Checking Out:
Exits from Currency Unions

Andrew K. Rose*

Draft: December 15, 2006

Preliminary; Comments Welcome.

Abstract

This paper studies the characteristics of departures from monetary unions. During the post-war period, almost seventy distinct countries or territories have left a currency union, while over sixty have remained continuously in currency unions. I compare countries leaving currency unions to those remaining within them, and find that leavers tend to be larger, richer, and more democratic; they also tend to have higher inflation. However, there are typically no sharp macroeconomic movements before, during, or after exits.

Contact: Andrew K. Rose, Haas School of Business,
            University of California, Berkeley, CA 94720-1900
            Tel: (510) 642-6609
            Fax: (510) 642-4700
            E-mail: arose@haas.berkeley.edu
            URL: http://faculty.haas.berkeley.edu/arose

Introduction

        In this short paper, I examine the gross features of countries exiting currency unions.

Since the end of the Second World War, 69 countries, territories, or other entities (hereafter

"countries") have left currency unions. I compare these countries to the 61 entities that remained

continuously within currency unions during the same period of time. I find only a few

macroeconomic differences between countries remaining in and leaving currency unions.

Exiters tend to be larger, richer, and more democratic than stayers. But these differences tend to

be persistent and sluggish; there are few dramatic macroeconomic events around currency union

exits.

The "Countries" of Interest

        I start my investigation by considering all 229 entities with IFS "country codes." This

includes: independent sovereign states (such as the United States, IFS code 111); colonies (such

as the Cayman Islands, code 377), special administrative regions (e.g., Hong Kong, now a part of

China, code 532), overseas department (e.g., Martinique, code 349), territories (e.g., Guam, code

829), and other entities (the West Bank and Gaza strip is not internationally recognized as a *de

jure* part of any country, code 487). I refer below to all as "countries" for convenience.

        I then check each of these countries to see if they are or have been in a currency union

since the end of WWII. For information on monetary unions, I follow Glick and Rose (2002).

By "currency union" I mean essentially that a country's money was interchangeable with that of

another country at a 1:1 par for an extended period of time, so that there was no need to convert

prices when trading between a pair of countries. Hard fixes of exchange rates, such as those of

Hong Kong, Estonia, or Denmark, do not qualify as currency unions, even if they are currency

boards. The basic source for currency union data is the IMF's *Schedule of Par Values* and issues

of the IMF's *Annual Report on Exchange Rate Arrangements and Exchange Restrictions*,

supplemented with information from annual copies of *The Statesman's Yearbook.* I ignore

political dissolutions (e.g., of the Soviet Union and Yugoslavia) and unions (e.g., Germany and

Yemen). I drop countries never in currency unions (including currency union "anchors" such as

the United States).

Since World War II, 61 countries have continuously been members of currency unions;

their names are tabulated in Table A1.[1] Another 69 countries left currency unions during this

period of time; their names are tabulated in Table A2, along with the year of departure and the

anchor country or multilateral monetary union they left.[2]

Potential Reasons for Currency Union Exit

One might think that there is a typical scenario for a country leaving a currency union; it

acquires its own money concurrently with its own flag, national anthem, and other trappings of

political sovereignty. It is true that 24 currency union members are dependencies, such as Aruba,

the Channel Islands, and Greenland. However, 37 independent countries have remained

continuously in currency unions, including Cameroon, Luxembourg, and Panama. Most

importantly, of the (over 60) countries that have left currency unions, the median delay was

seven years after independence. Further, over a tenth left their currency unions *before*

independence and over twenty waited at least a decade *after* independence before exiting.

Succinctly, the tie between political and monetary independence is weak.

---

[1] A few territories involved in currency unions are too small even to have IFS country codes, such as the Holy See, and Puerto Rico.

[2] Parenthetically, I note that 19 countries have entered currency unions post-war. This is too small a number to study sensibly with statistical techniques, especially given that a dozen of them are associated with EMU and thus highly dependent.

