

Measuring the Unfunded Obligations of European Countries

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by Jagadeesh Gokhale

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Europe is undergoing two major transitions. On the demographic front, many European countries are undergoing rapid population aging as their Baby Boom generations enter retirement, senior citizens live longer and fertility rates remain well below the population replacement level. On the economic front, 15 European countries have adopted the euro as a common currency, eliminating the ability to use monetary policy to achieve country-specific economic goals. Both transitions will place tremendous, conflicting pressures on the domestic national budgets of European countries.



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Executive Summary

These countries remain politically committed to maintaining fiscal discipline, but large portions of their government budgets are funded on a pay-as-you-go basis. That means that no real resources are set aside and invested each year by government or individuals to prefund future expenditures on such programs. Spending on promised retirement and health-care benefits for the elderly will increase. But there will be fewer workers to pay benefits as the bills come due, and the growth of income from which to extract taxes to support these programs will slow. As a result, all European countries have large unfunded liabilities — the difference between the projected cost of continuing current government programs and net expected tax revenues. In general:

- The average EU country would need to have more than four times (434 percent) its current annual gross domestic product (GDP) in the bank today, earning interest at the government's borrowing rate, in order to fund current policies indefinitely.
- At the low end, Spain would need to have almost two and one-half times (244.3 percent) its annual GDP invested.
- At the high end, Poland would need to have 15 times its GDP invested in real assets, forever!

No EU government has made the necessary investment. As an alternative, the next-best option is for these countries immediately to gradually but significantly increase saving and investment. In particular, the average EU country could fund its projected budget shortfall through the middle of this century if it put aside 8.3 percent of its GDP each and every year. Despite this adjustment, a budget shortfall is likely to emerge after 2050, requiring additional fiscal reforms.

What will happen if EU countries do not set aside these funds? Unless they reform their health and social welfare programs, they will have to meet these unfunded obligations by increasing tax burdens as the larger

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benefit obligations come due. Although spending averages 40 percent of GDP today:

- By 2020, the average EU country will need to raise the tax rate to 55 percent of national income to pay promised benefits.
- By 2035, a tax rate of 57 percent will be required.
- By 2050, the average EU country will need more than 60 percent of its GDP to fulfill its obligations.

In some countries, the projected shortfalls are lower than the average. In other countries, they are higher. This is the result of several factors. For instance, life expectancy at birth (in 2004) ranges from a low of 71.2 years in Latvia to a high of 80.7 in Sweden, indicating higher age-related costs in older EU countries than in newer, Eastern countries. Another demographic factor is fertility, which is below the rate of 2.1 births per woman required to maintain populations. However, fertility rates in the EU range from a low of 1.18 in the Czech Republic to a high of just 1.93 in Ireland — indicating that the Czech Republic is closer to a population implosion. Partly as a result of these demographic differences, economic growth rates also differ widely, from a contracting economy in Malta, with a -1.6 percent rate of growth in GDP per capita (averaged over

the period from 1996 to 2005), to a 5.7 percent growth rate in Estonia.

In comparison, the United States' shortfall for Social Security and Medicare alone has been somewhat smaller than the EU average, at 6.5 percent of future GDP. But as a result of the expansion of the Medicare program to cover prescription drugs, the U.S. fiscal imbalance is now 8.2 percent of future GDP. Putting this in perspective, to close its fiscal imbalance:

- The United States would need to save and invest an amount equal to 8.2 percent of its GDP beginning now and continuing every year forever to pay expected future benefits without future tax increases.
- This could be accomplished by more than doubling the current 15.3 percent payroll tax on employers and employees, immediately and forever.
- Alternatively, the federal government could immediately stop spending nearly four out of every five dollars on programs other than Social Security and Medicare — eliminating most discretionary spending on such programs as education, national defense, environmental protection and welfare — forever.

Each year that the United States does not take action to reduce the projected shortfall, it grows by more than \$1.5 trillion, after adjusting for inflation.

About the Author

Jagadeesh Gokhale is a senior fellow with the Cato Institute in Washington, D.C. His research focuses on U.S. fiscal policy, entitlement reforms, intergenerational redistribution, national saving, and labor productivity and compensation. He works with Cato's Project on Social Security Choice to develop reforms for programs such as Social Security and Medicare. Dr. Gokhale served in 2002 as a consultant to the U.S. Department of the Treasury and in 2003 as a visiting scholar with the American Enterprise Institute (AEI). Earlier, he was senior economic adviser to the Federal Reserve Bank of Cleveland. His most recent book, *Fiscal and Generational Imbalances: New Budget Measures for New Budget Priorities*, coauthored with Kent Smetters, drew widespread attention when it was published by AEI. He has also authored numerous papers in such economic journals as the *American Economic Review*, *Journal of Economic Perspectives* and the *Quarterly Journal of Economics*. Gokhale holds a Doctor of Philosophy degree in economics from Boston University.

Introduction¹

Europe is undergoing two major transitions. On the demographic front, many European countries are undergoing rapid population aging as their Baby Boom generations enter retirement, human longevity continues to increase and fertility rates remain well below replacement. On the economic front, 15 European countries have created a monetary union (the European Monetary Union) by adopting the euro as a common currency, eliminating the use of monetary policy to achieve country-specific economic goals.² Both transitions will place tremendous, conflicting pressures on the domestic national budgets of European countries. Decision makers will face growing demands to increase public expenditures for promised retirement and health-care benefits precisely when the growth of the labor force and tax base slows. That will create pressures to enlarge government budget deficits and expand public debt if economically destructive increases in tax rates are to be avoided. At the same time, these countries remain politically committed to maintaining fiscal discipline and avoiding cross-country economic imbalances that would make monetary policymaking by the European Central Bank (ECB) more difficult.

Fiscal discipline requires timely action to reduce future long-term budget commitments. The prerequisite for appropriate action is measuring those commitments properly to understand how large they are and to appreciate the trade-offs involved in reducing them. The official budgets of many countries

include projections of total government revenues, expenditures and annual budget deficits but are usually limited to the next 5 or 10 years. Such short-term budget projections are obviously inadequate for designing long-term policy reforms.³

“European countries have large and growing unfunded obligations.”

This study estimates the long-term fiscal imbalances (FIs) for 23 EU countries.⁴ It finds that future budget shortfalls projected under current policies are much larger than official estimates:

- Officially, the average EU country has unfunded obligations of 3.5 percent of the present value of total gross domestic product (GDP).⁵
- The measure developed for this study — the average (or benchmark) financial shortfall in EU countries — amounts to more than 8 percent of the present value of all future GDP.⁶
- This means that, in addition to projected taxes and other revenues, the average EU country would need to have more than four times (434 percent) its current annual GDP in the bank, earning interest at the government’s borrowing rate, in order to fund current policies indefinitely.

Obviously the EU countries do not today possess the resources re-

quired to eliminate the fiscal imbalance embedded in their budget policies. Hence, those resources must be generated from future policy changes — either by increasing revenues or reducing benefit commitments. The official EU budget imbalance is much smaller than that estimated here because the former assumes that EU governments will implement spending and revenue reforms in the future. However, such reforms have not been sanctioned under any political or economic agreements between EU countries, nor are they likely to enjoy adequate political support from EU citizens when it comes time to implement them — especially if they come as a surprise to members of key political constituencies.

Similar to existing public debt, the fiscal imbalance grows larger each year that governments avoid action to restore fiscal balance. As shown below, the FI measure can be decomposed to determine which policies and national economic and demographic features are contributing to its large size. The calculations also reveal by how much each country must adjust its policies to make them sustainable in the long term.

The study concludes by suggesting that European countries undertake a third transition — a policy transition agreed to and announced well in advance to reduce the scope of social insurance programs and to allow greater individual choice and private savings to provide these services in the future. Gradually but significantly reducing public social insurance spending commitments and replacing them with

Why Measure Unfunded Obligations into Infinity?

Because of the time value of money (a euro in hand is worth more than a euro received one year from now), future income and spending must be discounted to its present value, using a real (inflation-adjusted) rate of interest, such as the government's cost of borrowing money from the public. (See Appendix B for the methodology used in the FI calculations for this study.) The present value of dollars discounted from the future diminishes the further out the projections are carried — say, beyond 50 or 75 years. However, there are important reasons why such projections should not be limited to the current generation or the lifetimes of living individuals.

First, setting any specific limit on the projection horizon implies that the government budget is in balance beyond that horizon. However, if current policies result in large imbalances beyond the projection horizon, truncating the horizon is equivalent to ignoring future imbalances and the uncertainty associated with them. A better approach would be to report imbalances beyond the horizon under the best available economic assumptions and projections in addition to imbalances calculated under a truncated projection horizon.

Second, truncating the horizon usually leads to the “rolling-window” problem. Reforms implemented to balance the budget through a predetermined time horizon would be thrown off balance relatively quickly, simply by the passage of time.¹¹ If future imbalances are large and growing — as is likely in countries with rapidly aging populations — they would necessitate repeated reforms to pull the government's finances back into balance to avoid escalating fiscal deficits. The repeated “surprise” that policies need rebalancing means that any reforms undertaken would likely be economically inefficient: They would be undertaken under incomplete information about the full extent of the fiscal imbalance outstanding at any particular time.

Third, the most important reason for adopting infinite-horizon calculations is that truncated budget projections bias policymaking. For example, take a reform proposal to establish “social security” personal accounts:

- Suppose such accounts were created by diverting a portion of existing dedicated wage taxes for investment in private securities.
- In exchange for being allowed to invest a part of their payroll taxes in personal accounts, individuals would have to agree to actuarially fair reductions in their future social security benefits.
- “Actuarially fair” means that for every euro of payroll taxes deposited in personal accounts, individuals would surrender future benefits worth one euro in present value (calculated using the government's long-term borrowing rate and average mortality factors).

The government's financial position clearly remains unchanged under such a reform: The present value of the diversion of tax revenues to personal accounts is exactly matched by a reduction in future social security benefit commitments. However, if a truncated estimate were used, evaluations of the government's position would include short-term revenue losses but exclude reductions in benefit payments accruing beyond the truncated horizon. Or, if the government offered a personal accounts reform with a more than dollar-for-dollar reduction in the present value of future benefits, some individuals might agree to exchange smaller future benefits for personal accounts they would own and control. Implementing such an exchange would imply a larger reduction in future government outlays compared to the immediate reduction in wage tax receipts. However, a truncated projection horizon would include reduced short-term revenues but exclude the larger decline in future obligations. Thus, focusing exclusively on a truncated FI measure would bias policymakers to reject reforms that could potentially improve the government's financial condition.

private provision appears as the only economically and politically feasible way of addressing future fiscal challenges. The alternative — increasing taxes and imposing additional regulatory restrictions on EU countries to preserve current social programs as and when payment obligations under current policies come due — is likely to prove counterproductive in achieving a fiscally sustainable monetary union.

What Are Fiscal and Generational Imbalances?

The fiscal imbalance is the present value of all future projected government financial shortfalls, assuming current policies remain unchanged. The generational imbalance shows how much of the shortfall is due to past and current generations, with the remainder attributable to future generations. (These measures are an offshoot of generational accounting, which is discussed in detail in Appendix B.)

