.63736	– 23.76	113.58
indr	Industrialization rate	3658	30.4599	6.25	83.91
merchtr	Merchandise trade as a share of GDP	3658	58.0396	6.57	373.82
fdir	Foreign direct investment as a share of GDP	3658	3.145875	– 54.358	524.8802
propensity	Average propensity score	3657	0.4283	0.0463	1

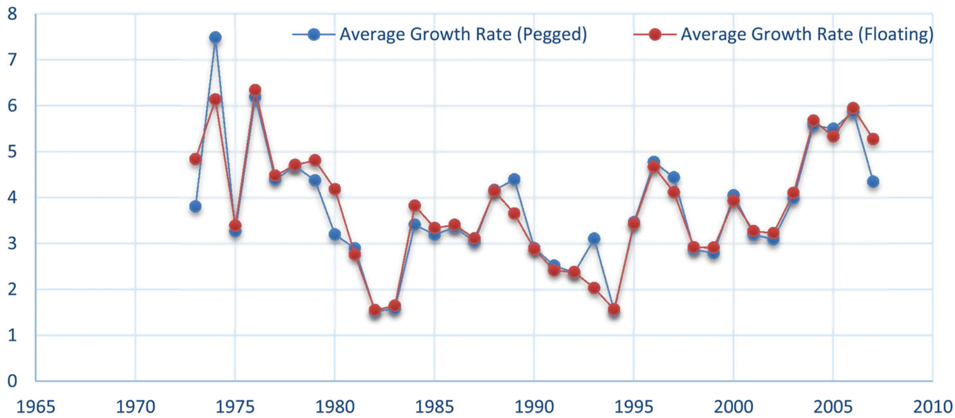

Figure 1. Average economic growth rates of treatment and control groups.

Figure 1 shows the annual GDP growth rate for the countries using alternative exchange rate regimes. The figure shows that there are not fundamental differences between the economic growth paths of both country groups.

4. Methodology

4.1 *An evaluation framework: the role of randomization*

Our ultimate goal in the study is to employ propensity score matching to estimate the effect of different exchange rate regimes on economic growth. Following the notation of the potential outcome approach by Roy [20] and Rubin [21] in the evaluation literature, we denote $T = 1$ if a country uses a floating currency regime and $T = 0$ if a country uses a fixed currency regime. We then define the outcome for the countries that uses a floating exchange rate ($T = 1$) as Y_1 and the outcome for the countries that uses ($T = 0$) as Y_0. Then, we can write the average treatment effect on the treated (ATT) as follows:

$$\text{ATT} = E[Y_{i1}|T_i = 1] - E[Y_{i0}|T_i = 1], \tag{1}$$

where $E[Y_{i0}|T_i = 1]$ stands for the mean value of the economic growth rate that would have been observed if the treated country had not adopted a floating exchange rate regime, and $E[Y_{i1}|T_i = 1]$ stands for the mean value of the economic growth rate that has actually been observed for the same treated country under the same floating exchange rate regime policy. The essential evaluation challenge is based on the circumstance that only one of the potential outcomes is observed at the same time for each country i. The first term on the right-hand side of Equation (1) is observable. However, the second term on the right-hand side is counterfactual, because we are not able to observe the growth rate of a treated country if it had not adopted a floating exchange rate regime. Therefore, the equation above is only analogous to a clinical experiment where the counterfactual mean outcome represents the group of subjects that are randomly assigned. If a country's exchange rate regime choice were random, we could easily obtain the ATT by comparing the sample mean of the treatment group of countries using a floating currency with that of the control group of countries using a fixed currency. However, using this method generates a selection bias if the currency decision is not random. Since we know that the selection of a currency regime is not random, and because the counterfactual mean outcome for the countries being treated $E[Y_{i0}|T_i = 1]$ is not observed, we need to choose a proper substitute to estimate the ATT.

To do so, we impose the assumption that, conditional on the covariates, the growth rates are independent of the policy dummy. However, according to Heckman *et al*. [10], it is possible to consistently estimate the ATT under a weaker assumption that only requires that the growth rate in the countries using a fixed currency be independent of the currency decision, conditional on the observed covariates. The Average Treatment Effect and the ATT are then generally different under this weaker assumption. This assumption implies that the selection is only made by using the observable characteristics, and that all variables that influence regime policy assignment and potential growth rates are simultaneously observed by the researcher.

