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Did the Euro Harm the Greek Economy?

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Did the Euro Harm the Greek Economy?

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Abstract

Beginning in 1992, Greece's economy was at least partially managed consistent with European Union (EU) membership. Greece joined the EU on 1 January 2001, adopting the Euro at a conversion rate of 340.75 Drachmas per Euro.

From 1995-2000, Greece had 3.2% average GDP growth, 5.5% consumer inflation, 10.5% unemployment rate, and a government deficit of 4.5% of GDP. After 11+ years of EU membership, Greece's 2012 GDP growth rate is minus 6.4%, its consumer inflation rate is 1.0%, its unemployment rate is 25.4%, and its government deficit is 7.6% of GDP. Some economists suggest that Greece, as did Argentina, should default on its debt.

This paper reviews two competing theories for Greece's economic decline: (1) Greece was disadvantaged by EU membership, by switching to the Euro, and by subsequent austerity measures; or (2) Greece accumulated excessive debt, creating an economic bubble.

I examine these theories by defining the conditional exchange rate for the Drachma as the rate that would have prevailed if Greece had not adopted the Euro. Under a Drachma regime, I assume that Greek policymakers would have attempted to keep an investment-grade credit rating. I account for economic adjustment, and calculate values of the following Greek economic variables for 1990-2012: the conditional exchange rate of the Drachma, the debt-to-GDP ratio, the growth rate of real GDP, prevailing interest rates, and other relevant macroeconomic variables.

Key Words: Greece, GDP, austerity, Euro, Drachma.

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¹Source: The Economist, November 17, 2012, p. 84.

Background

In discussing the Hellenic Republic, it is important to understand that Greece is not a third-world or developing country, despite implications to that effect in some English-language news media. Greece is a developed country with a relatively high standard of living, including the world's 29th-highest quality of life as of 2012.¹

Greece became the tenth member of the European Communities (afterward subsumed by the European Union) on 1 January 1981, ushering in a three-year period of economic decline. For the period 1981-1983, constant-price GDP fell by an average of 1.20%. GDP per capita was \$17,098 in 1981, and did not recover to its pre-1981 level for eight years. Greece officially adopted the Euro in 2001 at an exchange rate of 340.75 Drachmas per Euro. For the period 2001-2007, Greek GDP per capita rose from \$21,041 to \$27,603, a 31.18% increase.

More recently, Greece has been hit hard by the 2007-2013 recession and the related European sovereign-debt crisis. Although the recession officially ended in the United States in 2009, the Greek economy is still in a recession. The Greek government's debt crisis, subsequent economic crisis and resultant, sometimes violent protests have roiled domestic politics and have regularly threatened both European and world financial-market stability since the debt crisis began in 2010.

Greek interest rates have also risen dramatically since 2007 and are the highest in Europe. As of April 2013, long term interest rates³ were 11.58% in Greece, followed by 7.00% in Cyprus and 6.15% in Portugal.⁴

The Value of the Euro

In U.S. dollar terms, the Euro rose from \$0.94 in 2001 to \$1.57 in 2008 (see Figure 1). Since 2008, the Euro has fallen to approximately \$1.32. Since 2001, the Euro has appreciated by 40.4%. In an export-based economy (e.g., South Korea), currency appreciation would have decreased exports due to an increase in the price of the exporting country's goods. However, the Greek economy has historically been driven by government consumption, not by exports. Using 2001-2013 data, I estimated that government consumption has a coefficient of 0.54 compared to only 0.21 for exports.

²Calculated from data provided by the Federal Reserve Bank of St. Louis, FRED Economic Data.

¹'Human Development Report 2013,' the United Nations.

³Long-term interest rates are defined as the yield on government bonds with remaining maturities of close to ten years.

⁴Source: The European Central Bank, http://www.ecb.int/stats/money/long/html/index.en.html



Figure 1. *The Value of the Euro* (2001-2013)

Greek government consumption has a 94% correlation with GDP. In 2013Q1, Greek exports fell by approximately 3% compared to exports in 2012Q1.

Greek government consumption fell from 13.15 billion Euros in 2009Q4 to 8.30 billion Euros in 2012Q4, a decline of almost 37%. In great part, this decline in government consumption caused the dramatic decline in GDP and the rise in the unemployment rate to depression-era levels.