Fiscal Imbalance. The fiscal imbalance (FI) measures the size of the total imbalance built into current fiscal policies, including future changes already scheduled by law. It is a country’s unfunded liability, looking indefinitely into the future. It is the difference between the present cost of continuing current government spending programs, including entitlement promises, and present public debt, net of expected tax revenues. It is the amount of additional resources the government must have on hand today, invested and earning interest, in order to con-

tinue current policies forever. Alternatively, it equals the additional net revenue or cost savings required from future policy adjustments to close the budget gap embedded in current fiscal policies.⁷

The FI is similar to outstanding public debt in one important way: It grows larger over time because of accruing interest costs.⁸ In addition, fiscal policies that imply a positive FI are unsustainable: Because the ratio of FI to the present value of future GDP also grows larger over time, the implied annual service payments would eventually become larger than annual GDP.⁹

The main objection to calculating and reporting fiscal imbalances through the infinite future is that the degree of uncertainty increases the further out budget projections are taken. Hence, most agencies that report FIs base them on projections truncated after 25, 50 or 75 years.¹⁰ However, strong arguments favor infinite-horizon calculations. (See the side bar, “Why Measure Unfunded Obligations into Infinity?”)

“Fiscal imbalances are the amount of real assets government must invest today to close future budget gaps without spending or tax reforms.”

Generational Imbalance. The FI reveals the size of the long-term imbalance, whereas the generational imbalance (GI) reveals how

much past and living generations together contribute to the FI. The GI measure is useful for analyzing the intergenerational redistribution of resources if current fiscal policies were maintained throughout the lifetimes of current generations. The GI is derived by subtracting from the FI the portion of the government’s total unfunded obligations that are attributable to future generations.¹² (See Appendix B for methodology.) The GI shows the amount of transfers that past and living generations may expect to receive under current policies in excess of their past and future payments to fund them.¹³

However, whereas the FI can be calculated for the entire government and for specific social insurance programs, the GI measure can be easily calculated only for specific transfer programs. Calculating the GI for the entire government would require making strong assumptions about the intergenerational distribution of benefits from government provision of public goods and services — such as defense, international diplomacy, domestic security, judicial services and so on.¹⁴

The information provided by the GI calculations complements the FI measure. The FI tells how much additional resources are needed to restore a sustainable fiscal policy, but it cannot indicate how those resources should be raised. The GI, however, can help in selecting from among alternative policies because it shows how a given policy would change the net fiscal treatment of living and future generations. Essentially, the GI would show the trade-offs involved in raising

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resources from current versus future generations.¹⁵

The size of the GI reveals the amount of benefits, under current policies, that living generations can expect to receive from a government program in excess of their past and future expected taxes or contributions toward funding them. This measure remains relevant to changing fiscal policies because it represents a net (expected) wealth gain for living generations due to government policies. The gains can influence those generations' economic choices — such as their consumption and labor force participation. Hence, analyzing the potential implications of current fiscal policies on the economic choices of today's generations requires a

measure of the public provision of net benefits to those generations.

Estimated Fiscal Imbalances of EU Countries

This section presents FI estimates for individual EU countries and for the “average” EU country (see Appendix B for methodology). Estimates for the average EU economy provide benchmarks against which individual countries can be compared. (See the side bar, “Benchmarks of the Average EU Country.”) Although it was argued earlier that the FI measure would be comprehensive only if calculated over the infinite horizon, these estimates are over a finite horizon — through 2051, the terminal year

of population projections available from Eurostat.¹⁶ (See Appendix C for assumptions used to determine budget projections.) The estimates are provisional due to limitations in the underlying data, but they highlight the magnitude of the imbalances facing European countries.

Fiscal Imbalance Estimates.

Figure I compares the FI to GDP for 23 EU countries and for the EU benchmark for the base year, 2004 (see Appendix B for methodology).²¹ These ratios show the additional percentage of future GDP required to restore a balanced fiscal policy:

- The FI for the average EU economy equals 8.3 percent of the present value of estimated GDP through the year 2051.

Benchmarks of the Average EU Country

Calculating the average (or benchmark) across all EU countries provides a common reference point for evaluating each country's fiscal stance and the sources of difference, permitting an apples-to-apples comparison of each country's fiscal position. The benchmark case is defined with reference to demographics, productivity, budget structure and generational policy:

- The *demographic* benchmark is the average of all countries' projected populations by year, age (16 and older) and gender, between 2004 and 2051, and contains about 16 million people.¹⁷
- The *productivity* benchmark is the average annual labor productivity growth (measured in output per hour) across EU countries, which is estimated at 0.24 percent per year.¹⁸
- The *budget allocation* benchmark is the population-weighted averages of all of the countries' taxes and spending per capita.
- Finally, the *generational policy* benchmark is composed of age and gender profiles of various tax burdens and receipt of transfer payments per capita, averaged across all EU countries.¹⁹

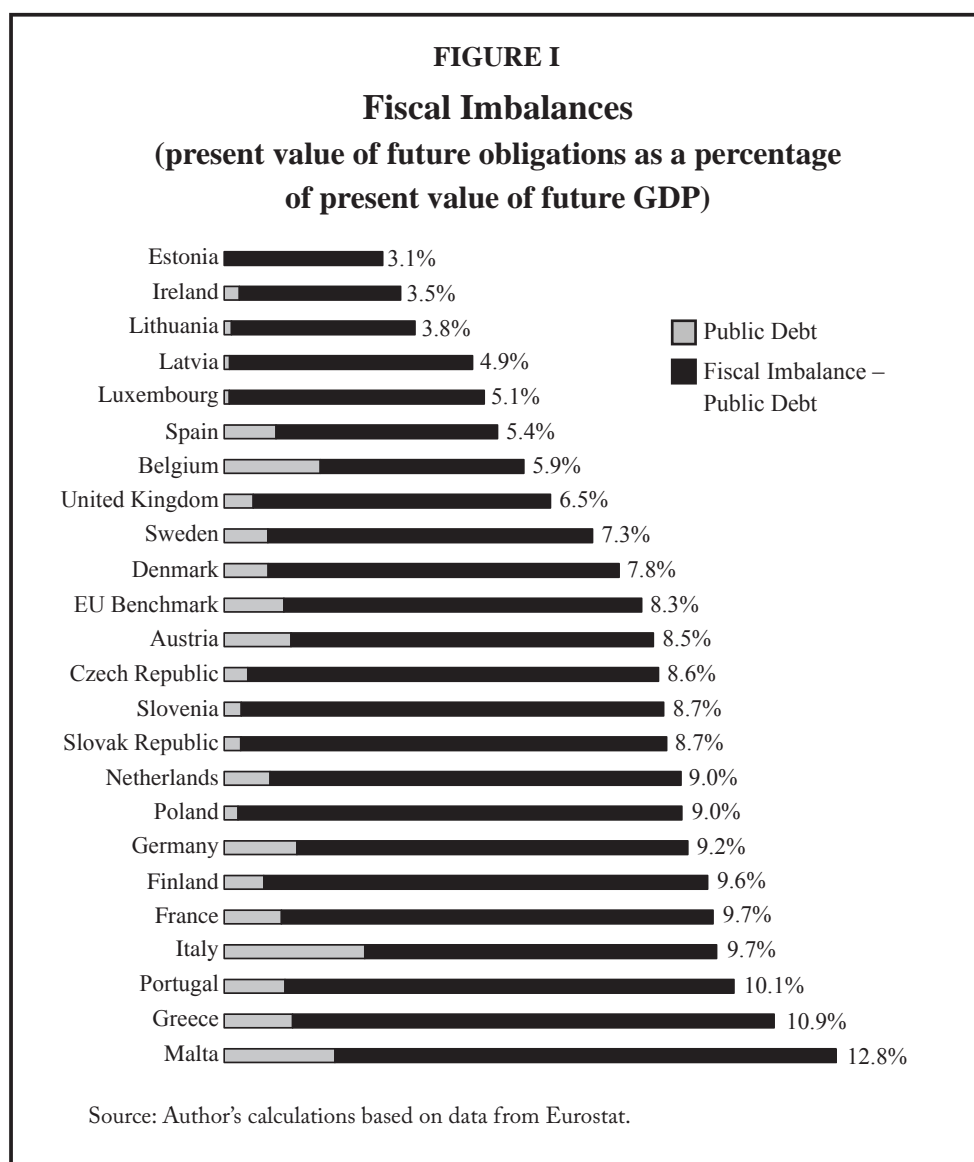
Taken together, the benchmarks yield the average EU economy. This framework allows each country's FI to be decomposed into its four sources. Substituting a particular country's demographics (normalized by the average EU population size) for the EU demographic benchmark would show the impact of that particular country's demographics on its FI.²⁰ For example, countries with younger populations compared to the EU benchmark would have more taxpayers relative to pension and health-care beneficiaries; consequently, the FI would be reduced. Countries with a smaller share of the budget going to public pension and health-care services would also have a smaller FI and so on.

- Three of the four largest EU economies have above-average FIs — Germany (9.2 percent), France (9.7 percent) and Italy (9.7 percent).
- By contrast, the EU country with the largest projected GDP, the United Kingdom, has a FI of just 6.5 percent — smaller than the EU benchmark value — due to its relatively younger population.

Generally speaking, older members of the European Union — including Germany, France, Italy, Greece, Portugal and Finland — have high FIs compared to GDP. The largest economies in the EU — such as Germany, the United Kingdom and France — have FI/GDP ratios close to the average. This is unsurprising because, due to their size, these economies form a substantial percentage of the total EU GDP. By comparison, the estimated U.S. fiscal imbalance in 2004 was 8.2 percent of *all* future GDP.²²

The United States' shortfall for Social Security and Medicare alone has been somewhat smaller than the EU average, at 6.5 percent of future GDP. But as a result of the expansion of the Medicare program to cover prescription drugs, the U.S. fiscal imbalance is now 8.2 percent of future GDP. Putting this in perspective, to close its fiscal imbalance:

- The United States would need to save and invest an amount equal to 8.2 percent of its GDP beginning now and continuing indefinitely to pay expected future benefits without future tax increases.
- This could be accomplished by more than doubling the current 15.3 percent payroll tax on em-



ployers and employees, immediately and forever.

- Alternatively, the federal government could immediately stop spending nearly four out of every five dollars on programs other than Social Security and Medicare — eliminating most discretionary spending on such programs as education, national defense, environmental protection and welfare — perpetually.

Each year that the United States does not take action to reduce the

projected shortfall, the total grows by more than \$1.5 trillion, after adjusting for inflation.

Fiscal Imbalances Compared to Current GDP. As noted, the FI shows the amount of real financial assets a government must have on hand today, invested and earning interest forever, in order to continue current policies indefinitely. This amount varies widely, but for every EU country it is several times larger than each country's annual GDP (see Table I). In 2005, for instance:

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TABLE I
Fiscal Imbalance as Percentage of Annual GDP (2004)

Country	GDP 2005 (billions of euros)	FI (billions of euros)	As a % of Annual GDP
Belgium	288	854	296.50%
Denmark	197	754	382.50%
Germany	2,215	9,263	418.20%
Greece	168	1,470	875.20%
Spain	837	2,045	244.30%
France	1,659	9,111	549.20%
Ireland	148	600	405.20%
Italy	1,388	5,054	364.10%
Luxembourg	27	102	376.70%
Netherlands	489	2,556	522.80%
Austria	236	967	409.80%
Portugal	143	703	491.90%
Finland	152	820	539.30%
Sweden	282	1,215	430.70%
United Kingdom	1,734	7,666	442.10%
Cyprus*	13		
Czech Republic	87	514	590.80%
Estonia	9	41	455.60%
Hungary*	81		
Lithuania	18	90	497.20%
Latvia	11	68	619.10%
Malta	4	19	467.50%
Poland	204	3,163	1550.40%
Slovakia	34	391	1149.10%
Slovenia	26	197	758.50%
EU-25 Benchmark	454	1,971	434.20%

* Incomplete data available for Cyprus and Hungary.

Source: Author's calculations based on data from Eurostat.

■ The average EU country would need to have more than four times (434 percent) its current annual GDP in the bank today, earning interest at the govern-

ment's borrowing rate, in order to fund current policies indefinitely.