Under this assumption, we rewrite the Equation (1) as:

$$\mathrm{ATT} = E[Y_{i1}|T_i = 1, X_i] - E[Y_{i0}|T_i = 0, X_i], \tag{2}$$

where $(Y_{i1}|T_i = 1, X_i)$ stands for the growth rate in the ith country which changed its policy, under conditions X_i. The term $(Y_{i0}|T_i = 0, X_i)$ stands for the growth rate in the ith country which maintained its policy under the same conditions X_i. In other words, for the right-hand term $E[Y_{i0}|T_i = 1, X_i]$, we substitute $E[Y_{i0}|T_i = 0, X_i]$, which makes all the terms in our equation consist of observables.

4.2 *Propensity score and reduction of dimensionality*

As the number of observed covariates increases, matching on these characteristics becomes impractical due to the so called curse of the dimensionality problem. The first studies on the evaluation framework matched observations either by basing them on a single variable vector or by weighting variables. Matching by using a small number of covariates, such as using two dummy covariate variables, is straightforward. However, as the number of covariates increases, the difficulty of estimating the ATT increases. To deal with this high dimensionality problem, Rosenbaum and Rubin [19] propose that it is possible to match the treated and control units on their propensity scores, which are the probabilities of policy adoption conditional on covariates and can be estimated by any probability models.

Formally:

$$P(X_i) = \Pr(T = 1|X_i). \tag{3}$$

Since propensity score is a probability function, its score ranges between 0 and 1. If exchange rate policies were randomly assigned by the countries, their propensity scores of each would be equal to 0.50. However, since this is not the case and the policy that a country chooses to employ is not randomly assigned, we estimate the propensity score function by this quasi-experimental design. Because we employ dummy codes for floating exchange rate policy as 1, and fixed exchange rate policy as 0, a propensity score higher than 0.50 indicates the country is more likely to select a floating currency policy rather than a fixed one. A score lower than 0.50 indicates the opposite. Therefore, it is possible to argue the conditional probability that a country will choose to use a floating exchange rate regime rather than a fixed one given a set of observed covariates that we use to predict the country's condition.

Finally, under the same assumptions that we impose in Section 4.1, we rewrite the Equation (2) conditional on a propensity scalar as:

$$\mathrm{ATT} = E[Y_{i1}|T_i = 1, P(X_i)] - E[Y_{i0}|T_i = 0, P(X_i)]. \tag{4}$$

4.3 *Common support (overlap) condition*

Another method to estimate the ATT without a bias is to impose the common support. The common support guarantees that any combination of characteristics that we observe for the treatment group countries that use a floating currency can simultaneously be observed among the control group countries that use a fixed currency.

It is clear that if some of the covariates have the properties either $P(X_i) = 0$ or $P(X_i) = 1$ for different groups, we will not have any matched pairs in order to estimate the ATT. The common support necessary condition is formally written as:

$$0 < P(X_i) = \Pr(T = 1|X_i) < 1. \tag{5}$$

However, this is not a sufficient condition for a good match. If the values of $P(X_i)$ cluster in different zones, it is implied that we do not have good common support and hence the process might still be biased.

After imposing the common support condition, we can finally define the ATT estimator as the mean difference in growth rates over the common support, properly weighted by the propensity score distribution of all countries in the data set.

4.4 *Choice of the matching method*

In order to maintain a balance for two non-equivalent groups, a propensity score research can be applied by using matching, stratification, or covariance adjustment methods. In this paper, we focus on a variety of matching methods to maintain the balance between the countries using different currency regimes. We use the most common matching techniques in the academic literature.[1] With different matching methods, we try to estimate the ATT in the Equation (4) by using these different techniques. The estimation of ATT is different according to how the neighborhood and the weighting functions are defined that are assigned in each method.

4.4.1 *Nearest-neighbor matching*

Nearest-neighbor matching can be defined as the most straightforward estimator for matching. The country from the control group chooses the closest match for itself from the treated group of countries according to its propensity score.

It is also possible to increase the number of neighbors that is used in the matching process. The study captures more matches by increasing the number of neighbors to include more than just the nearest ones. This allows us to use more information; hence our variance gets smaller. However, on the other hand, this technique reduces the quality of our matches because of employing, on average, poorer matches, which causes the estimates to have increased bias. Another downside of the nearest-neighbor matching is that ATT estimates are sensitive to the order of matching process. This means that one should be careful that the ordering is random while employing the nearest-neighbor matching.

