

Part 2. The Interactions between Private Savings and Government Budget Deficit

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2.1. Introduction

The goal of this paper is to assess theoretically as well as empirically the influence of government budget deficit of private saving rate, with special emphasis on Poland and other transition economies. It is organised as follows: Section II discusses the theoretical aspects of the influence of fiscal policies on private savings, Section III outlines empirical results from the literature and Section IV develops implications for transition economies. Section V concludes.

The saving rate is one of the most important variables in economy. Saving rates and economic growth are strongly positively correlated. Although what induces what still causes hot debates, most economist agree, that there exists a virtuous cycle, in which higher saving causes faster growth and that causes even higher saving.

Savings are undoubtedly a necessary condition for capital accumulation and to extend that domestic saving and investment rates are correlated, higher domestic saving rates will imply higher investment. However, in an open economy, where capital is highly mobile, domestic saving and investment may be totally uncorrelated. If that is the case, the increase in the former may not be transmitted into higher investment.

If however, the degree of capital mobility is limited, domestic saving will be an important factor generating higher domestic investment.

Higher investment may imply higher growth, but again, economists do not fully agree on the implications of the increased investment on growth.

Neo-classical theories (Solow growth model) suggest that increase in the level of saving will generate higher growth only in the short run, during the transition to a new steady state, with higher per capita GDP. The new growth theories predict that higher saving rates and the related increase in capital accumulation can result in a permanent increase in growth rate.

Therefore the level of domestic savings may or may not have an impact on growth, but it probably does have an impact on one of the most important economic variable: the level of GDP per capita.

Fiscal policy is among the factors that exert influence on the level of domestic savings. Understanding the mechanisms of this impact and being able to predict the reaction of private and hence the national saving rate to changes in fiscal policy would give a powerful

tool for increasing and encouraging domestic savings. This is especially relevant today, when saving rates have declined and are expected to decline further, as the population ages, what raises questions about issue of the saving shortfall.

2.2. Theoretical Considerations

Budget actions influence the level of national savings. In a purely accounting sense, fiscal policy alters to the level of national saving by changing the amount of government (dis)saving. Its direct impact on national savings is however much more complex, as the level of budget deficit and public debt, as well as the composition of government expenditures and revenues, may cause a shift in the level of private savings [1]. Therefore, the effect of fiscal policy on the level of national saving cannot be determined only by looking at the change in government savings; one has to take into account also the induced change in private savings. However, despite a voluminous research on this subject, it is not clear either from theoretical as well as empirical ground, how exactly private saving rate reacts to public deficit and the method of its financing.

The Ricardian-Barro Equivalence Theorem and the Neo-classical view give the theoretical predictions concerning the direct impact of budget actions on private savings.

The Ricardian-Barro Equivalence Theorem holds, that any tax-induced change in government budget deficit/surplus will be exactly offset by a change in private savings and level of national savings will be unchanged. The substitution of current taxes by budget deficit has no impact on private consumption decisions, interest rate and national savings [Barro, 1989].

The Neo-classical view predicts that a permanent deficit will not increase private savings because it will induce households to consume more. Therefore national saving ratio will fall. A temporary budget deficit may indeed not have an adverse effect on national savings, but through a different channel, than predicted by Ricardian Equivalence Theorem [Bernheim, 1989].

These opposite predictions stem mainly from the fact, that both theories have different views on the issue, whether the issuance of government debt will be perceived by households as an increase in their wealth or not. The Ricardian approach assumes, that government debt is not treated as net wealth, while the Neo-classical approach holds that

[1] Fiscal policies influence private savings also indirectly, through their impact on the real interest and exchange rates, and therefore on the income and substitution effect. The budget deficit can also change the private saving ratio through its effect on inflation, that if big enough, might discourage people from money savings and cause a flight into durable goods.

the opposite – that government debt will be viewed as increasing the households' net wealth.

To clarify this issue, let's consider a tax-cut induced rise in budget deficit covered by issuing additional debt. The Ricardian-Barro Equivalence Theorem holds that because people are fully rational and farsighted, they will recognise that the government will have to repay today's debt by raising taxes in the future. Therefore today's tax decrease implies future tax rise equal to the present discounted value of the issued debt. Because households try to smooth the consumption pattern, they will save the current tax rebate to cover the future expected tax increase. Debt is recognised as merely a postponing of taxes and does not alter individual's net wealth and lifetime budget constraint in any way. The maximisation problem is not changed. The only thing that changes is individuals' saving behaviour: because disposable income is temporarily increased by the postponing of taxes, but consumption is unchanged, agents save the additional income when government issues debt, in order for them to pay the future tax liabilities. The time pattern of financing the deficit (the debt/tax mix) is irrelevant.

A crucial assumption needed for the Ricardian Equivalence Theorem to hold, is that households behave as if they lived forever and thus it does not matter when taxes will be risen to pay for the debt: in the near future or during the lives of next generations. This problem was solved by Robert Barro [Barro, 1974], who showed, that this assumption will be satisfied, if one takes into account, that people usually love their children. It is then plausible, that the utility of the next generations has the same value for the individuals as their own utility: individuals treat children as extensions of themselves. If this is true, then people will save the additional income from tax decrease, even if they expect, that the taxes will not be increased during their lifetime, but during the lifetime of their children.

