

BUYBACKS OF THE UKRAINIAN  
FOREIGN DEBT

by

Oleg Bizyaev

A thesis submitted in partial  
fulfillment of the requirements for the  
degree of

Master of Arts in Economics

National University of "Kiev-Mohyla  
Academy"

2000

Approved by \_\_\_\_\_  
Chairperson of Supervisory Committee

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Program Authorized  
to Offer Degree \_\_\_\_\_

Date \_\_\_\_\_

National University of “Kiev-Mohyla  
Academy”

Abstract

BUYBACKS OF THE UKRAINIAN  
FOREIGN DEBT

by Oleg Bizyaev

Chairperson of the Supervisory Committee: Professor Anatoliy Voychak,  
Director of the Christian University

This paper considers the possibility of buybacks of the Ukrainian external debt in Eurobonds to increase the creditworthiness of Ukraine on international credit markets. Buybacks is a purchasing of the external debt by a debtor country at market prices. The overall situation with the external debt is highlighted and, using different theoretical approaches of market based reduction mechanisms, the profitability of buybacks for Ukraine is proved. As a conclusion some policy implications which could help Ukraine to re-access international credit markets are given.

## TABLE OF CONTENTS

<i>Chapter1</i> Introduction.....	<b>1</b>
<i>Chapter2</i> Buybacks and related issues.....	<b>3</b>
<i>Chapter3</i> External Borrowing of Ukraine.....	<b>22</b>
<i>Chapter4</i> Buybacks of the Ukrainian external debt.....	<b>29</b>
<i>Conclusion</i> .....	<b>36</b>
Appendix.....	<b>38</b>
Bibliography.....	<b>43</b>

## LIST OF FIGURES AND TABLES

<i>Number</i>	<i>Page</i>
Table 1. Effects of Buybacks.....	<b>8</b>
Figure 1. The timing of the model.....	<b>16</b>
Figure 2. Accumulation of the Ukrainian external debt.....	<b>24</b>
Table 2. Critical values of the external debt and the performance of Ukraine.....	<b>26</b>
Table 3. Servicing of the Ukrainian external debt.....	<b>30</b>
Figure 3. Foreign portfolio investment to the Ukrainian economy.....	<b>33</b>
Table A 2.1. Peak Net Repayment-GDP and Net Repayment-Export ratios, thirteen highly indebted countries.....	<b>38</b>
Table A 3.1. The structure of the Ukrainian foreign debt.....	<b>39</b>
Table A 3.2. The external state of Ukraine during the period of 1993-2000....	<b>40</b>
Table A 3.3. Borrowing on international credit market.....	<b>41</b>
Figure A 3.1. Payments to GDP ratio (under restructuring proposals).....	<b>42</b>

## ACKNOWLEDGMENTS

I wish to express my deep gratitude to my supervisor Prof. James Dean for his substantial help in writing the thesis. I am also grateful to Prof. Charles Steele, Prof. Gene Ellis, Prof. Roy Gardner and Prof. Janusz Szyrmer for their valuable comments and suggestions.

## GLOSSARY.

**Average price of the debt.** The market price of the unit of the debt.

**Buybacks.** The purchasing the debt at market prices.

**Debt equity swap.** The swap of an external debt for the domestic equity. It is a combination of buybacks and foreign direct investment.

**Debt relief.** The cancellation of a part of the debt.

**Free rider's problem.** The situation when each economic agent by deviating from the agreement among agents can increase its utility, when other agents adhere to that agreement.

**Liquidity relief.** The postponing principal repayments or interest payments on the old debt or new lending.

**Marginal price of the debt.** The increase in present value of the debt caused by reducing the debt by one unit.

## *Chapter 1*

### ***Introduction.***

The Ukrainian external debt is one of the major problems of the country. Although growth of the economy can not be achieved only by reducing the external liabilities of the country, the elimination of the debt, which is burdensome for the country in transition in concert with urgently, demanded improvements in the micro-economic policy of Ukraine could induce the economy to grow. Although the Ukraine's macro-economic governance falls short of that in Central European countries such as Poland, Hungary and the Czech Republic Ukraine lands at the bottom of the former Soviet Union countries in terms of its micro-economic governance because it failed to create a good environment at the enterprise level (The World Bank 1999). On 1 April 2000 the country external debt is about 12.068 billion dollars and its predicted GDP for year 2000 is 25 billion dollars (ING Barings 2000). Ukraine can not afford to fulfill its obligations to foreign creditors because of comparatively low amount of foreign exchange reserves and the economy recession. The result of that is the recent decision by the government to restructure its bond liabilities for new bonds with a seven-year maturity. The high external debt is the one of the causes of the severe tax and regulation pressure on the economic agents in Ukraine. In this situation investment is suppressed and most of the economy is in the shadows. Moreover the inability of Ukraine to fulfill their external obligation make it less attractive for foreign investors. Ukrainian investment climate indexes reported by financial agencies such that Moody's agency and the Standard & Poors agency characterize Ukraine as a country with absolutely unfavorable conditions for the investment.

Rescheduling and restructuring solved all recent problems with the external debt in Ukraine (COMMERZBANK 1999). That rescheduling and restructuring are the liquidity relief for the country. However in my paper I argue that these mechanisms do not increase the creditworthiness of the

country on the international credit markets. I suggest considering the buybacks mechanisms of market based debt reduction. The interesting feature of buybacks is that benefits for creditors and a debtor are difficult to predict and must be thoroughly considered.

There are two main approaches for and against buybacks of foreign debt. The first was developed by Acharya and Diwan (1989) to show that using buybacks the debtor country can re-access to international credit market and so may be profitable to debtor country. Bulow and Rogoff (1988) developed the second. It was shown that buybacks are not profitable for debtor country in the case when penalty rate is low in the case of default.

The structure of the paper is the following .The second chapter describes the modern theory of market based reduction mechanisms. The third chapter is devoted to a description of the external debt of Ukraine. The fourth chapter introduces practical calculations of profitability of buybacks for Ukraine. In the end of the paper some policy implications are given.

The main results of my paper are the following. Using the Bulow, Rogoff(1988) approach it was found that it is unprofitable for Ukraine to undertake buybacks because the penalty rate is rather low for the country. However assuming that Ukraine is eager to re-access the international credit market, using approach developed by de Aghion (1991), buybacks are profitable in the case of a sufficient amount of foreign exchange reserves.



## Chapter 2

### *Buybacks and related issues*

The solving of any sovereign debt problem demands a thorough consideration of the problems of why a debtor country can not pay back its debt.

Creditors consider the debtor country illiquid if it can not afford to fulfill its external liabilities in current period because of a temporarily lack of foreign exchange. In that case creditors believe that by rescheduling payments on old debt or by receiving new credits the debtor country can receive necessary liquidity relief and can afford to fulfill its liabilities to the creditors in the future. Suppose a country has external debt  $D$ . The probability of default on that debt is  $d$ . In this case by granting new loan creditors believe that they reduce the default rate down to  $d^*$ . The program increase the value of existing debt by  $(d-d^*)D$ . Thus benefits of the program to the creditors exceed its cost as long as

$$d < (d-d^*)D \quad (2.1)$$

By granting liquidity relief the creditors increase the expected value of debt repayments (Dean and Bowe (1997)).

The possibility that the debt burden is itself responsible for slow growth is important. Under burdensome external debt country could not fulfill their external obligations because of debt overhang which determined as difference between present value of country external debt obligations and the expected resource transfers that will be made to service that debt (Dean and Bowe 1997). So the best strategy for creditors in that case would be to forgive part of the debt. As Claessens, Diwan (1988, pp. 4-5) note:

*“ It implies that insistence of creditors on maintaining of full extend of their claims on debtor nations may be self defeating, reducing their expected repayment below what might be achieved through a settlement that reduces country’s debt burden. The possibility that less may be more*

*– that a reduction in the debt burden of highly indebted countries, rather than financing that simply postpones debt repayment, might be to everyone’s advantage suggests that appropriate concerted strategy could be to forgive, not to refinance some of the debt.”*

By granting debt relief creditors benefit from increasing the present value of the remaining debt. Following Dean and Bowe (1997) there are two causes why this could occur.

