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When Is Fiscal Adjustment an Illusion?

William Easterly

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Summary findings

Fiscal adjustment is an illusion when it lowers the budget deficit or public debt but leaves the government's net worth unchanged, says Easterly.

Conventional measures of the budget deficit largely measure the change in explicit public sector liabilities (debt). A more appropriate measure of the deficit would be the change in public sector net worth, but many criticize this concept as impossible to measure.

Easterly takes a positive, rather than normative, approach to the net worth definition of fiscal balance. A simple model shows that when an outside agent forces a reduction in a government's conventional deficit (debt

accumulation), the government will respond by lowering its asset accumulation or by increasing hidden liabilities. That leaves net worth unchanged, so fiscal adjustment is an illusion.

He performs some simple empirical tests on the observational predictions of the model, examining a sample of countries with World Bank and International Monetary Fund adjustment programs and case studies of Maastricht Euro countries.

The results confirm the model predictions: Fiscal adjustment in these countries was at least partly an illusion.

When is fiscal adjustment an illusion?

William Easterly[*]

World Bank

Fiscal adjustment is an illusion when it lowers the budget deficit or public debt but leaves government net worth unchanged. Conventional measures of the deficit mostly capture the change in explicit government liabilities (debt), and mostly do not capture the change in government assets or the change in implicit liabilities. A more appropriate measure of the deficit would be the change in public sector's assets minus all its liabilities, or the change in its net worth.

IMF/World Bank adjustment programs often require reducing the conventional deficit, as do legal agreements like Gramm-Rudman and Maastricht. This paper shows that, under certain plausible conditions, a government will lower the conventional deficit while leaving its path of net worth unchanged. When required to lower its debt accumulation, the government will lower its asset accumulation or increase its hidden liability accumulation by an equal amount. In such a case, fiscal adjustment is an illusion.[1] I investigate the empirical implications of this positive prediction, and find that results already known in the literature as well as additional results in this paper confirm it. While existing data are inadequate to test whether fiscal adjustment was completely illusory, the support for the predictions of the model indicates that adjustment was at least in part an illusion.

1. Literature review and anecdotes

Economists have widely accepted the "change in net worth" definition of the deficit as the right conceptual measure (Ott and Yoo 1980, Buiter 1983, 1985, 1993, Blejer and Cheasty 1993, Bohn 1992, Eisner 1984, 1986, 1990). While not all of these authors have the same definition of net worth in mind, all agree that the general concept of change in net worth is the appropriate definition for the deficit. Eisner and Pieper 1984 estimate that US consolidated government debt increased by $1 trillion from 1946 to 1980. However, they also estimate that total consolidated government assets increased by $3 trillion from 1946 to 1980, so net worth increased by $2 trillion. However, it is difficult to carry out such calculations in very many countries, especially

poor countries. As Blejer and Cheasty 1991 note, "defining government net worth ... is far from operational."[2]

But what is difficult to measure operationally is still relevant for predicting how the government will behave. The relevant concept for government intertemporal behavior is net worth, as this paper will show. Then governments will follow its optimal path of net worth and be indifferent about its composition between assets, explicit liabilities, and implicit liabilities. If an outside agent constrains increases in explicit liabilities, then the government will substitute reductions in assets and increases in implicit liabilities. Here I go through anecdotal evidence and previous results in the literature to establish this claim, while I will go through more formal theorizing and testing below.

The most transparent means of reducing government assets is privatization.[3] Privatization often makes possible significant efficiency gains, but something is amiss when governments develop a sudden interest in privatization during fiscal austerity. Nigeria over 1989-93 had 2 IMF stand-by agreements and 2 World Bank adjustment loans that placed constraints on its budget deficit and public debt. During that period it sold government equity shares in upstream oil ventures for US$2.5 billion. This was during the Persian Gulf War oil boom, a period in which a government commission found that $12.2 billion of oil money had disappeared.[4] Privatization by a corrupt government is likely to end up in consumption by the ruling class, thus lowering public sector net worth.

Developing countries are not the only ones to privatize during austerity. The government counted privatization receipts towards reducing the deficit in the US during its experiment with a fiscal rule, the Gramm-Rudman-Hollings Law of 1985.[5] Kotlikoff (1986) quotes the director of the US Congressional Budget Office as saying "The Gramm-Rudman-Hollings process ... has encouraged ... transparent budget gimmickry" such as "sale of public assets." Niskanen (1988, p. 59) describes how Congress stalled on privatization of the railway company Conrail until Gramm-

Rudman created incentives for privatization to meet budget targets. The Congressional Budget

Plan to meet Gramm-Rudman targets in FY1987 included $7 billion of asset sales, such as sales of

rural housing and development loans.[6] The plan also induced prepayment of rural electrification

loans (counted as revenue) by eliminating prepayment penalties -- even though that worsened

government net worth by losing assets that paid interest rates above current market rates.[7] During

the Gramm-Rudman era, the President or Congress proposed at various times selling off the

Federal Housing Administration, Amtrak, the naval petroleum reserves, and five power marketing

administrations.[8]

Another well-known means of reducing asset accumulation when forced to reduce debt

accumulation is to reduce public investment.[9] As Roubini and Sachs 1989 note, "in periods of

restrictive fiscal policies ... capital expenditures are the first to be reduced (often drastically)."

During fiscal adjustment, the 1988 World Development Report (p. 113) of the World Bank found

that governments cut capital spending by far more (about 35%) than other public sector categories

like wages (about 10%). Likewise, Hicks (1991) found that in countries with declining government

expenditure 70-84, governments cut capital expenditures by more (-27.8 percent) than current

expenditures (-7.2 percent). Serven 1997 found that Latin American public investment fell 2.5

percentage points of GDP from the 70s to the 80s, when the region was adjusting. East Asia, which

did not need to adjust in the 80s, had an increase of 3.7 percentage points. The World Bank

(1994d) found that when African countries lowered their budget deficits from 1981-86 to 1990-91,

"most of the cuts were in capital spending" (p. 47). De Haan et al.(1996) find that public

investment is reduced during times of fiscal stringency in OECD countries.

