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**Article — Published Version**

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Intereconomics

*Suggested Citation:* Erber, Georg (2003) : Unwarranted final demand shocks of public deficits reductions in Germany: UMTS windfall revenue impacts, Intereconomics, ISSN 0020-5346, Springer, Heidelberg, Vol. 38, Iss. 1, pp. 38-50

This Version is available at:

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Georg Erber\*

# Unwarranted Final Demand Shocks of Public Deficits Reductions in Germany

## UMTS Windfall Revenue Impacts

*It has become common practice to blame the rapid collapse of the German economy after its having reached a 3% GDP growth high in the year 2000 on the oil-price shock, the burst of the New Economy bubble and the overall slowdown of the world economy around this time. However, the exceptional decline is striking if one looks at the other European countries, in particular the member states of the European Monetary Union. Is this decline in fact the result of the negative fiscal demand shock to the German economy caused by the use of the UMTS licence auction revenues to service outstanding loans?*

The situation of public finances in Germany has developed over the decades since 1960 from one of carefully guarded fiscal stability to one in which the public sector today finds itself facing the problem of a long-term debt trap. We consider a debt trap to be a situation in which the public sector's net interest payments to the private sector,  $Int_t^{pub}$ , exceed the public deficit,  $Def_t^{pub}$ , in a particular time period, i.e.  $Int_t^{pub} = i_t^{pub} \times D_t^{pub} > Def_t^{pub}$ .<sup>1</sup> Such a situation, if not transitory, lasts not only for a short period, e.g. one year, and leads to a cumulative process of public indebtedness, making the fulfilment of the financial obligations of the state nearly impossible in the long run. Looking at West Germany's record from 1960 to 1990 and that of reunited Germany (including the former area of the GDR) from 1991 until 2002, we observe the following patterns (see also Figure 1).<sup>2</sup>

- *From 1960 until 1974:* The public sector ran surpluses in interest income until 1974 of about 1.3% to 1.4% of current GDP. The public deficit also never led to a cumulative increase in the public debt. The public sector, federal, state and communal bodies plus the social insurance system possessed more financial interest-bearing assets during this era than they issued.

- *From 1974 until 1982:* After the first period, the financial situation deteriorated rapidly due to two oil-price shocks. With public deficit spending propping up the ailing economy, public deficits increased to a level of 5.5% of German GDP in 1975. After this peak the deficits stayed at a fairly high level until the government under the leadership of Helmut Schmidt was forced to step down because his coalition partners, the Free Democrats, formed a new coalition government with the Christian Democrats under Helmut Kohl in 1982. One of the central objectives of the new government was to stabilise the public finances, i.e. cut down public deficits and get public indebtedness under control.

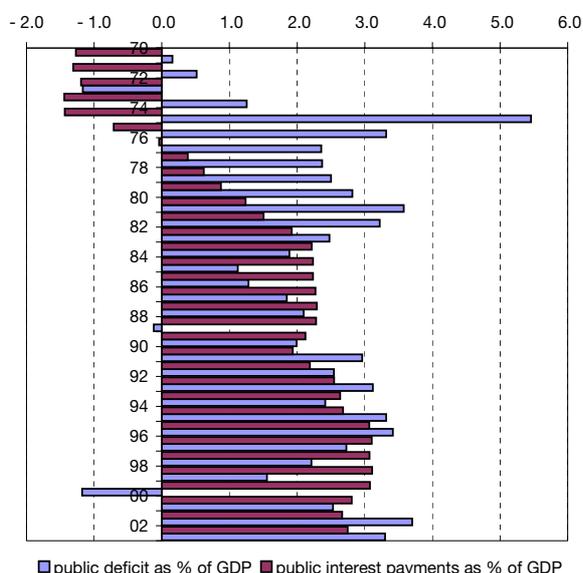
- *From 1982 until 1989:* After eight years the public sector was on the verge of again running surpluses instead of deficits in 1989. The government managed to escape the debt trap only after running

<sup>1</sup>  $i_t^{pub}$  denotes the average annual interest rate for the total public debt, while  $D_t^{pub}$  denotes the average annual level of public debt.

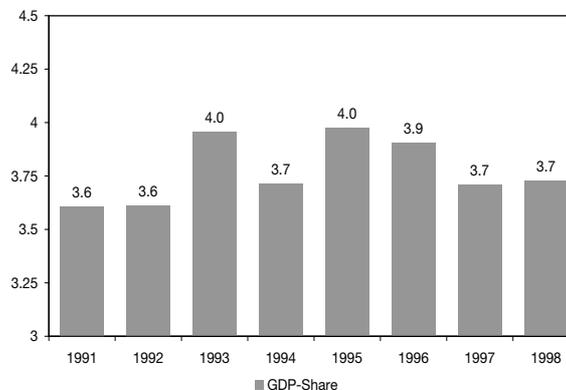
<sup>2</sup> Calculations are based on data taken from the OECD (OECD: Economic Outlook, Paris, December 2001). Recent forecasts have changed, now foreseeing a delay of the recovery from spring 2002 to the second half of next year. The percentage-of-GDP public deficit ratios are based on the financial statistics used by the Maastricht treaty and deviate from the national accounts debt ratios, which are significantly higher. Recent forecasts for the German deficit have been raised to -3.7% in 2002 and -3.3% in 2003. See e.g. Sachverständigenrat: Zwanzig Punkte für Beschäftigung und Wachstum, Annual Report 2002/03, Council of Economic Experts, Wiesbaden, November 2002.

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**Figure 1**  
Public Deficits and Public Interest Payments  
(as % of GDP)



**Figure 2**  
Net Public Transfer Payments as GDP-Shares  
for East Germany  
(in %)



Source: German Bundesbank (1998) and own calculations.

lower deficits from 1984 until 1989. Annual net interest payments by the public sector declined slightly from 2.3% of GDP in 1988 to about 2.2% in 1989 and to 1.9% in 1990. The solid GDP growth in West Germany before the start of the monetary union with East Germany in the two years before had raised expectations that this would create enough momentum to pull East Germany out of its sombre economic situation and that economic and monetary union with East Germany would raise the long-term growth path of a united Germany. This would offer sufficient room for the government to keep long-term public deficits under control if tax revenues grew accordingly and offered the opportunity to keep the long-term growth of government expenditures below the new GDP-growth trajectory. A new “economic miracle” like that of the 1950s was envisioned for a united Germany, which would produce budget surpluses similar to those of the USA in the second half of the 1990s.