Why might a country leave a currency union, if not as a demonstration of political sovereignty? That is, which macroeconomic characteristics should one examine around the time of currency union dissolutions? I look to standard theory to guide my choice. Mundell's (1961) optimum currency area theory points to the difficulties of handling asymmetric cyclic shocks that affect one member of a currency union but not another. Since such business-cycle shocks can potentially be handled by fiscal policy, it is natural to examine the scope of government spending in the economy. More open economies benefit more from currency unions which lower the transactions costs associated with trade, so that it is also natural to look at the importance of trade in the economy.

Richer countries and larger countries can more easily handle the expense associated with creating and operating a monetary institution; Alesina and Barro (2002). Thus the size and income of a country are of relevance. Since countries that leave currency unions have to establish a new monetary framework, I also examine their money growth and inflation rates.

The Data Set

The single biggest issue confronting the researcher interested in such issues is that of data availability. There are few broad political or economic data sets that cover the relevant period of time for members of currency unions. A number of unions dissolved either early in the postwar period; data is often not collected for the constituents of currency unions. Accordingly, while there have been a few studies of currency union dissolutions in the literature, these are essentially case studies (e.g., Bordo and Jonung, 1999). However, my interest is in creating a more comprehensive overview of economies around the time of currency union exit. In particular, I am interested in macroeconomic features of countries before, during, and after they leave

currency unions. I also wish to compare these characteristics to those for continuing members of

currency unions, a natural comparison group. Thus, I need a data set that covers a long span of

data over time, for a broad range of countries including many too small to be in standard data

sets.[3]

I use the popular Penn World Tables (version 6.2) for series on: population, real GDP per

capita, openness (exports plus imports), direct government spending and investment. The latter

three are expressed as ratios to GDP, and the variables are available, with gaps, from 1950

through 2004. I also use the World Bank's *World Development Indicators* for series on these

variables, as well as government budget balance, inflation, money, and the trade balance; these

series only go as far back as 1960. The International Monetary Fund's *International Financial*

Statistics provides series as far back as 1948 on CPI inflation, the budget balance, money growth,

and the national accounts. Finally, I use the polity series from the University of Maryland's

Center for International Development and Conflict. I am left with a data set that covers 130

countries from 1946 through 2005, though there are many gaps. The data set is necessarily thin,

simply because so many observations are missing for current or former currency union

members.[4]

Descriptive statistics on the variables of interest are provided in Table 1. These are split

into two tables: the one on the right covers the countries that left currency unions (labeled

"Exits") while that on the left covers the countries that were continuous members of currency

unions ("Cont."). I provide the sample means, standard deviations and number of observations

---

[3] This unilateral approach makes much more sense than that of Nitsch (2004), who borrowed my bilateral data sets
to investigate the same question.
[4] I sometimes have series that represent the same concept from different sources. For instance, population data is
available from PWT, WDI, and IFS. These are extremely highly correlated but have different samples. In such
cases, I use PWT as the default series, filling in with WDI when the PWT is missing, and IFS when both other series
are missing.

for twelve variables of interest. These are: 1) an "Out/In" dummy variable which is 1 for countries outside currency unions, and 0 for countries still inside; 2) an "Independent" dummy variable which is 1 for independent countries and 0 for dependencies; 3) the natural logarithm of population; 4) log real GDP per capita; 5) the percentage of GDP spent directly by the government; 6) investment as a percentage of GDP; 7) trade as a percentage of GDP; 8) the trade imbalance as a percentage of GDP; 9) the government budget imbalance as a percentage of GDP (positive for surplus); 10) the inflation rate; 11) the percentage growth of M1; and 12) Polity (which ranges from -10 for strongly autocratic states to +10 for strongly democratic states). Exiting countries are larger than those staying in currency unions, are more likely to be democratic and independent, and have higher inflation and money growth.

An Event Study

I begin by taking an event-study approach to the data. This provides a comprehensive look at the dynamic behavior of the variables of interest before, during, and after departures from currency unions.