A debt overhang causes “ illiquidity effect “, the debtor country has no excess to international credit markets and can not borrow. In that case many valuable investment projects are not undertaken. Many types of policy reforms, technological improvement, capital accumulation are hampered.”*Had such investments been undertaken, expected debt service transfers would have increased. However credit rationing caused by debt overhang crowds out many such desirable projects “* Dean and Bowe (1997, p. 22). The second cause is “disincentive effect” of the debt overhang. Requirements to service debt demands a raise in taxes that certainly reduces the expected return from investment, so reduce gross investment of the country. On the other hand because the government expects that accruing benefits may be appropriated by the creditors, it discourages it from implementation of restructuring reforms, such as improvement in micro-economics policy to improve the investment climate in the country.

Thus debt relief could increase the productivity of the country and increase future payments to creditors. If the debt relief induces a productivity adjustment the price of the debt increases. If  $E(V)$  is the expected resource transfers to creditors,  $x$  amount of debt relief, the marginal condition for debt relief will be:

$$dE(V) / dx = -\pi + (1 - \pi)(dI / dx)[f'(I)] > 0 \quad (2.2)$$

Where  $\pi$  is the probability of full repayment before debt relief,  $I$  is investment, and  $f'(I)$  is the marginal product of investments in terms of increased debt payments (Froot 1989).

Any concerted action program will face a major problem: the gains from these concerted plans are collective. This arises because re-lending or forgiving some of the debt increases the present value of future payments. Although look in isolation each new loan and each dollar of forgiveness are the losses for the individual creditor. That is why each creditor would try to free ride on the package by letting other creditors do the new lending or forgiving.

Debt restructuring plans therefore faces a free-rider problem in that debt relief may be in everyone's collective interests but fails because any individual creditor maximizes his welfare.

Concerted lending – with creditors negotiating collectively, with pressure from creditors central banks on individual commercial banks, with different form of coercion from international agencies, and with the somewhat ineffective threat by countries to declare moratoria if new money is not provided – is used to overcome this problem. In cases of the debt relief to overcome debt problem is much more difficult because free rider's benefits are high and achieving concentrated debt forgiveness is impossible (Claessens, Diwan 1988).

Given the difficulties of insuring concerted action on debt in world practice decentralized, market-based approaches as an alternative are usually used. There exist different market based debt reduction mechanisms for indebted countries. The survey of those mechanisms is introduced in work by Claessens, Diwan (1988). These mechanisms are the following: buybacks, exit bonds and debt equity-swaps. This paper will be concerned with buybacks.

- **Buybacks of foreign debt at discount prices.**

Buybacks refer to the retirement by a debtor country of its cross-border commercial banks obligations at market prices.

In 1988, Bullock and Rogoff wrote a seminal paper on buybacks whose main message is that LDC debtor should not “*throw good money after bad*” ( Bullock and Rogoff 1988,p.675). The buybacks are to the debtor detriments, because “...*diverting resources from consumption and investment into debt reduction represents a concession to the creditors...*” (Bullock and Rogoff 1988,p.676). It was shown that buybacks make creditors better off in the case when they enjoy higher debt repayment stream. However the debtor’s country see the following trade-off:

*“Shortening its way out from financial autarky (but having to sacrifice immediate consumption of foreign exchange reserves) on the one hand, and postponing debt repayments (but suffering a cut off from international credit markets for a longer period of time), on the other. ”* de Aghion (1991,p.20)

The main issue is whether buybacks benefit the debtor countries, creditors or both of them. In the literatures that issue was divided on three different research avenues.

### **Investment incentives**

That research approach was first introduced in the Sach’s(1988) and Krugman’s(1989) papers. Having reduced the debt overhang the country is better induced to improve investment performance. That will be the case when a country is discouraged to improve its investment performance because anticipate great future debt repayments and increase in tax burden. The investment incentive effect will benefit to both borrower and creditors. Because of improvement in trade balance creditors will receive higher debt-repayment stream. At the same time the price of the country debt increases on the secondary markets. That is because of the increase in probability of repayment on such a country’s remaining obligations.

## **Rate of return**

According to this approach buybacks has an opportunity cost which constitute the following. If country earns some extra foreign exchange reserves it could spend them or to undertake an investment project with risk free return or it uses it to buyback part of her debt on which risky return currently being paid. It can be shown that it is better to undertake buybacks *“because such a transaction boils down to giving away reserves that would have earned a risk-free return in exchange of liabilities that bear a risk premium.”* (Dooley 1989, p.43) We can conclude that buybacks benefit a debtor country. However creditors will be worse off because that creditors who sold their bonds will receive a risk-free return instead of risk premium. Remaining creditors will not anymore enjoy the country’s good fortune, because all extra reserves have been exhausted already. That all lead to decrease in market valuation of the country debt (Dooley 1989).

## **Bargaining over debt repayments**

This approach was developed by Bulow and Roggoff (1989). After a country announces that it will undertake buybacks the market value of the debt increases for the following reasons: the buybacks eliminate some of the creditors who previously shared periodic repayments made by the debtors. Creditors will sell only in the case when they will be at least as well off as creditors who will not sell. Price of remaining obligation will increase, we can conclude that country will retire its debt at a higher price than before announcement (*“...country will repurchase marginal sovereign debt at marginal sovereign prices“* Bulow and Rogoff (1989, p.687)). Under this approach the buybacks benefit the creditor at the expense of the debtor country.

The overall effects of the buybacks are summarized in the table below.

**Table1. Effects of Buybacks**

Framework	Market valuation of the debt	Creditors	Debtors
Investment incentive	Increase	Better off	Better off
Bargaining	Increase	Better off	Worse off
Rate of return	Decrease	Worse off	Better off

Source: de Aghion (1991, p. 8)

We can conclude that only the investment incentive approach provides a rationale for buybacks. From the other hand if the country implements buybacks gradually, the price of the debt is increasing and the country will have to pay the higher price for the buybacks. If the country anticipates the increase in price it can implement them secretly (Cohen and Verdier 1990). Despite seemingly benefits from the investment incentives Hofman and Reisen (1990) using the specifications of conventional investment and consumption functions for problem debtor countries in two sub-periods, 1971-81 and 1982-87, rejects the debt overhang proposition. However it was proved that the switch from positive to negative external transfers to the debtor countries explains the drop in investment in the debtor countries. Cohen (1993) argues that in the Latin American indebted countries the value of external debt stock did not impact the investment in that countries, however it was shown that in the case when the debt are constantly rescheduled the correlation between net transfer of a debt and investment is significant. The non-reschedulers exhibit a weaker correlation between net transfers and debt. Cohen (1993) argues that in average external debt servicing in amount about 3 percent of GDP reduce the investment by 1 percent below financial autarky level of investment what was estimated by about 18.3 percent. That is why it is stated that simple debt reduction does not foster investment very much. It was shown that saving is more responsible for debt servicing than investment. Claessens and Diwan (1988) introduced the cost fee

reduction effect. They argue that even small reduction in the external debt eliminates the cost for creditors connected with temporarily debt payment collection. It is shown that such cost may be quite large and constitute some percentage from the overall debt. As a result the price of remaining debt increases.

The benefits, which are obtained by debtor country and creditors, also depend on from what sources buybacks are financed. This can be **external sources**, so called donators, as well as **internal sources**, such as foreign exchange reserves.

Claessens, Diwan (1988) show that under externally financed buybacks the major part of benefits go to creditors, at the same time debtor country receive the substantial benefit if only investment effect works, and price of the debt goes up partially because of improvement in investment incentives in the country. The effects of buybacks financed from internal sources on welfare of debtor country and creditors are more ambiguous. The debtor country sees a trade off to spend excess reserves on current consumption or on buybacks. Claessens and Diwan (1988, p.24) argue that:

*“...The debtor may attach a “liquidity premium “ to current resources, making the current “shadow” value of the dollar grater than the value placed on a dollar by creditors. Under such circumstances, self-financed buybacks are clearly less attractive to the debtor. The cost of the buybacks are greater the more liquidity-constrained the country is. Indeed a country sufficiently short of cash will always find a given self financed market scheme harmful.”*

The large self-financed buybacks are not realistic. Because a debtor who is able to buyback substantial part of the debt will find the discount price of the debt very unstable.