- *From 1990 until 1998:* This stabilisation policy came to an abrupt halt after German reunification took place. From the German monetary union in the summer of 1990 until official unification took place, the German government again accepted public deficits as high as 3% of GDP to finance the public subsidies considered necessary to ease the adjustment process following the collapse of the socialist economy. This extraordinary situation led to an increase in annual public net

interest payments of about 3% of GDP, which is moderate if one considers the previous rise that took place following the two oil-price shocks in the second half of the 1970s and early 1980s. The debt increase then was 2.2% of GDP in total, compared to which the 0.8% GDP increase after German unification was relatively tiny. These two periods in German history clearly show that the consolidation of public finances does not work smoothly and that it takes time to achieve moderate success. The government again managed to escape the debt trap in 1994 and from 1997 until 2001 by means of a rigorous control of public deficits. Since the catastrophic situation of the East German economy after unification on a one-to-one parity basis for the exchange rate did not encourage the self-sufficiency of the East German economy in catching up with western Germany, the government continued to subsidise the East on an unprecedented scale. Only through the large-scale privatisation of public assets via the Treuhandanstalt, Deutsche Telekom, Deutsche Post etc., and transfers of German Bundesbank revenues (earned due to the D-Mark’s position as one of the major reserve currencies in the world), did the German public sector manage to contain the public deficit somewhat, so that the net interest payments did not increase in line with the transfer payments. The growing doubts of the German public regarding the government’s ability to guide it out of this precarious situation led to the incumbent CDU being voted out at the next election. Large numbers of East German voters in particular changed camps, ending their support for Helmut Kohl’s administration.

**Table 1**  
**Annual Transfer Payments from Surpluses of the German Bundesbank to the Federal Government**  
 (in € billion)

	Total transfers	Used for debt payments	Used for current budget expenditures
1991	4.66	1.08	3.58
1992	7.78	4.20	3.58
1993	7.53	3.95	3.58
1994	9.63	6.05	3.58
1995	5.55	1.97	3.58
1996	5.59	2.01	3.58
1997	4.82	1.24	3.58
1998	12.39	8.81	3.58
1999	6.45	2.87	3.58
2000	3.90	0.32	3.58
2001	8.35	4.77	3.58
2002	11.24	7.74	3.50
1991-2002	87.89	45.01	42.88

Sources: German Bundesbank and own calculations.

An impression of the substantial amount of revenues transferred by the Bundesbank to the German federal government is presented in Table 1. Overall the Bundesbank transferred the amount of nearly €88bn to the German federal government from 1991 to 2002. That's a quite substantial contribution. Even the part which contributed to debt repayment was officially €45bn. It is however questionable whether the distinction between debt repayment and contribution to the current budget is very important because for the government the total amount is what reduces the pressure to finance a budget deficit by issuing government bonds. Therefore the total amount just shows to what extent the budget was supported by the German central bank without creating additional tax burdens. The particularly high revenue transfers in 1998 are due to a revaluation of the dollar assets of the Bundesbank, which were previously valued by the lowest-value-ever-experienced principle. A more market-oriented valuation created a huge additional book value for the bank, which after protests against this suggestion of the former finance minister Theo Waigel was transferred a year later, as initially proposed by the government.<sup>3</sup> It gave the new government a comfortable surplus when it took office in 1998.

<sup>3</sup>This transfer was controversial in 1997 because 1997 was the year in which the decision was to be made as to which countries could enter the final stage of the EMU according to the Maastricht treaty. With this additional revenue from the central bank in 1997 Germany would have had a much easier stand to fulfil the deficit criterion of 3% of the GDP in 1997.

• *From 1998 until 2002:* The new federal government led by Gerhard Schröder made one of its central policy aims the stabilisation of the public sector fiscal situation. After signing the Maastricht Treaty the legal obligation to bring the public deficit below the 3%-of-GDP margin further increased public pressure. With some difficulty, Germany managed to become a member of the European Monetary Union. After the resignation of Oskar Lafontaine as finance minister, his successor Hans Eichel announced that his central objective would be to turn around public sector deficits and achieve long-term fiscal stability in Germany. The big problem associated with this transition from a debt trap situation to long-term public sector fiscal stability becomes apparent if one considers the efforts required to cut down the public deficit on the one hand and the persistently high net interest payments on the other. Even after gradually lowering the public deficit over three years, even achieving a brief surplus thanks to the windfall profit from the UMTS auction, the level of net interest payments decreased rather modestly. With the end of the New Economy boom in the year 2000 worldwide and a simultaneous oil-price shock, the economic situation in Germany deteriorated again. Slow growth continuing from 2001 up to the present day and rising unemployment stalled the consolidation of public finances. At the end of the year 2001 the European Commission warned that Germany would fail to meet the Maastricht criterion of a deficit-to-GDP ratio of no higher than 3% in 2002. At the time of writing, even the German government is no longer denying that this is likely.<sup>4</sup>

This failure to turn the fiscal position around since 1998 is even more worrying because during this time interest rates, which offer the public sector the possibility to refinance its huge accumulated debt, have fallen significantly. Even the reduction in financing costs due to lower interest rates on the public sector debt plus a high windfall profit of about €51bn from the UMTS licence auction used to pay back public sector debt did not pave the way out of the debt trap. When economic growth stalled in 2001 the commensurate decline in revenues on particular taxes and the rising payments for unemployment benefits again caused rising public deficits. The vicious cycle of low growth, rising unemployment and declining tax revenues leading to endogenous rising public deficits

<sup>4</sup> Cf. e.g. Financial Times Deutschland: Bund schließt Maastricht-Verstoß nicht aus, 19 August 2002.

began to spoil the previous efforts toward financial consolidation of the public sector.

What can be done to turn the tide and offer the public sector long-term prospects for sound financial conditions and freedom from the debt trap?

### Public Deficits and Final Demand

In business cycle analysis the impact of demand constraints on the utilisation of available production capacity and the reduction of cyclical unemployment plays a central role in assessing how much additional exogenous demand might stimulate economic growth by closing this output gap while still maintaining price stability.

Keynesianism, which seeks to stimulate an economy in recession via demand management, was founded on the assumption that the state can easily mobilise additional demand through short-term deficit spending. In principle, the short-term direct impact of additional demand financed through public deficit spending has been repeatedly confirmed as effective. Up to now the theory has worked.<sup>5</sup>

The major short-coming of this kind of treatment was, however, that it offered no means of reducing the accumulated public debt afterwards. The economy (including the public sector) was something like a drug addict: it underwent a high degree of hysteresis to cut down these deficits after the economy had recovered from a recession. This predictably led to a cumulative process of public indebtedness. This process in turn led to the problem of the debt trap, which has made deficit spending a highly suspicious strategy since its heyday in the late 1970s and early 1980s.

Since deficit spending could not be implemented in economic policy as a merely transitory remedy for the negative impacts of short-term exogenous shocks, the policy fell into disfavour as a potential policy option. Only in times when major recessions loomed or even had already started to take hold, for example in Japan in the 1990s, the USA in the early 1980s or after the recent New Economy bust, was a return to extensive deficit spending used without giving further consideration to Keynesianism.

<sup>5</sup> See e.g. A. M. Okun: Potential GNP: Its Measurement and Significance, in: Proceedings of the Business and Economic Section, American Statistical Association, Washington D.C. 1962, pp. 98-104; G. Schnabel: Output trends and Okun's law, BIS Working Papers No. 111, Bank for International Settlements, Basle, April 2002; G. Erber: Okun's Law in the U.S. and the Employment Crisis in Germany, in: H. Hagemann, S. Seiter (eds.): New Developments in Growth Theory and Growth Policy, London 2003 (forthcoming), Routledge.