Figure 1 illustrates the behavior of the key variables around the time of currency union exits, comparing them with control group of (country-period) observations for countries remaining continuously in currency unions. Each of the nine small graphs portrays a different macroeconomic variable. The top-left panel, for example, shows the natural logarithm of real GDP per capita (measured in international dollars), beginning three years before currency union exit, continuing through the actual event (marked with a vertical line) and ending three years after the currency union dissolution. Along with the average values (marked with circles), a plus/minus two standard-deviation confidence interval is also provided to illustrate the extent of

cross-country variation around the mean. To aid comparison, I also show (with a horizontal line) the average log real income for currency union "stayers." Thus, the top-left panel shows that real GDP per capita was both significantly lower for currency union exiters than for stayers, in both the economic and statistical senses. It is also striking that there are no important cyclic fluctuations of real income around the time of currency union exit, although these are the focus of both Mundell's theory and much recent work (e.g., Alesina, Barro and Tenreyro, 2002).

Countries leaving currency unions tend to have smaller government and international sectors than those staying inside currency unions. Since this implies that these countries have less fiscal capacity to respond to asymmetric shocks and fewer benefits from international trade, both features are consistent with standard optimum currency area theory. Exiters have similar investment shares and budget imbalances. Trade imbalances are smaller for exiters than stayers, and exiters tend to be less autocratic. Inflation is understandably volatile around the time of currency union dissolution, but not significantly different for stayers and exiters; the same is true of money growth. But perhaps the most striking feature of the data is the absence of volatility. In general, there are remarkably few signs of dramatic macroeconomic events either preceding or following currency union dissolutions.

A Statistical Approach

The event study of the preceding section provides an interesting picture of the (lack of) macroeconomic dynamics around currency union departures. However, this comes at a cost, since event-studies are intrinsically univariate in nature; one examines the variables one by one, in isolation from each other. Accordingly, I now proceed to a statistical approach, remaining non-structural in nature.

I begin by estimating a set of bivariate probit estimates, which examine the individual effect of the key variables on the probability of being inside or outside a currency union. The dependent variable is a binary indicator which is 0 for currency union members and 1 for countries that have left a currency union.[5] Each row of Table 2 presents the coefficient of a probit regression of this regressand on a single variable of interest. As expected, countries are more likely to leave (or have left) currency unions if they are independent or large. Their government sectors are also larger, (manifestly the growth in government spending visible in Figure 1 continues long after exit), and trade is less important. Inflation and money growth are also higher for exiters than for stayers.

These results are interesting but only suggestive since they are bivariate. Accordingly, I pursue a multivariate approach in Table 3a, by simply adding all the variables of interest to the probit regression simultaneously. This more complete look at the data comes at the cost of a reduced sample size.

When one considers all the variables simultaneously, only five show through with sizable effects. The size and income of the country are both strongly positively associated with monetary independence, consistent with Alesina and Barro (2002). More democratic countries and those with larger government sectors are systematically more likely to have their own currencies. Finally, inflation is higher for with currency union exiters than stayers, though the causality here is ambiguous. High inflation countries may find it more difficult to remain with currency unions, as their competitiveness cannot be regained through a nominal devaluation; but countries with their own money may simply have systematically less disciplined monetary institutions and accordingly higher inflation.

---

[5] Thus, countries that are continuous members of currency unions (like Panama) are 0 throughout the period, while exiters like Algeria are 0 before they exit and 1 during and after the year of exit from monetary union.

More democratic countries and those with larger government sectors may find it easier to asymmetric macroeconomic shocks, but are less likely to remain in currency unions. This is inconsistent with standard optimum currency area theory, as is the absence of any strong tie between the importance of trade and currency union membership. But these negative results should not be over-interpreted, since the model fits the data poorly, with a quasi-R^2 of less than .2. The poor fit is verified by the frequency table displayed in Table 3b which compares actual currency union members (and non-members) to those predicted by the model to be members (and non-members); this shows large off-diagonal elements. That is, from the universe of countries that started off inside currency unions, it is difficult to determine which countries leave (and when).