4.4.2 *Radius matching*

If the closest neighbor is far away, nearest-neighborhood matching cannot estimate the true ATT. To address this problem, a radius (or a caliper) might be defined to capture the maximum propensity score distance. Again there is a tradeoff between the bias and the variance. This approach is advantageous in that it avoids the bad matches; however the variance will increase since the number of matches decreases. Smith and Todd [22] argue the disadvantage of this method, saying that it is hard to know the choice of a reasonable caliper in a radius matching method.

4.4.3 *Kernel matching*

In the neighbor and radius matching methods, only a few observations from the comparison group are used to construct the counterfactual outcome of a treated individual. To avoid this problem, the study employs a kernel matching method that uses the weighted averages of all countries in the control group for its matching process. The advantage of the Kernel matching is its lower variance due to the increased information used in the process. The disadvantage of this method is that observations that are used might possibly become bad matches.

4.4.4 *Local linear matching*

Local linear matching is a kernel based matching process, which is incorporated to the matching methodology by Heckman *et al*. [10,11]. The difference between the kernel matching and local linear matching processes is that local linear matching includes a linear term in the propensity score of a treated country. Therefore, employing this approach is more useful when we do not have a strong common support.

4.5 *Sensitivity analysis of hidden bias*

In order to have robust estimates of ATT, we need to deal with the hidden bias problem. Since we work in a non-experimental framework, the magnitude of the selection bias cannot be estimated. Due to this reason, we need to deal with this problem by using a bounding approach. Rosenbaum [18] bounds are heavily in use in recent matching literature. By using the Rosenbaum bounds, we want to check how unmeasured variables influence our selection process. Hence, after using the bounds approach, it is possible to figure out whether or not our selection study undermines the matching process.

Based on the Rosenbaum bounds, Mantel–Haenszel and Rbound tests are widely employed. The first one uses the Mantel–Haenszel statistic and gives us different p-values when hidden bias exists. The second test, using similar logic, gives us the upper and lower confidence intervals. Note that, in the absence of an hidden bias, bounds are equal to the base scenario.

5. Empirical results

We estimate the propensity score function using a probit model. We denote our dummy dependent variable for the floating exchange rate policy as 1, and for the fixed exchange rate policy as 0. After estimating the propensity scores, as reported in Table 1, the predicted probability ranges from 0.0463 to 1 with a mean of 0.4283. This shows that, in general, the countries have slightly more propensity to choose a fixed exchange rate policy.

To check the common support between treatment and comparison groups, we follow Lechner's [12] argument. He states that the most straightforward way of observing the common support is a visual analysis of the density distribution of the propensity score in both groups. Hence, we exhibit the density distribution of the propensity scores in Figure 2. The figure shows that there is a good overlap between the control (fixed) and the treatment (floating) groups. Both country groups share the same support, 2089 control units stand for the control group and 1568 stand for the treatment.

The results from different matching methods are reported in Tables 2–5. For each of the methods, bootstrapping is repeated for 500 times, which calculates the re-estimation of the standard errors. In each table, the standard errors are reported in parentheses. This procedure also includes the first stage of the matching estimation (propensity score, common support, etc.). Repeating the bootstrapping 500 times leads to 500 bootstrap samples, and hence, in our case, leads to the ATTs to be estimated 500 times.

The results from different nearest-neighbor matching methods are reported in Table 2. We employ the nearest, 3 nearest, and 5 nearest-neighbor matching methods. After bootstrapping 500