■ At the low end, Spain would need to have almost two and one-half times (244.3 percent) its annual

GDP invested in real or financial assets in order to fund current policies indefinitely.

■ But the imbalance in many EU countries is much worse, and in Poland the government would need to have 15 times the country's GDP invested in real assets, forever!

Of course, no country has that much money on hand. Therefore, the FI must be closed by changing prospective taxes and/or benefits. However, the ratio of the FI to current year GDP, and the FI itself, increases each year that action is not taken.

The Cost of Delaying Fiscal Adjustments. Similar to outstanding debt, the FI grows over time because it accrues interest. When calculated over a finite horizon, each year's FI estimate is influenced by the addition of another year's budget surplus or shortfall. Table II shows estimates of the FI for EU countries through the year 2010. Each estimate covers a rolling period of 47 years — 2004 through 2051 for the 2004 FI, 2005 through 2052 for the 2005 FI and so on. The FI for the EU benchmark case increases by 26 percent over six years.²³ (See Table II.)

Overall, about one-third of the increase in the FI each passing year arises from advancing the terminal year of the projection horizon by an additional year. The remainder of the increase in the FI arises from accruing interest. This indicates the shortcoming of a finite projection horizon in capturing the cost of postponing fiscal adjustments. Were policymakers to adopt fiscal

TABLE II
Annual Changes in Fiscal Imbalances: Interest Accruals and Shifting the Projection Window

COUNTRY	MEASURE	2004	2005	2006	2007	2008	2009	2010
		Percent of PV_GDP(FI) / Annual GDP (Annual Change and Components)						
EU-25 BENCHMARK	Fiscal Imbalance	8.25	8.58	8.92	9.27	9.63	10.01	10.39
	Annual Change	-	0.18	0.18	0.18	0.19	0.19	0.2
	Interest Accrual	-	0.1	0.11	0.11	0.11	0.12	0.12
	Shift in Projection Window	-	0.07	0.07	0.07	0.08	0.08	0.08
BELGIUM	Fiscal Imbalance	5.92	6.13	6.35	6.57	6.81	7.04	7.28
	Annual Change	-	0.11	0.12	0.12	0.12	0.13	0.13
	Interest Accrual	-	0.07	0.07	0.08	0.08	0.08	0.08
	Shift in Projection Window	-	0.04	0.04	0.04	0.04	0.05	0.05
DENMARK	Fiscal Imbalance	7.81	8.09	8.37	8.67	8.97	9.28	9.6
	Annual Change	-	0.14	0.15	0.15	0.16	0.16	0.16
	Interest Accrual	-	0.09	0.09	0.1	0.1	0.1	0.11
	Shift in Projection Window	-	0.05	0.05	0.05	0.06	0.06	0.06
GERMANY	Fiscal Imbalance	9.16	9.51	9.87	10.24	10.61	11	11.39
	Annual Change	-	0.15	0.16	0.16	0.17	0.17	0.18
	Interest Accrual	-	0.1	0.1	0.11	0.11	0.11	0.12
	Shift in Projection Window	-	0.06	0.06	0.06	0.06	0.06	0.06
GREECE	Fiscal Imbalance	10.87	11.39	11.93	12.49	13.07	13.68	14.31
	Annual Change	-	0.4	0.41	0.41	0.42	0.42	0.43
	Interest Accrual	-	0.2	0.21	0.21	0.22	0.22	0.23
	Shift in Projection Window	-	0.2	0.2	0.2	0.2	0.2	0.2
SPAIN	Fiscal Imbalance	5.4	5.62	5.84	6.07	6.3	6.53	6.77
	Annual Change	-	0.1	0.1	0.1	0.11	0.11	0.11
	Interest Accrual	-	0.06	0.06	0.06	0.06	0.07	0.07
	Shift in Projection Window	-	0.04	0.04	0.04	0.04	0.04	0.04
FRANCE	Fiscal Imbalance	9.66	10.02	10.39	10.77	11.16	11.56	11.97
	Annual Change	-	0.22	0.23	0.23	0.24	0.24	0.25
	Interest Accrual	-	0.13	0.13	0.14	0.14	0.15	0.15
	Shift in Projection Window	-	0.09	0.09	0.09	0.09	0.09	0.1
IRELAND	Fiscal Imbalance	3.44	3.64	3.85	4.07	4.3	4.54	4.79
	Annual Change	-	0.26	0.26	0.27	0.27	0.28	0.28
	Interest Accrual	-	0.09	0.1	0.1	0.1	0.1	0.11
	Shift in Projection Window	-	0.17	0.17	0.17	0.17	0.17	0.17

Source: Author's calculations based on data from Eurostat.

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TABLE II
Annual Changes in Fiscal Imbalances: Interest Accruals and Shifting the Projection Window

COUNTRY	MEASURE	2004	2005	2006	2007	2008	2009	2010
		Percent of PV_GDP(FI) / Annual GDP (Annual Change and Components)						
ITALY	Fiscal Imbalance	9.73	10.06	10.41	10.76	11.12	11.49	11.86
	Annual Change	-	0.12	0.13	0.13	0.14	0.14	0.14
	Interest Accrual	-	0.09	0.09	0.1	0.1	0.1	0.11
	Shift in Projection Window	-	0.04	0.04	0.04	0.04	0.04	0.04
LUXEMBOURG	Fiscal Imbalance	5.13	5.33	5.53	5.74	5.94	6.15	6.36
	Annual Change	-	0.18	0.18	0.18	0.18	0.19	0.19
	Interest Accrual	-	0.09	0.09	0.09	0.1	0.1	0.1
	Shift in Projection Window	-	0.09	0.09	0.09	0.09	0.09	0.09
THE NETHERLANDS	Fiscal Imbalance	9.03	9.35	9.69	10.04	10.39	10.76	11.14
	Annual Change	-	0.2	0.21	0.21	0.22	0.22	0.23
	Interest Accrual	-	0.12	0.13	0.13	0.13	0.14	0.14
	Shift in Projection Window	-	0.08	0.08	0.08	0.08	0.08	0.08
AUSTRIA	Fiscal Imbalance	8.48	8.8	9.13	9.46	9.8	10.14	10.5
	Annual Change	-	0.16	0.17	0.17	0.17	0.18	0.18
	Interest Accrual	-	0.1	0.1	0.1	0.11	0.11	0.12
	Shift in Projection Window	-	0.06	0.06	0.06	0.06	0.07	0.07
PORTUGAL	Fiscal Imbalance	10.07	10.46	10.85	11.26	11.68	12.12	12.56
	Annual Change	-	0.19	0.19	0.2	0.2	0.2	0.21
	Interest Accrual	-	0.12	0.12	0.12	0.13	0.13	0.14
	Shift in Projection Window	-	0.07	0.07	0.07	0.07	0.07	0.07
FINLAND	Fiscal Imbalance	9.55	9.93	10.31	10.71	11.12	11.54	11.97
	Annual Change	-	0.21	0.22	0.22	0.23	0.23	0.24
	Interest Accrual	-	0.13	0.13	0.14	0.14	0.14	0.15
	Shift in Projection Window	-	0.09	0.09	0.09	0.09	0.09	0.09
SWEDEN	Fiscal Imbalance	7.28	7.55	7.83	8.12	8.42	8.73	9.05
	Annual Change	-	0.17	0.18	0.18	0.19	0.19	0.2
	Interest Accrual	-	0.1	0.1	0.11	0.11	0.11	0.12
	Shift in Projection Window	-	0.07	0.07	0.08	0.08	0.08	0.08
UNITED KINGDOM	Fiscal Imbalance	6.45	6.72	7	7.29	7.59	7.9	8.21
	Annual Change	-	0.2	0.2	0.2	0.21	0.21	0.22
	Interest Accrual	-	0.1	0.11	0.11	0.11	0.12	0.12
	Shift in Projection Window	-	0.09	0.09	0.09	0.1	0.1	0.1

Source: Author's calculations based on data from Eurostat.

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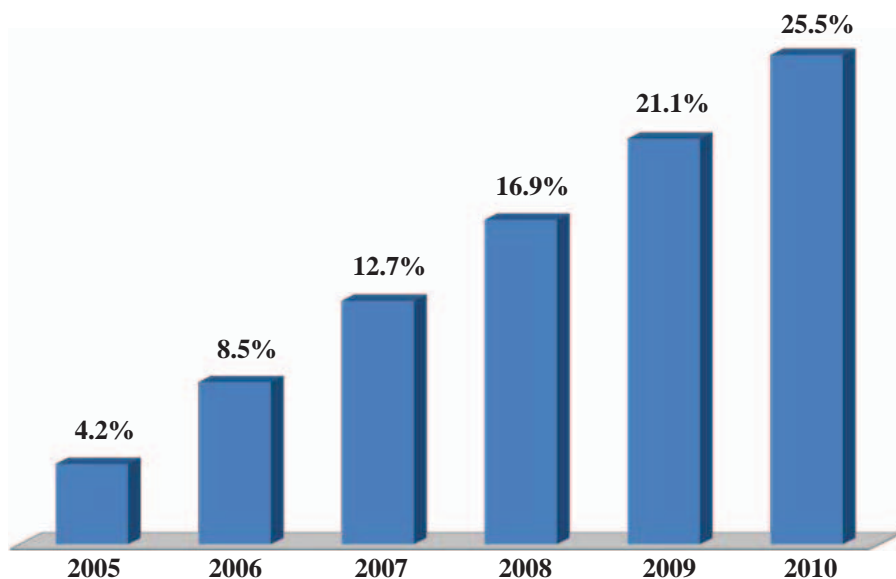
TABLE II
Annual Changes in Fiscal Imbalances: Interest Accruals and Shifting the Projection Window

COUNTRY	MEASURE	2004	2005	2006	2007	2008	2009	2010
		Percent of PV_GDP(FI) / Annual GDP (Annual Change and Components)						
CZECH REPUBLIC	Fiscal Imbalance	8.59	9.02	9.46	9.93	10.41	10.91	11.43
	Annual Change	-	0.28	0.28	0.29	0.29	0.3	0.3
	Interest Accrual	-	0.14	0.14	0.15	0.15	0.15	0.16
	Shift in Projection Window	-	0.14	0.14	0.14	0.14	0.14	0.15
ESTONIA	Fiscal Imbalance	3.17	3.41	3.67	3.95	4.24	4.56	4.9
	Annual Change	-	0.31	0.32	0.33	0.34	0.35	0.36
	Interest Accrual	-	0.1	0.11	0.11	0.11	0.12	0.12
	Shift in Projection Window	-	0.21	0.21	0.22	0.23	0.23	0.24
LITHUANIA	Fiscal Imbalance	3.77	4.03	4.31	4.61	4.93	5.27	5.63
	Annual Change	-	0.32	0.32	0.33	0.34	0.35	0.35
	Interest Accrual	-	0.11	0.12	0.12	0.12	0.12	0.13
	Shift in Projection Window	-	0.2	0.21	0.21	0.22	0.22	0.23
LATVIA	Fiscal Imbalance	4.91	5.24	5.58	5.95	6.34	6.76	7.2
	Annual Change	-	0.37	0.37	0.38	0.39	0.39	0.4
	Interest Accrual	-	0.14	0.14	0.15	0.15	0.15	0.16
	Shift in Projection Window	-	0.23	0.23	0.23	0.24	0.24	0.25
MALTA	Fiscal Imbalance	12.76	13.06	13.37	13.69	14.02	14.36	14.7
	Annual Change	-	0.14	0.14	0.14	0.15	0.16	0.16
	Interest Accrual	-	0.1	0.11	0.11	0.12	0.12	0.13
	Shift in Projection Window	-	0.03	0.03	0.03	0.03	0.03	0.03
POLAND	Fiscal Imbalance	9.05	9.71	10.43	11.19	12.01	12.88	13.81
	Annual Change	-	1.04	1.06	1.08	1.09	1.11	1.12
	Interest Accrual	-	0.35	0.36	0.36	0.37	0.38	0.38
	Shift in Projection Window	-	0.69	0.7	0.71	0.72	0.73	0.74
SLOVAKIA	Fiscal Imbalance	8.74	9.33	9.95	10.61	11.3	12.04	12.82
	Annual Change	-	0.71	0.72	0.73	0.74	0.75	0.76
	Interest Accrual	-	0.26	0.27	0.27	0.28	0.28	0.29
	Shift in Projection Window	-	0.45	0.45	0.46	0.46	0.47	0.47
SLOVENIA	Fiscal Imbalance	8.68	9.16	9.65	10.16	10.7	11.25	11.82
	Annual Change	-	0.39	0.4	0.4	0.41	0.41	0.42
	Interest Accrual	-	0.17	0.18	0.18	0.19	0.19	0.2
	Shift in Projection Window	-	0.22	0.22	0.22	0.22	0.22	0.22

Source: Author's calculations based on data from Eurostat.