While public investment contains "white elephants", it also contains investment that will

pay the government future returns. The World Bank (1994a, p. 17) estimated rates of return to

infrastructure investment during 1983-92 ranging from 19 percent (telecommunications) to 29

percent (highways). And even some state enterprise investments are profitable. In Zambia, for

example, the government withdrew money from the state copper company ZCCM to meet deficit targets instead of profitable reinvestment in the company. In part because of this disinvestment in copper, ZCCM saw production fall from 700,000 tons a year in 1972 to 300,000 tons in the 1990s. Revenue from mining fell from 10.8 percent of GDP in 1970-74 to 1.6 percent of GDP in 1990-94 (World Bank 1996a, *West Africa*, 24 February-March 2 1997). Likewise in Zaire, mineral production by the state company GECAMINES feel from 500,000 tons in 1988-89 to just over 40,000 tons in 1994-95. It contribution to the government budget fell from $325 million in 1988-89 to zero in 1992-94. Among factors leading to GECAMINES collapse was "insufficient investment, which led to the obsolescence and decay of equipment and the cave-in of a major mining site (Kamoto mine) in 1990." (International Monetary Fund 1996b) The US government held up investment for airport expansion in the 1980s so as to meet Gramm-Rudman targets, even though the expansions paid for themselves through the 8 percent tax on airline tickets. [10]

A third means of reducing asset accumulation is to reduce operations and maintenance (O&M) spending. Spending cuts in the US to meet Gramm-Rudman targets in the 1980s "fell heavily on ... operations and maintenance" (Deloup et al. 1987). The World Bank 1994a noted that inadequate spending on O&M during fiscal adjustment reduces current asset values and/or requires future spending to restore those assets:

Timely maintenance of $12 billion would have saved road reconstruction costs of $45 billion in Africa in the past decade. On average, inadequate maintenance means that power systems in developing countries have only 60 percent of their generating capacity available at a given time, whereas best practice would achieve levels over 80 percent. And it means that water supply systems deliver an average of 70 percent of their output to users, compared with best-practice delivery rates of 85 percent. (p. 4)

In the Philippines, the World Bank 1992a found that budget stringencies during 1983-85 resulted in large cuts (about 40 percent) in O&M expenditures. The result was deteriorating roads, bridges, ports, and increased breakdowns at power plants during the late 1980s. Likewise, the same study found that Costa Rica cut O&M by 80 percent during fiscal adjustment in the 1980s. By the end of the period, 70 percent of the road network was in poor to very poor condition. Kenyan hospitals'

incubators operated for two years instead of the eight expected. Maintenance budgets in these hospitals were only 1 percent of the machinery's value when the optimal is 10 percent (World Bank 1993a, p. 138). In the period that Kenya received 19 adjustment loans (1979-96), it reduced spending on operations and maintenance and other goods spending from 160 percent of wages spending to 75 percent of wages spending.

Gyamfi (1992) estimates economic rates of return of over 70 percent for operations and maintenance on roads in Latin America. World Bank 1992a (p.57) estimated a rate of return of 117 percent for nonwage operations and maintenance in irrigation in mid-80s Indonesia. Hospitals, roads, power, irrigation, and water supply are all publicly provided goods for which it is fairly easy to recoup costs. The government can use excise taxes (for roads, on fuel and vehicles) or user charges (for hospitals, power, irrigation, and water). So allowing these assets to deteriorate hurts future government revenue potential.

Cuts in O&M spending simply postpone infrastructure spending towards the future. This is only one of many ways that governments can protect public consumption today by shifting other expenditures and revenues across time to meet today's cash deficit targets.[11] Brazil in 1998 issued zero coupon government bonds that were not due until the next year, thus lowering this year's interest expenditure. Many governments resort to the expedient of delaying payments to government workers or suppliers. These arrears lower this year's cash deficit and explicit debt, but the accrual-based net worth balance is unchanged.[12]

In an unusual twist, the US Congress brought *forward* by five days a $680 million payment of federal revenue-sharing payments into FY1986 so as to meet the Gramm-Rudman targets for FY1987 (Wildavsky 1992, pp. 243-44). Using a more traditional device, the Congress in FY1987 postponed a $3 billion payday for military personnel into the following fiscal year. The Defense Secretary Caspar Weinberger also stretched out procurement of new weapons system so as to lower the current expenditure, even though the stretch-out increased per unit costs (Kee 1987,

p. 11). The Gramm-Rudman annual cash targets encouraged switching to projects that disburse slowly, so as to meet this year's target whatever the long-run costs of the project (Hanushek 1986).

Governments can also shift taxes over time. There are many anecdotes of developing countries getting advance payments of taxes to meet IMF program deficit targets (Kopits and Craig 1998). The US Congress moved about $1 billion in excise tax collections forward to meet Gramm-Rudman deficit ceiling in FY1987.[13] The literature on balanced budget requirements in US states notes: "a state usually has considerable latitude to accelerate tax collections, defer outlays, and adopt accounting practices that avert a deficit."[14]

Another type of expenditure postponement is to delay addressing financial crises in banks where the government has an implicit or explicit deposit guarantee. As the government postpones shutting the banks and writing off loan losses so as not to incur expenditure today, there is incentive for the banks to continue making bad loans. This adds to the government's obligatory bailout spending in the future. In the US, the government during the Gramm-Rudman era postponed for 5 years dealing with the savings and loan crisis. The result was that the cost of the eventual bailout rose from $25 billion to $200 billion (Kotlikoff 1993). Similar episodes of costly delay occurred in developing countries (see Brock (1992) for the example of Chile). The size of necessary banking bailouts in the countries suffering from the 1997-98 East Asia crisis is estimated to range from 20 to 60 percent of GDP.[15]

Another intertemporal sleight of hand is when governments require their pension funds (that accumulate surpluses early in the life-cycle of the plan) to lend to the government at negative real interest rates. Examples include Costa Rica, Ecuador, Egypt, Jamaica, Peru, Trinidad and Tobago, Turkey, and Venezuela. In the worst case, Peru, the real return on the pension fund was -37.4 percent. Lower interest rates on government debt reduce the budget deficit, but also reduce the reserves available when the pension plan begins to run deficits later in its life cycle.[16] The

government will have to honor the net pension liabilities, so the negative real interest rate scheme

just redistributes spending across time (World Bank 1994b, p. 128).

Unfunded pension liabilities are themselves a form of hidden liability accumulation. The

surplus of a young pay-as-you-go pension system often directly reduces the budget deficit.