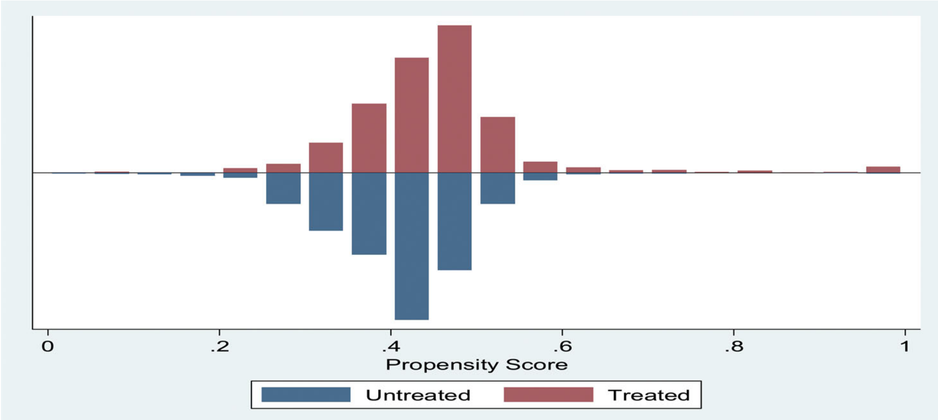

Figure 2. Density distribution of the propensity scores in both groups.

Table 2. Neighborhood matching estimates of treatment effect on economic growth.

	Nearest-neighbor matching	3 nearest-neighbor matching	5 nearest-neighbor matching
ATT	0.1680	0.3896	0.2335
	(0.3114)	(0.2715)	(0.2555)
Number of treated	1568	1568	1568
Number of controls	2089	2089	2089
Number of observations	3657	3657	3657

Notes: Bootstrapped standard errors for ATT are reported in parenthesis. They are based on 500 replications of the data.

Table 3. Radius matching estimates of treatment effect on economic growth.

	Radius matching with radii = 0.005	Radius matching with radii = 0.01	Radius matching with radii = 0.03
ATT	0.1502	0.1229	0.1124
	(0.2966)	(0.2818)	(0.2899)
Number of treated	1536	1542	1555
Number of controls	2073	2075	2089
Number of observations	3609	3617	3644

Notes: Bootstrapped standard errors for ATT are reported in parenthesis. They are based on 500 replications of the data.

times, the evidence from all neighbor matching techniques suggests that the average treatment effects of floating exchange rate regimes on economic growth is statistically insignificant.

To capture the maximum propensity score distance, we next employ a variety of radius matching methods. We set the radius values first to 0.005, then to 0.01 and finally to 0.03. Table 3 reports the results. After repeating the bootstrapping 500 times, we again fail to find any evidence of a significant impact of a floating currency regime on economic growth.

Third, the study utilizes a variety of kernel matching methods that uses the weighted averages of all countries' propensity scores in the control group for its matching process. Results are reported in Table 4. Gaussian, Biweight, Epanechnikov, Uniform and Tricube kernel matching methods are employed. A general 0.08 fixed bandwidth is used for the Gaussian, Biweight, Epanechnikov and Uniform Kernel matchings. For Tricube kernel matching, a commonly used

Table 4. Kernel type matching estimates of treatment effect on economic growth.

	Gaussian Kernel matching	Biweight Kernel matching	Epanechnikov Kernel matching	Uniform Kernel matching	Tricube Kernel matching
ATT	0.1953	0.2376	0.2382	0.2361	0.2475
	(0.1778)	(0.2069)	(0.1919)	(0.1944)	(0.1970)
Number of treated	1568	1559	1559	1559	2089
Number of controls	2089	2089	2089	2089	1563
Number of observations	3657	3648	3648	3648	3652

Notes: Bootstrapped standard errors for ATT are reported in parenthesis. They are based on 500 replications of the data. A 0.08 fixed bandwidth is used for the Gaussian, Biweight, Epanechnikov and Uniform Kernel matchings. A 0.06 fixed bandwidth is used for the Tricube Kernel matching.

Table 5. Local linear regression type matching estimates of treatment effect on economic growth.

	Gaussian LLR matching	Biweight LLR matching	Epanechnikov LLR matching	Uniform LLR matching	Tricube LLR matching
ATT	0.1610	0.5678	0.5598	0.2361	0.2475
	(0. 2096)	(1.2625)	(7.1561)	(0.1944)	(0.1970)
Number of treated	1568	1560	1560	1559	2089
Number of controls	2089	2089	2089	2089	1563
Number of observations	3657	3649	3649	3648	3652

Notes: Bootstrapped standard errors for ATT are reported in parenthesis. They are based on 500 replications of the data. A 0.08 fixed bandwidth is used for the Gaussian, Biweight, Epanechnikov, Uniform, Tricube Local linear regression matchings.

Table 6. Mantel–Haenszel bounds for economic growth.