FIGURE II

Growth of U.S. Fiscal Imbalance, 2005 to 2010* (percentage growth in present value compared to 2004)



*Note: The fiscal imbalance in 2004 was an estimated \$63.3 trillion.

Source: Jagadeesh Gokhale and Kent A. Smetters, "Fiscal and Generational Imbalances: An Update," in James A. Poterba, ed., *Tax Policy and the Economy*, Vol. 20 (Washington, D.C.: National Bureau of Economic Research, 2006).

adjustments to reduce FIs measured under a limited time horizon, a positive FI would re-emerge the very next year and grow larger over time.²⁴ Similarly, the U.S. fiscal imbalance increases from year to year. (See Figure II.)

The increase in the FI from one year to the next generally implies an increase in the cost of future fiscal adjustments because the GDP from which the shortfall must be paid generally grows at a slower rate. For the EU benchmark case, the

ratio of the FI to the present value of GDP grows from 8.3 percent in 2004 to 10.4 percent — assuming no changes in economic and demographic projections and no changes in fiscal policies.

This shows that waiting to implement policy adjustments will make the problem of balancing long-term budgets more difficult. Implementing adjustments later will require a larger share of total EU GDP to pay budget shortfalls.

Total Burden of Government.

Although projections of unfunded government spending equal to 8 percent or even 10 percent of total future GDP are alarming, these FIs are in addition to projected spending that is funded by taxes and other government receipts. Figure III shows total funded and unfunded government expenditures as a percentage of the present value of GDP for each EU country. It shows that the total burdens of EU governments under current policies are approaching 40 percent of GDP. The figure also shows that countries that devote a high percentage of GDP (through high taxes) to fund government spending do not necessarily have low fiscal imbalances. For instance:

- France has a total fiscal imbalance of 9.7 percent, higher than the EU benchmark, but also has higher-than-average funded government spending (25.3 percent compared to the EU benchmark of 23.2 percent).
- Estonia, on the other hand, has a total fiscal imbalance of 3.2 percent and funded government spending of 16.4 percent, both lower than the EU benchmark.

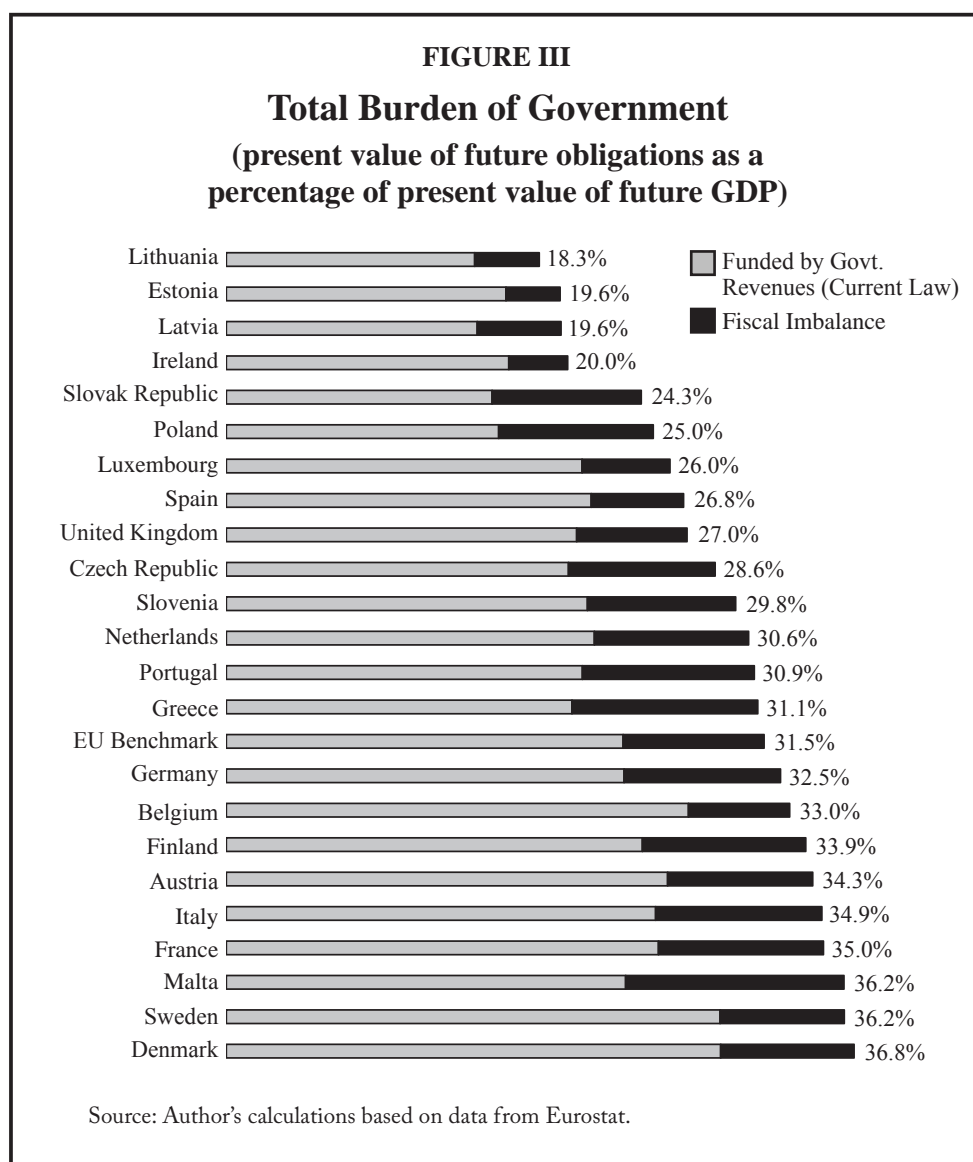
Causes of the Fiscal Imbalances

Figure IV shows how rapidly EU populations are aging by presenting worker-to-retiree ratios, calculated as the population aged 20–64 years divided by the population aged 65 and older for each country and for the EU benchmark. This ratio is a

key determinant of the finances of pay-as-you-go entitlement programs — public pensions and health care for retirees financed directly out of payroll taxes levied on workers. The higher the ratio, the larger the number of taxpayers compared to beneficiaries and, therefore, the more secure the financing of such programs. As Figure IV shows:

- Worker-to-retiree ratios will decline in Europe during coming decades from about 3.5 workers per retiree to about 1.7 workers per retiree.
- The U.S. Social Security Administration projects the United States will have the same ratio of workers to retirees a few years later.
- The comparison indicates that population aging in Europe is considerably more advanced (the current average ratio is smaller in Europe) and more severe (the ratio declines to a lower value in Europe) than in the United States.

In some countries, the projected fiscal shortfalls are lower than the average. In other countries, they are higher. This is the result of several factors. For instance, life expectancy at birth (in 2004) ranges from a low of 71.2 years in Latvia to a high of 80.7 in Sweden, indicating higher age-related costs in older EU countries than in newer, Eastern countries. Another demographic factor is fertility, which is below the rate of 2.1 births per woman required to maintain population in each EU country. However, fertility rates range from a low of 1.18



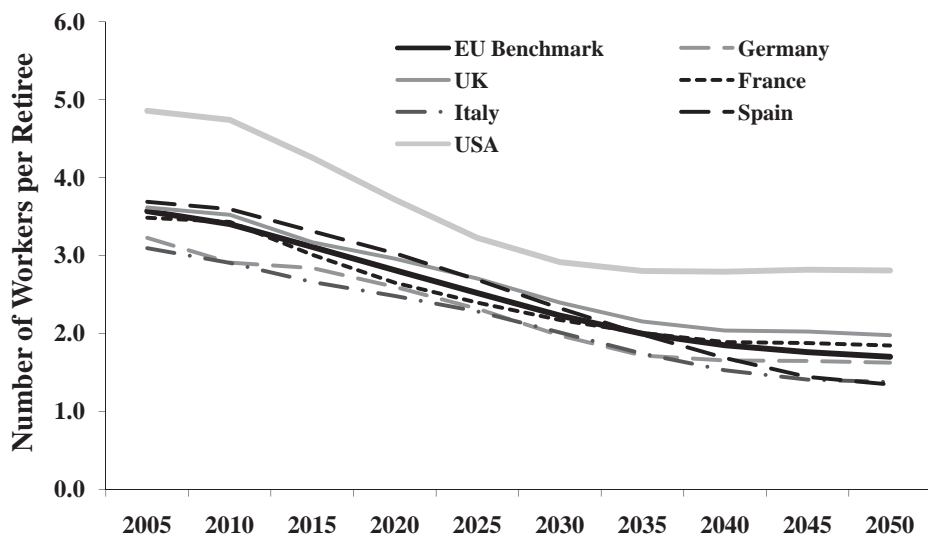
in the Czech Republic to a high of 1.93 in Ireland — indicating the Czech Republic is closer to a population implosion. Partly as a result of these demographic differences, economic growth rates also differ widely, from a contracting economy in Malta, with a -1.6 percent rate of growth in GDP per capita (averaged over the period from 1996 to 2005), to a 5.7 percent growth rate in Estonia.

Given that the United States and other developed countries (such as

Japan) are also experiencing sharp demographic transitions and are projected to face fiscal shortfalls on account of their public pension programs, these fiscal measures are clearly relevant to them as well.

Health and Social Welfare Spending. Pension and health-care programs in most European countries are partly financed out of dedicated taxes. Figure V shows public spending on health-care and social protection programs as a percent of the present value of

FIGURE IV
Projected Worker-to-Retiree Ratios
(EU benchmark and selected countries)



Source: U.S. Social Security Administration and author's calculations based on data from Eurostat.

future GDP for each EU country. It is important to note that social protection encompasses not only pension (social security) spending but also unemployment insurance, welfare benefits and other transfers. Although such programs are usually considered to be “in balance” by definition, excess outlays over dedicated revenues are financed out of transfers from the general budget. The FI measure can be used to show the extent to which the government is obligated to cover financial shortfalls in projected dedicated revenues compared to projected benefits under current policies. In such cases, the GI calculated using just dedicated taxes would indicate

the extent to which past and living generations' net benefits — those in excess of their taxes dedicated to such programs — are responsible for creating general government obligations to finance the program.²⁵

Effect of Population Aging on Fiscal Imbalances. Several countries have an excess, or positive, FI when their demographic profiles are used in place of the demographic profile of the EU benchmark country. (See Figure VI.) In this figure, positive numbers — reported as a percent of the present value of GDP estimated for the EU benchmark case — indicate that country-specific demographic projections increase

FI under current (EU benchmark) fiscal policies. Compared to benchmark demographics, country-specific demographic features for countries with positive numbers in Figure VI could include more rapid population aging due to increases in longevity, a larger-than-average Baby Boom generation approaching retirement, a Baby Boom generation that is closer to retirement and a recent, relatively more rapid decline in projected fertility rates that will reduce the number of taxpaying workers. The opposite effects would be true for countries with negative numbers in Figure VI.