However, politicians using this kind of policy did not claim to have found the silver bullet to finish off the problem of slack demand. The main problem with this kind of approach was its lack of faith and of convincing proof that once the economy had recovered from recession it would be possible to cut deficits easily without falling back into recession. What Keynes once considered a transitory pump-priming later became a persistent fiscal stimulus.

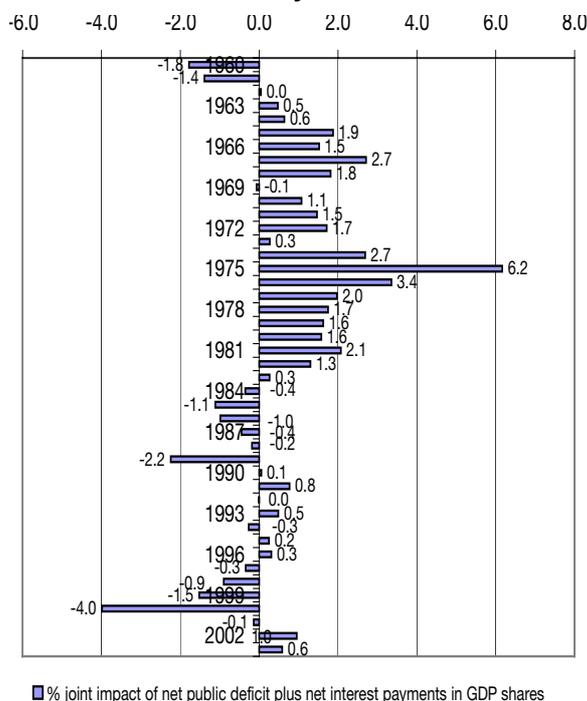
The original Keynesian vision was probably that the endogenous forces needed to maintain economic growth utilising existing production capacities could be generated after a recession. The implicit hope was that during a period in which growth exceeded production capacity, sufficient time and excess demand would open up in the private sector enabling the public sector to cut deficits and run surpluses for long enough to bring down the accumulated public debt.

The issue of the timing of public sector deficits and surpluses through anti-cyclical fiscal behaviour on the part of the state seemed to be a serious one, partly due to the problem of how to calculate properly the amount of time needed to stimulate demand adequately and consolidate the budget and public debt afterwards. The dream of controlling the business cycle through public deficit spending proved more and more to be just a pipedream of theoretical macroeconomics, where the significant problems of uncertainty about current and future developments together with the political constraints built into the political process that actually shapes economic policies are not sufficiently considered. What worked on the blackboard at universities did not work in practice, leaving both sides, politicians and theoreticians, in a deadlock, blaming each other for their inadequate theories or inadequate behaviour.

It is therefore of crucial importance to understand how the endogenous growth process of the private sector of an economy works. Without a clear understanding of how private sector growth can be fostered on a self-contained, sustainable path, public deficits just offer a crutch for a lame private economy, but no real cure for the root causes. The modern theory of growth cycles<sup>6</sup> has used abstract models to show that multiple-growth equilibria are possible under a given set of assumptions. Romer used the concept of the public's formation of expectations as a means of accomplishing these results, showing how they could drive an economy into either a low-growth or a high-

<sup>6</sup> See G. W. Evans, S. Honkapohja, P. M. Romer: Growth Cycles, in: American Economic Review, Vol. 88, No. 3, 1998, pp. 495-515.

**Figure 3**  
**Expansionary or Contractionary Fiscal Impulses**  
**in Germany 1960-2003**



growth equilibrium. One could imagine other means to illustrate how this happens. What is important for the issue of demand management is that the state would need to know how to employ a fiscal stimulus to manage a traverse from low-growth to high-growth equilibrium. Only if this were accomplished through temporary deficit spending by the public sector would the state be able to recover the accumulated deficits later on by extracting the necessary surpluses when this new high-growth equilibrium had been accomplished. The concept of demand management thus relies on the clear understanding that after an exogenous random shock, such as the flooding of large parts of the Elbe river valley this summer, there is a potential risk of the economy returning to low-growth equilibrium. Deficit spending should only be used if it can create a self-sufficient, sustainable higher-growth path in the private sector, leaving ample room for a gradual consolidation of the public debt. Taking into account the development of endogenous growth theory since the early 1980s, one could imagine that such a deficit spending policy would have to direct spending towards resources which help pay back the public investments through higher dividends from returns on human capital, necessary infrastructure or other sources, increasing long-term productivity.

What may have been the misunderstanding from the 1960s to late 1980s, the old days of deficit spending, was the belief that any kind of additional exogenous public demand would be sufficient to help the economy out of its doldrums. This was the extreme short-term orientation of Keynesianism at that time, which considered digging holes or building pyramids – as Keynes himself said – sufficient to solve the problem. The interconnectedness of the short-term and long-term impacts of demand stimuli from government fiscal behaviour was largely ignored and led to the unwarranted negative long-term impacts on the economy. What is urgently needed for Germany and many other economies is a strategy which leads them towards long-term recovery. To my mind this seems possible only if one considers the impact of government fiscal behaviour and its consequences for endogenous growth stimulation in a multiple growth-equilibria framework.

The crucial issue in such a framework is that if negative exogenous demand shocks could drive the economy into a low-growth equilibrium and if a positive exogenous demand shock could do the opposite, i.e. drive the economy onto a high-growth equilibrium trajectory, then the government should ensure that it does not intentionally or unintentionally cause such disturbances to a fragile growth equilibrium and alter its growth path.

We shall focus below on the issues of what negative fiscal demand shocks might be and whether the German UMTS licence auction revenues might have been a source of such a negative impact on the German economy.

#### **Unwarranted Demand Shocks of Public Deficit Reduction**

Before we discuss this topic we wish to give a brief explanation of what we consider to constitute a demand shock from the public sector. A change in the debt-deficit position of the public sector has two effects. One is directly related to the actual deficit or surplus spending from the actual budget position of the public sector. This deficit has been explicitly taken into account in the Maastricht stability pact catalogue with the 3%-of-GDP deficit limit which should be maintained permanently by the public sector of each member state in the European Monetary Union. There is, however, another impact that is not taken into account in the pact: the net interest payments on public sector debt. As we have seen above, the

the public sector lies above the public deficit share. We already used this ratio to define the debt trap. The impact of an increase in net interest payments from the public sector to the private sector, however, creates monetary income for the private sector. The higher its interest income from the public sector, the higher its ability to use this liquidity to create effective demand.

From this perspective a public deficit at period  $t$  not only has an impact on the actual final demand side but it also creates a future income stream for the private sector with regard to interest payments and repayments of the loans the public sector has obtained. Therefore the demand expansion of a public sector deficit is significantly larger if we take the intertemporal impacts of public sector deficits into account. The future interest payments due for the loans are incorporated by rational economic agents as future income streams. As any private investor knows, the amount borrowed from a bank, e.g. € 100 000, leads to a repayment obligation which, depending on the interest rate to be paid for the loan, is significantly higher. If we consider government bonds with a time period of 10 years with annual interest payments of 5% p.a. the government will have to repay not only € 100 000 after ten years but nearly 50% more due to the accumulated interest payments necessary to service this loan. A fiscal deficit therefore has to be considered to lead to much more additional income for the private sector than just the actual amount borrowed. Over the time period for which the loan is contracted there is a multiplier associated with the fiscal expansion which is on average significantly higher than 1, if the respective amount borrowed is included.