Gamma	Q_mh +	Q_mh −	p_mh +	p_mh −
1	0.60006	0.60006	0.274233	0.274233
1.2	0.727107	0.478188	0.23358	0.274233
1.4	0.839106	0.378201	0.200705	0.352641
1.6	0.940124	0.293423	0.173577	0.384599
1.8	1.03269	0.219741	0.150876	0.413037
2	1.1185	0.154482	0.131676	0.438615
2.2	1.1988	0.095822	0.115303	0.461831
2.4	1.27448	0.042462	0.101247	0.483065

Notes: From 3-neighborhood-matching estimates of treatment effect on economic growth. Q_mh + : Mantel–Haenszel statistic (assumption: overestimation of treatment effect). Q_mh − : Mantel–Haenszel statistic (assumption: underestimation of treatment effect). p_mh + : significance level (assumption: overestimation of treatment effect). p_mh − : significance level (assumption: underestimation of treatment effect).

0.06 fixed bandwidth is employed. After repeating the bootstrapping 500 times, we again fail to find any evidence of a significant impact of a floating currency regime on economic growth.

Finally, five different local linear matching methods are employed. Results are reported in Table 5. This approach is useful in order to reduce the effects of an asymmetric distribution between two groups. We perform Gaussian, Biweight, Epanechnikov, Uniform and Tricube local linear matching methods. After bootstrapping 500 times for each of them, using the same general

Table 7. Rosenbaum bounds for economic growth.

Gamma	t-hat +	t-hat −	CI +	CI −
1	0.510001	0.510001	0.316667	0.705
1.5	− 0.311667	1.325	− 0.513333	1.525
2.0	− 0.9	1.90167	− 1.11167	2.10833
2.5	− 1.35833	2.34667	− 1.58333	2.10833
3.0	− 1.73667	2.70667	− 1.58333	2.93167

Notes: From 3-neighborhood-matching estimates of treatment effect on economic growth (ATT = 0.389685). t-hat + : upper bound Hodges–Lehmann point estimate. t-hat − : lower bound Hodges–Lehmann point estimate. CI + : upper bound confidence interval ($a = 0.9$). CI − : lower bound confidence interval ($a = 0.9$).

fixed bandwidths, we fail once more to detect any significant evidence for the impact of treatment effects of floating exchange rate regimes on economic growth.

Rosenbaum's bounding approach is also employed to deal with the hidden bias problem. Bootstrapped results for Rosenbaum's bounding for the neighbor matching, radius matching, kernel matching and local linear matching give the same result, which shows that our results are robust. Results from the 3-nearest-neighbor matching are reported in Tables 6 and 7. According to the new p-values and the new confidence intervals which account for the hidden bias problem in each matching case, we again fail to detect any evidence of a significant impact of a floating currency regime on economic growth.

6. Conclusion

The study uses the propensity score matching framework and evaluates the average treatment effect of the floating exchange rate regime on economic growth in 164 countries. The time period of the quasi experiment starts in 1970, with the collapse of the Bretton Woods fixed exchange rate commitment system, and continues through 2007. The research addresses the self-selection problem that was ignored in the previous empirical studies. We show that there is a good overlap between the control (fixed exchange rate regime) and the treatment (floating exchange rate regime) groups, and both country groups share the same support. This common support guarantees that any combination of characteristics that is observed for the treatment group countries that use a floating currency can simultaneously be observed among the control group countries that use a fixed currency. The chosen covariates that influence regime policy assignment and potential growth rates in the research to make the selection are: gross capital formation rate, merchandise trade as a share of GDP, industrialization rate, inflation rate, exports as a share of GDP, imports as a share of GDP, and foreign direct investment as a share of GDP. Different matching techniques, namely, the nearest, radius, kernel and local linear matching methods are employed to simulate a randomized experiment. All the matching methods employed in the study report the same result, and hence the same conclusion. Results show that the average treatment effect of floating exchange rate regimes on economic growth is statistically insignificant. Verifying the findings with the Rosenbaum's bounds, the results are strong and robust. The findings document that there is no evidence that employing a floating exchange rate regime compared to a fixed one leads to a higher economic growth for the countries that use this particular policy.

Disclosure statement

No potential conflict of interest was reported by the authors.

Note

1. Angrist *et al*. [1] and Caliendo and Kopeinig [4] provide detailed reviews of different matching techniques.

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