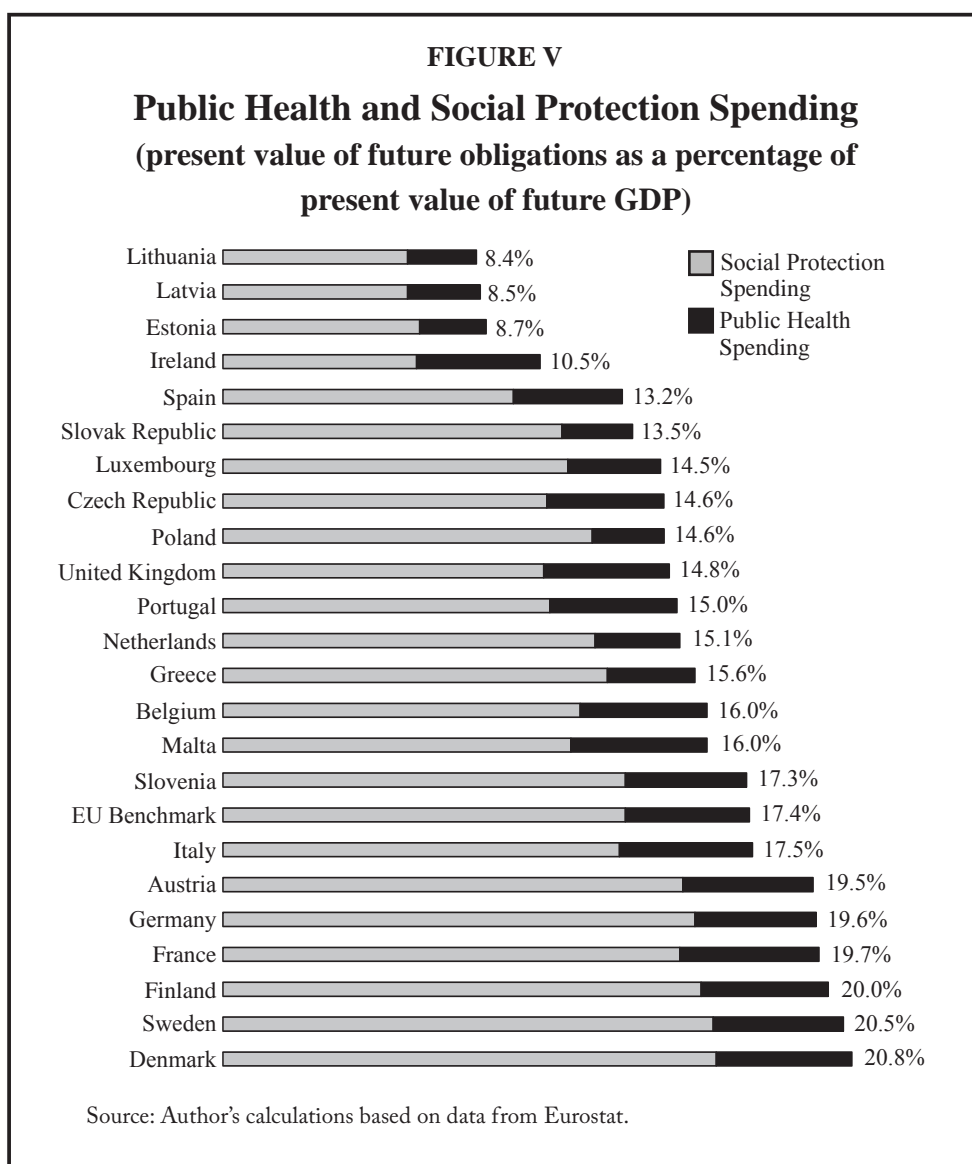
Figure VI also shows that despite the large FI estimates for Germany, Italy and the United Kingdom, their population aging is no more rapid than that of the average EU country. This result may appear surprising, but it must be noted that these large countries also contribute significantly to the “average” demographics of the EU benchmark. Whereas the projected populations of some countries will not only grow older but also stabilize and even shrink, the populations of some younger countries are still expanding. For instance:

- France's population aging causes a 5 percent increase in its fiscal imbalance relative to the EU benchmark.
- Population aging has the greatest influence on the fiscal imbalances of Ireland and Malta, increasing them by more than one-fifth.
- By contrast, the demographic profiles of Latvia and Estonia are

much younger than the EU average, reducing their fiscal imbalances by more than one-quarter.

Effect of Budget Allocations on Fiscal Imbalances. Figure VII shows countries that, compared to the EU benchmark, have tax, transfer and spending policies that will increase their unfunded obligations over time. For example, some countries may devote a much larger share of their government budgets to social insurance programs, with both spending and dedicated taxes constituting a much larger share of total expenditures and receipts, respectively. Because social insurance programs' budgets are sensitive to population aging and fertility declines, such countries' budget allocation structures would contribute toward increasing rather than reducing FI compared to the budget allocation structure of the average EU country. Another example: A country's tax structure could be associated with a larger FI. Countries raise different shares of total revenues through wage and indirect (excise) taxes. Because indirect taxes, compared to wage taxes, fall more evenly on workers and retirees, population aging would not cause as significant a reduction in future government revenues in countries that rely more heavily on indirect taxes compared to those that rely more on wage taxes:

- The budget allocation policies of the United Kingdom, Germany and France contribute 13.6 percent, 20.3 percent and 40.4 percent, respectively, to their high FI values.



- However, newer EU members appear to follow much more balanced budget allocations compared to the EU benchmark country. That makes their budget allocations much more conducive to maintaining fiscal balance. This is especially true for the Czech and Slovak Republics, Poland, Latvia, Estonia and Lithuania. This is not surprising because newer EU members and newly independent countries from the erstwhile Soviet sphere

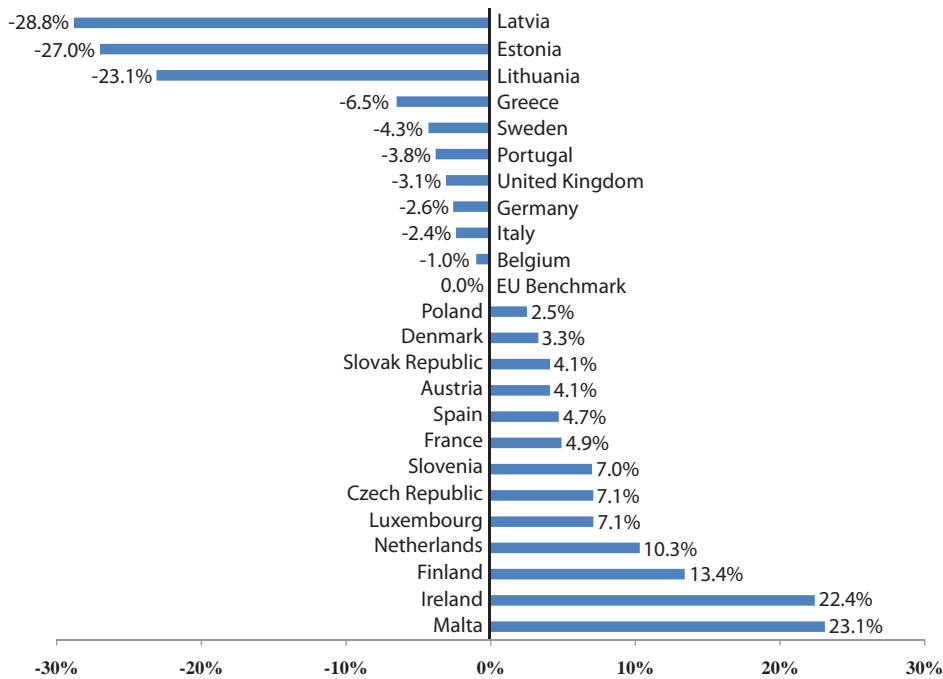
have very limited social insurance programs.²⁶

Policy Implications of FI Measures

Reporting FIs and their growth over time relative to GDP appears to be more relevant for fiscal policymaking than does reporting annual deficits. Budget deficits record only the current year's cash flow shortfall. As such, they are

FIGURE VI

Demographic Component of Fiscal Imbalances (present value of future obligations as a percentage of present value of future GDP)



Source: Author's calculations based on data from Eurostat.

backward-looking measures of fiscal policy. From the beginning of one year, say, year t , to the next, year $t+1$'s cash flow shortfall is "booked" by adding it to the outstanding debt. But this change in its status occurs merely because of the passage of time. That same passage of time brings future shortfalls forward by one year — which is costly because policymakers have one less year to finance them and a smaller resource base to tap — as represented by the aforementioned interest cost on the FI that is usually larger than the GDP's growth rate.

There is no sound reason to include just this year's accruing FI while excluding the accruing interest cost of future ones under current policies. Calculating the accruing cost of projected FIs comprehensively shows that the cost of making immediate policy changes to eliminate the total fiscal imbalance is much larger than the current-year deficits that are usually and regularly reported. For example, take the case of France:

- In 2005, the French government reported a deficit of 2.9 percent of that year's GDP.²⁷

- However, during that year, the French FI grew by 22 percent — that is, by an amount equal to more than one-fifth of that year's GDP — an order of magnitude larger than the reported fiscal deficit.

Comparing annual changes in FIs to traditional deficit and debt measures yields similar results for other EU countries.

Some EU countries have a budget surplus that suggests a good fiscal condition; but the rising FI points to the opposite conclusion. This is similar to the case of U.S. Social Security wherein current trust fund surpluses lead people to believe that the program is in fine financial condition even though current policies imply a large and growing financial shortfall. Thus, policymakers would draw incorrect conclusions about their country's evolving fiscal condition if they depend on backward-looking fiscal measures such as deficits and debt.