On the other hand, the Neo-classical approach holds that the time pattern of financing the deficit does matter. This approach assumes that economy consists of overlapping generations that plan consumption over own life cycle, with little or no altruistic behaviour. Individuals recognise that a tax-cut-induced rise in budget deficit must be eventually paid off by an increase in future taxes. If however the burden of the debt is expected to be borne by future generations, then the expected future tax increase will not induce any offset in private saving. Contrary, consumption will rise and private saving may fall. Because individuals do not expect pay the future higher taxes themselves, they perceive a tax-cut induced budget deficit and government debt as increasing their wealth.

In the short run, if the deficit is temporary and some resources are unemployed, then the increased consumption will raise national income. Since both consumption and income is stimulated, the effect of a temporary deficit on savings need not be perverse. However, if large numbers of consumers are liquidity constrained, then even a temporary

deficit will depress saving rate, as for such consumers the propensity to consume out of additional resources is one.

If however the change in deficit is permanent and economic resources are fully employed, that the increased consumption necessary implies depressed private savings.

The main underlying cause of the different predictions of the two views is the assumption concerning the intergenerational altruism and the strength of bequest motive, while the underlying permanent income/life-cycle hypothesis, widely accepted for the analysis of household choice, is incorporated by both approaches [Seater, 1993]. The extreme Neo-classical model holds that individuals have no bequest motive. Individuals care only about their own consumption and therefore will leave no bequest. Therefore if the tax increase needed to repay the debt is expected to be levied on the future generations, current generations will not increase their savings for the purpose of paying future taxes.

The extreme form of the Ricardian-Barro Equivalence Theorem holds, that the bequest motive is so strong, that individuals act as if they lived forever. In this case, a tax cut would induce increased savings in order to smooth down consumption over time, irrelevant of whether it is their own or their heirs. The increased savings are passed as a bequest to future generations, in amount sufficient to pay for the increased taxes.

The Ricardian Equivalence, although intellectually interesting, requires the following assumptions, apart from the already discussed precondition of the existence of intergenerational altruism and bequest motives [Seater, 1993]:

- there are no liquidity constraints,
- there is no uncertainty,
- the individuals and government have the same borrowing rates,
- there is no distribution effects,
- no differential between the interest rate and the GDP growth rate exist,
- consumers are rational,
- there is no distortive taxation.

Those assumptions are strong and it does not seem possible that they are likely to hold in real world. The main arguments raised against their validity are the following. First of all, although without doubt most parents care about their children, it is impossible to assume that the bequest motive will be strong enough to balance government dissavings with private saving increase. If altruism had been sufficiently important to induce Ricardian Equivalence, than it would have also caused some rather implausible results. Because family linkages form complex networks, then strong altruism would link all families together and then all redistributive policies would be irrelevant, including tax rates. Since this is not observed, the fundamental assumption must be wrong [Bernheim, 1989].

Second, many households, especially in developing and transition economies are liquidity constrained, and therefore would be pleased to have their current taxes reduced and to increase consumption, even if that means paying higher taxes and consuming less in the future.

Third, distortionary taxation and uncertainty over future tax burdens and income streams imply that fiscal policy may not be neutral.

Another argument raised against Ricardian Equivalence Theorem is that not all people are rational and forward looking. Myopia, rules of thumb, habit may be important at least for part of the population and therefore these persons might not include the connection between current debt and future taxes into their budget constraint.

The Neo-classical prediction concerning the effects of deficit does not require such strong assumptions. Although its strict version also assumes fully rational consumers, who solve the intertemporal optimising problem and no liquidity constrains, violation of those assumptions does not significantly alter the results. It even strengthens the hypothesis concerning the non-neutrality of debt, as the introduction of liquidity constraints implies, that temporary deficits will have immediate negative effect on spending [Bernheim, 1989].

For those and other reasons, most economist dismiss the strict Ricardian Equivalence, but many believe, that the true effect of the government deficit on the private savings lies somewhere between the predictions of both schools. This implies that a fall in government savings would be partly offset by an increase in private savings and the strength of the reaction is an empirical question.

Apart from the relevance of the tax/debt mix on the patter of private savings, another interesting aspect of the government policies is the influence of specific public spending policies on private savings. In particular, in the Ricardian-Barro framework, it is argued, that government expenditures in the forms of investment as opposed to consumption/transfers should have different effects on private saving [Hutchinson, 1992]. Private saving should respond much less to a deficit financed government investment, that to a rise in consumption or transfers. The reason is, that investment is expected to earn profit and to pay for itself, therefore corresponding tax increase should be reduced.

There also might exist a link between private savings and a tax-financed government consumption (i.e. the government budget is held constant). If the public does not value government consumption, i.e. it is not a substitute for private consumption, savings will probably decline. If however government consumption is a close substitute for private consumption, then private savings may not decline.

When surveying the impact of public finances on private savings, one cannot forget about the impact of the public social security system [Hutchinson, 1992]. A rise in total budget surplus associated with a rise in current social security balance may have quite

different effects than a rise in other budget components. It is argued that if social security is viewed as a fully funded system, than a rise in the social security surplus may in a large part substitute for private saving targeted for retirement. On the other hand, if the system is viewed as a PAYG system, than a rise in the social security surplus may have only little effect on the private saving, because the present contributions are not directly linked to future retirement benefits.

2.3. Empirical Results from the Literature

Existing research on the correctness of the Ricardian versus the classical view is largely inconclusive. Some researchers dismiss the Ricardian Theorem, while the others provide a support to a weak Ricardian Equivalence (i.e. the deficit-induced change in private saving is less than one). The Ricardian -supportive research also indicates, that the extend with which private savings offsets the fall in government savings does vary from country to country and through time, and depends on institutional characteristics of the economy.