The Greek Budget Deficit

Greece was accepted into the Economic and Monetary Union of the European Union by the European Council on June 19, 2000. Greece was accepted based on 1999 data such as the Greek inflation rate, budget deficit, public debt, long-term interest rates, and foreign-exchange rate. In 2004, an audit commissioned by the incoming New Democracy government reported that the budget deficit statistics had been under-reported.¹

In 2004, Greek Finance Minister George Alogoskoufis explained that under current EU accounting practices, Greece would not have met the criteria for entry into the Eurozone, but it did under methodology in force at the time.

¹ 'The Revision of the Greek Government Deficit and Debt Figures,' Eurostat, November 2004.

As a result, no shadows remained about the country's eligibility for membership.¹

In other words, the 1999 budget deficit was below the prescribed 3% limit when calculated with the ESA79 methodology in force at the time of Greece's application, and thus the criteria for Greece had been met.

In 2005, the OECD reported that 'the impact of new accounting rules on the fiscal figures for the years 1997 to 1999 ranged from 0.7 to 1 percentage point of GDP; this retroactive change of methodology was responsible for the revised deficit exceeding 3% in 1999, the year of Greece's EMU membership qualification.'2

In 2009, the Greek government revised its deficit from an estimated 6% of GDP to 12.7% of GDP.³ Investors began to have serious doubts about Greece's ability to repay its sovereign debt, and many investors believed that default was inevitable. In order to avert a default, the other Eurozone countries and the International Monetary Fund (IMF) agreed to a rescue package that gave Greece an immediate €45 billion in loans. An additional €65 billion was promised if Greece adopted austerity measures designed to bring its deficit under control.

On November 15, 2010, Eurostat revised the public finance and debt figures for Greece. According to Eurostat, Greece had a budget deficit of 15.4% of GDP and total public debt of 126.8% of GDP in 2009. It became apparent that 'the bailout would be insufficient, and a second bailout of €130 billion was agreed to in 2012, subject to strict conditions, including financial reforms and further austerity measures.'

Literature Review

My literature review explored four questions:

- 1. Should Greece default on its debt?
- 2. Was Greece disadvantaged by its participation in the EU?
- 3. Was Greece disadvantaged by switching to the Euro?
- 4. Have austerity measures harmed the Greek economy?

Each of these questions is discussed below.

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¹'Finmin says fiscal data saga has ended in wake of EU report,' Athens News Agency, December 8, 2004. http://www.hri.org/news/greek/ana/2004/04-12-08.ana.html#09.

² 'OECD Economic Surveys: Greece 2005,' p.47, OECD, September 2005.

³ A Very European Crisis, The Economist, February 4, 2010.

⁴'Eurozone Crisis Explained,' BBC News Online, November 27, 2012, http://www.bbc.co.uk/news/business-13798000.

Should Greece Default on Its Debt?
In 2010, economist Nouriel Roubini argued that:¹

The bitter pill of debt restructuring could be taken with appropriate sweeteners, such as credit enhancements supported by the IMF and EU. Certainly, it would be better to use a small amount of public money to tempt creditors into a pre-emptive deal now than waste €110bn of it trying to prevent an unavoidable restructuring later. Such public resources would be better used to help ring-fence other embattled eurozone economies − such as Spain − whose debt may come under renewed pressure.

In short, an orderly restructuring of Greece's public debt is achievable and desirable for the debtor and its creditors. If Europe wants to avoid a deepening crisis, it is unavoidable too.

Economist Jeffrey Miron of Harvard University proposes that:²

The question for Greece is whether to continue its recent path – continued attempts at austerity, which do little to tame the deficit, followed by just enough bailout from the EU to avoid default – or whether to finally admit the obvious: it should default on its sovereign debt, abandon the euro, and go its own way.

In such a scenario, the pressure for austerity would therefore diminish. This would allow Greece to choose policies that encourage growth, rather than ones that shrink the deficit but retard growth by imposing higher taxes.

ICN.com has reported that the consequences of a Greek default could be severe. According to ICN, 'The Institute of International Finance said that a Greek random default could trigger more than one trillion euros of losses and also could leave Italy and Spain vulnerable, which in result could force both nations to seek an outside financial support to prevent the contagion from spreading within the [European] economies.' 3

Matthew Lynn makes a persuasive case that a Greek default is inevitable. Lynn has pointed out that 'Argentina didn't manage to hold out against the inevitable collapse, and neither will Greece. Even if you assumed that the austerity plan works, and there is no reason to suppose that it will, then Greece's public debt will keep on rising.'