The remainder of Table 3a shows that the key results of the default model are reasonably insensitive to a number of perturbations of the default statistical model. I perform seven robustness checks. First, I drop the variables that are insignificant in the default specification. Then I add a comprehensive set of year-specific fixed effects. Then I drop observations from different regions: first, all African countries and then separately, all countries from Latin America and the Caribbean. Next, I drop observations from different periods of time: first, data after 1989, and then observations before 1970. Finally I use the one-year lead of the regressand, so that the equation is predictive. The five variables tend to remain statistically significant and consistently signed across the variations. Further, the goodness of fit remains poor (except for the small sample when the African countries are dropped).

In Table A3, I use the same statistical model, but only on a purely cross-sectional basis. These equations fit the data poorly, given the small sample sizes. Essentially no variables are

statistically significant at conventional levels. I conclude that the model fails dismally to predict currency union membership on a cross-sectional basis.

Conclusion

In this short paper, I take a comprehensive look at postwar currency union exits, using as many such events as possible. My universe of countries is potentially large; I include 61 countries and territories that have remained in currency unions continuously since WWII and another 69 that left a currency union during the same period of time. The scope of this project is its advantage; the cost is that I am forced to restrict my attention to those countries with data that is consistent and comparable across time and countries, and there are many gaps in the data set.

I find that countries leaving currency unions tend to be larger, richer, and more democratic; they also tend to experience somewhat higher inflation. Most strikingly, there is remarkably little macroeconomic volatility around the time of currency union dissolutions, and only a poor linkage between monetary and political independence. Indeed, aggregate macroeconomic features of the economy do a poor job in predicting currency union exits. I conclude that there is plenty of room for future research in this area.

References

Alesina, Alberto and Robert J. Barro (2002) "Currency Unions" *Quarterly Journal of Economics* CXVII, 409-436.

Alesina, Alberto, Robert J. Barro, and Silvana Tenreyro (2002) "Optimal Currency Areas" *NBER Macroeconomics Annual* (Gertler and Rogoff editors, MIT Press).

Bordo, Michael D. and Lars Jonung (1999) "The Future of EMU: What Does the History of Monetary Unions Tell Us?" *NBER Working Paper No. 7365.*

Glick, Reuven and Andrew K. Rose (2002) "Does A Currency Union Affect Trade? The Time-Series Evidence" *European Economic Review* 46(6 June), 1125-1151.

Mundell, Robert A. (1961) "A Theory of Optimum Currency Areas" *American Economic Review* 51, 657-665.

Nitsch, Volker (2004) "Have a Break, Have a … National Currency: When do Monetary Unions Fall Apart?" *CESIfo Working Paper No. 1113.*

Table 1: Descriptive Statistics

	Obs.	Mean	Std. Dev	Obs.	Mean	Std. Dev.
Currency Union:	Cont.	Cont.	Cont.	Exits	Exits	Exits
Out/In	3660	n/a	n/a	4140	.60	.49
Independent	3660	.39	.49	4140	.69	.46
Log(Population)	2197	5.69	2.06	3676	7.73	1.88
Log GDP p/c	1169	8.05	1.19	2540	7.89	1.08
Gov't Spending, %GDP	1265	24.3	13.8	2968	20.9	12.2
Investment, %GDP	1241	13.1	9.06	3021	14.2	9.57
Trade, %GDP	1276	99.8	48.0	3023	78.1	52.3
Trade Imbalance, %GDP	1080	-12.0	23.8	2599	-6.46	15.5
Budget Imbalance, %GDP	403	-2.22	4.59	1425	-3.96	7.86
Inflation	881	5.52	7.01	2227	32.7	527
M1 growth	951	11.7	18.1	2318	25.1	172
Polity	695	-4.52	4.99	2307	-1.61	6.99

"Cont" denotes continuous membership in currency union; "Exits" denotes countries that departed from a currency union in the sample.
130 countries, 1946-2005.