It is therefore reasonable to assume that the impact of a deficit is the sum of these amounts over the entire period of time. As a first approximation if detailed information about the intertemporal obligation created by a fiscal deficit is lacking, we suggest taking the sum of the actual deficit plus the actual net interest payments of the public sector as an indicator for the current impact of a change in the deficit or surplus position of the public *vis-à-vis* the private sector. Figure 3 illustrates this relation for Germany during the time period from 1960 to 2003.

Again using the deficit-to-GDP ratio as a measure for standardising the different joint impacts of public deficits and net interest payments over time, we observe that for Germany the joint expansionary/contractionary impacts of the public sector deficits

including interest payments reached a maximum of 6.2% in 1975 and a minimum of -4% in 2000.

If we consider a major demand shock to have occurred when its impact measured according to the definition outlined above exceeds a threshold level of three per cent of GDP, we notice that such events have been very rare in the history of the German economy during the last few decades. Only in 1975 and 1976 did an expansionary impact occur exceeding this threshold level. In the year 2000 the contractionary impact was 4% of GDP.

What are the origins of such large contractionary impulses created by the public sector on the final demand of the German economy?

### UMTS Licence Auctions in Germany

In August 2000 the German Regulatory Authority initiated the UMTS licence auction to allocate four to six licences to mobile phone carriers to set up separate UMTS mobile phone networks and thus establish a highly competitive environment for broadband wireless communication in Germany. The outcome of this auction led to an unprecedentedly high amount of revenue for the German government of about €51bn. This huge amount of about 5% of the German GDP could be considered as a windfall profit to the German government for providing the licences to run a UMTS network for the next 20 years in Germany. The six telecom companies had to pay the licence fee shortly after the auction was completed in August 2000. The windfall nature of this immediately sparked an intense public debate as to how to use this huge amount sensibly without causing a major disruption or endangering the consolidation of public finances which had just been begun by the new government of Gerhard Schröder in 1998.

To avoid an inappropriate expansionary impact on the economy, the government decided after some debate to use the money to consolidate the public debt through servicing outstanding loans. The majority, about €35bn, was used to pay back a fund established for financing the cost of establishing the German monetary union of 1990. The savings on the interest payments of these now serviced loans were used to finance a “programme of investment in the future”, and another couple of billions were spent on a programme to finance investments in the infrastructure of the ailing German railway system, which had run into trouble because of underinvestment in the network infrastructure during previous years.

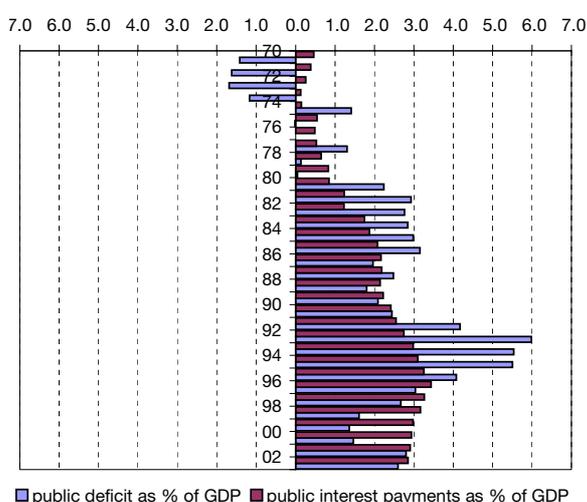
The interesting question raised by our analysis is, however, has this led to a sterilisation of the windfall revenue obtained by the German government from the UMTS licence auctions?

The answer from the perspective outlined above is no. The calculations obtained from the national accounts data might not give a perfectly correct picture of the timing of events because it was a more or less arbitrary decision to book this revenue completely in the year 2000 and not partially in the year 2001. The actual repayment of the loan taken out for German monetary union occurred in the year 2001 according to information from the German Federal Agency for Federal Debt Management. The main question which has to be answered is whether this operation to allocate the revenue obtained from the UMTS licence auctions has been neutral with regard to the final demand of the German economy.

The answer as far as these arguments hold is clearly no. The reduction of the public deficit plus the net interest savings occurring from the repayment of the current loans of the federal government led directly and indirectly to a negative fiscal impact with a magnitude of 4% of current GDP in the year 2000. This kind of negative fiscal shock is unprecedented in the Federal Republic of Germany's economic history since its very founding.

This raises the question of the degree to which this event might have set going the abrupt slowdown of the German economy in 2001 and 2002?

**Figure 4**  
**Public Deficits and Public Interest Payments**  
**in France**  
(as % of GDP)



It has become common practice to blame the rapid collapse of the German economy after its having reached a 3% GDP growth high in the year 2000 on the oil-price shock, the burst of the New Economy bubble and the overall slowdown of the world economy around this time. However, the exceptional decline is striking if one looks at the other European countries, in particular the member states of the European Monetary Union. While German GDP growth dropped to a mere 0.6% in 2001, other EU countries did much better. If we look at the growth slowdown in real GDP in the three other major EMU member countries of France, Italy and Spain, we observe that from 2000 to 2001 their growth rates declined from 3.4% to 2% (France), from 2.9% to 1.8% (Italy) and from 4.1% to 2.7% (Spain). Since all EMU member countries experienced the global oil-price shocks as well as the slowdown after the New Economy bust and 11 September 2001, the exceptional collapse of German growth from 3% to 0.6% in 2001 cannot be attributed simply to the global effects hurting all EMU economies during this year. None of these governments had such huge revenues from selling their licences as did the German government.

**Table 2**  
**UMTS Licensing Revenues for Governments**  
**in Europe**

	Licensing Procedure	Date of Licensing	Number of Licences	Revenue in Euro per Inhabitant
UK	Auction	April 2000	5	648
Germany	Auction	August 2000	6	610
Italy	Auction	October 2000	5	212
Netherlands	Auction	July 2000	5	171
France	Beauty Contest <sup>1</sup>	February 2001	2	169
Austria	Auction	November 2000	6	103
Poland	Beauty Contest	December 2000	3	50.5
Belgium	Auction	March 2001	3	44.1
Portugal	Procurement	December 2000	4	39.9
Switzerland	Auction	December 2000	4	18.9
Spain	Beauty Contest	March 2000	4	13.2
Norway	Beauty Contest	December 2000	4	10.9
Sweden	Beauty Contest	December 2000	4	0.0049
Finland	Beauty Contest	March 1999	4	0
Average			4	149.3

<sup>1</sup> The term *beauty contest* is used for a licensing procedure where potential applicants are chosen by a government agency because of their perceived ability to run the service most efficiently. Licence fees are usually negligibly low.

Sources: UMTS-Forum, HVB Trend Research, own calculations.