¹ 'Greece's best option is an orderly default,' Nouriel Roubini, Financial Times, June 28, 2010.

²'Viewpoint: Greece should default and abandon the euro,' Jeffrey Miron, BBC News, October 25, 2011, http://www.bbc.co.uk/news/business-15452180.

³'IIF: Greek Default consequences worth one trillion euros,' ICN.com, March 6, 2012, http://www.icn.com/en/marketnews/2012/03/06/iif-default-greece-consequences/.

⁴'Greece, the Euro, and the Sovereign Debt Crisis,' Matthew Lynn, John Wiley and Sons, 2011.

I find myself in partial agreement with each of the four authors. I draw three lessons from these authors: (1) A Greek bond default is inevitable. (2) In the short run, the consequences of a Greek default will seriously damage the European, if not the world, economy. (3) In the long-run, Greece will be able to establish pro-growth economic policies.

Should Greece Have Joined the European Union?

The Pew Research Center has found that, like many countries in the EU, the vast majority of Greek citizens believe that economic integration has harmed the Greek economy. For example, only 11% of Greek residents believe that economic integration has helped their country. However, only a plurality of the residents of Greece and Poland favor increasing rather than decreasing government spending.

Christodoulakis, Dimelis, and Kollintzas compared the cyclical behavior of the Greek economy to that of the other European Community economies, and found that:²

The evidence suggests that there are remarkable similarities in these features despite significant differences in the patterns of fiscal and monetary policies and the terms of trade. We take this evidence to suggest that the propagation mechanism for business cycles in Greece is fairly similar to that in the other EC countries. Hence, the integration of the Greek economy within the EC under a set of uniform institutions and policies should not be a problem as far as the business cycle is concerned.

The Economist compared the normalized path of real per capita output for Greece with that for Britain and Denmark and found that:³

Greece clearly enjoyed catch-up growth during its euro stint. And while some of that growth has been given back during the brutal recession years, it remains (and is projected by the IMF to remain) closer to British and Danish income levels than when it joined the single currency. Might it have caught up anyway? Certainly. This is simply to show that the decision to join wasn't obviously a big mistake.

²Christodoulakis, N., Dimelis, S. and Kollintzas, T., 1993. 'Comparisons of Business Cycles in Greece and the EC: Idiosyncracies and Regularities.' CEPR Discussion Paper no. 809. London, Centre for Economic Policy Research. http://www.cepr.org/pubs/dps/DP809.asp.

¹ 'The New Sick Man of Europe: the European Union,' Pew Research Global Attitudes Project, May 13, 2013, http://www.pewglobal.org/2013/05/13/the-new-sick-man-of-europe-the-european-union/.

³ 'Greece and the euro.' The Economist, July 4, 2011, http://www.economist.com/blogs/freee xchange/2011/07/greece-and-euro.

Should Greece Have Adopted the Euro?

Yuhadi Kadarmo found that that the Eurozone does not constitute an Optimal Currency Area (OCA) according to the nominal and real economic convergences. Kadarmo analyzed a number of economic variables for 15 EU members (EZ-15) from 1999-2007. Kadarmo found that there was a low correlation among the EZ-15 for the following variables: inflation rate, public deficit/surplus, public debt, unemployment rate, and real GDP.

Lucas Papademos had a cautiously optimistic view of Greece's adoption of the Euro. Papademos believed that 'The adoption of the Euro will change in a fundamental and irreversible way the country's monetary and economic environment. The prospects for sustaining faster economic growth combined with price stability are generally favourable.'

Greece's adoption of the Euro not only affected the Greek government, it has also affected the private sector. Eichengreen and Gibson have explained that 'The elimination of currency risk has allowed borrowers to arrange exceptionally large transactions, while investors' reorientation from strategies focusing on interest rate convergence to a search for yield, has allowed lower-rated borrowers to access the market. Thus, between the first nine months of 1998 and the first nine months of 1999, the share of corporate bond issuance accounted for by Baa issues rose from 4 percent to 15 percent.'

Has Austerity Harmed the Greek Economy?

During the European sovereign-debt crisis, many countries embarked on austerity programs, reducing their budget deficits relative to GDP from 2010 to 2011. The Greek economy is clearly worse off today than it was at the end of 2009. Although the deficit has fallen, the national debt has increased, unemployment has increased, interest rates have increased, and GDP has fallen by 13.92%.