The example of implementation of externally financed buybacks is the Bolivian buybacks in March 1988 (Claessens, Diwan 1988). Bolivia owed its commercial banks \$670 million debt valued by the market at 46.9¢ on the eve of the buyback negotiations in September 1986. In addition Bolivia had accumulated some \$300 million in interest arrears. In the buybacks, \$335 million was retired and banks waived their claims on the associated accumulated arrears at a price of 11 cents. Creditors receive \$36.9 million. After transaction, in March 1998, the remaining \$335 was valued at \$38.5 million. Thus the expenditure of \$36.9 million by external authorities reduced Bolivia expected payments by \$8.4 million (Claessens, Diwan 1988). Creditors net gains was  $\$36.9 - \$8.4 = \$28.5$  million. Creditors receive almost all but not all of the direct benefit from the buybacks (Claessens, Diwan 1988). If we were sure that Bolivian growth and adjustment incentives and the chances that penalties would be imposed were not affected by debt reduction, we could conclude that the 8.4 million reductions in expected payments was the net gain to Bolivia from the buyback (Claessens, Diwan 1988). But if this effect were present, this figure understates Bolivia's gains (Claessens, Diwan 1988)

Using a line of thought owing to Bulow and Rogoff (1988) raised strong argument against internally financed buybacks. They argue that when the developing country buybacks their debt they subsidize their creditors using scarce resources. They show why buybacks and debt-equity swaps which is combination of buybacks and foreign direct investment makes the country worse off. The debtor retires its debt using average price of the debt, at the same time reduction in country obligation reflects the marginal price of the debt which are lower than the average price.

Due to Bulow and Rogoff (1988) suppose that  $\mathbf{D}$  is the external debt of the country,  $\mathbf{I}$  is the expected return from the investment,  $\mathbf{q}$  is the fraction of the



investment return which creditors could appropriate. The market value of the debt  $V(D)$  is given by the following:

$$V(D) = E[\min(D, qI)]$$

Assume  $F(D)$  is the probability that  $qI < D$ , which is the probability of default. Assume also that  $F(D) > 0$ , so bonds are traded at price lower than face value. The marginal value of the debt  $V'(D)$  shows an increase in market price of the debt with increase by one dollar in face value of the external debt.

$$V'(D) = 1 - F(D)$$

It affects the creditor recipients only in those cases when country does not default. The average value of the debt is equal to  $V(D)/D$ . The average price of the debt is higher than marginal price because it includes not only the cases when country pays in full but also cases when country pays back only part of the debt (Bulow, Rogoff 1988). Suppose the country has the foreign exchange resources  $C$  and are willing to buyback part of its debt  $X$ . The country must suggest to the creditors the price high enough so the creditors who sell will be at least better off than the creditors who will not sell. That is described by equality:

$$C/X = V(D-X)/(D-X)$$

Because as it was shown previously marginal value of the debt is lower than average, we have:

$$V(D-X)/(D-X) > V(D)/D$$

The repurchases push the price of remaining debt up. Although the bondholders are apparently better off, the debtor country must come behind (Bulow, Rogoff 1988). The authors argue that shadow value of the scarce

foreign exchange reserves is much higher for the debtor country than for the creditors and the outcome of the buybacks is the loss for the debtor country. Furthermore because the fraction of country resources which can be extracted in the case of default is relatively small, a buyback is less attractive transaction for the sovereign borrower than for domestic borrower. Bulow and Rogoff (1988) show that small repurchases of the foreign debt hurt a sovereign debtor if the next inequality holds:

$$1 - q[1 - v'(D)] > Dv'(D) / v(D) \quad (2.3)$$

Where  $D$  is amount of the debt,  $v(D)$  is present value of the debt,  $v'(D)$  is marginal value of the debt and  $q$  is the maximum repayment creditors can extract from the country investment income in the case of default. From that inequality it is clear that buyback could work for the debtor country only if the  $q$  has sufficient high value. The proxy the authors uses for estimation the  $q$  is the repayments to the GNP. It was shown that for all indebted countries such ratio had not been higher than 5% of GNP (see Table A 2.1. in the appendix). Setting  $q$  equal to 0.05, and the market average price of the debt  $v(D)/D$  equal to 0.5 inequality 1.2 implies that buybacks will benefit to the debtor country only if probability of full repayment  $v'(D)$  is greater than 0.487. That is inconsistent with expectation that the debtor country may repay some but not all its debt. As Bulow, Roggoff (1988,p.688) notes:

*" We are not suggesting that that these low values of  $q$  imply that burden of this debt minor. Net repayments of several percentage of GNP are clearly painful for many Latin American debtors. A low value of  $q$  does implies that these countries have better uses for their money than buybacks".*

Previously it was assumed that all external debt is the bank debt. However if the borrowing from the official creditors also exist the  $q$  is even less because as Bulow and Roggoff show official creditors have not received net repayments, net transfers, on most debt owed by highly indebted countries. Bulow and

Rogoff show that buybacks can be justified only if the debtor country negotiates substantial **concession or compensation** for undertaking the repurchase. Dornbush (1988), in critique to the article by Bullock, Rogoff (1988), agrees with previous authors that buybacks could benefit the debtor country only if in the bad state of nature, when the country default on the sovereign debt, the creditors will be able to appropriate the large part of the GNP. However Dornbush (1988) notes that Bullock and Rogoff (1988) do not take into consideration the efficiency gains from the buybacks, including the beneficial effect on investment of debt reduction, through lower taxes, reduced financial instability and accompanying reduction in capital flight. De Aghion (1991) argues that Bullock and Rogoff failed to explain why the debtor countries found buybacks profitable (for example see Dean and Bowe (1997 p. 29)).

Acharua and Diwan (1989) in oppose to Bullock and Rogoff (1988) raise the question if the buybacks were not profitable for a debtor country, why then some indebted countries promoted the market based buybacks. They explain the open buybacks in a signaling model. Each highly indebted country is willing to receive debt relief. The authors consider two cases.

1. The case of symmetrical information when creditors can distinguish between countries that are willing to invest and increase the repayment on the debt in the future and countries that are not willing to increase investment and so no debt relief will cause the expected repayments on the debt increases in the future
2. The case of asymmetrical information when creditors can not distinguish between debtor countries described above.

The utility function of contemporary consumption for a country can be introduce in the following form:  $U=C_1+\delta C_2$  , where  $C_1$  is consumption in current period,  $C_2$  is the consumption in the future period and  $\delta$  is the

discount factor for the country. Debt relief increases the future consumption of the country, where debt buybacks reduces the current consumption. As Acharya and Diwan (1993,p.797) note:

*“If a country’s discount factor is high enough for the present value of debt relief offer to exceed any reduction in the current consumption due to buybacks, the country will self –select to promote a buyback program in response to a debt relief offer. On the other hand, rational banks will offer debt relief only when their net receipts are expected to increase as a result of ...The investment response by countries with higher discount factor is stronger, because this countries value the future returns to investment at a higher rate than other do. It could thus be in the interest of banks to offer debt relief to those countries that have voluntary buyback programs (which signal high discount factors and willingness to invest), but not to others “*

Buybacks can be viewed as screening device, which a debtor country uses to show their creditworthiness. By developing the model it was shown that in the case of symmetric information debtor countries are not willing to undertake buybacks in any case.

Using monthly data obtained for 17 highly indebted countries, which had not received new loans from 1982, Acharya and Diwan (1993) show the following:

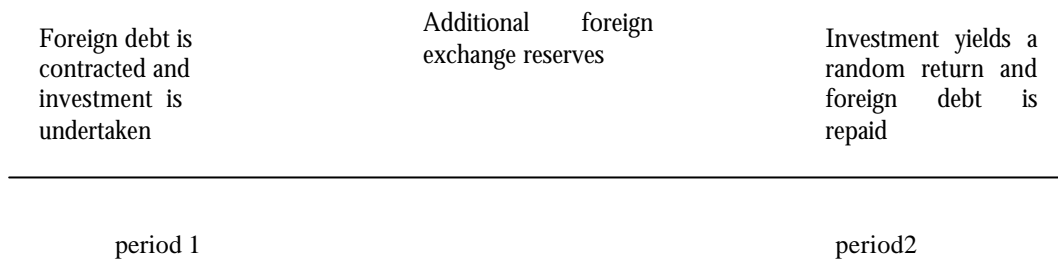
- Countries which had promoted debt-equity swap program in average received the higher debt relief and moreover 50% more new money from their lenders than the countries that not promoted such equity-swap programs. In that case lenders also charged lower interest rate(0.183 percent lower)
- The secondary market debt price was higher in the case of debt equity swaps by about 16.5 percent

It was also shown that probability of buybacks increased with increase in LIBOR interest rate, because in that case the market price of external debt decreases making buybacks attractive for the debtor. If the current investment to GDP ratio is quite high the probability of buybacks is low it happens because in the future it is expected fewer opportunities for investments (Acharya and Diwan 1993).