### French Experiences Concerning Public Demand Shocks

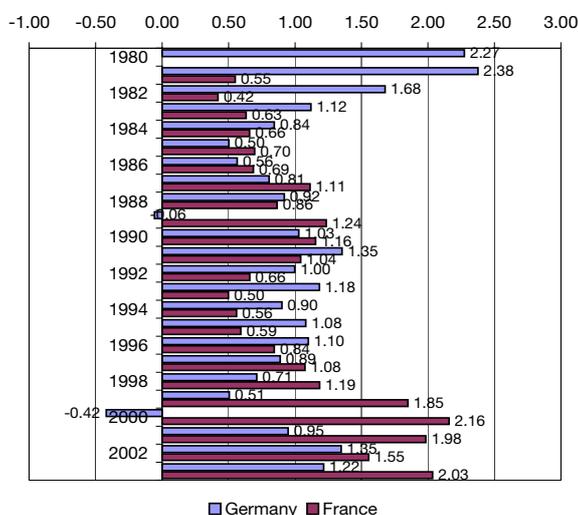
A comparison with the French government position, which was not confronted with the UMTS licence auctions, clearly shows this. Taking the same criteria, i.e. public deficit and net interest payments, as for Germany for the sake of comparison, the following results are obtained (see Figure 4).

There are highly significant differences between Germany and France in the magnitude of public deficits in the 1990s. During the early 1990s, France implemented a Keynesian deficit spending programme under Jospin's government that exceeded even the German public deficit levels of the Helmut Schmidt era when, after the first oil-price shock, Germany tried to be the locomotive of the world economy. France only succeeded in keeping the debt burden under control in the 1990s because it managed to keep the financing costs of these deficits extremely low. France ran a huge public deficit in the first half of the 1990s of up to 6% of GDP but did not finance it by issuing government bonds. This did not lead to a dramatic increase in net interest payments similar to those of Germany in the heydays of deficit spending, i.e. the era of the two oil-price shocks during the Helmut Schmidt administration. This was due to a privatisation programme which allowed the government to avoid issuing as many interest-bearing government bonds.

Even although deficit spending led to an increase in net interest payments of up to 3.4% of GDP (in 1996), the huge deficits did not induce rising financing costs similar to those in Germany. After this peak, interest payments were reduced – more rapidly than in Germany, but also more smoothly. One reason for this development in France could be that the French government issued government bonds below the normal market interest rates.

This functioned like a built-in stabiliser, maintaining a strong, positive fiscal impulse for the last two decades. The potential crowding-out effects of French deficit spending did not seem to cause similar dramatic increases in the financing costs compared to Germany. How was this accomplished? One answer could be that it used its political influence to sell its bonds to institutions such as government controlled pension funds.. Similar phenomena of extremely low interest issuing of government bonds have also been seen in Japan. In an accounting framework, this results in the problems being transferred to other in-

**Figure 5**  
Crowding Out Elasticity in Germany and in France  
1980-2003



stitutions such as public banks, or publicly controlled pension organisations.

One way of measuring the interest rate differential between the French and German costs of financing a one per cent increase in government deficit could be to compare the respective elasticities (crowding-out elasticities) for Germany and France, where

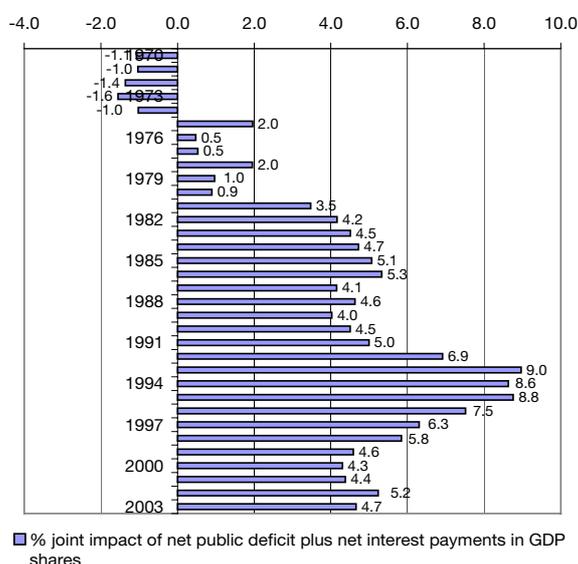
$$\epsilon_t^{Int,Def} = \frac{d \ln Int_t^{pub}}{d \ln Def_t^{pub}}$$

In Figure 5 the respective average elasticities for France and Germany have been calculated for the years 1980 to 2003.

From 1992 to 1995 France had a net interest payment elasticity of about 0.6. This was significantly lower than during the period 1987 to 1991, and was a return to a level that had already been attained in the early 1980s. Since then, the financing cost of interest payments for public deficits had increased dramatically to about 2.0. The cheap financing conditions for public deficits came to an end during the late 1990s. One might speculate as to the causes in greater detail, but just looking at the available official data, we see that the current level of public debt *vis-à-vis* the private sector will not be sustainable in the near future.

The expansionary fiscal policy is confirmed again if we look at the joint fiscal impact of public deficits and net interest payments in France (see Figure 6). While in Germany the restrictive fiscal policy began in 1982 and has lasted until the present day,

**Figure 6**  
**Expansionary or Contractionary Fiscal Impulses**  
**in France 1970-2003**



in France the state maintained a very high level of public deficit spending of at least 4% of GDP which in the first half of the 1990s reached more than twice that level.

The French government could learn an important lesson by looking at the track record of the early Helmut Kohl administration. Strict fiscal discipline was required to bring the high elasticity of about 2 for net interest payments induced by public deficits down to the low level of 0.5 in 1985. Even the conservative government could not sustain that kind of austerity policy, and elasticity rose again to about 1 in the 1990s.

Another striking difference between France and Germany is that in France there was no negative demand shock due to public deficit reduction in 2000 since France did not handle the licensing in the same way as Germany. The revenues there were much smaller and were not immediately used to reduce the public deficit.

Only with the huge repayment of government debt in 2000 originating from the windfall revenue from the UMTS licence auctions has crowding-out elasticity in Germany become negative, i.e. a surplus instead of a deficit leads to a moderate increase in net interest payment costs.

This may have occurred because the foregone future returns on government assets, in particular

for the assets issued by the German government to finance German monetary union, caused the holders to charge a fee which raised the net interest payments during that year because of the premature repayment.

As a whole Germany, however, currently faces much lower financing costs for its public debt than the French government does now or will in the near future. This is the good news, but the negative demand shock caused by the abrupt reduction of the public fiscal impulses has – at least temporarily – worsened the slowdown in economic growth which could possibly have been avoided if the repayment of public debt had taken place in a more gradual fashion.

All in all, the different ways of dealing with UMTS frequency licensing and the financing of public deficits in both countries shows that France did not face the same negative demand shocks from the public sector as Germany did in 2000/2001. This shows that the UMTS auction follies in Germany have had severe and unwarranted macroeconomic impacts.

### Compensatory Effects

It might be argued that the idea of incorporating the net interest payments into our consideration of demand shock is inappropriate. Simply due to double-entry bookkeeping, the repayment of public debt leads to revenues for those institutions that receive the repayment. Therefore money is not lost, it just ends up in other pockets.