The existing evidence arises from the tests on the influence of the level and composition of public deficit on consumption, interest rate and private saving rate.

Below I summarise the more interesting work, which I have come across.

Kormendi (1983) surveys the effects of government policy on private consumption. He estimates a private consumption function, which main explanatory variables are: net national product, government receipts (taxes), net interest payments made by government, total government transfers payments, government purchases of goods and services, market value of the stock of government debt, net private wealth and corporate retained earnings [2]. Such specification allows him to test what he calls a standard approach and consolidated approach. The standard approach assumes that the private consumption depends on personal disposable income (defined as national product less taxes, retained earnings plus transfers and government interest payments) and wealth plus government debt. Therefore, this approach incorporates the discussed neo-classical proposition, that the private sector treats the public debt a net wealth and ignores its effect on future taxation. In the standard approach, Kormendi also includes the proposition, that the private sector ignores the benefits of government spending. If this approach is correct, then the relation between private consumption and taxation will be

[2] Equation 5 in Kormendi's text.

negative and government debt transfer as well as government interest payments will have a positive impact on consumption.

The consolidated approach – incorporating the Ricardian hypothesis, but more general than its strict version, proposes, that the choice of debt vs. tax financing leaves the private consumption unchanged and also that government consumption does have an effect on private consumption. If this approach is correct, the estimation should yield, that government consumption affects private consumption negatively and that the stock of government debt, government interest payments, taxation and transfers do not affect private consumption-saving decision.

The estimation is done over the period 1930–1976 for USA, in first-differences of variables, using OLS. The results are mixed, but rather supportive of the consolidated approach: the coefficients of taxation and interest payments are insignificantly different from zero, what supports the Ricardian proposition. The coefficient of the government debt is negative, what is puzzling and not in line with any of the theories. This work has been perceived by many economists "as the strongest empirical evidence in favour of the Ricardian Equivalence" [Feldstein, 1990].

This research has produced a substantial amount of comments. Among them is the work by Feldstein and Elmendorf (1990). They argue that the evidence in favour of the Ricardian-Barro approach, given by Kormendi's paper is doubtful. They propose, that the estimated negative coefficient on government debt indicates, that the model might be misspecified. They also hold, that if one excludes the war years (a period of unusual nature of the market, because of shortages and rationing), it significantly changes the results and leads to rejection of Ricardian proposal [3]. They also argue, that instead of OLS, a more appropriate method should be used – first order autoregressive transformation and instrumental variable estimation is relevant. After incorporating all these corrections, they yield a result, that the coefficient on tax variable is generally negative and significant. Authors conclude, that Kormendi's conclusion is wrong, and the evidence contradicts the Ricardian Equivalence and supports the classical view.

Poterba (1988) studied the response to a 1975 tax rebate in the United States. He estimated a consumption function, where present real per capita consumption (in logarithms) was dependent on the consumption in previous period and a tax change, as a fraction of past consumption. Monthly consumption data was used. The results have shown, that consumption moved in the same way, as the tax-induced change in disposable income, supporting the neo-classical approach and constituting evidence against the strict Ricardian view, that the timing of taxes does not matter.

[3] Although Kormendi estimated equations, that did omit the war years, he did not include in them taxes and government debt together.

A more recent work modelling the impact of government budget deficits on private savings is provided in the articles by Masson et.al. (1995), Edwards (1996) and Hutchinson (1992).

In the article by Masson et.al. (1995) the private saving rates were regressed on number of potential explanatory variables, like government budget surplus, government current expenditures and investment, growth rates of real output, consumer prices and terms of trade, the real short termed interest rate, GDP per capita, dependency ratio. It was done for 21 industrial countries for the period 1971–1993 and for 40 developing countries for the period 1982–1993.

The results of this research imply that for the industrial countries, private savings offsets around half of the change in the government budget, which is caused by tax changes. For developing countries the coefficient of the government budget surplus variable was larger -0.659 . When however the sample of developing countries was divided into high, middle and low income countries, the results were different: for high income countries the coefficient of government budget was almost one (-0.940), exactly in line with Ricardian Theorem, while for middle income countries it was -0.349 and for low-income -0.673 . The results for developing countries also indicate, that when the deficit is reduced by cuts in government investment spending, rather than increases in taxes, there is a smaller offset on private saving (except in the case of middle-income economies). The current government expenditure variable was not included in the developing country regression. In the case of developed countries, private savings reacts equally to the change in budget caused by taxes and investment spending, but reacts less, if government current expenditure is changed.

This research is therefore supportive of a weak form of Ricardian Equivalence, and indicates, that the results are probably different across countries, with a stronger Ricardian behaviour in developing countries. It also suggest, that different expenditure policies will have different implications for savings.

The research by Edwards (1996) was done on 36 countries. The dependent variable was private saving rate, among the explanatory variables were: government savings (but not mentioning whether changes were due to tax or expenditures shifts), age dependency, income growth, urban population, GDP per capita, money/GDP, real interest rate, current account, social security.

Edwards results suggests, that the coefficient on government savings is around -0.54 for all 36 countries, and between -0.36 and -0.65 for LDC's, what gives support for a weak form of Ricardian Equivalence. The estimated coefficient on the social security

variable (variable defined as the ratio of public expenditure on social security policy to total public expenditures it is a proxy for expected social security benefits) provides some interesting insight as well; is negative and statistically significant, around -0.2 . Edwards concludes, that reforms, that replace government run social security systems by a privately run will in the long run (after the transition period) increase private savings.