### **The Model of Buybacks.**

In my thesis I use the model derived by de Aghion (1991). This work is continuation of Acharya and Diwan (1989). The extension that was introduced is developed in order to show that by granting to the debtor country partial debt forgiveness, creditors could induce buybacks which would not otherwise undertaken. In this framework new element which account for buybacks is early re-access incentive element, which is differ from standard investment approach developed by Krugman and shown in the debt-Laffer curve. In the considered model debt relief is viewed as an incentive device to induce the country to make buybacks and shows that creditors will find it profitable to forgive the part of the debt even if the country is on the left-hand side of Laffer curve.

Consider a two period framework where a debtor country has already undertaken an investment project financed by foreign loans of total face value  $\mathbf{D}$ . Such project yields a random return  $\mathbf{q}$  at the end of period two. The country is assumed to be cut from international credit markets: to borrow again it must first repay  $\mathbf{D}$ . Specifically the country cannot contract a new loan before the end of period two (when  $\mathbf{q}$  is realized and creditors are repaid). Assume however that in period one the country earns extra foreign exchange reserves,  $\mathbf{R}$ , which can allow for an early re-access to the international credit markets when in particular the country decides to use that reserves to repurchase a fraction of  $\mathbf{D}$  in order to shorten its way out from financial autarky by one period(de Aghion 1991). The timing of the model can be illustrated in the following figure.



**Figure 1: The Timing of the Model**

Assume that all creditors have the same discount factor  $\delta$  of the debtor country. We assume that creditors are rational. When the country does not undertake buybacks, then the market value of the debt will simply be:

$$V(D) = E_{\theta} \min(D, \theta) \tag{2.4}$$

Assuming  $\theta$  is uniformly distributed between 0 and 1, and  $D \in (0, 1)$ , we have:

$$V(D) = \int_0^D \theta d\theta + (1-D)D = (1-D/2)D \tag{2.5}$$

Therefore the price of each unit of debt is:

$$\frac{V(D)}{D} = (1 - \frac{D}{2}) \tag{2.6}$$

Now suppose country undertakes a buyback at the end of period 1. The reserves spent on the buyback could alternatively be spent on consumption in period 1. Assume the country's intertemporal utility function is

$$U(c_1, c_2) = c_1 + \delta c_2$$

Because of **crucial assumption of this model the country undertaking a buyback can re-access the international credit markets earlier**, i.e. in period one instead of period two, and thereby increase its utility. That assumption is practical because debt overhang create “illiquidity effect” described earlier in the paper.

Let  $W$  be the net present value (measured in units of consumption goods) of re-accessing the international credit markets. Assume that  $W > R$ .

Suppose the country decides to buybacks the fraction  $X$  of its external debt. Creditors will accept to sell their claims to the country if and only if they obtain as much as by selling than by keeping such claims. If the creditors hold on their claims, the price they get in the second period is:

$$1 - (D - X)/2 > 1 - D/2 \tag{2.7}$$

The above is the well-known result of Bulow-Rogoff. Prices of debt increase after buybacks occurred to the benefit of average creditor.

The selling creditor could get in the first period:

$$P(X) = \delta \left( 1 - \frac{D - X}{2} \right) \tag{2.8}$$

From the country’s standpoint, to re-access the international capital market means the whole  $D$  could be repurchased at a price:

$$P(D) = \delta$$

Reserves on the amount  $\delta D$  must be spent to obtain a new foreign loan in period 1. The country could afford buybacks only if  $R > \delta D$ . That follows

from our assumption that a country cannot contract new loans before external debt has been fully repaid.

The country's total utility when a buyback is undertaken will be:

$$R - \delta D + W$$

Suppose that the country does not undertake the buyback and spends  $R$  on current consumption. In that case the country total utility will be

(1) if  $\delta W < 1$ , the country prefers to consume its reserves immediately. The utility will then be :

$$R + \delta W(1 - D)$$

(2) if  $\delta W > 1$ , and  $R < D$ , than country will prefer to use its reserves to increase its probability of re-accessing the capital markets in period two. The utility will be:

$$\delta W(1 - D + R)$$

(3) if  $\delta W > 1$ ,  $R > D$ , the country prefers to increase the probability of re-accessing the capital market in period two, although in this case  $R - D$  left for the immediate consumption. The utility will then be:

$$\delta W + (R - D)$$

Summarizing we could conclude that if  $\delta W < 1$ . The country decides to undertake the buyback if and only if:



$$R - \delta D + W \geq R + \delta W (1 - D) \quad (2.9)$$

$$W (1 - \delta(1 - D)) \geq \delta D \quad (2.10')$$

$$W \geq \frac{\delta D}{1 - \delta(1 - D)} \quad (2.10'')$$

Above inequalities is more easily satisfied when  $D$  and/or  $\delta$  are sufficiently small, it can be in the case when debt burdens are low and or when debtor countries are impatient to re-access the international capital markets (de Aghion 1991).

The above result implies that the creditors could induce buybacks by granting forgiveness.

In the case when  $\delta W > 1$ , and  $R < D$ , then, the country decides to undertake the buyback if and only if

$$R - \delta D + W \geq \delta W (1 - D + R) \quad (2.11)$$

$$W (1 - \delta(1 - D + R)) \geq \delta D - R \quad (2.11')$$

The above inequalities are always true as long as long as  $R > \delta D$  (If the  $R < \delta D$  the buybacks is impossible). If  $W > 1/\delta$  means that it is extremely valuable for the country to re-access the international credit markets (de Aghion 1991).

*“Pure intuition then tells us that the more quickly creditors co-ordinate their actions to offer debt relief the earlier they can induce buybacks, and the earlier debt prices will increase” de Aghion (1991, p.23).*

Now, it must be considered under what conditions it would be in the creditors' interest to forgive part of the country debt to induce mutually profitable buybacks. It can be the case when

$$\delta W < 1 \text{ and } W < \delta D / (1 - \delta(1 - D)) = g(D).$$

It is can be fulfilled when  $W$  is not too large. If creditors do not forgive, the value of the debt will be

$$V(D) = \delta \left(1 - \frac{D}{2}\right) D \quad (2.12)$$

If creditors forgive an amount  $X < D$  but country does not undertake the buybacks, then the market value of debt will be:

$$V(D - X)$$

In the absence of buybacks, creditors should forgive if and only if  $D > D_m$  where  $V'(D_m) = 0$  ( $\Rightarrow D_m = 1$ ); since it is assumed that  $D < 1$ , creditors would never forgive in this model in the absence of buybacks.

Now suppose creditors contemplate the option to grant debt forgiveness in order to induce the debtor country to undertake buybacks. The minimum amount of debt forgiveness required for buybacks to take place is simply given by equality:

$$W = \frac{\mathbf{d}(D - X)}{1 - \mathbf{d}(1 - D + X)} = g(D - X) \quad (2.13)$$

Creditors forgive the amount of debt if and only if what they obtain by forgiving is at least equal to the market value of the debt in the absence of forgiveness

$$\delta(D-X) \geq V(D) = \delta \left(1 - \frac{D}{2}\right) \quad (2.14)$$

Where:  $\delta$  is the unit price of the buybacks; and  $(D-X)$  is the amount of buybacks. The further we want

$$D-X \geq \left(1 - \frac{D}{2}\right) D \quad (2.15)$$

The last inequality can be rewritten

$$D-X = \frac{(1-d)W}{d(1-W)} \geq \left(1 - \frac{D}{2}\right) D \quad (2.16)$$

This inequality is automatically satisfied if  $\delta$  is rather small. The intuition is the following:  $\delta$  is small the country does not require much forgiveness before deciding to repurchase the remaining debt  $(D-X)$  at price  $\delta$ .  $X$  can be small, so that the remaining debt  $\delta(D-X)$  will exceed the market value without forgiveness, the latter value being limited that by the positive probability  $(D/2)$  that the country will default on overall debt  $D$ .

*Chapter 3*  
*External Borrowing of Ukraine.*

Reformation of the Ukrainian economy is impossible without solving the problem with external debt. Ukraine, which is staying on the way of the transition, has a burdensome external debt.