However, the net present value of the contribution and benefit scheme in place is often negative.[17]

For example, Turkey, Colombia, China, and Argentina have a negative net present value of their

pension plans equal to more than a third of GDP (World Bank 1994b). Kane and Palacios 1996

estimate the present value of accrued claims by workers and pensioners in Brazil, Croatia,

Hungary, Ukraine, and Uruguay to be 2-3 times GDP.[18]

Kopits and Symansky 1998 are on the mark about fiscal rules without fiscal transparency:

> Compliance with fiscal rules has led to ... cuts in public investment ... accumulation of payment arrears, proliferation of creative accounting practices and recourse to one-off measures (such as financing from privatization receipts). (p. 12)

2. A positive theory of government intertemporal behavior

This section proposes an extremely simple and highly abstract model of the government's

behavior.[19] I assume that the government is a single agent who maximizes its own utility. Examples

are a dictator, an oligarchy with common preferences, or an elected leader with power over the

budget. I assume that the government derives utility from "consumption" in an analogous way to

how private individuals derive utility from consumption. "Consumption" for a government may be

the leader's own individual consumption of public resources, or it may be patronage to political

supporters embodied in current government spending. The government's intertemporal optimization

problem is then just like that of an infinitely lived individual consumer, maximizing the present

value of future utility (assuming log utility), subject to a budget constraint:

(1) $\max \int_0^\infty e^{-\rho t} \ln C \, dt$

such that

(2) $C = rA - rL_e - rL_i - \Delta A + \Delta L_e + \Delta L_i$

and

(3) $A-L_e-L_i \geq \int_0^\infty e^{-rt} C_t \, dt$

Here C is government consumption, A is the valuation of the government's assets, L_e is explicit government debt, L_i is implicit government liabilities, r is both the rate of return on government assets and the interest rate on government liabilities, and ρ is the government's discount rate. The government finances its current consumption with asset income minus debt interest, asset decumulation, debt accumulation, and hidden liability accumulation. The last condition (3) is the government's intertemporal budget constraint: net worth must be greater than or equal to the present value of all future consumption. Since the latter is certainly positive, net worth must always be positive. If net worth threatens to become negative, then an insolvent government would default on its liabilities.

The definition of government assets, as noted by earlier authors, should be broad. As Buiter (1993) and Blejer and Cheasty (1993) define government assets, it should include the present value of tax revenues and social security contributions, government-owned physical capital, equity in state-owned enterprises, land, mineral assets, and the present value of seignorage from money creation.

I assume that the government has an infinite supply of potential projects with a financial rate of return equal to r, which is also the market interest rate. I take the interest rate r as given. I define these "projects" as broadly as government assets. They could include anything from upgrading of the tax collection system to the construction of a road that generates increased traffic (and thus increased vehicle and fuel excise taxation).

The stream of "revenues" accruing from a project should be the government's own returns not the total returns to the whole society. However, there are at least three reasons why the government may reap a rate of return of r even if user fees are not being imposed.

First, the government taxes income and retail sales and so would get at least the tax rate times the project benefits to the rest of society. This suggests that the government will select projects with a social return r_s at a tax rate t such that $r=t^* r_s$.

Second, we should base the present value of project revenue on the potential user fees, not the current ones. The potential for charging user fees raises the government's long run revenue potential, which is what matters in the government's intertemporal budget constraint. Failure to charge user fees is a subsidy and we should include that subsidy in consumption.

Third, infrastructure investment is an important determinant of the size of the formal sector, which is the main tax base for the government. Sachs (1994) suggests there are multiple equilibria: one in which most firms are in the formal sector, pay taxes, and benefit from public goods, and one in which firms go underground, do not pay taxes, and do not benefit from public goods. Fiscal adjustment that exogenously shifts down the provision of public goods could set off the vicious circle, with calamitous effects on revenues (see Zaire case study below).

After all this, what is the solution to the government's intertemporal problem (1) - (3)? The solution is the familiar Ramsey-Cass-Koopmans first-order condition:

(4) $\Delta C/C = r - \rho$

In the government's steady state, net worth and consumption will grow at the same rate:

(5) $(\Delta A - \Delta L_e - \Delta L_i)/(A - L_e - L_i) = r - \rho$

By substituting (5) into (2), we can also solve for the ratio of net worth to consumption:

(6) $(A - L_e - L_i)/C = 1/\rho$

The "true" balance of the government (the change in net worth) as a ratio to consumption will be

(7) $(\Delta A - \Delta L_e - \Delta L_i)/C = r /\rho - 1$

There are three things to note about the solution of the government's intertemporal problem. First, the discount rate ρ is a useful indicator of "fiscal irresponsibility". A fiscally

irresponsible government (high ρ) will value consumption today very highly relative to future consumption.[20] This will result in a lower (possibly negative) "true" government balance as a ratio to consumption. It also means a lower net worth to consumption ratio. A fiscally irresponsible government will be one in which in steady state there is under-provision of profitable public capital services, an excessive debt ratio, and excessive implicit liabilities.

Second, even though the level of net worth must be positive if there is to be positive government consumption, note that the *growth* of government net worth can be negative if the government's discount rate ρ is greater than the interest rate r. In this pathological case, the government will disinvest in its revenue capacity and infrastructure so much that the state slowly withers away. This might explain a case like Zaire, where the formal sector disintegrated due to the failure to provide elementary infrastructure. Tax revenue collapsed from 30 percent of GDP in 1973 to under 5 percent by the 1990s. By 1994, the state had shriveled to little more than the presidential yacht, a presidential guard unit, Mobutu's palace in his birthplace of Gbadolite, and a skeleton state superstructure funded by diamond smuggling (Young 1994).

The third thing to note is that while the path of net worth $A-L_e-L_i$ is determined by the model, the composition of $A-L_e-L_i$ between A, L_e and L_i is indeterminate. The government is indifferent to whether it finances consumption today by running down assets or by piling up explicit or implicit liabilities. A, L_e, and L_i are not economically meaningful categories in this case: we could call liabilities "negative assets" and sum everything up under net assets. It is only when an outside party constrains L_e alone that the A and L_i versus L_e distinction becomes economically meaningful.

How does this model relate to conventional measures of the budget deficit? The conventional budget deficit D measures the sum of consumption (C), interest expenditure (rL_e), the

current realization of implicit liabilities (rL_i) and investment expenditure (ΔA) minus income (rA)

and the current proceeds of implicit liabilities ΔL_i (such as social security contributions):

(8) $D = C + rL_e + rL_i + \Delta A - rA - \Delta L_i$

Comparing (8) with the budget constraint (2), we see that the conventional definition of a deficit

(the Public Sector Borrowing Requirement or PSBR) measures only the change in explicit

liabilities:[21]

(9) $D = \Delta L_e$.