Table 2: Bivariate Probit Estimation

	Coeff.	Obs.
Independent	1.72**	7800
	(.04)	
Log Population	.29**	5873
	(.01)	
Log GDP Per capita	.04*	3709
	(.02)	
Gov't Spending (% GDP)	.005**	4233
	(.002)	
Investment (% GDP)	.004*	4262
	(.002)	
Trade (% GDP)	-.0022**	4299
	(.0003)	
Trade Imbalance (% GDP)	.004**	3679
	(.001)	
Budget Imbalance (% GDP)	-.019**	1828
	(.004)	
Inflation	.033**	3108
	(.002)	
M1 growth	.009**	3269
	(.001)	
Polity	.017**	3002
	(.004)	

Standard Errors in parentheses. Intercepts included but not recorded.
Regressand is a 0 for (country*year) currency union observation and 1 for non-currency union observations.
One (two) asterisk(s) indicates significance at .05 (.01).

Table 3a: Multivariate Panel Probit Estimation

	Default	Variant	Time Effects	Drop Africa	Drop Latins	Pre-1990	Post-1969	Lead-LHS
Independent	-.75		-.90	n/a	-.43	-.82	n/a	-.69
	(.68)		(.78)		(.67)	(.62)		(.68)
Log Population	.33**	.29**	.27**	.69**	.31**	.20**	.29**	.33**
	(.04)	(.03)	(.05)	(.08)	(.05)	(.06)	(.05)	(.04)
Log GDP per capita	.42**	.44**	.33**	1.34**	.45**	.14	.38**	.41**
	(.06)	(.04)	(.06)	(.14)	(.06)	(.08)	(.06)	(.06)
Gov't Spending (%GDP)	.016**	.015**	.011*	.12**	.006	.018**	.014**	.015*
	(.005)	(.003)	(.005)	(.02)	(.005)	(.006)	(.005)	(.005)
Investment (%GDP)	.000		.017*	.004	-.003	.022*	.001	.002
	(.006)		(.007)	(.010)	(.007)	(.009)	(.007)	(.006)
Trade (%GDP)	-.001		-.004**	.003	-.000	-.002	-.002	-.002
	(.001)		(.001)	(.002)	(.001)	(.002)	(.001)	(.001)
Trade Imbalance (%GDP)	.009*		.014**	-.025*	.009*	.011*	.011**	.009*
	(.004)		(.004)	(.010)	(.004)	(.005)	(.004)	(.004)
Budget Balance (%GDP)	.001		-.002	.034*	.003	-.001	.001	.001
	(.008)		(.008)	(.016)	(.009)	(.009)	(.008)	(.008)
Inflation	.034**	.041**	.032**	.036**	.027**	.037**	.026**	.034**
	(.005)	(.004)	(.008)	(.016)	(.005)	(.007)	(.005)	(.005)
M1 growth	.002		.001	.006	.002	.004	.001	.003
	(.002)		(.002)	(.006)	(.002)	(.004)	(.002)	(.003)
Polity	.027**	.030**	.039**	.007	.027**	.012	.050**	.029**
	(.006)	(.005)	(.007)	(.012)	(.007)	(.008)	(.007)	(.006)
Pseudo R^2	.16	.18	.20	.46	.15	.13	.16	.16
Observations	1195	1954	1158	549	1041	717	1047	1195

Standard Errors in parentheses. Intercepts included but not recorded.

Regressand is a 0 for (country*year) currency union observation and 1 for non-currency union observations.

One (two) asterisk(s) indicates significance at .05 (.01).

Table 3b: Frequency Distribution for Default Model

	Actual: In CU	Actual: Outside CU	Total
Predicted inside CU	145 (12%)	104 (9%)	249 (21%)
Predicted outside CU	232 (19%)	714 (60%)	946 (79%)
Total	377 (32%)	818 (68%)	1195

Table A1: Continuous Currency Union Members

American Samoa	Andorra	Anguilla
Antigua & Barbuda	Aruba	Bahamas
Benin	Bermuda	Bhutan
Brunei Darussalam	Burkina Faso	Cameroon
Central African Rep.	Chad	Congo
Cook Islands	Cote d'Ivoire	Dominica
Faeroe Islands	Falklands	French Guiana
French Polynesia	Gabon	Gibraltar
Greenland	Grenada	Guadeloupe
Guam	Guernsey	Jersey
Kiribati	Lesotho	Liberia
Liechtenstein	Luxembourg	Man, Isle of
Marshall Islands	Martinique	Micronesia
Monaco	Montserrat	Namibia
Nauru	New Caledonia	Niger
Niue	Palau	Panama
San Marino	Senegal	St. Helena
St. Kitts	St. Lucia	St. Vincent & Grens.
Swaziland	Togo	Turks and Caicos Islands
Tuvalu	Virgin Islands, British	Wake Islands
Wallis & Futuna		