Greece was not the only country whose economy declined during the 2009-2012 period. Greece, Iceland, Italy, Ireland, Portugal, France, and Spain improved their budget deficits from 2010 to 2011 relative to GDP. Each of those countries had public-debt/GDP ratios that increased (i.e., worsened) from 2010 to 2011. Greece's public-debt/GDP ratio increased from 148% in 2010 to 171% in 2011. This indicates that despite improving budget deficits, GDP growth was not sufficient to support a decline (improvement) in the debt/GDP ratio for those countries during this period. Eurostat reported that the debt/GDP ratio for the 17 Euro area countries (EA17) together was 70.1% in 2008, 80.0%

¹Kadarmo, Yuliadi, Is the Euro Zone an Optimum Currency Area? (August 11, 2008). Available at SSRN: http://ssrn.com/abstract=1165842 or http://dx.doi.org/10.2139/ssrn.1165842.

²Papademos, Lucas D. 'The Greek Economy: Performance and Policy Challenges.' pp. xxxviii. In Greece's Economic Performance and Prospects, Bryant, Garganis, and Tavias eds. Bank of Greece, Athens; and the Brookings Institute, Washington D.C., 2001.

³Eichengreen, Barry and H. Gibson. 'Greek Banking at the Dawn of the New Millenium,' p. 589. In Greece's Economic Performance and Prospects, Bryant, Garganis, and Tavias eds. Bank of Greece, Athens; and the Brookings Institute, Washington D.C., 2001.

in 2009, 85.4% in 2010, 87.3% in 2011, and 90.6% in 2012. Real GDP in the EA17 has declined for six straight quarters from 2011Q4 to 2013Q1.

From 2010-2011, the unemployment rate in Spain, Greece, Ireland, Portugal, and the UK increased; was unchanged in France and Italy; and declined in Germany and Iceland. Eurostat reported that Eurozone unemployment reached record levels in March 2013 at 12.1%, up from 11.6% in September 2012, and 10.3% in 2011.

Martin Wolf analyzed the relationship between cumulative GDP growth from 2008-2012 and total reduction in budget deficits due to austerity policies in several European countries. He concluded that 'In all, there is no evidence here that large fiscal contractions [budget deficit reductions] bring benefits to confidence and growth that offset the direct effects of the contractions. They bring exactly what one would expect: small contractions bring recessions and big contractions bring depressions.'²

Paul Krugman analyzed the relationship between GDP and reduction in budget deficits for several European countries in April 2012 and concluded that austerity was slowing growth. Krugman wrote that '... this also implies that 1 euro of austerity yields only about 0.4 euros of reduced deficit, even in the short run. No wonder, then, that the whole austerity enterprise is spiraling into disaster.'³

Results and Discussion

I collected data on 15 variables of interest using publicly available seasonally adjusted quarterly data. Additionally, I created a dummy variable (switch), set to 0 before Greece adopted the Euro and to 1 afterward. Data was collected from the United States Federal Reserve Board of St. Louis; Statista; Eurostat; the Bank of Greece; the OECD; and the Penn World Tables. A description of the data is provided in Table 1.

First, I estimated a regression equation for each of the 15 variables described in Table 1 and calculated coefficients. Regression results are available upon request.

1

¹Eurostat news release, 'Euroindicators,' April 23, 2012.

² The Impact of Fiscal Austerity in the Eurozone, Martin Wolf, Financial Times, April 27, 2012.

³ 'Austerity and Growth Again,' Paul Krugman, New York Times, April 24, 2012.

Table 1. Data Used in Regression Analyses

Variable	Description		
Bond	Yield on the 10-year Greek government bond.		
Cons	Private consumption in billions of Euros.		
CPI	Consumer Price Index, 2005=100,		
Currency	I used the Greek Drachma through 2000. After 2000, the Euro variable was multiplied by the 2001 Drachma-to-Euro exchange rate of 340.75 Drachma per Euro to obtain a consistent data series.		
Debt	Greek debt in billions of Euros.		
Drachma	Value of the Greek Drachma (1981-2000) in Drachmas per U.S. dollar.		
Euro	Value of the Euro (1999-2013) in U.S. Dollars.		
Exports	Exports in billions of Euros.		
GDP	Gross domestic product in billions of Euros.		
Gov	Government Consumption in billions of Euros.		
Imports	Imports in billions of Euros.		
Inv	Investment in billions of Euros.		
IP	Industrial Production Index, 2005=100.		
IPD	GDP Implicit Price Deflator Index, 2005=100.		
Ratings	Credit Ratings were assigned a numerical value from 1 (D) to 24 (AAA).		
Unem	The Greek unemployment rate as a percentage of the labor force.		