The usual excuse for measuring only the change in explicit liabilities is that net worth is

impossible to calculate.[22] However, what is different to measure operationally is still relevant to

the government's behavior. A fiscally irresponsible government can frustrate any attempt to control

its finances through constraints on the conventional budget deficit.

Let us say an outside agent -- the Gramm-Rudman Law, the European Commission, or a

Fund/Bank adjustment program -- puts a limit on D. To make it consistent with growth in the

steady state, let's imagine that the ratio of D to consumption C is constrained to be equal to Λ. If

$\Delta L_e/C = \Lambda$, then we can solve for $\Delta A/C - \Delta L_i/C$:

(9) $\Delta A/C - \Delta L_i/C = r/\rho - 1 + \Lambda$

Any mandated reduction in the deficit as a percent of consumption (Λ) will be met one for one with

a reduction in asset accumulation as a percent of consumption ($\Delta A/C$) or accumulation of hidden

liabilities $\Delta L_i/C$. Similarly, the stock equation (6) shows that any mandated reduction in public

debt will be met one for one by a reduction in public assets or an increase in hidden liabilities. In

these cases, fiscal adjustment is an illusion.[23] The fiscal adjustment is genuine only when the

government has a change of heart, i.e. has a lower discount rate ρ.

A, L_e and L_i are metaphors for the diverse ways that governments can shift revenues and

expenditures over time. For example, government during a fiscal adjustment can postpone

expenditure or it can require advance payment of taxes. The improvement in the cash deficit due to this postponement is illusory. These kinds of fiscal tricks will show up as a later reversal of the progress made on the deficit.

Thus although the net worth budget deficit is difficult to measure operationally, a model of government behavior based on the net worth budget deficit has some clear predictions. This model predicts that, barring any change in the discount rate of the governments concerned, the governments will respond to a mandated deficit reduction by: (1) cutting public investment, (2) privatization, (3) shifting revenue and expenditure over time, or (4) running up implicit liabilities. Note that these mechanisms will allow the path of government consumption to remain unchanged.

The intuition is very simple -- a fiscally irresponsible government wants to have high present consumption at the expense of lower future benefits. If that government is constrained in only one form of shifting revenue and expenditure across time (public debt), it will find other ways of shifting revenue and expenditure across time so as to leave its high present consumption unchanged.

3. Testing the predictions of the model on developing country adjusters.

This section tests the positive predictions of the above model. I will look successively at government consumption, public investment, privatization, and revenue and expenditure shifting over time.

<u>3.1 Government consumption</u>

The most direct prediction of the model is that government consumption growth will be the same during adjustment programs as it is outside of adjustment programs. I test this by comparing the median real growth of government consumption during IMF stand-by arrangements to the median real growth for the whole sample period for each country. I have a sample of 89 countries that received one or more stand-by loans during the period 1967-96. I have real government consumption for the same period from country national accounts. Since the prediction of the model

has to do with long-run optimization, I first apply the Hodrick-Prescott filter to get the long-run component of government consumption in each country (although results without this filter are the same). I then compare the growth of permanent government consumption in stand-by and non-standby periods. I find that long-run government consumption was lower during stand-bys in 44 of the 89 country cases. We would have expected half the cases to be below average government consumption growth and half above if the growth of government consumption were unrelated to stand-bys. Hence, we fail to reject the hypothesis that consumption growth is the same during stand-bys as during non-stand-by periods.

3.2 Public Investment

In this section, I construct a new series on public investment and World Bank/IMF adjustment lending. I then test the proposition that adjustment programs -- as enforced by IMF and World Bank adjustment loans -- generally are accompanied by public investment reductions. Public investment series are difficult to obtain, because the data on public investment made by public enterprises are not reported to the standard international data sources (such as the Government Finance Statistics of the IMF), although they are counted in the deficit for adjustment loan conditionality. My public investment series for this paper amalgamates 5 different efforts to get public investment data from internal IMF and World Bank reports: (1) the series on public investment by country 1970-89 by Easterly and Rebelo (1993), (2) the public investment series constructed for the 1991 World Development Report (World Bank 1991), (3) the series on public and private investment constructed by the International Finance Corporation of the World Bank (Pfeffermann and Madarassy 1993 and subsequent updates), (4) a recent effort to assemble public investment statistics by the Macroeconomic Data Team of the World Bank, and (5) the United Nations National Accounts. I take the simple average of whatever series are available for each year for each country.

I study the behavior of public investment in a special set of countries whose deficits were likely constrained by outside forces -- those countries receiving World Bank and IMF adjustment loans. I construct a database of total number of adjustment loans by country.[24] Adjustment lending began at the Bank in 1980 and IMF operations increased at the same time, so the number of total adjustment loans of all kinds accelerated sharply in the 1980s. This justifies using the post-1980 period as the era of adjustment lending. The Bank and Fund gave adjustment loans to induce policy changes in the recipient. One of the most important policy changes the Bank and Fund sought was a budget deficit reduction. This condition was observed in most cases. An IMF study notes that budget deficits fell by 4 percentage points of GDP during the average two and a half year long IMF program (Schadler et al 1995, p. 19). Likewise, a World Bank study (World Bank 1996c, p. 33) found that targets for budget deficits were attained in a majority of countries receiving Bank adjustment loans. Hence, countries receiving adjustment loans during this period had their deficits constrained.

I have a database of 15 countries that received ten or more World Bank and IMF adjustment loans and that have complete data on public investment for 1980-1994.[25] The prediction of the model is that countries will reduce asset accumulation at the same time as the IFIs constrain them to reduce debt accumulation (the public deficit). I take public investment as an imperfect proxy for asset accumulation – even if it includes some "white elephants," it also includes valuable state assets like infrastructure. Public investment decreased steadily during 1980-94 in these 15 intensively adjusting countries (Figure 1).