Table A2: Departures from Currency Unions

Country	Year	Anchor	Country	Year	Anchor
Algeria	1969	France	Mauritania	1973	CFA
Angola	1976	Portugal	Mauritius	1967	India
Bahrain	1973	India	Morocco	1959	France
Bangladesh	1965	India	Mozambique	1977	Portugal
Barbados	1975	ECCA	Myanmar (Burma)	1967	India
Botswana	1977	S Africa	New Zealand	1967	UK
Burundi	1964	Belgium	Nigeria	1967	UK
Cape Verde	1977	Portugal	Oman	1975	UK
Caymans	1972	Jamaica	Pakistan	1949	UK
Comoros	1994	CFA	Qatar	1959	India
Cuba	1950	USA	Reunion	1976	CFA
Cyprus	1972	UK	Rwanda	1966	Belgium
Djibouti	1949	CFA	Sao Tome and Principe	1977	Portugal
Dominican Rep	1985	USA	Seychelles	1967	India
Equatorial Guinea	1969	Spain	Sierra Leone	1965	UK
Gambia	1971	UK	Singapore	1967	UK
Ghana	1965	UK	Solomon Islands	1979	Australia
Guatemala	1986	USA	Somalia	1971	EACB
Guinea	1969	CFA	South Africa	1961	UK
Guinea-Bissau	1976	Portugal	South Yemen	1972	EACB
Guyana	1971	ECCA	Sri Lanka	1966	India
Iraq	1967	UK	St. Pierre and Miquelon	1976	CFA
Ireland	1979	UK	Sudan	1956	Egypt
Israel	1954	UK	Suriname	1994	Neth. Ant.
Jamaica	1954	UK	Tanzania	1978	EACB
Jordan	1967	UK	Tonga	1991	Australia
Kenya	1978	EACB	Trinidad & Tobago	1976	ECCA
Kuwait	1967	UK	Tunisia	1958	France
Libya	1967	UK	Uganda	1978	EACB
Madagascar	1982	CFA	Vanuatu	1981	CFP
Malawi	1971	CACB	Western Samoa	1967	NZ
Maldives	1967	India	Yemen, North	1971	EACB
Mali	1962	CFA	Zaire	1961	Belgium
Malta	1971	UK	Zambia	1971	CACB
			Zimbabwe	1971	CACB

Table A3: Multivariate Cross-Section Probit Estimation

	1970	1980	1990	2000
Log Population	1.37 (1.24)	-.52 (.52)	1.62 (1.00)	1.12 (.63)
Log GDP per capita	-.05 (1.30)	.07 (.52)	.02 (.56)	1.18 (.74)
Gov't Spending (% GDP)	.04 (.10)	-.04 (.04)	.06 (.08)	-.01 (.04)
Investment (% GDP)	-.05 (.08)	.18 (.11)	-.11 (.09)	-.04 (.07)
Trade (% GDP)	.01 (.02)	-.02 (.02)	.02 (.02)	-.01 (.01)
Trade Imbalance (% GDP)	-.13 (.14)	-.00 (.02)	.03 (.03)	.01 (.04)
Budget Balance (% GDP)	.09 (.20)	-.00 (.04)	-.17 (.15)	.10 (.15)
Inflation	-.24 (.36)	-.02 (.04)	.34 (.20)	.03 (.06)
M1 growth	.02 (.10)	.04 (.04)	-.01 (.01)	-.02 (.04)
Polity	.14 (.17)	.06 (.06)	.16 (.09)	.02 (.06)
Pseudo R^2	.29	.23	.53	.48
Observations	20	30	39	31

Standard Errors in parentheses. Intercepts included but not recorded.