The work by Hutchinson (1992) is most comprehensive as far as the impact of fiscal policy is concerned. In his estimation, Hutchinson stresses the proposition, that private saving will react differently to specific expenditure policies and distinguishes between consumption and investment expenditures and also includes the social security variable.

In his model, the dependent variable is the private saving rate and the explanatory variables are: time trend, that captures other factors influencing private savings through time, percentage of elderly in the population (according to life cycle model, this should negatively influence the private savings), real income growth, tax-induced change in net government lending (without the social security fund), social security fund, government investment, tax financed (net lending is held constant), government consumption/ /transfers (including interest payments), tax financed.

To measure the effect of a debt financed government expenditure, one has to subtract the coefficient of net government lending from the coefficient on tax financed government expenditures.

The model was run separately for United States, Japan, Germany, United Kingdom and Canada, for the years 1960–1987. The methodology was cointegration and error – correction model. The results are summarised in Table 1.

The estimated long run private saving offset to a tax-increase-induced fall in net government lending (i.e. a deficit decrease) is quite high. In US, Germany and United Kingdom the estimates for government investment expenditures are larger than for other government expenditures. This indicates that in the long run a tax – financed rise in investment spending tends to be associated with a larger decline in private saving, that a rise in other categories of spending. This is consistent with the view, that a rise in investment spending would be expected to bring return and lower future taxes. However, the estimation results for Japan and Canada do not support this proposition. The response of private savings to debt financed expenditure changes, (contrary to tax changes) is small, except for Japan and US.

The results of the ECM show, that the coefficient on net lending was negative and statistically significant for every country, the social security surplus was in four out of five cases not significant. The private saving offset to government investment was estimated to be larger than to other expenditures in two cases.

Those result suggest a private saving offset to government budget deficits both in the short and in the long run, providing support for a weak Ricardian equivalence theorem.

Table 1. The estimated interaction between private saving rate and fiscal policy in selected developed countries

	United States		Japan		Germany		United Kingdom		Canada	
	long - run eq.	ECM	long - run eq.	ECM	long - run eq.	ECM	long - run eq.	ECM	long - run eq.	ECM
constant	0.88	0.00	0.19	0.00	0.45	0.00	0.17	0.00	0.63	0.01
trend	0.002		0.002		0.001		0.000		0.008	
% of elderly	-3.11	-2.76	2.99	1.89	0.59	0.86	0.21	-0.41	-2.87	-2.34
income growth	0.04	0.06	-0.05	-0.05	0.15	0.19	0.21	0.15	0.02	0.06
net lending of government (nl)	-1.08	-0.97	-1.37	-0.79	-1.18	-1.17	-0.54	-0.49	-0.84	-0.73
social security	0.23	0.22	2.86	0.06	-0.18	-0.58	-2.14	-1.72	-0.85	-0.20
government consumption (ge)	-1.03	-0.83	-2.03	-1.67	-1.42	-1.31	-0.39	-0.48	-0.76	-0.52
government investment (gni)	-1.94	-2.27	-1.18	-0.58	-1.48	-1.02	-0.91	-1.13	-0.63	0.56
ge-nl	0.05	0.14	-0.66	-0.86	-0.24	-0.14	0.15	0.01	0.08	0.21
gni-nl	-0.86	-1.30	0.19	0.21	-0.30	0.15	-0.37	-0.64	0.21	1.29

Source: M. Hutchison (1992), p.29–30 in ECM all variables are in first - difference form

The response to expenditure induced rise in the budget deficit, in contrast to a tax-induced change, is mostly very small.

2.4. Empirical Results for Transition Economies

2.4.1. Panel Estimation for 7 Transition Economies

The question of the degree of influence of the government budget on the private saving ratio is crucial for the transition economies. Unfortunately it seems, that it is almost impossible to answer this question. The main reason is the lack of reliable and comparable data.

As it was stated earlier, most economists postulate, that it is impossible to determine the existence and degree of private savings offset to changes in budget deficit on purely theoretical grounds. To solve this problem comprehensive empirical research is needed, which results depend crucially on good quality data and long time-series. Those conditions are for obvious reasons not met in the case of transition countries.

If one however tries to theoretically speculate, whether the Ricardian Equivalence might work in the Central European countries, the more plausible answer seems to be negative. The assumptions underlying the Theorem are probably not met in transition economies.

The market economy is still young: many people have liquidity constraints, because of the underdevelopment of financial markets and high borrowing costs. Many people are myopic, as they are not used to the market rules and do not see the connection between present debt and future taxes, people are uncertain of the future and of the durability of the government and of the whole system, etc.

Empirical research, done rather just for the fun of it, that for any solid results, suggest, that the above conclusions may be right. I developed a model, based on the model by Hutchinson, in which the private saving rate was regressed on the government budget deficits, government expenditures (all measured as ratios of nominal GDP), growth rates of real output, and dependency ratio (measured as the percentage of people under 14 and over 65 in the total population).

The sample is 7 transition countries – Poland, Hungary, Czech Republic, Slovak Republic, Lithuania, Latvia and Estonia. The data is obtained from World Bank and IMF International Financial Statistics and International Government Statistics: the data on

national saving rate, dependency ratio is from World Bank, the data on government statistics and on the real growth rates are from IMF. The exception is Poland and Hungary, where sufficient government statistics from IMF was unavailable, and national statistics on government accounts were used. The time span is 1991–1996 for Poland and Hungary, 1993–1996 for Czech Republic, Slovak Republic and Lithuania, 1994–1996 for Latvia and 1995–1996 for Estonia. Because the time series data is so short and the data for the government budget deficit and expenditures for Poland and Hungary is not comparable to the IMF data for other countries, the model does not pretend to deliver definite answers on the determinants of the private saving rate in the transition countries. It is done rather as an exercise that can give some very weak hints as to whether the level of budget deficit has an impact on the level of private savings.