By way of contrast, Figure 2 shows the public investment behavior of the East Asian high growth countries (prior to their recent debacle). They did not need to adjust in the 1980s and early 90s, and so we see no general tendency for public investment to decline in these countries. Hong Kong has a mild negative trend, China a strong positive trend, and the others go up and down with no clear trend.[26]

<u>3.3 Privatization and other asset sales</u>

The most transparent form of asset decumulation is privatization of valuable state assets. Privatization usually involves two separate operations – the commercialization of a politically run state enterprise and the sale of this enterprise for cash. The first implies important efficiency gains; the second should not be done for fiscal reasons, e.g. to finance government consumption. However, my model predicts that a constraint on debt *will* motivate privatization to maintain government consumption.

To test this hypothesis, I look at the association between privatization revenues as a percent of GDP and Fund-Bank adjustment loans over 1988-95. Fund-Bank loans implied a constraint on public debt. There is a positive and significant correlation, with each additional loan associated with .25 percentage points of GDP more privatization revenue (t-statistic of 2.26). While privatization may have been a condition of some of these loans, this association is also consistent with the model prediction that governments forced to reduce liabilities will reduce assets. Privatization revenues are not supposed to reduce the deficit directly according to IMF accounting methodology, but they can be used to reduce gross public debt to meet debt targets. Privatization may have been desirable in its own right, but it is suspicious when it increases during times of constrained public debt.

Another form of asset decumulation during adjustment programs is production of crude oil, which reduces the country's asset of oil reserves in the ground. It makes no sense to compare oil production across countries, so I instead compare oil production across time within countries. I use the timing of IMF standby loans as the clearest signal of the timing of fiscal squeezes, and then investigate if crude oil production increases during fiscal squeezes. I exclude transition countries in Eastern Europe and the Former Soviet Union, whose oil sectors were bound up with the general output decline. I also exclude countries with trivial amounts of oil production (I arbitrarily set the cutoff at 1000 tons of production per year), since it matters little what happens to oil production in

such cases. I have 18 cases of countries that received IMF standby loans during 1987-96 and produced more than 1000 tons of oil per year during that period. I find that in 13 of the 18 cases, oil production was higher during the IMF standby loan compared to the periods without IMF standby loans. Using a simple non-parametric signs test, I can reject the hypothesis that there was no difference in oil production during periods with and without standby loans at a .015 significance level.[27] The median increase in production in the 13 cases where crude oil production increased was 7 percent, and ranged as high as 31 percent (Venezuela).

3.4 Revenue and expenditure shifting

By shifting revenues forward and postponing expenditures during an adjustment program, the government reduces the deficit today at the cost of higher deficits in the future. (This would mean that permanent deficit constraints would eventually bite for the case of pure shifting of revenue and expenditure. Temporary deficit constraints, like those during an IMF-World Bank program, will tend to shift deficits into non-program periods. Even permanent deficit constraints can be evaded by running down assets and running up implicit instead of explicit liabilities, as in the theoretical model.)

We can test this notion of temporariness by examining the degree of trend reversion in fiscal deficit series vis a vis the strength of the trend during the adjustment period. I specify a simple error correction model. First, I regress the fiscal deficit as percent of GDP for each country on a time trend:

(10) $DF_t = a + b*t$

Then I regress this equation in first differences plus an error correction term that is the residual from (10), i.e. the difference between the actual value D_t and the fitted trend value from (10) DF_t

(11) $D_{t+1}-D_t = b + c*(D_t - DF_t)$

The constant in this equation (b) is a measure of the trend change per year, while the coefficient on the deviation of the actual deficit (D_t) from the trend deficit (DF_t) captures the degree of trend

reversion. We can think of the trend change as the long run change in the budget deficit during the adjustment period, while the mean reversion term measures how much the change in deficit was temporary. The sample of countries consists of 38 recipients of adjustment loans that have complete data on consolidated public sector deficits.

The results are striking. Only one country (Bangladesh) shows a long run fiscal trend improvement over 1980-92, as indicated by the constant term b being statistically significant. For the other 37 countries, there is no evidence for a long-run trend in the deficit. By contrast, the coefficients on the error-correction term (c) are significant in 26 out of the 38 countries. The median coefficient on the error correction term is -.81, indicating that 81 percent of a fiscal improvement is reversed the following year for a typical recipient of adjustment lending.[28]

4. Testing the model's predictions on Euro countries

The countries subscribing to the Stability Pact of the Maastricht Treaty have their budget deficits constrained at 3 percent of GDP and their gross public debt constrained at 60 percent of GDP (albeit with some loopholes).[29] These constraints were particularly biting as the May 1998 selection of countries eligible to join the Euro monetary union approached. They thus provide another natural experiment of the effect of outside constraints on deficits and debt. The Maastricht Euro countries indeed show signs of reducing their asset accumulation and increasing hidden liability accumulation. Although sales of financial assets like reserves or equity do not reduce the budget deficit, the proceeds can be used to reduce the gross public debt. Reduction of public nonfinancial investment does reduce the deficit.

4.1 Examples of illusory fiscal adjustments

I have first anecdotes of illusory fiscal adjustments. Buiter et al. 1993 note about Maastricht (which disallowed applying privatization receipts to deficits but did allow applying them to reduce debt) that

Maastricht encourages financial engineering to avoid underlying real fiscal adjustment. Even when privatization is desirable for efficiency reasons, it is bad economic policy to do the right (structural) thing for the wrong (financing) reasons. (p. 73)

Greece, which did not yet make it as a Euro country but is trying hard to become one, announced in 1998 plans to privatize 11 state enterprises and 3-4 state banks. Among the enterprises were such potentially profitable companies as Hellenic Telecommunications Organization, Hellenic Petroleum, Water Supply Co., and two subsidiaries of Olympic Airways. Revenue from the Greek privatizations is expected to total 0.8-0.9 percent of GDP in 1998-99.[30] The expected revenue will likely be exceeded because of recent sales of shares in the National Bank of Greece.[31]

Belgium was even less subtle, selling $2.5 billion worth of gold reserves on March 19, 1998. The government used the proceeds to reduce public debt by 1 percentage point of GDP.[32] Sales of mobile phone licenses also brought revenue that could be applied to lower both deficit and debt.