With other countries of former Soviet Union, its economy had been stagnating before the actual breakdown of the USSR. The breakup of the former Soviet Union was accompanied by 10-folds increase in price of oil and a collapse in trading relationship among the FSU republics. The enterprises could not afford the energy and other input for production. Moreover the collapse of relationships among enterprises of the former Soviet Union republics only showed inefficiencies in production which existed in the USSR when the enterprises with vertical relationships were separated by thousands of kilometers.

Inexperienced in management of the country, the Ukrainian government financed the state budget deficit in the 1991-1994 by simply printing money. Prices soared, driving inflation to 10,000 % per year. When it was understood that the printing of money did not improve the welfare of the nation, the government began to borrow. Initially the government borrowed on the domestic market, however rapid increase in interest rate induces borrowing on international credit market. Attraction of foreign capital into OVDP market started in 1996. During first half of 1997 non-resident, interested high real yields on domestic T-bills (48.3 % in 1996) invested 950mln USD into OVDP. But most what Ukraine has borrowed since the independence has not been borrowed for investment: it has been borrowed for consumption:

- liquidation of the budget deficit
  
- unbalanced trade

- formation of national currency stabilization fund
- accepting enterprises debt

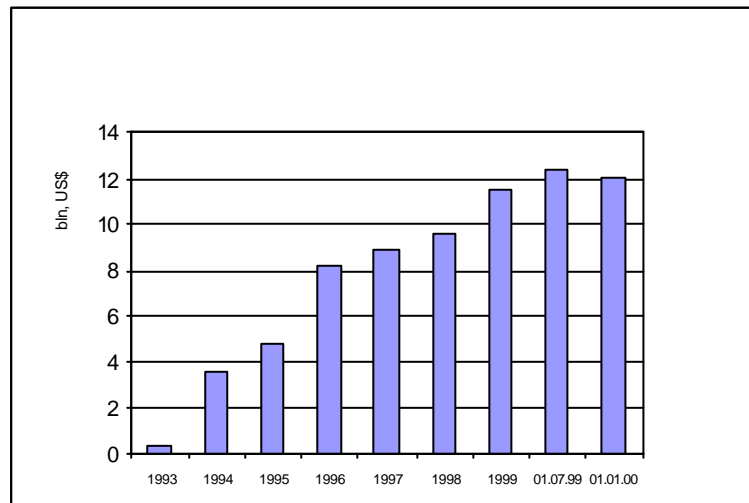
That fact means a bad influence on the economy. Because high interest rates suggested by the government caused decrease in less profitable investment in real sector, thus intensifying recession in economy (UEPLAC). The second government had to buy the OVDP by emission which lead to inflation during 1996-1999. The worst of all, much of the borrowing was undertaken to finance the payments on previous debt. That pyramid of debt is a sure road to collapse. Simultaneously with debt accumulation, Ukraine began to face a danger of a substantial capital outflow and a depletion of foreign currency reserves as the result of the:

- Asian Crisis
- affect from Russian Crisis in 1998
- slowdown of economic reforms
- shrinking access to credits from abroad caused by loss in the government confidence.

In the second half of 1997 the non-residents started to withdraw their capital. During 1998 1.4 bn Hrn were paid to nonresidents in interest and principal payments. In September 1998, right after Russia froze its GKO's in August, the Ukrainian Ministry of Finance offered two separate scheme for residents and foreigners to restructure the domestic debt in T-bills (OVDP) amounted USD 4,5 bn by that time. The foreign holders of T-bills agreed to receive 20% in cash on the exchange date and the rest in a new zero coupon bond two-year issue (maturing on September 22, 2000). The nominal value reached USD 500 million. More than 95% of creditors were agreed. However the restructuring is difficult to call voluntary, because it was supported by IMF and the creditor

fear of default (COMMERZBANK 1999). That year Ukraine has to return debt to Nomura International partially by issuing new bond through ING Barings. Since than factually Ukraine has not access to international credit market because loss in creditworthiness. The resent events show the deteriorating situation with the external debt. In the autumn 1999 the Ministry of Finance initiated negotiation with ING Barings on restructuring a ten-month USD 163 million bond. The paper was issued in September 1998 to finance part of the repayment on the USD450 bond issued by Nomura in 1997. Both sides agreed to 20% up to front cash payment and 80% by reopening the DM-denominated Eurobond maturing in February 2001. The dynamic of accumulation of external debt is shown on the graph below (see also Table A 3.3. in the appendix). The slight slowdown in the beginning of 2000 is the result of eliminating part of the debt due to Russia by selling military equipment to that country. With negative trade balance and decreasing budget revenue it became impossible for Ukraine to serve its external debt.

**Figure 2.**Accomulation of the Ukrainian external debt



Source: Ministry of Finance

On 01 January 2000 Ukraine has 12.0608 bln dollars in external liabilities and its expected GDP 25 \$bln in 2000 (ING Barings group prediction ,2000). The

Ukrainian debt can be divided on two categories: the official debt to international organizations and debt owned to private lenders in the forms of bonds and different obligations.

The debt on 01/01/2000 Ukraine owns 2.9598 bln dollars to IMF, 2.1501 bln to World Bank, 443 mln to European Community, 115 mln dollars to European Bank for Reconstruction and Development. Ukraine also owns 3404.5 mln dollars to governments of other countries (source: Ministry of Finance)

The situation with debt to private lenders is the following: Ukraine owned 1970.9 mln dollars to foreign commercial banks and 1015 mln dollars in T-bills (source : Ministry of Finance). For detailed information see Table A 3.1, Table A 3.2. and Table A 3.3. in the appendix..

The external debt to GDP ratio exceeds the critical value 40% and is equal to 50%. The debt service to export ratio can achieve 17 % -20% in 2000, the critical threshold level defined by IMF is equal to 20 percent (Source: UEPLAC) Ukraine must pay USD 2,231 mln in 2000 and USD 2,109 mln in 2001( ING Barings2000). Exchange reserves of the country were USD1090 mln on the beginning of February 2000(ING Barings 2000). So it is impossible for Ukraine to fulfill its external debt obligations. It is clear that Ukraine will manage to obtain liquidity relief from multilateral organization IMF and World Bank if it is going to reform its economy (ING Barings 2000, see also Schwarts (1999)). The main problem is obligations to pay its debt to the holders of the bonds. Under supervision of ING Barings Ukraine government suggested to convert up to USD 3.4 bln in indebtedness into new eurobonds with maturity seven years and 11% percent interest rate on USD denominated and 10 % on eurodenominated bonds. The average life of the bond will be equal to 4,4 year. On 15 March 2000 85 % of creditors gave agreement and plan began to exist in reality. That restructuring does provide sufficient breathing space to prevent the sharp fall in reserves, however the liquidity

situation remains very tight with little margin for error (ING Barings 2000). The ordinary rescheduling will considerably relieve the burden on the budget in 2000. The expenditure on the principal financing will fall from 1424 mln USD to 185.6 mln, however substantially increase the principle and interest payment burden on 2002-2007 (UEPLAC, ING Barings 2000, see also the payment pattern on the external debt 1996-2007 in Figure A 3.1. ). According to Sounders (1999, p. 331 ):

*“By rescheduling now the borrowers may close itself out of the market for loans in the future. As a result, even if it encounters high growth investment opportunities in the future, it may be difficult or impossible to finance them”.*

Because Ukraine can not afford to fulfill its liabilities on eurobonds in current period it impairs the credibility of Ukraine on the international credit markets. Even assuming that government introduces all of the right steps in short order it will still take time for new credits and foreign direct investment to flow and capital flight to decelerate (ING Barings 2000). According to IMF and The World Bank classification external debt restructuring, which involves reduction of debt liabilities, is more appropriate in cases when indicators shown in Table 2 exceed critical levels.

**Table 2 Critical values of the external debt and the performance of Ukraine** (end of the year)

	Critical values	Ukraine	
		1999	2000**
EXTERNAL DEBT AS % OF GDP (AT THE END OF THE YEAR)	40	51.3	49.8
Repayment and servicing of external debt as % of export of goods and services	20	17*	20.2

\* January – September

\*\* calculated on the basis of planned indicators of the Ministry of Finance and the Ministry of Economy at the beginning 2000.

Source: UEPLAC, World Bank

The buybacks, debt equity swaps or exit bonds can be considered as market based mechanisms in the case of Ukraine.