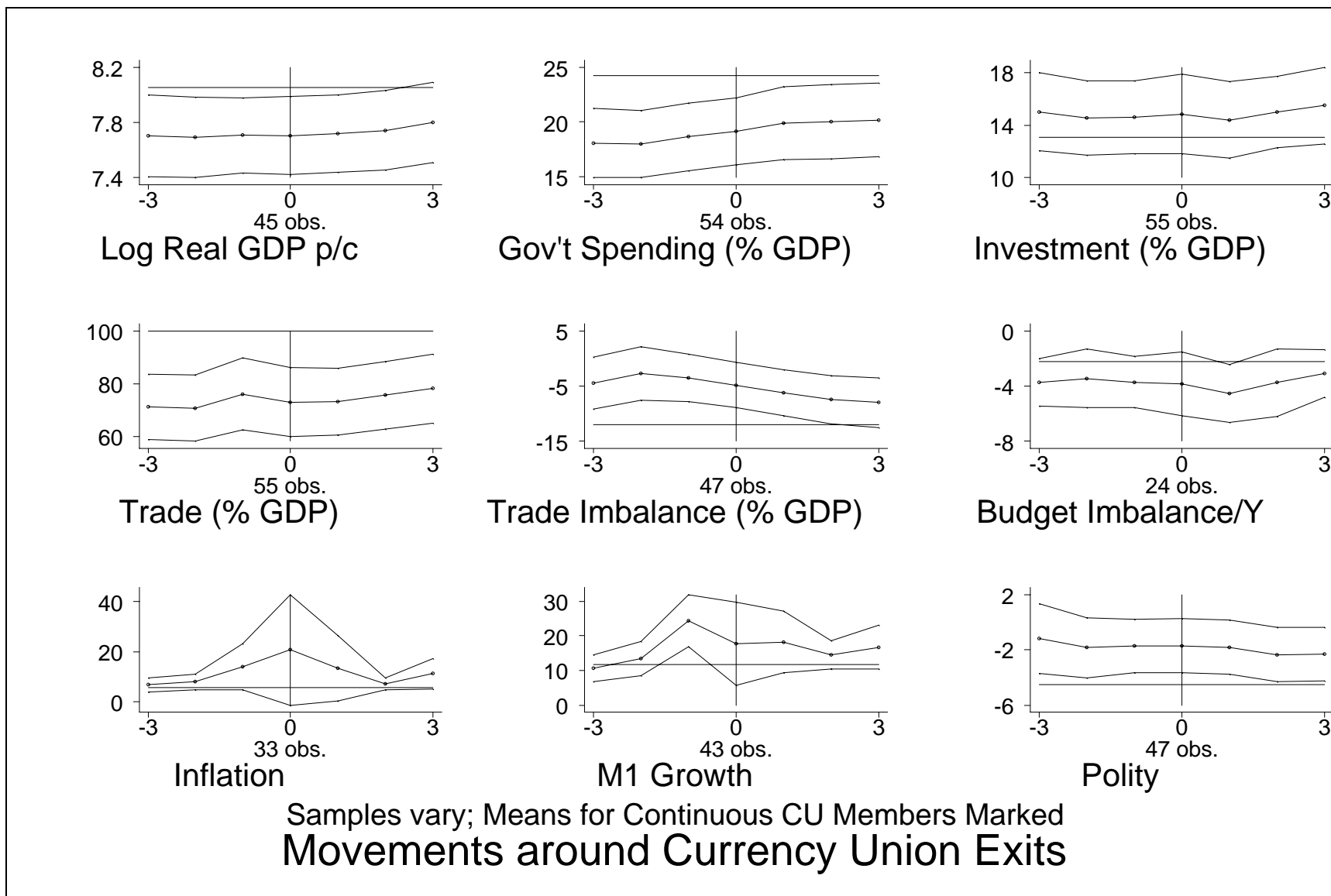Regressand is a 0 for (country*year) currency union observation and 1 for non-currency union observations.

Figure 1: Event Study for Departures from Monetary Unions