France used a more intricate device. France Telecom made a one-time payment to the government of 0.5 percent of GDP in return for the government shouldering its pension liabilities (this corresponds exactly in the model to ΔL_i). The proceeds reduced the deficit according to a European Commission ruling, while the future pension liabilities of the government did *not* show up in government debt. This conjuring trick accounted for half of France's deficit reduction in 1997.[33] One skeptic noted that "the French budget process suggests that interpretive flexibility is simply being shifted from the Maastricht criteria to national accounting practices."[34]

Like France, Austria got a one-time payment from a state enterprise (the Postsparkasse) in return for assuming pension liabilities.[35] Like Belgium, other temporary Austrian revenues came from sales of mobile phone licenses. Austria used a further sleight of hand in breaking out from the budget state enterprises that had substantial debts. For example, the Asfinag agency that supervises road construction was reclassified from the government sector to the corporate sector.[36]

Italy used a more transparent device: it levied a one-time Eurotax to meet the Maastricht deficit target in 1997. It announced that 60 percent of this tax would be refunded in 1999.[37] The budget plan also foresees a reduction in debt levels using proceeds from privatizing the highway management network Autostrade and the airline Alitalia.[38]

Even the conservative Germans engaged in some illusory fiscal adjustments. The Germans reclassified public hospitals into the corporate sector in 1997, and so their debts were taken out of the general government debt.[39] The Germans delayed interest payments on the public debt to lower the 1997 deficit. The Germans also accelerated sales of shares in Deutche Telekom and used central bank profits from reserve revaluation to pay off debt inherited from East Germany.[40]

Eichengreen and Wyplosz' (1998) summary of the Maastricht adjustment process is on the mark:

European governments have relied on one-off measures -- central bank sales of gold, refundable euro taxes, appropriation for the general budget of public enterprise reserves, and sales of strategic petroleum reserves -- to meet the Maastricht fiscal criteria for 1997.

4.2 Growth of government consumption

I follow the same procedure that I used with the IMF stand-by group for the Euro 11 (actually 10 because I lack data on unified Germany). I first use the Hodrick-Prescott filter to separate out the long-run component of government consumption. Then I compare the growth rate of the smoothed government consumption in the five years before Maastricht (1986-91) to the five years after Maastricht (1991-1996). The results are surprising: all of the 10 have *higher* consumption growth after Maastricht than before Maastricht. However, the difference is quantitatively trivial (an average of .09 percentage points). There *are* trend breaks downward in the Hodrick-Prescott smoothed series, but they come long before Maastricht.

4.3 Privatization with a control group

I looked at privatization revenues before and after the Maastricht treaty for the 11 countries adopting the Euro (Austria, Belgium, Finland, France, Germany, Ireland, Italy,

Luxembourg, the Netherlands, Portugal, and Spain). As a control group for what was happening

in privatization in the absence of trying to join the Euro club, I also look at privatization revenue in

3 EU members who did not want to participate in the Euro (UK, Sweden, Denmark). The stability

pact and its sanctions applied only to countries joining the Euro currency union, not to all EU

countries (Eichengreen and Wyplosz (1998), p. 71). Figure 3 shows privatization in the Euro and

non-Euro countries before and after the signing of the Maastricht treaty that specified the deficit

and debt targets. The Euro countries more than quadrupled their annual privatization revenue after

Maastricht, while privatization revenue actually fell after Maastricht in the non-Euro countries.

4.4 Public investment

Figure 4 shows what happened to public investment spending in the aftermath of

Maastricht. Seven of the Euro countries reduced public investment as a percent of GDP, two left it

unchanged, and only two increased it. By way of contrast, two of the three non-Euro European

countries increased public investment. The two Euro countries that left public investment

unchanged (Belgium and Ireland) and a third that reduced it only slightly (the Netherlands) may

have done so because they had already reached rock bottom public investment. Belgium, Ireland,

and the Netherlands had cut public investment in half in a previous round of fiscal retrenchment.[41]

By 1997, public investment/GDP was at or within .1 percent of GDP of its historic low in seven

out of the Euro eleven.

4.5 Pension liabilities

The gross debt target set in the Maastricht treaty did not include contingent liabilities such

as pension obligations. The implicit pension debt can be defined as the net present value of benefits

minus contributions. Although estimating the net present value of the current scheme of pension

contributions and expenditures is sensitive to many assumptions, most calculations show the

implicit pension debt in European countries to be large. Table 1 summarizes some estimates of the

implicit pension debt in the Euro countries as compared to explicit public debt.[42]

Table 1: Implicit pension debt of Euro countries

Country	Gross government debt end-1995 as percentage ratio to 1995 GDP	Implicit pension debt as percentage ratio to 1994 GDP
Austria	69	93
Belgium	133	153
Finland	59	65
France	53	102
Germany	58	62
Ireland	85	18
Italy	125	60
Netherlands	79	53
Portugal	72	109
Spain	66	109

Source: Kopits (1997, p. 18); original source for implicit pension debt is Roseveare et al. (1996, pp. 15-16)

We see that net pension liabilities are large relative to the gross government debt targeted by the convergence criterion – seven of the ten countries have higher implicit pension liabilities than explicit government debt. The distribution does not match that of explicit debt. While much-maligned Italy has the second highest explicit debt/GDP ratio, it has the third lowest implicit pension debt. While implicit pension liabilities are not the same as explicit debt --because governments can change them by increasing contribution rates or by decreasing benefits -- they are a measure of the fiscal changes governments will have to make.

4.6 Maastricht summary

The combination of basically unchanged consumption growth, one-off measures, privatization, and public investment reduction suggests that at least part of the fiscal adjustment in response to Maastricht was illusory. They could be a sign that the rest of the fiscal adjustment included less observable illusory actions. The high implicit pension debt suggests in any case that the constraint on gross government debt was addressing only part of the Euro countries' future fiscal problems.

5. Conclusions

There is a large literature on the net worth definition of the deficit. The literature has clarified why the change in public sector net worth is the appropriate measure of the deficit, but practitioners do not use the net worth definition because of measurement difficulties.

The innovation of this paper is to use the change in net worth definition of the deficit positively rather than normatively. I use it to predict how the government will behave when faced with a constraint on its conventional deficit. The prediction is that a government forced to reduce its deficit (i.e. its debt accumulation) will reduce its asset accumulation or increase its hidden liability accumulation by an equal amount. The government will leave the (true) net worth definition of the deficit unchanged. If the prediction is right, then conventional fiscal adjustment is an illusion. The net worth definition of the deficit will only improve if the government has a change of heart that places more value on future consumption relative to present consumption.

Anecdotes and empirical results confirm that asset decumulation , hidden liability accumulation, and revenue/expenditure shifting takes place during Fund/Bank fiscal adjustment programs in a sample of developing countries. The Euro 11 countries in Europe also show signs of adjustment illusion.