The external debt problem can not be considered without consideration of the overall situation in Ukraine economy. Ukraine's macroeconomic governance is close to that in central European countries such as Poland, Hungary and the Czech Republic. However Ukraine lands at the bottom of the former Soviet Union countries in terms of its micro-economic governance because it failed to create a good environment at the enterprise level (The World Bank 1999). Ukraine enterprises see a high cost working in the formal economy. The first problem for all entrepreneurs is to get license, the process, which can last for weeks or even months. It can also cost the entrepreneur heavily in terms of fees, bribes and time lost from production. In 1998 the government made considerable progress in reducing the number of areas of activity subject to licensing but introduced a lot of "permits " which deteriorate situation more (The World Bank 1999).

The burden of complying with government also very high. As it was shown by The World Bank (1999) reports that 17% of management time in Ukraine are spent on complying with the law. For comparison in Czech Republic 5% of the time are spent on the compliance. The biggest single regulatory burden is the visits by inspectors. Among the regulators that visit enterprises, the tax police are the most burdensome, accounting for the vast majority of the visits and the heaviest costs. The large number of different taxes discourages investment and growth. The entrepreneurs are frustrated by numbers of changes in tax laws. Under this situation many firms go to the "shadow" to evade taxes and avoid burdensome regulation (The World Bank 1999).

Low wages of bureaucrat and high regulatory burden cause the severe corruption in the country. In many cases the entrepreneurs found it is profitable simply to pay bribes to officials to escape complications.

High external and internal debt add to the tax regulation pressure in the country. The government must collect revenue to repay debt and so is afraid to lost part of it because of relaxing of tax pressure. From the other hand it

causes the low budget revenue and even without budget deficit which Ukrainian government predict on 2000 if its program of economy development will be approved by Parliament it is very unlikely for Ukraine to fulfill its external liabilities in full amount. Improvement in the microeconomic policy must be accompanied by the elimination of the external debt because high external debt deteriorates the situation in the debt country and blocked many valuable projects.

## Chapter 4

### *Buybacks of the Ukrainian external debt*

Considering opportunity of buybacks of foreign debt of Ukraine we must estimate the benefit which Ukraine could obtain from such transaction. First of all using the framework developed by Bulow and Rogoff (1988) we could estimate the appropriateness of buybacks for Ukraine. Using the inequality (2.3) and calculating  $q$ , the maximum amount of payments which creditors could extract in the case of the default. As a proxy it can be used the repayment on debt to GDP ratio as Bulow and Rogoff (1988) suggest. Using data from 1992 to 1999 year (see table below) we could obtain that maximum value of external services to GDP ratio was 0.044 in 1995. One of the maximums of servicing on the external debt to GDP ratio was also achieved in 1995 and constitutes 7.2 percent from the export in 1995.

Table3. Servicing of the Ukrainian external debt.

year	servicing of the external debt to GDP, %	Servicing Of the external debt to the export, %
1993	...	1,8
1994	1,2	2,5
1995	4,4	7,2
1996	2,4961	5,5
1997	2,21322	7,5
1998	3,1271	5.9
1999	3,1039	7.5

Source: UEPLAC , World Bank.

Assuming  $q$  is equal to **0.044** and market price of the debt  $v(D)/D$  is equal to **0.63** (the price of the Ukrainian eurobonds on Frankfurt Stock Exchange on 7 February 2000, 2 days after Moody's and Standard & Poors agency lowered the creditworthiness index of Ukraine to Caa1 and CCC+ correspondingly). The buybacks will be beneficial for the country if and only if the following inequality holds:

$$V'(D) > (1-q) / \left( \frac{D}{V(D)} - q \right)$$

$V'(D) > (1-0.044) / (1/0.63 - 0.044)$  or  $V'(D) > \mathbf{0.589}$ , as Bulow and Rogoff (1988) show that in this case the probability of full repayment is quite high and it is inconsistent with expectations that the country will repay some but not all debt.

After restructuring of Ukrainian bonds the price of the bonds increase up to 82 cents per dollar (Frankfurt Stock Exchange, 17 March 2000). In that case the necessary marginal value of the debt could be calculated:  $V'(D) > (1-0.044) / (1/0.82 - 0.044)$ , or  $V'(D) > \mathbf{0.813}$ , that is more unreliable values for the marginal price of the debt. In this case the creditors would anticipate that country would pay its external debt practically fully and so will be unwilling to sell bonds earlier.

We could conclude that under the framework developed by Bulow and Rogoff (1988) the buybacks are costly for the Ukraine because  $q$ , penalty rate, is rather small.

The high debt to GDP ratio and moreover the inability of the government to fulfill its external obligations negatively impact the expectation of the old foreign creditors as well as creditors who are going to lend the debtor country. Moreover because asymmetric information about investment climate in the country I assume that foreign financial institutions do not distinguish private commercial risk from the sovereign risk. The foreign lenders may have felt unable in monitoring the private borrowers activities in any way and calculate the risk of the investment in the country by observing mainly sovereign risk of the debtor country (Eaton 1990). I argue that problems with the Ukrainian external debt is one of the cause why the foreign direct investment and more important foreign portfolio investment are on such low level in comparison with suppose other transition economies. So I argue that improvement in the microeconomic policy should be accompanied by eliminating external debt,

taking into consideration and amount of the current exchange reserves, through buybacks. According to Acharya, Diwan (1990) a screening model would help the country obtain the necessary debt relief as well as increase creditworthiness of the country on international credit market. By forgiving part of the debt creditors of Ukraine can induce buybacks for purpose to receive higher repayment stream in the future. One of the result of which would be the early Ukraine re-access to international credit market in the form of increasing foreign portfolio investment to Ukraine according to de Aghion (1991). The importance of foreign sector in Ukraine for its recovery from deep depression can not be underestimated. Szyrmer (1995) argues that a strong foreign sector in Ukraine is the necessary although not sufficient condition for the successful growth of Ukrainian economy.

The assumptions of the de Aghion (1991) model are the following:

- 1) The debtor country is cut off from international credit market unless it pays its debt partially or fully.

That assumption is hold in the case of Ukraine. Recent problem of Ukraine to receive new loans to pay for old debt is support to that assumption.

- 2) All creditors have equal discount factor for the debtor country.

We can not unambiguously say does the discount factor is really equal for all creditors and Ukraine itself. We assume it for simplicity

- 3) The debt is moderate.

The Ukrainian external debt constitutes 50 percent of its expected GDP in 2000(ING Barings). Although this debt to GDP ratio is rather high and Ukraine came across the 40 percentage level it could be said that the external debt is moderate in comparison with highly indebted developing countries where the debt to GDP ratios constitute usually more the 100 percent.

The utility to re-access to international credit market can be approximated by following

- The increase in foreign portfolio investment into Ukraine economy caused by increase in creditworthiness of Ukraine and so decrease in sovereign risk expected by investors.
- The increase in foreign direct investment into Ukraine economy caused by the same factors that portfolio investment.

However, intuitively, the better proxy from previous two is the foreign portfolio investment. The portfolio investment is more volatile than foreign direct investment. Because of asymmetric information between creditors and lenders the portfolio investment depends mainly on sovereign risk of the debtor country. As one of the major indicators of risk is fulfillment of the external obligations by the government.

In evaluating sovereign risk financial institutions abroad use different indexes, the main of them are

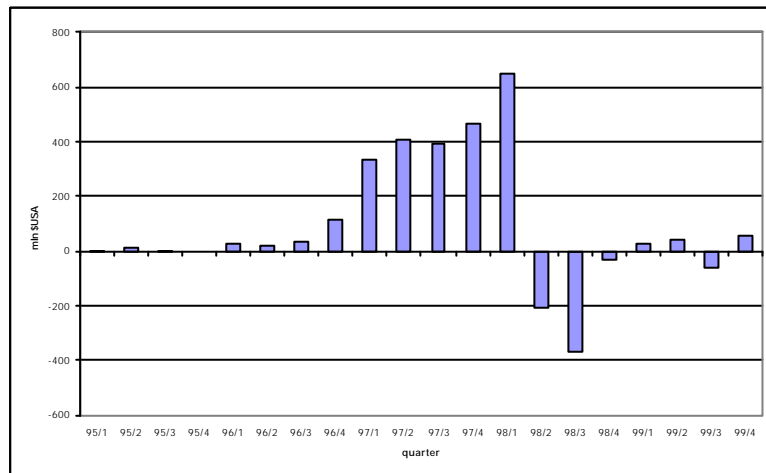
- **Institutional Investor Index**, which for Ukraine is equal to 20.5 and place Ukraine as 105<sup>th</sup> in rank after Uganda and Senegal (Saunders 1999, p.335).
- **S&P Index** which for Ukraine is CCC+.
- **Moody's Index** which for Ukraine is equal to Caa1

The sensitivity of credit market to the Ukraine debt problems can be observed using historical data. After Ukraine announced about rescheduling of the debt in eurobonds on 4 February the Moody's and Standard & Poors indexes fall: the Moody's index fall from B3 in the Autumn to Caa1 in three days. The prices of the eurodominated bonds fall by 15 % and became equal to 63 cent

on the 7 February (Frankfurt Stock Exchange) what corresponded to yield in 345 % per year. Deutsche Mark denominated bonds fell from 63DM down to 53,3DM.