In Table 2 and 3 I report the results from estimating the Fixed and Random Effects Models. The software that I used was TSP. The variables are:

- PRIVSAV – private saving rate,
 - DEF – consolidated central government budget deficit/GDP,
 - INC – real income growth rate,
 - DEP – dependency ratio,
 - EXP – consolidated central government expenditure/GDP,
- Unbalanced data: Number of Individuals 7, TMIN= 2. TMAX= 6,
No of observations 29.

Table 2. WITHIN (fixed effects) Estimates. The dependent variable: private saving rate

Variable	Coefficient	Error	t-statistic
DEF	-.089506	.402870	-.222172
INC	-.052422	.089605	-.585032
DEP	.208797	.094798	2.20254
EXP	-1.11132	.391164	-2.84104
R-squared = .705211			
Adjusted R-squared = .541440			
F test of A,B=Ai,B: F(6,18) = 6.4520, P-value = [.0009]			
Critical F value for diffuse prior (Leamer, p.114) = 3.0212			

In both models the government budget was insignificant, indicating, that using the available data, it is impossible to empirically conclude, that the level of budget deficit does have an impact on the level of private savings. The government expenditure is negative and statistically significant, indicating, that an increase in government expenditures, with net lending held constant (i.e. tax financed) lowers private savings. This suggests, that the

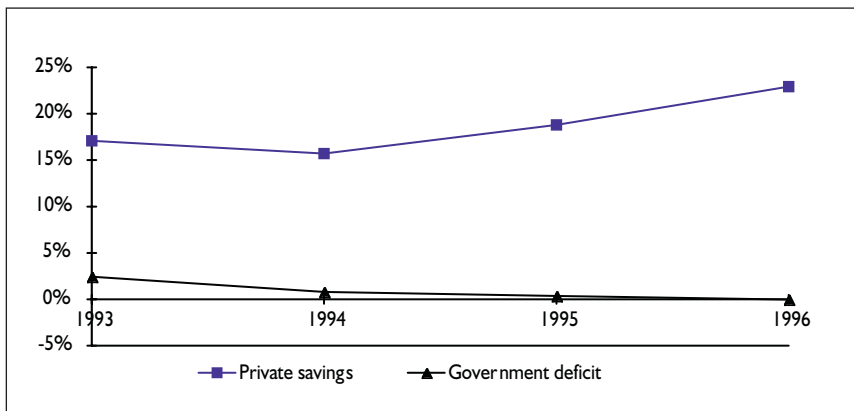
government consumption is not perceived by the public as a close substitute for private consumption.

Table 3. WITHIN (fixed effects) Estimates. The dependent variable: private saving rate

Variable	Coefficient	Error	t-statistic
DEF	.262887	.345732	.760378
INC	.014957	.085147	.175664
DEP	.117487	.080796	1.45411
EXP	-.393776	.303666	-1.29674
C	.272213	.106626	2.55297
R-squared = .508271			
Adjusted R-squared = .235089			
Hausman test of H0:RE vs. FE: CHISQ(4) = 10.325, P-value = [.0353]			
VWITH (variance of U _{it}) = 0.12951E-02			
VBET (variance of A _i) = 0.17652E-02			
(computed from small sample formula)			
THETA (0=WITHIN, 1=TOTAL) = 0.10896			
(evaluated at TMAX = 6)			

Charts 1, 2, 3 and 4 reveal additional information for Czech Republic, Estonia, Hungary and Slovenia.

Chart 1. The private saving ratio and consolidated central government budget deficit in the Czech Republic, in per cent of GDP

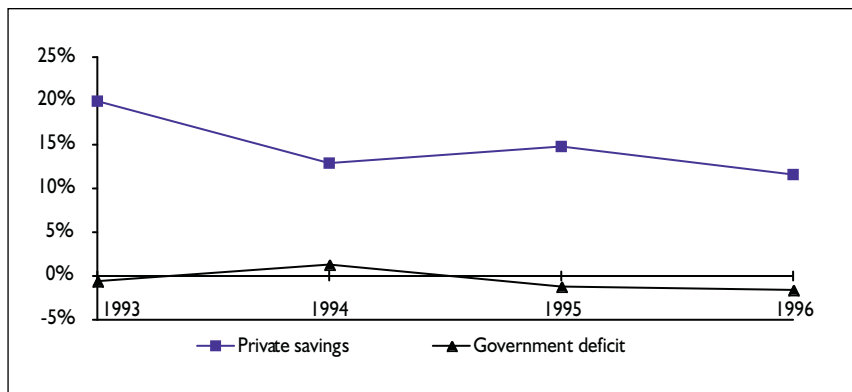


Source: World Bank database (1998) and IMF Government Statistics Yearbook (1997)

In the case of the Czech Republic, the development in the series might suggest some form of Ricardian behaviour: since 1994 the government budget surplus decreased, and

in the same time the private saving ratio grew, more than offsetting the fall in government savings.