It is true that the institutions receiving the repayments of previous loans can now use these to create their own demand or to lend it to new creditors. However, it has to be kept in mind that this is not a frictionless undertaking. Furthermore, it is very likely that the major creditors of the fund set up to finance the costs of the German monetary union were commercial banks or pension funds. For them, the situation changed unfavourably as well, even if they did lend the money to the mobile phone carriers again so that it did not change the credit/debit position at all, but just changed the creditor. In this case, not the government but the mobile phone carrier would be the creditor. Would this lead to a neutral position of the whole fiscal transaction with regard to the real economy?

<sup>7</sup> See Deutsche Bundesbank: Das Eigenkapital der Kreditinstitute aus bankinterner und regulatorischer Sicht, in: Monthly Report, January 2002, pp. 41-59.

### Credit Channel and Risk Portfolio Effects on Final Demand

This is unlikely because the risk structure of the banks' loans has changed dramatically. Loan contracts are not based on actual or past accounting positions but on expectations about the future. The risk of a loan contract with a time-inconsistent, unfavourable revaluation in the future is decisive. With regard to the commercial banking sector or a single bank, what matters is also not the individual customer's risk but the riskiness of the whole loan portfolio of the bank. This exposure or vulnerability is what is regulated by the financial supervisory bodies.<sup>7</sup>

Normally the assets issued by the state are considered to be a much lower risk than those of private creditors. If one looks at the high indebtedness of mobile phone carriers, which have already borrowed heavily from the commercial banks, the currently €67bn of outstanding debt after the UMTS licence auction for Deutsche Telekom (DTAG) provides a good example of the creditworthiness of the top carrier in the mobile phone business in Germany. As none of the companies acquiring a UMTS licence in Germany had the cash to pay for the licence, they just more or less passed on the bill to their commercial banks. Taking the commercial bank sector as a whole and ignoring the individual changes in the creditor/debtor structure of the individual banks, this implies that the commercial bank sector as a whole dramatically changed its value-at-risk position if it received a repayment from the government debt, a relatively safe asset, and in-

stead took on the high risk assets of the mobile phone carriers as a substitute.

The deteriorating valuation of these assets by Moody's<sup>8</sup> and Standard and Poor's already approached that of junk bonds, and this will make it necessary to gradually correct the valuation of these assets. The American telecom carrier Worldcom illustrates that the risk of company failure due to insolvency has increased dramatically since the bursting of the New Economy bubble.

Taking into account that a bank has to meet the requirements of the Basle I Accord<sup>9</sup> and even prepare to meet the new more restrictive capital requirements of the Basle II Accord<sup>10</sup> in the near future,<sup>11</sup> the changing risk structure and necessary write-offs on the assets from the UMTS credits given to the mobile phone carriers could easily induce the necessity of credit-rationing on the part of the banks. The significant loss of the low-risk government bonds and the crediting of the high-risk UMTS licences will make the commercial bank sector as a whole more risk-averse through the induced risk-portfolio effect for the remaining credit demand.<sup>12</sup> Without reducing the amount of risk in their loans portfolio, the entire sector or the individual banks as "marginal" banks (with regard to exposure and vulnerability to insolvency of major creditors) will force the commercial bank sector to lower the amount of credit issued to other creditors than the mobile phone carriers.

One might even speculate that the process currently undergone by small and medium sized companies, namely an increase in credit-rationing and more unfavourable conditions when seeking loans, might be an indirect result of a significant change in the value-at-risk position of the commercial banking sector. This

<sup>8</sup> While German government bonds stayed at Aaa (see Moody's Rating List of September 6, 2002) the ratings of Deutsche Telekom e.g. fell from Aa2 on September 22, 1997 to A3 on June 13, 2001 to Baa1 on March 28, 2002 for long-term debts. On November 18, 2002 Moody's again announced a review of Deutsche Telekom and Voicestream for another possible downgrade. Just a few days ago on January 10, 2003 Moody's downgraded Deutsche Telekom to Baa 1, the last investment grade above the junk bond grades. A rating-trigger in existing credit contracts already induces an increase of interest rates by 50 basis points if Standard and Poor's jointly downgrade a company to the same lower level. With a further downgrading to Ba1 the credit ratings of Deutsche Telekom would enter the range of junk bonds. Many other mobile phone companies or their respective shareholders face similar problems, such as Mobilcom and France Telekom. While an Aaa rated company had, for example, to pay a bond yield of 6.11% on September 19, 2002, a Baa rated company had to offer a bond rate of 7.34%, i.e. an extra 1.23 percentage points higher. At junk bond level the interest rate would nearly double to about 13.7%. "The severity of the telecommunications sector collapse is fully appreciated by looking at the default statistics for the sector. \$26.1 billion of the 42.6 billion of defaults in the second quarter (61%) were by issuers in the telecommunications industry. On the issuer count basis, 19 of 42 defaults (45%) were by telecommunication issuers. Through the first half of 2002, 55% of defaults by volume and 37% as a percentage of issuers have been telecommunication firms." See Moody's: Corporate Defaults Refuse to Yield in 2002, Moody's Investor Service, Global Credit Research, New York, July 2002.

<sup>9</sup> According to Basle I rules a commercial bank should keep 8% of its outstanding credit volume backed up by its own capital as a liquidity reserve against debt failures. Under Basle II the commercial banks should use a more differentiated backup scheme of own capital reserves according to different risk classes. High risk credits should use higher own capital requirement ratios than those of low risks. Basle II will be implemented by 2005. However, most banks are starting to build value at risk management systems now to meet the requirements of Basle II in the future. That the credit financing conditions for about one third of SMEs (small and medium sized enterprises) have become worse in 2001 has been documented by a survey by the Kreditanstalt für Wiederaufbau: Unternehmensfinanzierung im Umbruch, Die Finanzierungsperspektiven deutscher Unternehmen im Zeichen von Finanzmarkt Wandel und Basel II, Auswertung der Unternehmensbefragung 2001, Frankfurt am Main, 2001.

<sup>10</sup> BIS: International Convergence of Capital Measurement and Capital Standards (Basle Capital Accord, updates to April 1997), Bank for International Settlements, Basle 1997.

<sup>11</sup> See e.g. J. von Hagen, B. Hayo, I. Fender: Monetary Theory, Monetary Policy, and Financial Markets, in: K. F. Zimmermann (ed.): Frontiers in Economics, Berlin – Heidelberg – New York 2002, Springer Verlag, pp. 1-36.

of course cannot be attributed entirely to the recycling of the UMTS licence revenues in Germany, but is probably due to some significant degree to the currently weakened position of the commercial banking sector in Europe, and Germany in particular, which has been caused by other factors in global financial markets.

The negative impact of repaying such a huge amount of public debt via the UMTS licence revenue in such a short time therefore should not be directly associated with a reduction in final demand through the state sector because of the lower net interest payment. However, it may be expected to cause changes indirectly in the credit market conditions which affect the private sector, companies and households through a specific form of credit-rationing because their particular risks are now much less acceptable to commercial banks than before.

The repayment of government debt works as a negative externality to households seeking to finance a house or SMEs seeking to finance an investment because banks have to maintain a certain level of risk exposure due to credit market regulations. Since the big players of the commercial banking sector in Germany have been very involved in high-risk ventures like the UMTS investment or mega-mergers like the DTAG/Voicestream deal, the remaining borrowers cannot obtain loans from them under the same condi-

tions as previously, because otherwise the banks' risk exposure would increase dramatically.