Second, I used data from 1983Q1 to 2000Q4 and estimated the value of the Drachma. I then estimated what the value of the Drachma would have been from 2001Q1 to 2013Q1. I calculated an error factor of 8.16% during calendar year 2000 and adjusted the regression results accordingly. The end-of-year estimates are given in Table 2. Results are shown in Drachma per U.S. dollar.

As shown in Table 2, the forecast value of the Drachma is almost 25% less valuable than the Euro by 2013Q1. This devaluation has significant benefits and costs. I multiplied the estimated coefficient value by the actual currency values multiplied by 0.25 and calculated that a switch from the Drachma to the Euro and 25% decrease in the value of the Drachma would have the following effect on Greek economic variables over a 12-year period (2001-2013):

- Increase the interest rate on 10-year government bonds by approximately 455 basis points.
- Decrease GDP by 347 million Euros.

¹My model underestimated the value of the Drachma by an average of 8.16% during calendar year 2000.

13

- Decrease government consumption by 492 million Euros. This would have the effect of increasing the unemployment rate by 0.1%.
- Increase Greece's bond rating by slightly over one notch. This would mean that Greece's bond rating might be BBB- (lowest investment grade) instead of BBB (non-investment-grade rating).

I used the Drachma values summarized in Table 2 and reran the following five regressions using the modified Drachma values: Bond, Debt, GDP, Ratings, and Unemployment. The names of the regressions refer to the names of the dependent variables.

Table 2. The Estimated Value of the Drachma (2001-2013)

Year	Forecast Value	Actual Value
2000	362.95	362.95
2001	348.64	374.49
2002	353.81	344.92
2003	343.48	292.49
2004	335.49	274.42
2005	337.84	282.59
2006	328.50	268.58
2007	328.49	239.64
2008	305.05	241.99
2009	291.95	232.91
2010	307.73	250.53
2011	308.10	253.36
2012	327.78	265.05
2013Q1	322.84	258.42

Note: For comparison purposes, the forecast value for 2000 and the actual value for all years is the value of the Euro (in U.S. dollars) multiplied by the 2001 Drachma-to-Euro exchange rate of 340.75 Drachmas per Euro. For the period 2001-2013, the forecast value is essentially the value of the Euro divided by 340.75.

I estimate that if Greece had not adopted the Euro, this counterfactual action would have had the following effect on Greek economic variables:

- Have no effect on the interest rate on 10-year government bonds compared to a 455 basis point reduction in the Euro currency regime.
- Decrease GDP by 1.83 billion Euros compared to a reduction of 347 million Euros in the Euro currency regime.
- Have no effect on Greece's bond rating compared to a one-notch increase in the Euro currency regime. This would mean that Greece's bond rating might have been BBB (non-investment grade) instead of BBB (lowest investment-grade rating).

In Table 3, I provide a comparison of the estimated values of the debt/GDP ratio, the growth rate of real GDP, prevailing interest rates, and the unemployment rate at the end of 2012 under both the hypothetical Drachma and the actual Euro currency regimes.

Table 3. The Greek Economy under the Drachma and the Euro Currency

Regimes

Variable	Drachma Regime	Euro Regime	Actual
Debt-to-GDP Ratio	1.85	1.76	1.77
Growth Rate of Real GDP	-7.4%	-7.2%	-6.0%
Average 2012 yield of 10-year bond	20.23%	20.58%	22.83%
Average Unemployment Rate in 2012	23.84%	23.94%	24.40%

Conclusion

I find no evidence to suggest that Greece's adoption of the Euro harmed the Greek economy. I found that a Drachma currency regime would have resulted in a higher debt/GDP ratio, a lower GDP growth rate, a slightly lower unemployment rate, and a 35 basis point reduction in the yield on 10-year government bonds. The Euro currency regime resulted in lower interest rates, higher GDP, and a higher bond rating than would have prevailed otherwise.

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