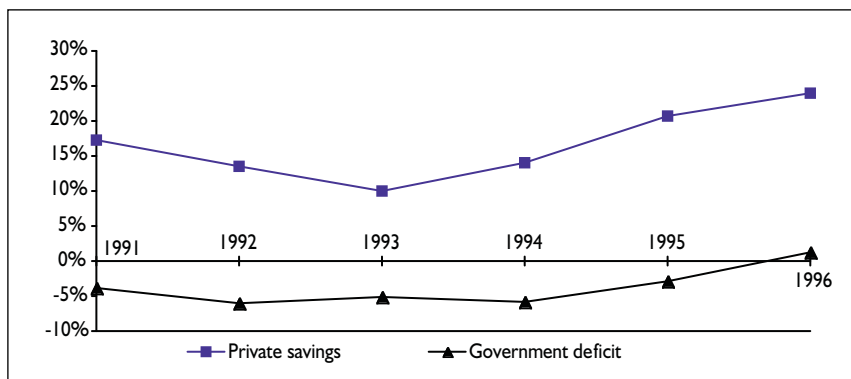
Chart 2. The private saving ratio and general government budget deficit in Estonia, in per cent of GDP



Source: World Bank database (1998) and IMF Staff Country Report: Estonia (1998)

In Estonia, the development of private savings and government deficit might suggest a form of Ricardian Equivalence, especially during 1993–1995, when private saving rate was moving in opposite direction to the developments in government balance. During 1993, as the budget deficit turned into surplus, private savings decreased, and in the following year, as the budget deteriorated, private savings rose.

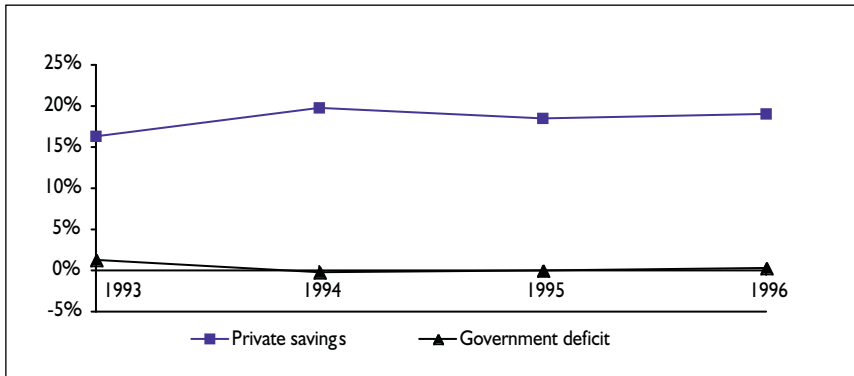
Chart 3. The private saving ratio and general government budget deficit in Hungary, in per cent of GDP



Source: World Bank database (1998) and Statistical Yearbook of Hungary (1997)

It seems, that in Hungary there indeed is no Ricardian-type interaction between the government budget deficit and private savings, as the private saving ratio changes rather in line, than opposite to the changes in budget deficits. This might suggest a classical case, where an increase in budget deficit causes private savings to fall.

Chart 4. The private saving ratio and general government budget deficit in Slovenia, in per cent of GDP



Source: World Bank database (1998) and IMF, Republic of Slovenia: Recent Economic Developments (1998)

In the case of Slovenia, both the government budget deficit and private saving rate have been stable, not allowing for any conclusions on the impact of public sector deficit on private saving rate.

2.4.2. The Case of Poland

A brief examination of data on private saving rate and government net lending in Poland for years 1991–1997 suggests, that there does not exist a strong Ricardian-type relationship between private saving rate and net lending of the general government. Up to 1993, as the government net lending was decreasing, private saving rate has been falling, what is consistent with the Barro-Ricardo Theorem. In year 1994 the saving rate jumped by up almost 4 percentage points and the government deficit turned into large surplus. Year 1994 is however an outlier: because of the external public debt reduction, which was an effect of the agreement with Paris and London Club, the government sector displayed large net borrowing. Another aspect, that is blurring the analysis is, that the data for 1994–1997 includes estimates of hidden economy, therefore it is not fully

comparable with 1991–1993 data [4]. Therefore year 1994 should be treated differently, and any comparison of data on private saving before and after 1994 should be done with caution. In year 1995 the saving rate grew by 1 percentage point, up to 20% of GDP and the government budget improved, compared to 1993. In 1996–1997 the general government budget outcome stabilised at –2.9%, –3% of GDP, but of GDP and 19% of GDP, but private saving ratio has been slowly declining.

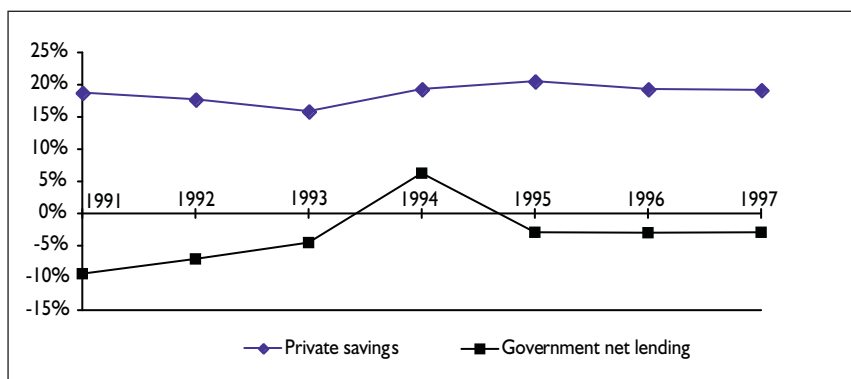
The Polish private saving rate and general government net lending are presented in Table 4 and Charts 5, 6, and 7.