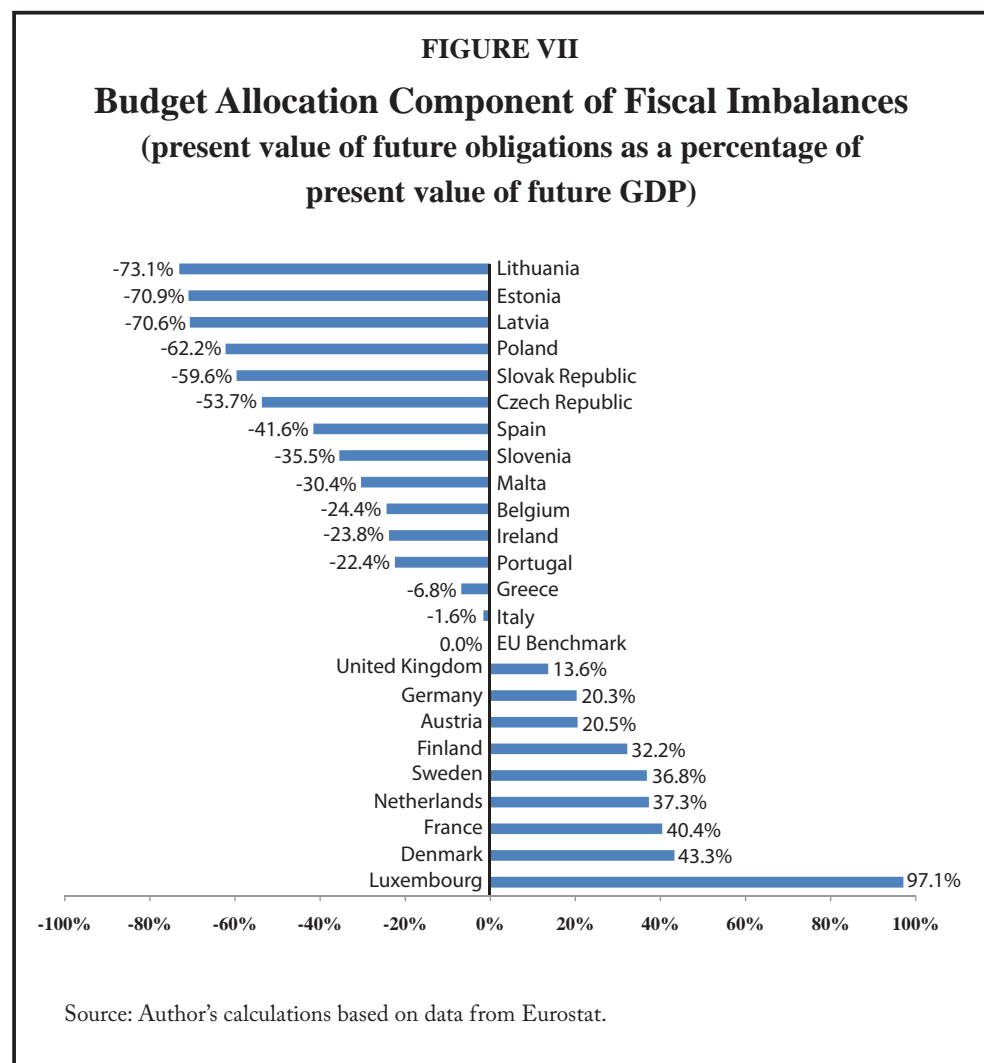
Conclusion

This study began by observing that EU countries are undergoing twin transitions: a demographic transition wherein the populations of most EU countries are aging and an economic transition resulting from the adoption of a single currency and associated adjustments in fiscal constraints and agreements based on short-term and backward-looking debt and deficit measures. These processes and constraints on how high economically debilitating taxes can be increased are likely

to impose conflicting pressures on policymakers, on the one hand, to increase deficit spending to support expanding retiree cohorts and, on the other hand, to limit deficits and debt in order to continue expanding a heretofore successful process of monetary unification.

As a result, an extended framework of budget accounting and reporting needs to be adopted within the context of the EU's long-term fiscal policy requirements. Among the several available fiscal measures, this study argues for adopting fiscal and generational imbalance measures because they can potentially incorporate comprehensive and policy-relevant information about the future implications of continuing current fiscal policies. The baseline FI and GI estimates can be supplemented with demographic, budget allocation, productivity growth and cohort-distribution policy components. The advantage of doing so is to present policymakers with tools to compare intercountry differences in fiscal stances and to evaluate the feasibility and likely economic effects of alternative policy options.

Adopting FI and GI measures need not imply that projected shortfalls are immutable liabilities of the government.²⁸ Instead, they should be viewed as policy guideposts to help implement appropriate changes to future fiscal policies — including reforms of tax, pensions and other government programs — in order to restore sustainable fiscal policies and promote better economic choices by EU citizens.²⁹ The fiscal



constraints facing EU countries suggest that the correct approach is to initiate a third transition — of gradually but significantly reducing dependence on government-provided social insurance in favor of promoting private saving for retirement, health care and other social welfare services. Without such reforms, the already hugely underfunded government provision of social insurance is likely to run aground, worsening the prospects of consolidating and expanding the economic and monetary union in Europe.

Appendix A

Measuring and Reporting Government Debts, Deficits and Imbalances

Concern about fiscal sustainability arising from the aging populations and falling birth rates in developed countries has spurred interest in developing forward-looking measures of fiscal policy. There are several alternatives.

Extending Budget Deficit and Debt Projections over Longer Horizons. Traditional measures of

Measuring the Unfunded Obligations of European Countries

short-term government deficit and debt are grounded in Keynesian macroeconomic theory under which budget deficits (and surpluses) can be fine tuned to stabilize the economy over the current business cycle. Annual budget deficits naturally move countercyclically — that is, there is greater spending, especially on welfare programs during economic downturns and increased revenues during booms. However, discretionary revenues and expenditures can be used to enhance these countercyclical movements in order to dampen business cycles and stabilize the pace of economic activity and growth. A large and growing literature has attempted to measure the economic effects of discretionary spending using annual deficits as the key measure of fiscal effects on the overall economy.³⁰

If short-horizon fiscal measures are inadequate to analyze long-term fiscal sustainability and structural reforms, the simplest solution is to extend the time horizon of traditional deficit and debt projections. One proposal is to project and report government revenues, expenditures and surpluses/deficits over the next 50 or 75 years under alternative economic and demographic assumptions. These measures can be calculated for the entire government budget and for specific programs that are financed out of dedicated revenues, such as retirement and health programs. Time series projecting annual budget cash flows — revenues, expenditures, deficits and debt — have some advantages and a few shortcomings. They clearly show the path of future revenue shortfalls, given projected discre-

tionary and aging-related spending. They also show how quickly large deficits are likely to emerge under current policies.

“Traditional budget measures do not fully capture fiscal imbalances.”

First among the shortcomings is the fact that these projections do not place current and future dollars on a level playing field. Although future nominal deficits appear to be larger, their real values may not be as large if nominal interest rates — projected inflation plus real interest rates — are high.

Second is the fact that nominal deficits and debt levels do not appear to bear any significant, stable relationship to other economic variables of interest — interest rates, currency values, inflation, productivity growth and so forth. As a result, strict budget rules to control deficits and debt may not be sufficient. Third is the fact that some countries could follow policies that maintain or even reduce explicit deficits and debt while simultaneously increasing future deficits — so-called one-off measures and other budget gimmicks. Such policies alter the timing of deficit accruals but do not have a predictable impact on the economy.

Any particular time series of government net cash flows can be produced by arranging the sizes and

timing of different taxes and expenditures in a myriad of ways. Each time series could be associated with different distributions of fiscal burdens among individuals in different stages of their lives. Hence, a particular time series of deficits and debt may be associated with wildly different real underlying fiscal policies — that is, with different real flows and distributions of consumption, saving, investment and output and different levels of real interest rates, inflation and exchange rates. These real economic outcomes would diverge primarily because each policy would have different effects on various population groups, especially across young, middle-aged and older individuals.³¹

Accrual Accounting Measures. Increases in outlays for retirement and health benefits are built into the budget projections of most EU countries, and they imply growing annual deficits. Those costs should be explicitly recognized as additional government debt under current policies. One way of doing so is to adopt accrual accounting, which considers the government’s financial obligations and assets that have been “earned” or “booked” based on events that have occurred through the current period, whether or not the funds associated with those events have been paid or received as yet. Budget reports using accrual accounting would include a summary measure called “unfunded accrued obligations,” which is future payment obligations net of assets accrued from past transactions.

Accrual accounting is used to evaluate the pension and other

obligations of private companies. It has been applied to government finances to a limited extent in several countries.³² However, the government is sufficiently different from private entities to warrant a different accounting standard. In particular, private entities can fail, whereas the government is perpetual, at least in principle. Moreover, unlike private entities, governments possess the sovereign power to levy taxes.

Accrual accounting measures are also partially backward-looking because their projections of future fiscal flows (taxes and transfers) are the result of *past* events. However, they ignore future events that would trigger additional obligations even if current policies continue — such as labor force participation, earnings, payroll tax payments and so forth.³³ Indeed, if accrued net obligations are positive (increasing budget deficits) but continuing current fiscal policies would generate net future receipts (creating surpluses), accrued net obligations would indicate a large positive net liability even though current policies may be sustainable.

Generational Accounting.

Generational accounting produces actuarial estimates of the prospective lifetime fiscal effects of the net taxes and transfers of current and future generations.³⁴ Generational accounts for future generations are based on a binding overall budget constraint: The government must pay for all the public goods and services it provides. Thus, generational accounting helps to assess the government’s net financial commitments to current generations

under current fiscal policies and, by implication, the net fiscal burdens those policies place on future generations. (See Appendix B for methodology.) However, the concepts associated with generational accounting involve subtle thought experiments that are difficult to communicate to lawmakers and the public, such as treating all future-born generations under different policies in contrast to treating living generations under current policies. In addition, generational accounts are calculated from the perspective of private individuals rather than the government’s financial constraints. That makes it difficult to integrate generational accounts with existing budget reports.

“Generational accounting attributes the cost of benefits and potential resulting budget shortfalls to current and future generations.”

Generational accounting also reports the lifetime fiscal burdens on each (living and future) generation if policy adjustments were made that achieved a sustainable fiscal policy. However, the key information about the sustainability of current policies is frequently obscured by the focus (and often confusion) associated with the multiplicity of numbers included in most generational accounting reports.³⁵

The fiscal and generational imbalance measures discussed in the text are an offshoot of generational

accounting. They simply capture the most important elements of generational accounting. Similar to the generational imbalance measure, generational accounting is useful for analyzing the intergenerational redistribution of resources if current fiscal policies were maintained throughout the lifetimes of current generations. However, unlike the fiscal imbalance and generational imbalance measures, generational accounting involves some complicated thought experiments involving hypothetical and nonimplementable future policies.

How to Integrate Reporting of Short- and Long-Term Budgetary Conditions.

Even with the new EU monetary constraints, each member country has considerable control over its fiscal policies and full control over the accounting for and reporting of national budget information. Both short-term budget projections and the long-term implications of current fiscal policies should be included in the reports. The FI measure appears to be the easiest to integrate into most existing budget reporting frameworks because it is essentially a “budget measure” and comprehensively incorporates forward-looking fiscal information (as discussed in the main text). For social transfer (and possibly other) programs with independent and dedicated financial resources, it is also easy to integrate both fiscal and generational imbalance measures into existing budget reports.

Comparison to Other Sustainability Measures. The Working Group on Aging Populations

(AWG) — part of the EU’s Economic Policy Committee — evaluates the prospect that member countries will comply with requirements that they avoid excessive deficits and keep debt levels below 60 percent of GDP.³⁶ EU members are required to maintain a “close to balance or surplus” position over the medium term (three to five years), although not over a longer term. If followed, this would result in de facto sustainability in a simple and transparent manner.³⁷ The problem is, however, that a “short-sighted” view of current policy does not provide sufficient and relevant information to policymakers. Policies could be enacted to ensure compliance with the short-term EU constraints only to soon discover that the problem grew larger as the budget window moved forward. Meanwhile, the opportunity in the intervening years to save resources through larger policy adjustments is lost.

“Short-term deficit measures hide the re-emergence of bigger deficits beyond the period measured.”

Defining *sustainability* as “the maintenance of predetermined levels of deficits and debt” is simply not useful because those indicators alone do not fully reveal the implications for the budget (and the real economy) of alternative ways of achieving fiscal sustainability and economic convergence across member coun-

tries. Simple projections of future debt and deficit levels also do not comprehensively reveal the sources of economically meaningful imbalances — not just in overall budgets but also in terms of net payments to different groups, such as young, old and future generations. There appears to be no shortcut to specifying sustainability in terms of comprehensive forward-looking measures, such as fiscal and generational imbalances.

Another issue concerns the incorporation of future policy changes that have already been enacted. The calculations reported here are based on 2005 levels of taxes, transfers and government purchases. However, if cuts in pension benefits or revenue-increasing measures are already scheduled in the laws — information unavailable to the author at the time of writing — they should be incorporated into FI and GI calculations because they are consistent with the definition of “current policy.” However, lawmakers may repeatedly alter laws that schedule cuts in benefits because such cuts are not politically feasible. For example, this is a regular feature of the U.S. Medicare program when doctors’ reimbursement rates are scheduled to be reduced but lawmakers restore reimbursements each year at higher levels. In such cases, it is best to first check whether or not there is sufficient precedent to justify not following “current laws” in preference to “current practice.”