The negative impacts on the real economy encouraging a slackening of private demand are therefore attributable to a significant degree to the negative portfolio-effects of a changing risk structure leading to credit-rationing.<sup>13</sup>

Another factor inducing credit-rationing by commercial banks is the change in the opportunities to discount bonds from the loan portfolio of a commercial bank at the central bank if additional liquidity is needed by the commercial bank. While first rate commercial papers are discountable, junk bonds are not. If a bank holds huge amounts of junk bonds, e.g. bonds of telecommunication carriers, in its loan portfolio, its capacity to obtain liquidity through the discount channel of the central bank is restricted.

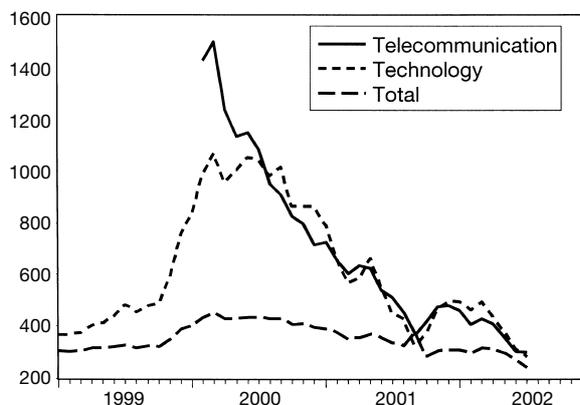
An asymmetric distribution of credit-rationing at the national level results from the fact that most mobile phone carriers have a number of home banks to which they turn when they need banking services.<sup>14</sup> Since asymmetric information between national banks and foreign banks concerning the creditworthiness of particular customers creates significant barriers to entry, the integration of the European financial markets has not advanced to the point that a national bias with regard to who lends to whom no longer exists.<sup>15</sup> This might explain why Germany was hit more severely

<sup>12</sup> Cf. e.g. G. Heismann: Angst vor Kreditverknappung geht um, Großbanken schrauben Firmenausleihungen zurück, Ursache sind vor allem sinkende Investitionen, in: *Financial Times Deutschland*, 22 August 2002. H. Ehren, M. Prellberg, C. Wanner: In der Klemme, in: *Financial Times Deutschland*, 21 August 2002. It would of course be necessary to study the process of the potential credit rationing due to the UMTS revenue-induced impacts on the financial sector in greater detail to make sure how much this has contributed to the current situation. A recent study by Morgan Stanley suggests some modest form of credit crunch for Germany. There is no doubt that there has been a significant decline in the credit volume during the last 18 months, i.e. from the beginning of 2001 to mid-2002, but the difficulty is to identify the different origins. Did the credit demand shrink first and the supply simply follow or vice versa? In particular the big banks in Germany, Deutsche Bank, Dresdner Bank/Allianz, HypoVereinsbank and Commerzbank, which have been involved in the financing of the UMTS licences and other merger activities in the telecommunications industry, have reduced their credit volume by 9.3% between March 2001 and March 2002, i.e., by €140bn. These amounts are significantly greater than the entire licence fees of €51bn, which strongly suggests that other factors have played a role. The problem is how to disentangle the different sources properly. The commercial banks also involved in the UMTS licence financing were downgraded by Moody's on September 20, 2002: Commerzbank to (A1/B-), Deutsche Bank from (Aa3/B) and HypoVereinsbank (A1/B-) with a negative outlook from stable outlook before. The increased revaluation of credit risks reached record heights in 2002. Already in January 2002 a corporate bond default height of about 10% was reached. This was, however, lower than the default heights of 12% in July 1991 and 16% in December 1933, but it was the third highest default rate ever observed during the last 80 years worldwide. The defaults of Worldcom and other big telecommunication companies, or the financial rescue operations which are underway like the one for France Telecom were not incorporated into this analysis by Moody's.

<sup>13</sup> Cf. e.g. D. F. Spulber: *Market Microstructure – Intermediaries and the Theory of the Firm*, New York 1990, Cambridge University Press. See in particular chapter 8, Adverse Selection in Financial Markets, pp. 203-225. Intermediaries in financial markets tend to pool risks between different risk classes and in this way implicitly collude with their big customers with risky credits to the disadvantage of the small customers. By pooling high and low risks banks create a negative externality for the low-risk customers via a credit-rationing constraint induced by pooling different risk classes. For other literature related to this issue see J.-J. Laffont, E. S. Maskin: The Efficient Market Hypothesis and Insider Trading in the Stock Market, in: *Journal of Political Economy*, No. 98, 1990, pp. 70-93; A. S. Kyle: Continuous Auctions and Insider Trading, in: *Econometrica*, No. 53, 1985, pp. 1315-1335; R. Kihlstrom, A. Postlewait: Equilibrium in a Securities Market with a Dominant Trader Possessing Inside Information, Manuscript, University of Pennsylvania, 1983; J. P. Gould, R. E. Verrecchia: The Information Content of Specialist Pricing, in: *Journal of Political Economy*, No. 93, 1985, pp. 66-83; M. S. Grinblatt, S. A. Ross: Market Power in a Securities Market with Endogenous Information, in: *Quarterly Journal of Economics*, No. 100, 1985, pp. 1143-1167; M. Cripps: Specialist Pricing in Asset Markets with Asymmetric Information, Manuscript, London School of Economics, 1986.

<sup>14</sup> The financing of huge credit volumes is also restricted to big banks or bank consortia because they are the only ones who have sufficient own capital requirements to give billions of euro of loans to a large borrower (economies of scale in credit business). Only ten big banks in Germany have a revenue larger than €100bn. These are the banks able and willing to finance the huge credit volumes needed in the telecommunications industry to finance e.g. €8.3bn for a single UMTS licence. Usually such loans even need international big banks consortia to split the amount in order to avoid the effect of an insufficiently diversified credit portfolio.

**Figure 7**  
**Dow Jones Euro STOXX indices**  
 (1994=100)



than other countries of the European Union. This will not significantly change in the near future because asymmetric information depending on costly information acquisition cannot be easily overcome even in an information society.<sup>16</sup>

#### The Negative Wealth Effect of the UMTS Licence Payments

Besides the negative effect on the credit markets, another factor has led to significant negative impacts on the economy. In addition to the bursting of the dotcom-bubble caused by the irrational exuberance of investors in the capital markets about the prospective returns from the commercial application of the internet via e-commerce,<sup>17</sup> the vision of the fusion of mobile phones and a wireless broadband internet with the global implementation of the UMTS standard contributed significantly to overbidding for the licences in Germany and elsewhere, in particular in the UK.

It is well-known from auction theory and has been confirmed by experimental economics<sup>18</sup> in numerous types of auction designs that a winner's curse situation occurs in particular under circumstances where a public value auction takes place in which the asymmetric and imperfect information of all bidders set limits to rational bidding behaviour.<sup>19</sup> Because of

<sup>15</sup> See e.g. the empirical evidence for the still persistent Feldstein-Horioka effect. M. Feldstein, C. Horioka: Domestic Saving and International Capital Flows, in: *The Economic Journal*, No. 90, 1980, pp. 314-329; H. Siebert, H. Klodt: Towards Global Competition: Catalysis and Constraints, in: *OECD: The Future of the Global Economy, Towards a Long Boom?*, Paris 1999, pp. 115-138. The effect predicts a positive relationship between national saving rates and national investments, which should not be present if international capital markets were efficient.