Table 4. Private saving rate and general government net lending in Poland, in per cent of GDP

	Private saving rate	General government net lending
1991	18.77%	-9.35%
1992	17.74%	-7.05%
1993	15.91%	-4.51%
1994	19.34%	6.25%
1995	20.55%	-2.89%
1996	19.32%	-2.99%
1997	19.19%	-2.91%

Source: National Accounts, 1991–1997, Polish Central Statistical Office, 1999

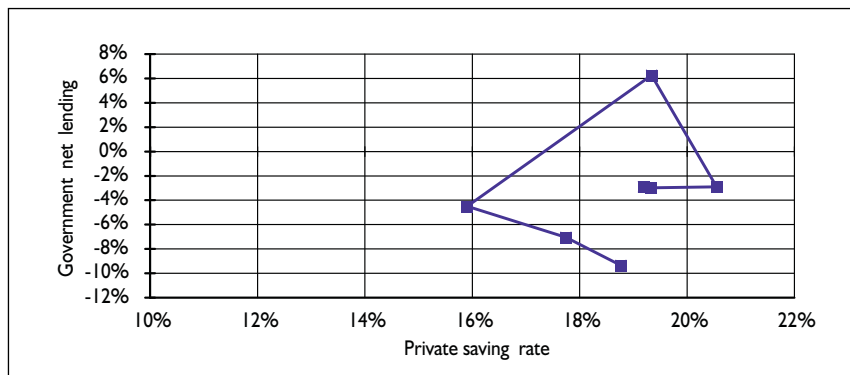
Chart 5. The government net lending and private saving rate in Poland, in percent of GDP, 1991–1997



Source: National Accounts, 1991–1997, Polish Central Statistical Office, 1999

[4] The private saving rate in 1994 reported by previous issues of National Accounts, without the estimates of hidden economy was 16.8% PKB.

Chart 6. Scatter plot of private saving rate and government net lending, in percent of GDP



Source: National Accounts, 1991–1997, Polish Central Statistical Office, 1999

The correlation coefficient between the general government net lending and private savings is low and positive: 0.3174, indicating, that there does not exist a linear, Ricardian-type relationship between both series. Excluding year 1994 does not lead to different conclusions: the correlation is again positive: 0.303

The low positive correlation coefficient, as well as examination of scatter plot (Chart 6) suggest, that Ricardian Equivalence Theorem is not relevant for the Polish economy i.e. that the changes in government (dis)savings will probably not be offset by changes in private savings.

However, it must be emphasised, that a much longer time period is needed to prove or deny an existence of any relationship.

The theoretical as well as empirical researches done by Hutchinson (1992) and by Masson et.al. (1995) indicate, that expenditure and tax policies should have different effects on private savings, in particular, a tax-induced decline in government budget deficit should have a bigger effect on private saving rate, than the lowering of budget deficit caused by expenditure cuts. Additionally, the social security balance is estimated to have a very small effect on private savings.

Therefore, to further investigate the possible private – public savings relationship in Poland, a more detailed analysis of the fiscal adjustment is needed.

The relevant data is presented in Table 6.

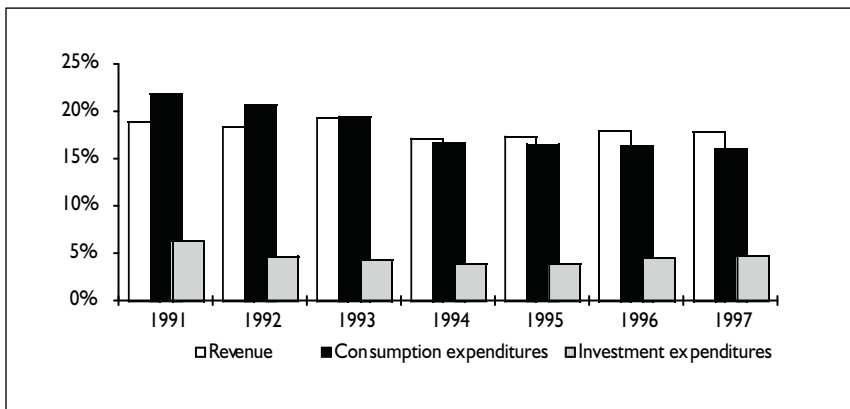
Table 6. General government of Poland, data in per cent of GDP

	General government revenues*	General government consumption expenditures	General government investments	General government savings	General government net lending	Social security balance	Net lending - Social security
1991	18.96%	21.87%	6.44%	-2.91%	-9.35%	-4.75%	-4.60%
1992	18.42%	20.72%	4.75%	-2.30%	-7.05%	-5.18%	-1.87%
1993	19.38%	19.52%	4.36%	-0.14%	-4.51%	-5.55%	1.04%
1994	17.21%	16.74%	3.92%	0.46%	-3.46%	-6.12%	2.66%
1995	17.40%	16.58%	3.93%	0.82%	-2.89%	-3.23%	0.34%
1996	18.00%	16.46%	4.60%	1.55%	-2.99%	-2.56%	-0.42%
1997	17.94%	16.12%	4.77%	1.81%	-2.91%	-2.55%	-0.35%

Source: National Accounts, 1991–1997, Polish Central Statistical Office, 1999

*revenues are net of transfers

Chart 7. General government revenue and expenditure in Poland, in percent of GDP, 1991–1997