The policy implications of this finding are that outside agents like the EU, IMF, and the World Bank should scrutinize expenditures during adjustment programs for signs of asset decumulation or hidden liability accumulation. Such signs are like those documented in this paper -- cuts in public investments, cuts in operations and maintenance, fiscally motivated privatization, expenditure or revenue shifting over time, high pension liabilities despite current pension surpluses, shifting expenditure and debt off-budget.

The Interim Committee of the Bank and the Fund already showed some awareness of these issues by calling in its 1996 meetings for actions "to enhance the transparency of fiscal policy by persevering with efforts to reduce off-budget transactions and quasi-fiscal deficits" (Kopits and Craig 1998). International financial institutions should select which countries should receive

adjustment loans on the basis of indicators that reveal whether a given government is a low discount rate government.

Likewise, the stability pact of the Maastricht countries should require monitoring of indicators of asset decumulation, hidden liability accumulation, and other forms of fiscal illusion. EU policymakers should redo the Maastricht debt criterion in terms of debt net of marketable assets rather than gross debt, so as to eliminate the temptation to engage in illusory improvements from simultaneous reduction of assets and liabilities. The deficit target should be the structural deficit -- excluding cyclical fluctuations and one-off maneuvers. EU policymakers should also pay as much attention to the implicit pension debt of the Maastricht countries as they do to their explicit government debt.

The example of New Zealand shows that a low discount rate government can try to bind its own hands with accrual and balance sheet accounting. As one of the architects of the New Zealand reforms put it, "the balance sheet ... can provide an indicator of whether the Government is running down its estate in order to maintain current consumption" (Scott 1996, p. 66).

There is a hierarchy of possible public sector balance sheets that can be constructed in practice. The ideal that I have had in mind in this paper would include all public sector assets – such as infrastructure, the present value of tax receipts, the market value of state-owned mineral reserves, and the market value of state enterprises. It would include all liabilities such as the official public debt, the implicit pension debt, the expected value of banking or state enterprise bailouts, and the off-budget debt. This comprehensive net worth measure would be a true indicator of long-run fiscal stance. The second-best would be a purely financial balance sheet, in which all marketable financial assets are listed in addition to financial liabilities. This would yield a number like "net financial assets" or "net financial debt." However, the value of marketable assets would be hard to measure prior to their being offered on the market; nor would a purely financial balance sheet prevent all of the abuses documented in this paper. The third- best position is to try to

estimate the *change* in whatever can be measured in the comprehensive balance sheet by monitoring all asset sales and changes in asset accumulation and all new liability accumulation, implicit or explicit, certain or contingent. This third-best solution should be a minimum for external agents like the EU for Euro countries, and the IMF and World Bank for developing countries.

However it is done, more comprehensive monitoring of the public sector's assets and liabilities would help ensure that fiscal adjustment is the real thing and not an illusion.

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Footnotes

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[1] The public choice literature has used "fiscal illusion" to refer to a related but not identical concept: that governments will act in ways that hide the burden of taxation and magnify the apparent benefits of public spending. This hypothesis was first proposed in 1903 by Puviani (1973) and later popularized by Buchanan (1960, p.60). I am indebted to Kopits and Craig (1998) for the Puviani reference and many other useful references.

[2] Another variant of measuring the government's intertemporal position is the "Generational Accounting" proposed by Kotlikoff (1993), and Auerbach, Gokhale, and Kotlikoff (1993), which seems to have even more formidable data requirements than the change in net worth deficit. The argument of this paper could be reformulated in terms of generational accounting by postulating that a government has a given objective of redistributing income between generations and responds to any demand for fiscal retrenchment by lowering the deficit while leaving the intergenerational transfer unchanged.

[3] The economics profession has not been consistent on whether to treat privatization proceeds as revenue, in which case they directly reduce the deficit, or as (negative) financing, in which case they could be applied to reduce debt but not the deficit. The Government Finance Statistics (GFS) Manual of the IMF (1986, p. 108, 116) treated privatization as revenue, but IMF practice has changed over time to treating it as financing. The proposed revision of GFS (IMF 1996a, p. 54) treats privatization as financing. The deficit definition for the Maastricht convergence criteria treat privatization proceeds as financing, but these proceeds can be applied to reduce the gross public debt to reach the Maastricht debt/GDP target. The net worth definition of the deficit would treat privatization receipts as financing and would use net debt rather than gross debt as a policy target.

[4] Ruppert 1998, p. A19

[5] For an early and prescient treatment of the problems with fiscal rules such as Gramm-Rudman, see Hanushek 1986.

[6] White and Wildavsky 1989, p. 514

[7] Sheffrin 1987, p. 54

[8] Eisner 1986, Kee 1987, p. 19

[9] Virtually all commonly-used deficit definitions treat public investment as expenditure rather than as below the line asset accumulation.

[10] The government can also improve its apparent fiscal condition by substituting private investment for public investment in infrastructure, reducing overall public spending. However, to attract the private investment, the government often offers implicit or explicit guarantees that may create a future fiscal burden greater than the initial public spending reduction. For example, in the late 1980s and early 1990s, Mexico franchised out private construction and operation of about 5000 kilometers of highways. When anticipated demand failed to materialize, many franchise operators faced financial ruin. The government gave more than $6 billion in subsidies to save the operators from bankruptcy (p. 93, Engel et al 1997).

[11] Alesina and Perotti 1995 found that deficit adjustments made by cutting consumption were more lasting than those reduced in other ways, which is in accordance with the argument of this section.

[12] The 1986 GFS Manual (IMF 1986, p. 31) recommended cash rather than accrual accounting. Current practice uses a mixture of cash and accrual accounting. When arrears become a serious problem, the conventional approach to deficits in developing countries will often show them explicitly as a financing item for an accrual-based deficit target. The 1996 GFS Manual (IMF 1996a, p.16) recommended accrual accounting. However, arrears still can be used to temporarily meet a gross public debt target, since they are not included in the gross public debt.

[13] White and Wildavsky 1989, p. 514.

[14] Gold 1983, quoted in Poterba 1994. Alesina and Bayoumi 1996 find that balanced budget rules in US states do reduce deficits, and that there is no cost in the form of increased output variability. The rest of the literature on US states reaches similar findings (see survey in Inman 1996). However, this literature does not address the question of how the deficits were reduced, leaving open the possibility that the deficit reductions did not improve net worth.