The portfolio investment had been increasing till third quartile 1998. The sustainable part of that investment constituted the borrowing of Ukrainian government on international credit market. The structure of the bond debt is shown in the Table A 3.4. Partially as a result of Asian crisis in 1997, the default in Russia in August 1998, problems with payments for OVDP and impossibility for Ukraine to fulfill its debt obligation to Nomura International on the sum 450 mln dollars using own reserves on the September the outflow of capital began. Since fourth quartile 1998 Ukraine has not access to international credit market. It is clearly seen from the graph below.

**Figure 3.** Foreign portfolio investment into Ukraine economy.



Source: Ministry of Finance

ING Barings predicts that foreign portfolio investment will remain constant on the level 100 mln dollars during next 7 years.

I assume that for Ukraine utility function of re-accessing to international credit market  $W$  is the present value of inflow of foreign portfolio investment:

$W=V$  (Foreign Portfolio Investment)

The portfolio investment in 1997 was equal to 1605 mln dollars. Suppose that amount Ukraine could receive in the case when it had fulfilled its external obligations (also here I assume that amount of creditors who were involved by high interest rates equal to amount of creditors who were threatened by that rates). The present value of utility, assuming that Ukraine would receive that amount each year for a long period of time, can be calculated using 11% interest rate which Ukraine is going to pay for new USD denominated Eurobonds. Using the formula of present value for console  $W = \frac{1605}{0.11} = 14590.91$  mln dollars. This value underestimates the true value of the utility, because it was not take into consideration

- The externality, which Ukraine may receive, from re-accessing to international credit market, such as development of financial infrastructure.
- The increase in portfolio investment with time under economy growth

The second variable in the model which must be estimated is  $D=1$  from condition  $V'(D)=0$ . Under assumption that all creditors are rational, they do not give any more loans to Ukraine, because in that case present value of the overall debt will fall. That is why I assume that current level of the external debt USD12068 millions correspond to  $D=1$ . This sum overestimates true value, because debt to Russia and Turkmenistan for gas and oil, credits from other governments, credits from international financial institutions are managed partially by political interests.

The third variable, which must be estimated, is discount factor of future consumption for the country  $\delta$ . Suppose for Ukraine the period 2 is period after 2007 when it suppose to repay old debt in bonds in full. As starting point for buyback I take year 2002. The discount factor can be easily estimated using



Acharya and Diwan (1993) approach, that discount factor is based on  $1/\delta=1+r$ , where  $r$  is interest rate in the country. Assuming  $r=11\%$ , for reason described above, discount factor for 5 year period (from 2002 to 2007)  $\delta=1/(1,11)^5=0,593451$ .

The fourth variable in the model is debt  $D$  which must be paid in full in 2007. Converting stream of payments into one payment in 2007 we receive:

$$D=0.374*1.11+0.374*(1.11)^2+0.374*(1.11)^3+0.374*(1.11)^4+0.374*(1.11)^5+3.4=5.985409\approx 5.985 \text{ bln USD.}$$

Normalising in the maximal amount of the debt  $D_n=12,068$  we receive the following parameters for the estimation of the profitability for Ukraine to implement buybacks in 2002 .

$$W_n = \frac{14590 \cdot 0.91}{12068} \approx 1.21, D_n = \frac{5985}{12068} \approx 0.50, \delta W_n \approx 0.72, \delta D_n \approx 0.30$$

That is the case when  $\delta W_n < 1$ , the country will decide to undertake buyback if the following inequality holds:

$$W \geq \frac{dD}{1 - d(1 - D)}$$

For Ukraine we get  $1.21 > \frac{0.3}{1 - 0.593 \cdot 0.5} \approx 0.43$ . It can be concluded that

Ukraine could undertake buybacks of foreign debt in 2002 if it has enough reserve for that, or equal minimally to  $\delta D=3,552049$  bln dollars. In that case Ukraine will re-access to international credit market under Acharya, Diwan, de Aghion approach. This concession to creditors would show the strong desirability of Ukraine to invest and would involve portfolio investment. Improvement in microeconomic policy must go along with liquidating of the external debt.

## ***Conclusion***

The burdensome external debt is one of the main detriments to Ukrainian economy growth. It produces unsustainable situation on the financial market and leads to loss in creditworthiness of Ukraine on international credit market. Factually Ukraine is cut off from that market. Restructuring of the debt in bonds by rescheduling give the liquidity relief for the short time. However because the base characteristics of the debt to GDP ratio achieved the critical level, foreign creditors should implement debt forgiveness. However because of the debt structure free-riders problems arises. This problem could be solved by implementing market based reduction mechanisms such as buybacks, debt-equity swap, exit bonds (or senior debt). The last is not very useful. It is clear that foreign creditors would not believe Ukraine promise to treat new bonds as senior bonds, like in the case of Mexico in 1988, when only seventh part of planed debt reduction was achieved. Debt-equity swaps is the combination of buybacks and foreign direct investment factually is ultimatum to creditors to invest in Ukraine economy, what is not efficient, and not improve creditworthiness of the country much. As Bulow and Rogoff (1988) argue debt-equity swap is not the best way for a debtor country to attract foreign direct investment, because the country has to repurchase its debt on average price in any case. From the Acharya and Diwan (1990) approach because debt equity swap is not true willingness of creditors to invest, but only fear of default their screening effect is less clear then effect from buybacks.

In this paper it was shown that under Bulow and Rogoff (1988) approach, in the case of Ukraine buybacks is not profitable, and it is better to spend the foreign exchange reserves on the investment in the current period. However historical analysis show that government investment is less effective then private investment explained mainly by moral hazard and adverse selection problems. Moreover because of asymmetric information the spending of the reserves on purposes that defer from reduction of future debt show creditors that the country does not concern about future consumption and so discount

factor of that consumption is low. That is why creditors would not be willing to implement debt relief and give the new loans because they have not enough evidence of the government commitments. In this paper I show that because utility for Ukraine to re-access international credit market is high, the reliable policy advise is to undertake buyback in the nearest future, if foreign exchange reserves make it is possible (it is possible under “optimistic scenario” by ING Barings or under the “ high case scenario” by World Bank). The amount of foreign exchange left after debt repurchasing should be enough to suppress possible speculative attacks on the national currency. On the other hand the necessary reserves can be found from concession of the governments debt by “Paris Club” on the sum 806 mln USD (except Russia, Turkmenistan and Check Republic) and canceling some of the debt by IMF and the World Bank like in the highly indebted poor countries initiative in September 1996. This Initiative was adopted to reduce the debt burdens of eligible HIPC's to sustainable levels and include such countries: Uganda, Bolivia, Burkina Faso, Guyana, Cote d'Ivoire, Mozambique, Mali and some others. The maximum debt reduction was equal to 63% in Mozambique in 1998. The condition for debt relief was carrying out strong programs of microeconomic adjustment and structural reforms (Andrews, Boote, Rizavi and Singh 1998) Another example in 1991 “Paris Club” has restructured 50% of debt principal and servicing to Poland. The remaining part of the debt was prolonged for 19-23 years. In 1994 Bulgaria succeeded to manage its debt to foreign commercial banks: the debt amounting to 8.1 bn USD was reduced by 50%. In the case of Ukraine a strong position has to be elaborated and pursuit during the negotiations. Focus must be on the fact that Ukraine cannot carry out its payment obligations (UEPLAC) and need inflow of capital, not for government consumption but to speed growth of the economy. It also could be possible to re-access international credit market by repurchasing small fraction of the debt, using internal resources (de Aghion 1991).

## Appendix

Table A 2.2. Peak Net Repayment-GDP and Net Repayment-Export ratios, thirteen highly indebted countries .