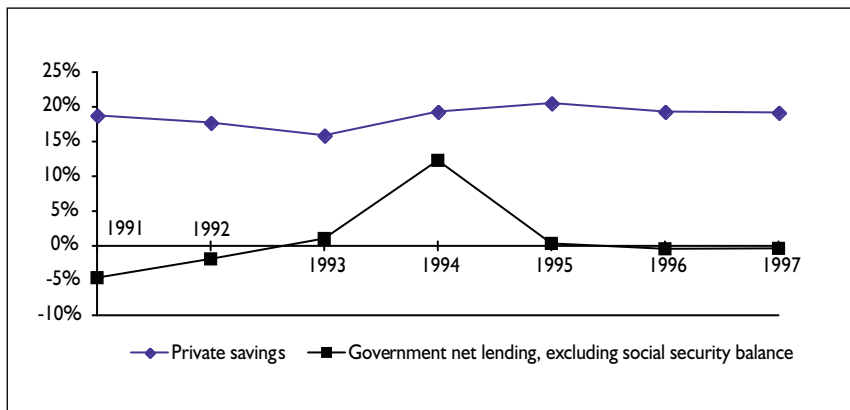
Source: National Accounts, 1991–1997, Polish Central Statistical Office, 1999

The decline of government net lending during 1991–1997 was caused mainly by a reduction in consumption spending: net lending of general government decreased by 6.44 percentage points, from over –9% of GDP in 1991 to less than –3% of GDP in 1997. Total expenditures were lowered by 7.42 percentage points; in particular consumption spending was lowered by 5.75 percentage points and investment spending by 1.67 percentage points. The government revenues declined by 1.02 percentage points.

The social security deficit is responsible for a significant amount of net lending; since year 1993 government net lending, excluding social security, was positive or close to null. If the social security balance is excluded from government net lending, as proposed by Hutchinson (1992), the correlation between the government net lending without social security balance is still positive: 0.1413. If however year 1994 is excluded the correlation becomes negative, but still very low: –0.12. This is consistent with Ricardian proposition, although the correlation is very low, which makes the existence of Ricardian Equivalence in Poland very questionable. The appearance of negative correlation (and therefore the appearance of possible Ricardian behaviour) is consistent with the proposition [Hutchinson, 1992], that changes in social security balance operating on pay-as-you-go transfer can in practise cause differential response as opposed to other budget factors. The Ricardian behaviour will more likely be observed, when one investigates the relationship between private savings and government budget balance without social security.

Both series are depicted in Chart 8.

Chart 8. General government net lending, excluding social security balance and private saving rate in Poland, in percent of GDP



Source: National Accounts, 1991–1997, Polish Central Statistical Office, 1999

The above analysis of the Polish data allows to draw some conclusion. Of course, these conclusions are not very strong, due to the short time span available for investigation

Available data suggest, that for the Polish economy the propositions of Ricardian Equivalence Theorem are not relevant with respect to the whole general government sector.

However, one cannot rule out a possibility, that there exists some very weak form of Ricardian Equivalence in Poland, however only when the relevant series is government net lending without social security balance. If one excludes the social security balance form the government net lending, than the correlation between private saving and government budget outcome becomes negative, what is consistent with the Ricardian proposition.

The correlation is very low, but this can be justified by the fact, that in Poland the fiscal adjustment had the form of expenditure cuts. According to Hutchinson (1992) a change in fiscal position in form of tax increase rather than expenditure cut, is likely to induce more of a private saving offset than the consolidation done so far.

Therefore, there might exist a weak form of Ricardian relationship in Poland between private saving rate and general government net lending, but without the social security. If this is true, then a change in government savings (without social security) might induce an offsetting change in private savings, but this change will be less than proportionate.

However, it must be emphasised, that is only a speculation. Saving behaviour is a very complex phenomenon and much longer time series is needed to draw any definite

conclusions. Besides, the data is not fully comparable, what makes the speculations even more questionable.

2.5. Conclusions

This paper has investigated the theoretical as well as empirical literature on the impact of fiscal policy on private saving rate and tried to draw some conclusions for the transition economies, with a special attention on Poland.

The survey of the literature indicates, that a definite answer to the question on the existence and strength of such an impact does not exist.

The main views – the Ricardian-Barro Equivalence Theorem and Neo-classical view – give contradicting results. The first one predicts, that the private saving rate will offset the tax-induced changes in government budget outcome, so that the national savings will not change as a result of a change in government savings. The second one holds, that private savings will not offset increase in budget deficit and therefore national savings will decline.

The empirical research is also not uniform. However, the recent research, that I have come across indicates, that, to some extent, private saving offsets the changes in government savings, but a pure Ricardian equivalence hypothesis is rejected.

In addition, it seems, that different fiscal policy tools will have different implications for private saving. The results are again not uniform, but some of the research suggests that private savings offsets the tax induced fluctuations in government net lending to a much greater extent than the changes induced by spending policies.

It also seems, that the strength of private saving offset is country specific and is influenced by the institutional environment in a surveyed country.

The question of the interactions between public and private savings is important for the transition economies. Unfortunately, the short time span and the poor quality of the data make it virtually impossible to determine this issue at present point in time. The panel analysis done for 7 transition economies indicates, that the budget outcome does not influence the private saving rate. A simple analysis for Poland also indicates, that in years 1991–1997 there was no strong Ricardian-type relationship between the government net lending and private savings. There is however a possibility of the existence of a weak form of Ricardian Equivalence in Poland, when one assumes, that the social security is treated differently than the rest of government net lending, and therefore social security balance is excluded from government budget balance. However, much longer time series is needed to draw any strong conclusions.

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