In addition, future policies may be incompletely specified — say, scheduled to terminate at a certain

date with no indication of what would occur thereafter. Such policy environments make it difficult to implement long-range calculations of FI and GI measures. In such cases, providing ranges of FI and GI estimates under alternative policy projections would be more appropriate.

Appendix B

Calculating the Fiscal and Generational Imbalances

Fiscal Imbalance. The FI measure equals the present value of prospective government purchases under current policies (PV_{Pc}) minus *lifetime net payments* (taxes minus transfers) to living (PV_{Lc}) and future (PV_{Fc}) generations plus the present value of projected government purchases and minus the government’s current net financial assets (NW_c). Thus,

$$FI = PV_{Pc} - PV_{Lc} - PV_{Fc} - NW_c.$$

Because the government’s budget choices are being evaluated, present values are calculated using the government’s opportunity cost of funds — the interest rate expected to prevail on the longest-term government bonds.

FI measures can also be calculated for government subprograms that exclusively provide transfers to private individuals (old-age retirement benefits, for example) and are financed out of dedicated revenues (a payroll tax, for example). There

are zero government purchases for this program, and its revenues and expenditures are attributable to particular generations.

$$FI_s = PV_{L_{s,c}} - PV_{F_{s,c}} - NW_{s,c}$$

Here the subscript s indicates a generic “social security” program that conforms to the financing conditions described above.

Generational Imbalance. Generational imbalance (GI) measures the contribution of past and living generations to FI. The motivation for the GI measure is the same as that for generational accounting — to analyze the intergenerational redistribution of resources that current fiscal policies would bring about if they were maintained throughout the lifetimes of current generations. GI represents the simplest decomposition of FI.

GI is derived by subtracting from FI the government’s total unfunded obligations under current policies on account of future generations. However, whereas FI can be calculated for the entire government and for subprograms having the features described earlier, the GI measure can be easily calculated only for such subprograms. The GI measure is not the same as the unfunded accrued obligation that is usually employed to show financial status of “fully funded” private pension programs. The GI measure is especially relevant and useful for assessing the financial status of “pay-as-you-go” public pension programs. It shows total outstanding obligations arising under current policies on account of

past and living generations. Unlike the accrued unfunded obligation, the GI measure includes future net payment obligations under current policies triggered by *past transactions* as well as future payment obligations that would be triggered under current policies by *future events*.

“Generational imbalances show how much net wealth current generations expect to gain at the expense of future generations.”

The size of GI reveals the amount of benefits that living generations may, under current policies, expect to receive from a government program in excess of their past and future expected taxes or contributions toward funding them. This measure is relevant to policy because it represents a net (expected) wealth gain for living generations, which affects their consumption and labor force participation decisions. The GI measure is not calculated for EU countries because of the lack of necessary detail in various countries’ budget accounts.

Appendix C

Assumptions for Budget Projections

The population projections used for distributing 2004 budget agree-

ments by age and gender are based on projections taken from Eurostat through the year 2051. Future taxes, transfers and general government spending on public goods are estimated for the EU benchmark by applying an average labor productivity growth factor of 0.24 percent per year. This average is calculated by taking a population-weighted geometric mean of average growth in output per hour worked for each of the 23 EU members between 1996 and 2004. The calculations use data on output per hour worked as reported by Eurostat.

A fixed and constant real rate of discount is used for discounting projected fiscal flows back to the year 2004. The inflation-adjusted discount rate is calculated as the interest rate on long-term government bonds minus average expected inflation. Long-term budget transactions spanning 50 or more years should be discounted using the government’s opportunity cost of funds over a similar term. However, the longest-term interest rates available are on 10-year government bonds. The geometric mean of annual rates calculated over the period 1996–2005 and across all 23 EU countries (using currently data available from Eurostat) equals 5.39 percent per year. Average expected inflation is calculated as the geometric mean of inflation rates across all EU countries from 1997 through 2005 (according to data availability). The resulting rate (3.01 percent) is subtracted from the nominal interest rate on government bonds to obtain a real discount rate of 2.38 percent.³⁸

Endnotes

- ¹ Based on Jagadeesh Gokhale, “Unfunded Obligation Measures of EU Countries,” Martin Larch and João Nogueira Martins, eds., *Fiscal Indicators, Proceedings from the Directorate-General for Economic and Financial Affairs Workshop Brussels, September 22, 2006*, Chapter 3, European Commission, European Economy Economic Papers, No. 297, December 2007.
- ² Cyprus and Malta joined the European Monetary Union (EMU) in January 2008. Countries that have joined the EMU have pledged to keep their annual budgets substantially in balance and to keep total public debt to less than 60 percent of annual gross domestic product (GDP). Since March 2005, EMU countries have followed an amended version of the Stability and Growth Pact (SGP) that incorporates greater flexibility in implementing the SGP’s constraints. Along with the Treaty of the European Union, the 1997 SGP provided the framework of rules for coordinating fiscal policies across EMU members — both current and prospective ones. Some observers claim, however, it abandons the original goal of preventing excessive discretion in fiscal policies. (Feldstein, 2005, and Wierds et al., 2006) See Martin Feldstein, “The Euro and the Stability Pact,” National Bureau of Economic Research, *Working Paper* No. 11249, 2005, and P.Wierds, S. Deroose, E. Flores and A. Turrini, eds., *Fiscal Policy Surveillance in Europe* (Basingstoke: Palgrave Macmillan, 2006). If correct, this would constitute good news. The thesis of this study is that traditional fiscal measures — annual deficits and debt-to-GDP levels — are both potentially misleading indicators of a country’s finances.
- ³ Several alternatives have been proposed. They include (1) simply extending the time horizon of traditional deficit and debt measures; (2) using accrual accounting, which focuses on net unfunded obligations accrued to date under current policies; (3) using generational accounting, which provides a detailed breakdown of fiscal burdens facing different generations under current policies; and (4) reporting fiscal and generational imbalances — two summary budget measures that show the size of the overall shortfall and broad generational trade-offs that must be made when selecting alternative policies. Each type of measure has strengths and weaknesses, which are explained in detail in Appendix A.
- ⁴ The calculations include all EU countries except Cyprus and Hungary, which are excluded due to data limitations.
- ⁵ The official measure of the unfunded obligations of EU countries is the current public debt plus the discounted value of all future government expenditures. This is the S2 sustainability gap indicator called for by the Growth and Stability Pact (see note 2). See Per Ekefeldt, “Discussion,” Chapter 3, and Jagadeesh Gokhale, “Unfunded Obligation Measures of EU Countries,” Martin Larch and João Nogueira Martins, eds., *Fiscal Indicators, Proceedings from the Directorate-General for Economic and Financial Affairs Workshop Brussels, September 22, 2006*, European Commission, European Economy Economic Papers, No. 297, December 2007.
- ⁶ Ibid.
- ⁷ Finally, unlike traditional measures of deficits and debt, this measure is not subject to change because of the way certain government receipts and outlays are labeled — as taxes and transfers, respectively, or borrowing and repayment of principal with interest, respectively.
- ⁸ For details, see Jagadeesh Gokhale and Kent A. Smetters, “Fiscal and Generational Imbalances: An Update,” in James A. Poterba, ed., *Tax Policy and the Economy, Vol. 20* (Washington, D.C.: National Bureau of Economic Research, 2006), page 20.
- ⁹ This result is due to the normal condition of a dynamically efficient economy where the interest rate exceeds the growth rate. For the U.S. context, see Andrew B. Abel, N. Gregory Mankiw, Lawrence H. Summers and Richard

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J. Zeckhauser, “Assessing Dynamic Efficiency: Theory and Evidence,” *Review of Economic Studies*, Vol. 56, 1989, pages 1–20. For more details, see Gokhale and Smetters, “Fiscal and Generational Imbalances: New Budget Measures for New Budget Priorities.”

¹⁰ However, the Social Security and Medicare Trustees in the United States have been reporting infinite-horizon measures of both those programs’ financial shortfalls — precisely the “fiscal imbalance” measure. They also report “generational imbalances” for both programs. The 2003 Technical Advisory Panel that makes recommendations to the trustees has endorsed both measures as providing useful additional information.

¹¹ This is a well-recognized phenomenon in the context of the U.S. Social Security program, which was reformed in 1983 to achieve balance through 2058. Now, however, the program faces a sizable 75-year shortfall because the new horizon includes financial shortfalls between 2059 and 2080.

¹² It is also called the “closed-group unfunded obligation,” where the term closed-group refers to past and living generations.

¹³ The FI and GI concepts correspond to the accounting concepts of open-group and closed-group unfunded obligations, respectively. The *open-group unfunded obligation* refers to government obligations to all individuals regardless of their cohort affiliation (that is, their birth dates) — whether in the past or in the (infinite) future. Limited-horizon open-group obligations are also calculated by excluding the net obligations arising after a specific (future) date. Closed-group obligation measures include the net obligations to a subset of individuals — for example, those born before a certain date. However, all past net payments and future net obligations to such individuals are included in the calculation.

¹⁴ Thus, in general, the GI measure can be calculated only for programs that are fully or partially financed out of dedicated government receipts and that distribute benefits directly to specific population groups rather than for such pure public goods as national defense that are funded out of general government revenues. For details, see Gokhale and Smetters, “Fiscal and Generational Imbalances: New Budget Measures for New Budget Priorities.”

¹⁵ The significance and policy relevance of GI measures, however, are not well appreciated, even among budget makers. Many believe the GI is similar to the concept of unfunded accrued obligations and is relevant only to “fully funded” pension programs, such as those offered by private employers. Private sector firms that offer pension benefits to employees may be subject to regulations about funding adequacy. That requires measuring existing funding levels to compare to regulated thresholds, and accrual accounting is normally used to provide the benchmark for 100 percent funding. However, the GI is also relevant to “pay-as-you-go” public pension systems. It incorporates in the government’s accumulated net financial assets the total outstanding obligations arising under current policies on account of past and living generations. The GI also includes future net payment obligations under current policies triggered by *past transactions* involving living generations, and it includes future payment obligations that would be triggered under current policies by *future events* involving living generations.

¹⁶ Low fertility in EU countries and low net external immigration cause projected populations to implode over time for several EU countries. As a result, projections beyond 2051 were not available for some EU countries when the estimates were made. As noted earlier, truncating the projection horizon at 2051 implies that a full apples-to-apples comparison of policy options is not feasible because costs and benefits of alternative policies beyond 2051 are excluded from the calculations. However, adopting such long horizon measures is still better than truncating the horizon after just 5 or 10 years.

¹⁷ Note that the average is taken across all countries’ projected populations and incorporates averages of projected mortality, fertility and net immigration rates.

18. Country-specific labor productivity growth rates are calculated by using annual average growth rates (the population-weighted geometric mean) between 1996 and 2004. See Appendix B for methodology.

19. That is, the cohort distribution using age- and gender-specific population weights. Unfortunately, data on tax and transfer profiles are not available for all EU countries. Hence, the estimates reported below are based on available partial data used to construct the “EU cohort-distributive benchmark.”

20. Take Ireland, for example, as a comparison to the EU Benchmark. To calculate the effect of demographics on Ireland’s FI, the EU benchmark demographic component would replace Ireland’s (in other words, one measure, the demographics, of Ireland changes while the others are constant). Because Ireland’s population is smaller than the EU benchmark average, the population count is then normalized to reflect the EU average. The resulting FI percentage means that Ireland’s demographics would result in an X percent larger FI compared to the EU benchmark.