<sup>16</sup> See the new approach by behavioural macroeconomics outlined by G. A. Akerlof: *Behavioral Macroeconomics and Macroeconomic Behavior*, in: *American Economic Review*, No. 92, 2002, pp. 411-433.

the asymmetric situation between incumbent carriers and new entrants, this leads as well to biased bidding behaviour where incumbents tend to coordinate bidding decisions strategically in accordance with a Bayesian-Nash equilibrium.<sup>20</sup> There is now an emerging consensus that the German UMTS licence auctions in 2000 are a good case study for such a winner's curse<sup>21</sup> outcome.

After the investors in the stock markets realised that the high-flying promises of the industry carriers and mobile phone investment goods suppliers like Nokia or Ericsson were unable to deliver what was advertised, namely attractive services for this technology based on a high bandwidth and inducing a correspondingly high willingness to pay for such services, their stock market valuation tumbled even more dramatically than in other areas of high-tech industry. Figure 7 gives an aggregate picture of the fact that the telecom bubble even exceeded the asset bubble of the other high-tech industries.

One immediate consequence of this revaluation of the telecommunication industry's assets was three-fold.

- It worked as a liquidity constraint because a refinancing via the stock market has become very unattractive or even impossible (e.g. the German DTAG had to postpone the issuing of the T-Mobile stocks because there would be insufficient demand at the valuation considered to be reasonable by the DTAG). Therefore the equity markets have dried up the potential for these companies to obtain liquidity to refinance their debt, i.e. short-term loans taken from banks to finance the UMTS licence fees.
- Low valuations of the assets of the telecommunication carriers led to increasing interest rates due to the revaluation of the credit risks carried out by rat-

<sup>17</sup> See e.g. R. J. Shiller: *Irrational Exuberance*, Broadway Books, New York 2000; A. B. Perkins, M. C. Perkins: *The Internet Bubble, Inside the Overvalued World of High-Tech Stocks – and what you need to avoid the coming shakeout*, HarperBusiness, New York 1999.

<sup>18</sup> See e.g. J. H. Kagel: *Auctions: A Survey of Experimental Research*, in: J. H. Kagel, A. E. Roth (eds.): *The Handbook of Experimental Economics*, Princeton – New Jersey 1995, Princeton University Press, chapter 7, pp. 501-586.

<sup>19</sup> See e.g. M. Spence: *Signaling in Retrospect and the Information Structure of Markets*, in: *American Economic Review*, No. 92, 2002, pp. 434-459.

<sup>20</sup> See e.g. K. Hendricks, R. H. Porter: *An Empirical Study of an Auction with Asymmetric Information*, in: *American Economic Review*, No. 78, December 1988, pp. 865-883.

<sup>21</sup> In auction theory a winner's curse is a situation where overbidding, i.e. an excess valuation of the auctioned item, emerges (see e.g. R. H. Thaler: *The Winner's Curse, Paradoxes and Anomalies of Economic Life*, Princeton, New Jersey 1992, Princeton University Press, chapter 5).

ing agencies like Moody's or Standard and Poor's. Many of the companies obtained (near to) junk bond status.

- Finally the downgrading of the future perspectives of the returns to the future UMTS mobile phone network led to a decline in investments and a dramatic labour shake-out in the telecommunications industry as well as in the industry that produces telecommunication-related investment goods and services. The near bankruptcy of Mobilcom in September is a good example. The shutdown of the Quam activities in Germany is another. Downstream companies in the advertising industry, for example, which had received significant numbers of contracts from the telecommunications industry, caused additional negative demand impacts on the real economy. The whole value chain linked with the mobile phone carrier business had to deal with a dramatic negative demand shock.

In addition, the collapse of the stock market prices of the telecommunications industry even induced a negative wealth effect on the shareholders of these assets. This wealth effect, even if delayed, will have negative ramifications for the final demand of these asset-holders. These negative indirect effects, which do not occur instantaneously but sporadically over time, will take some time to diminish. Therefore the rough estimate of the negative macroeconomic impact of the UMTS licence revenues might even be a conservative one with regard to the long-term impacts.

### Conclusions

This paper has attempted to shed some light on the question of what kind of impact unwarranted final demand shocks via public deficit reductions have had in Germany in the years 2000/2001. The author believes that when we look at the UMTS licence auction and the unexpected high windfall revenues for the German federal government, its attempt to sterilise the effect of repayment by simply reducing public debt over a short period of about 6 to 8 months (autumn 2000 to spring 2001) proves not to have worked. A more gradual approach might have worked better because it would have given time to the private sector to adjust to the changing conditions in the financial markets.<sup>22</sup>

<sup>22</sup> A more appropriate methodology would be that outlined by A. Nagurney, S. Siokos: *Financial Networks – Statics and Dynamics*, Berlin-Heidelberg 1997, Springer Verlag. Such a detailed analysis based on a flow of funds analysis is, however, beyond the scope of this paper.

The significance of the effect from a macroeconomic perspective becomes obvious if it is considered that the overall negative demand shock has been about 4% of the German GDP, which according to our historical experience constitutes an unprecedented negative Keynesian demand shock.

Since the UMTS technology seems unable to keep its initial promises, the transfer of public debt to private company debt of the mobile phone carriers was not neutral with regard to the value-at-risk structure of the commercial banking sector. To conform with the regulation of the financial market set-up under the Basle Agreements, the banking sector could, via a negative portfolio effect due to an increase in the risk structure, cause an indirect form of credit-rationing for other private sector agents, in particular SMEs and households. Even if banks do not explicitly raise lending rates for these traditional customers they will negatively influence the economy through credit-rationing of this segment of the credit market (reducing the willingness to lend). The already high risk exposure inherited from the past UMTS follies and mega-mergers of the big companies makes it impossible for them to maintain the previous risk level of the other creditors.

So the lesson from our analysis is twofold. Firstly, if the government wants to reduce its public debt it has to consider the impacts on the credit market very carefully. Because the government is too big to ignore its impact on the credit market as a whole, it should recycle large windfall revenues more slowly than it did in the case of the UMTS.

Secondly, it would have been even more rational to use payment scheduling where the mobile phone carriers would have been able to pay for the licences over the time period for which they had obtained the licence (pay-as-you-use). The author, together with S. Bach, has made a suggestion as to how to collect such royalties for the UMTS licences instead of using the licence-auctioning approach combined with instant payments.<sup>23</sup> This kind of cautious behaviour could limit the negative impacts on the final demand of an economy much better than a rather naïve fast-track policy which ignores the consequences of its behaviour on the rest of the economy.

<sup>23</sup> Cf. S. Bach, G. Erber: *Die UMTS-Lizenzvergabe in Deutschland - Auktionsverfahren unbefriedigend*, in: *Wochenbericht des DIW*, No. 30/2000.