[15] See Polackova 1998 on Thailand, China, Malaysia, and Korea. A banking crisis is but one example of how the government can comply with a ceiling on visible liability accumulation (debt) by switching to hidden liability accumulation. For an insightful treatment of different kinds of government liabilities (implicit and explicit, contingent and noncontingent), see Polackova 1998. For example, the government could switch from granting subsidies to state-owned enterprises (SOEs) to guaranteeing the bank loans made to SOEs to cover their losses. This creates the appearance of a deficit reduction but leaves unchanged the net worth definition of the deficit. When the SOEs eventually default on their debt, the government pays off the debt and so winds up paying for SOE losses just as it had been when subsidies were explicit. Egypt, for example, phased out budgetary support to SOEs in 1991, but allowed loss-making SOEs to continue to operate on overdrafts and foreign loans. The Egyptian government periodically writes off the domestic debt of these enterprises. (World Bank 1995, p. 84). The US Congress followed a similar stratagem in the Gramm-Rudman era. It cut direct loans by $50 billion (which shows up as expenditure according to US budget methodology) but increased loan guarantees by $178 billion, which do not show up in the budget (Rubin 1997, p. 159)

[16] Pension reserves are also used to cover health costs of workers covered by social insurance programs. This further depletes the reserves. The Venezuelan government invested between 10 and 30 percent of pension reserves in the hospitals of the social security system. In Ecuador, there was similar cross-subsidization of health programs with pension surpluses. Now these governments must face the rising expenditures on both health and pensions as the population ages with a depleted pension reserve fund (World Bank 1994b, p. 47).

[17] The Government Finance Statistics Manuals of the IMF (1986, 1996a) treat social security taxes as revenue and social security spending as expenditure.

[18] Borrowing by off-budget agencies, whose debt the government guarantees, is another way to accumulate hidden liabilities. An example comes from the Czech Republic, which international financial institutions have praised for its fiscal rectitude. However, in April 1998, the government announced that off-budget state agencies had accumulated debt equal to 13 percent of GDP (World Bank staff estimate by Hana Polackova, email to me of June 1998). The US government created 5 new off-budget enterprises during the Gramm-Rudman era 1985-89, while it had only created 1 such entity in the previous 13 years (Rubin 1997, p. 202). Similar examples come from the literature on US states that are subject to debt ceilings. Von Hagen 1991 finds that debt ceilings on states simply induce substitution of nonrestricted debt instruments for the restricted ones. Bunch 1991 finds that constitutional debt limits are associated with the creation of off-budget public authorities that are exempt from the debt limits.

[19] A notable optimizing model of government creative accounting in the face of deficit and debt constraints is Milesi-Ferretti 1998.

[20] One reason there may be a high discount rate is that the government does not expect to stay in power very long. Blanchard and Fischer 1989 show in a continuous time OLG model that the higher the probability of "death", the lower will be average individual wealth. In the context of the present model, "death" means the end of the government's time in power.

[21] Other measures of the deficit net out changes in financial assets and privatization receipts, but still do not net out all other assets to get to the net worth definition of the deficit.

[22] See Pritchett 1997.

[23] There may be a non-negativity constraint on ΔA if the government has no marketable assets to privatize and public gross investment is of course constrained to be positive. However, virtually all governments have positive public investment, implying that the non-negativity constraint is not binding. Moreover, the government still has the option of decumulating assets by lowering spending on O&M and on complementary inputs to government capital.

[24] For the IMF, my definition of adjustment loans includes what the IMF calls "stand-bys", "extended arrangements" (begun in 1975), "structural adjustment facilities" (begun in 1986), and "extended structural adjustment facilities" (begun in 1988). For the World Bank, I include adjustment loans at both the sector level and the economy-wide level for both low-income economies (Structural Adjustment Credits) and middle-income economies (Structural Adjustment Loans).

[25] The 38 countries are Argentina, Bangladesh, Bolivia, Burundi, Cameroon, Central African Republic, Chile, Congo, Cote d'Ivoire, Colombia, Costa Rica, Dominican Republic, Ethiopia, Gabon, Gambia, Ghana, Honduras, India, Indonesia, Kenya, Madagascar, Mexico, Mali, Mauritius, Malawi, Niger, Nigeria, Pakistan, Peru, Rwanda, Senegal, Sierra Leone, Togo, Thailand, Turkey, Uganda, Zambia, Zimbabwe.

[26] I did not have complete data on Singapore or Taiwan.

[27] Oil production numbers are from the World Petroleum yearbook.

[28] This form of the error-correction model is close to the Dickey-Fuller test for stationarity of the residual. Although 13 observations per country is a small sample, our evidence suggests that the residual is stationary in most of the countries.

[29] For previous analysis of the Stability Pact, on which this section draws, see Eichengreen and Wyplosz 1998, Beetsma and Uhlig 1997, Eichengreen and Von Hagen 1995, 1996, Holzmann et al. 1996, and Buiter et al. 1993. Note that the Maastricht Treaty applies to the entire EU, but the Stability Pact and its sanctions applied only to countries hoping to join the 1999 Euro currency union. These countries felt a special urgency to show progress towards the targets as 1998 -- the date when the eligible countries were selected -- approached.

[30] Dow Jones Newswires 15-3-98

[31] Financial Times, July 1, 1998, page 3.

[32] Dow Jones Newswires 19-3-98

[33] Dow Jones Newswires 25-3-98, Economist 12/14/96, European Commission (1998)

[34] Hildebrand 1996.

[35] European Commission 1998, p. 139

[36] Dow Jones Newswires 8-4-98

[37] The Economist Intelligence Unit 4/23/98

[38] Dow Jones Newswires 30-4-98

[39] European Commission 1998.

[40] The Economist Intelligence Unit 4/23/98, Dow Jones Newswires 5/14/98

[41] Sturm and de Haan 1998 challenge the interpretation that deficit reductions *cause* public investment reductions in the Netherlands. They find no evidence that public deficits Granger-caused public investment in the Netherlands over 1956-90.

[42] The pension debt is calculated assuming a 5 percent discount rate and a 1.5 percent productivity growth rate. See Van den Noord and Herd 1993 for an alternative calculation for the G-7. None of the sources do the calculation for Luxembourg, so estimates for only 10 Euro countries are presented.

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