21. The estimates shown in Figure I use only one year’s revenues and expenditures to make future projections. Because 2004 was neither a recession year nor a year of particularly strong growth, the estimates are unlikely to be influenced by extreme cyclical variability of fiscal cash flows. If projections of short-run budget forecasts had been available, the resulting FI estimates would have been more accurate because such projections usually incorporate expected changes in future fiscal flows due to policy changes that have already been enacted.

22. Unlike the estimates for EU countries, the U.S. projection, which is based on the 2005 *Trustees Reports*, is for the infinite horizon. See Jagadeesh Gokhale and Kent A. Smetters, “Fiscal and Generational Imbalances: An Update.”

23. This required extending each country’s demographic projections beyond 2051.

24. These calculations were made after extending the official (Eurostat) population projections beyond 2051. Details regarding the methods used are available from the author upon request.

25. Alternatively, both FI and GI could be calculated by allocating both dedicated and general taxes according to the generations that pay those taxes. This calculation would reveal the part of (zero-valued) FI that past and living generations contribute and the part that future generations would contribute under current policies. Note that even if $FI = 0$, by definition because of funding from general revenues, GI (and $FI - GI$) need not also equal zero.

26. Similar experiments are not implemented here for the productivity and cohort-distribution components because the required data are unavailable. In the case of productivity, a straightforward replacement of a member country’s productivity growth rate would not be appropriate because a higher productivity rate would generally reduce the projected levels of future means-tested social transfer programs and may be associated with higher revenues in a nonlinear manner. Implementing this experiment requires careful calibration of the response of welfare expenditures to changes in productivity growth — that is not feasible given data availability. Adequate information is also not available for estimating the impact of country-specific cohort-distribution policies. However, the experiments described earlier of isolating the demographic and budget allocation components provide the basic framework for isolating these components as well. Finally, estimating GI measures is also not feasible given that institutional details about financing arrangements for various programs are not available (to the author). However, for examples based on calculations for U.S. Social Security and Medicare programs, see Gokhale and Smetters, “Fiscal and Generational Imbalances: An Update.”

27. “Indicateurs de Progrès de L’Économie Française: Finances Publiques,” French Ministry of the Economy, 2006.

28. Concern that the public would view the adoption of such measures as recognition that they stand on a par with outstanding government debt — as immutable government liabilities — appears to be a chief reason cited by those opposing their adoption.

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²⁹ It is implicit in this discussion that establishing a sustainable fiscal outlook is desirable because it would boost the performance of the private sector by reducing expectations of future benefits, thereby increasing private saving and work efforts.

³⁰ Jordi Gali and Roberto Perotti, “Fiscal Policy and Monetary Integration in Europe,” *Economic Policy*, Vol. 37, 2003, pages 535–572, and Alberto Alesina and Roberto Perotti, “Fiscal Expansions and Adjustments in OECD Countries,” *Economic Policy*, Vol. 21, 1995, pages 205–248.

³¹ For a related discussion, see Jagadeesh Gokhale, “Comments on Public Debt, Ageing, and Fiscal Sustainability,” in *Public Debt* (Rome: Banca d’Italia, 2004).

³² Several developed countries have adopted accrual accounting for their government budgets, although only a couple of them have adopted such accounting comprehensively. New Zealand adheres to the standard principles of generally accepted accounting practice (Richardson, 1996); Sweden has introduced accrual accounting and reporting without extending the same to its appropriations process (Swedish National Financial Authority, 2001); regional governments in Canada, Germany, the United Kingdom and the United States are currently introducing accrual-based accounting methods for parts of their budgets.

³³ Including the obligations from future triggering events would convert the accrued obligation measure into the “closed-group unfunded obligation” measure. For details, see Jagadeesh Gokhale and Kent A. Smetters, *Fiscal and Generational Imbalances: New Budget Measures for New Budget Priorities* (Washington, D.C.: American Enterprise Institute Press, 2003).

³⁴ Alan J. Auerbach, Jagadeesh Gokhale and Lawrence J. Kotlikoff, “Generational Accounting: A Meaningful Alternative to Deficit Accounting,” in David Bradford, ed., *Tax Policy and the Economy*, Vol. 5 (Cambridge, Mass.: MIT Press, 1991), and Alan J. Auerbach, Jagadeesh Gokhale and Lawrence J. Kotlikoff, “Generational Accounting: A Meaningful Way to Evaluate Fiscal Policy,” *Journal of Economic Perspectives*, Vol. 8, No. 1, 1994, pages 73–94.

³⁵ For example, generational accounts are supposed to represent each cohort’s lifetime net fiscal burden under current policies. However, when the main message is that current policies are not sustainable, the value of focusing on the accounts as reported becomes diluted. Generational accounts have been subject to several other criticisms in the public economics literature. See David M. Cutler, “Review of ‘Generational Accounting: Knowing Who Pays, and When, for What We Spend,’ by Lawrence J. Kotlikoff,” *National Tax Journal*, Vol. 6, No. 1, 1993, pages 61–67. See Peter Diamond, “Generational Accounting and Generational Assessment,” *National Tax Journal*, Vol. 49, 1996, pages 597–607. See Robert H. Haveman, “Should Generational Accounts Replace Public Budgets and Deficits?” *Journal of Economic Perspectives*, Vol. 8, No. 1, 1994, pages 95–111.

³⁶ “Budgetary Challenges Posed by Ageing Populations and Impact on Public Spending on Pensions, Health, and Long-Term Care for the Elderly and Possible Indicators of Long-Term Sustainability of Public Finances,” Economic Policy Committee, European Commission, Publication No. EPC/ECFIN/655/01-EN, 2001.

³⁷ Fabrizio Balassone and Daniele Franco, “Assessing Fiscal Sustainability: A Review of Methods with a View to EMU,” *Fiscal Sustainability* (Rome: Banca d’Italia, 2000), pages 22–60.

³⁸ Present values are calculated by using an interest rate reflecting private agents’ (average) opportunity cost of investment.

The NCPA is a nonprofit, nonpartisan organization established in 1983. Its aim is to examine public policies in areas that have a significant impact on the lives of all Americans — retirement, health care, education, taxes, the economy, the environment — and to propose innovative, market-driven solutions. The NCPA seeks to unleash the power of ideas for positive change by identifying, encouraging and aggressively marketing the best scholarly research.

Health Care Policy.

The NCPA is probably best known for developing the concept of Health Savings Accounts (HSAs), previously known as Medical Savings Accounts (MSAs). NCPA President John C. Goodman is widely acknowledged (*Wall Street Journal*, WebMD and the *National Journal*) as the “Father of HSAs.” NCPA research, public education and briefings for members of Congress and the White House staff helped lead Congress to approve a pilot MSA program for small businesses and the self-employed in 1996 and to vote in 1997 to allow Medicare beneficiaries to have MSAs. In 2003, as part of Medicare reform, Congress and the President made HSAs available to all nonseniors, potentially revolutionizing the entire health care industry. HSAs now are potentially available to 250 million nonelderly Americans.

The NCPA outlined the concept of using federal tax credits to encourage private health insurance and helped formulate bipartisan proposals in both the Senate and the House. The NCPA and BlueCross BlueShield of Texas developed a plan to use money that federal, state and local governments now spend on indigent health care to help the poor purchase health insurance. The SPN Medicaid Exchange, an initiative of the NCPA for the State Policy Network, is identifying and sharing the best ideas for health care reform with researchers and policymakers in every state.

**NCPA President
John C. Goodman is called the
“Father of HSAs” by *The Wall
Street Journal*, WebMD and the
National Journal.**

Taxes & Economic Growth.

The NCPA helped shape the pro-growth approach to tax policy during the 1990s. A package of tax cuts designed by the NCPA and the U.S. Chamber of Commerce in 1991 became the core of the Contract with America in 1994. Three of the five proposals (capital gains tax cut, Roth IRA and eliminating the Social Security earnings penalty) became law. A fourth proposal — rolling back the tax on Social Security benefits — passed the House of Representatives in summer 2002. The NCPA’s proposal for an across-the-board tax cut became the centerpiece of President Bush’s tax cut proposals.

NCPA research demonstrates the benefits of shifting the tax burden on work and productive investment to consumption. An NCPA study by Boston University economist Laurence Kotlikoff analyzed three versions of a consumption tax: a flat tax, a value-added tax and a national sales tax. Based on this work, Dr. Goodman wrote a full-page editorial for *Forbes* (“A Kinder, Gentler Flat Tax”) advocating a version of the flat tax that is both progressive and fair.

A major NCPA study, “Wealth, Inheritance and the Estate Tax,” completely undermines the claim by proponents of the estate tax that it prevents the concentration of wealth in the hands of financial dynasties. Actually, the contribution of inheritances to the distribution of wealth in the United States is surprisingly small. Senate Majority Leader Bill Frist (R-TN) and Senator Jon Kyl (R-AZ) distributed a letter to their colleagues about the study. In his letter, Sen. Frist said, “I hope this report will offer you a fresh perspective on the merits of this issue. Now is the time for us to do something about the death tax.”

Retirement Reform.

With a grant from the NCPA, economists at Texas A&M University developed a model to evaluate the future of Social Security and Medicare, working under the direction of Thomas R. Saving, who for years was one of two private-sector trustees of Social Security and Medicare.

The NCPA study, “Ten Steps to Baby Boomer Retirement,” shows that as 77 million baby boomers begin to retire, the nation’s institutions are totally unprepared. Promises made under Social Security, Medicare and Medicaid are completely unfunded. Private sector institutions are not doing better — millions of workers are discovering that their defined benefit pensions are unfunded and that employers are retrenching on post-retirement health care promises.

Pension Reform.

Pension reforms signed into law include ideas to improve 401(k)s developed and proposed by the NCPA and the Brookings Institution. Among the NCPA/Brookings 401(k) reforms are automatic enrollment of employees into companies’ 401(k) plans, automatic contribution rate increases so that workers’ contributions grow with their wages, and better default investment options for workers who do not make an investment choice.

The NCPA's online Social Security calculator allows visitors to discover their expected taxes and benefits and how much they would have accumulated had their taxes been invested privately.

Environment & Energy.

The NCPA's E-Team is one of the largest collections of energy and environmental policy experts and scientists who believe that sound science, economic prosperity and protecting the environment are compatible. The team seeks to correct misinformation and promote sensible solutions to energy and environment problems. A pathbreaking 2001 NCPA study showed that the costs of the Kyoto agreement to reduce carbon emissions in developed countries would far exceed any benefits.

Educating the next generation.

The NCPA's Debate Central is the most comprehensive online site for free information for 400,000 U.S. high school debaters. In 2006, the site drew more than one million hits per month. Debate Central received the prestigious Templeton Freedom Prize for Student Outreach.

Promoting Ideas.

NCPA studies, ideas and experts are quoted frequently in news stories nationwide. Columns written by NCPA scholars appear regularly in national publications such as the *Wall Street Journal*, the *Washington Times*, *USA Today* and many other major-market daily newspapers, as well as on radio talk shows, on television public affairs programs, and in public policy newsletters. According to media figures from Burrelle's, more than 900,000 people daily read or hear about NCPA ideas and activities somewhere in the United States.

What Others Say About the NCPA



"The NCPA generates more analysis per dollar than any think tank in the country. It does an amazingly good job of going out and finding the right things and talking about them in intelligent ways."

Newt Gingrich,
former Speaker of the U.S. House
of Representatives



"We know what works. It's what the NCPA talks about: limited government, economic freedom; things like health savings accounts. These things work, allowing people choices. We've seen how this created America."

John Stossel,
co-anchor ABC-TV's *20/20*



"I don't know of any organization in America that produces better ideas with less money than the NCPA."

Phil Gramm,
former U.S. Senator



"Thank you . . . for advocating such radical causes as balanced budgets, limited government and tax reform, and to be able to try and bring power back to the people."

Tommy Thompson,
former Secretary of Health and
Human Services