Country	Average net repayment-GDP ratio in peak payment years	Average net repayment-export ratio in peak payment years
Argentina	0,029	0,224
Bolivia	0,04	0,0126
Brazile	0,018	0,163
Chile	0,027	0,091
Ecuador	0,033	0,12
IvoryCoast	0,047	0,104
Mexico	0,039	0,2
Morocco	0,025	0,107
Nigeria	0,02	0,124
Peru	0,018	0,084
Uruguay	0,04	0,136
Venezuela	0,042	0,143
Yugoslavia	0,018	0,066

Source: World Bank, Debt Tables, 1982-1988.

Table A3.1. The structure of foreign debt of Ukraine on 01.01.2000

	Mln, \$
<b>Overall</b>	<b>12060,8</b>
<b>International Financial Organizations</b>	<b>5668,5</b>
World Bank	2150,1
European community	443,3
EBRD	115,3
IMF	2959,8
<b>Governments</b>	<b>3404,5</b>
Russia	207,2
Turkmenistan	316,9
Japan	201,2
German	384,2
USA	314,9
France	36,5
Italy	51,4
Spain	15,1
Swydzereleud	3,4
Check Republic	8,8
<b>Commercial Banks</b>	<b>1970,9</b>
Chase Manhattan Bank S.A.	960,6
Bankers Trust Luxembourg	583,4
E.M. Sovereign Investment	258,4
Bavary Unighted Bank	112,2
Westdeutsche Landesbank(Europa)AG	56,2
<b>Other</b>	<b>1017</b>
T-bills 1995	1015
Nisscho Iwai(Pivdenmash)	2

Source: Ministry of Finance.

**Table A 3.2. External state debt of Ukraine during the period of 1993-2000**  
(beginning of the year, mn USD)

<i>Creditors</i>	1993	1994	1995	1996	1997	1998	1999	2000
1. CIS countries:	0	2733	3445	4987	4205	3720	3614	4439
Russia	0	2704	2704	3060	2381	2001	1896	3074
RJSC "Gasprom"	0	0	0	1200	1120	1120	1155	1048
Turkmenistan	0	0	713	708	704	599	458	317
Moldova	0	28	28	19	0	0	0	0
Kazakhstan	0	1	0	0	0	0	0	0
2. International financial organisations:	0	0	477	2101	3203	3670	4473	4931
World bank	0	0	101	503	905	1212	1586	2019
European bank	0	0	5	33	35	66	97	111
International Monetary Fund	0	0	371	1565	2263	2392	2790	2801
3. Other states:	0	0	0	110	423	502	477	531
European Union	0	0	0	110	241	352	333	345
Japan	0	0	0	0	182	150	144	186
4. International credit lines:	396	891	906	745	860	1013	1046	761
Germany	196	401	645	670	597	463	492	348
USA	174	333	123	71	215	448	396	318
European Union	26	157	123	4	0	0	0	0
France	0	0	6	0	35	32	37	36
Japan	0	0	0	0	0	37	31	-
Italy	0	0	9	0	13	29	66	57
Spain	0	0	0	0	0	1	5	1
5. Foreign commercial banks (fiduciary loans)	0	0	0	0	0	559	1767	1769
6. Other creditors	0	0	0	274	148	91	95	6
<b>Total external State debt</b>	396	3624	4828	8217	8839	9555	11472	12438

Source : Ministry of Finance.

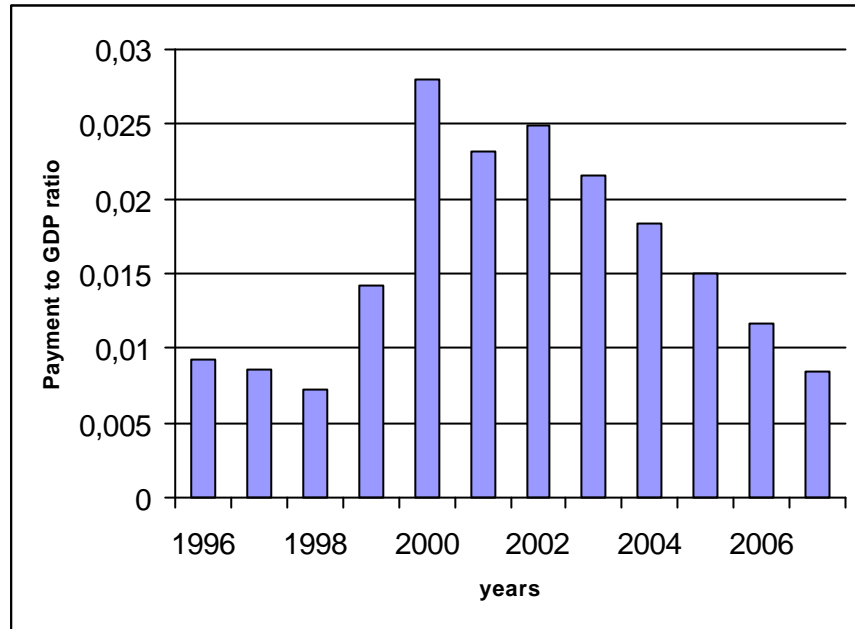
Table A 3.3. Borrowing on international credit market

Data of issue	Nominal Amount		Amount actually received (min)	Lead Manager	Nominal Interest Rate	Actual Interest Rate	Maturity	Months to Maturity	Repayment profile
	In currency of issue	In \$ US equivalent							
11-August-97	USD 450	USD 450	USD 396,9	Nomura International	12%	13,45%	11-Aug-98	12	Eurobond
17-Oct-97	USD 109	USD 109	USD 98,9	Chase Manhattan	10%	10,21%	20-Oct-98	12	Fiduciary Loan
23-Dec-1997( 1 st tranche)	UAH 375	USD 197	UAH 278,9	Merill Lynch	44%	46,09 % ( at least 21,125% in USD)	22-Sep-98	9	T-bills
23-Dec-1997( 2 nd tranche)	UAH375	USD 197	UAH 257,4	Merill Lynch	44%	45,84 %.( 21.125 % in USE*)	22-Dec-98	12	T-bills
•H-Febr-98	DM750	USD 421	DM 746,3	Merill Lynch, Commerzbank	16%	16,20%	26-Feb-01	36	Eurobond
17-Apr-1998( additional issue)	DM250	USD 139	DM255	Merill Lynch, Commerzbank	16%	14,99%	26-Feb-01	34	Eurobond
17-March-98	ECU 500	USD 540	ECU 488	SBC Warburg	15%	15,94 % ( 17,5 % inUSS)	17-Mar-00	24	Eurobond
6-Aug-98	UAH 332	USD 155	USD 155	ING Barings	55%	55 % ( at least 17,5%inUSS)	6-June-99	10	T-bills
20-Aug-1999	DM530	USD 270	DM 499,4	Chase Manhattan	16%	21%	26-Febr-01	18	Fiduciary Loan

a) interest is paid in UAH but annual return is guaranteed to be not less than 21,125 % in USD  
b) coupon is payable semiannually and annual return is guaranteed to be not less than 17,5 % in USD .

Source : Ministry of Finance.

Figure A 3.1. Payment to GDP ratio (under restructuring proposals)



Source:INGBarrings.



## BIBLIOGRAPHY

- Acharya, Sankarshan and Ishac Diwan.1989. Sovereign Debt Buybacks as a Signal of Creditworthiness, *World Bank Working Paper* #318 (December).
- Acharya, Sankarshan and Ishac Diwan.1993. Debt Buybacks: Signal Sovereign Countries creditworthiness: Theory and Tests, *International Economic Review* (November): 795-817.
- Beadriz Armedariz de Aghion.1991. Buybacks of LDC Debt and Scope for Forgiveness, *OECD Development Center, Paris France*.  
www.oecd.org.
- Bulow, J and Kenneth Rogoff.1988.The Buyback Boondogle, *Brookings Papers on Economic Activity* 2: 675-699.
- Claessens , Stijn and Ishac Diwan .1989."MarketBased Debt Reduction " , in Hussain , I. And Ishac Diwan , eds ., *Dealing with the Debt Crisis* , *The World Bank* , September.
- COMMERZBANK.1999. Ukraine. Alter Elections but Before, *unpublished report*.
- Cohen, Daniel .1993. Low Investment and Large LDC Debt in the 1980's,*The American Economic Review* V.83, I.3 (June): 437-449.
- Cohen,D. and T.Verdier.1990. Secrete Buybacks of LDC Debt, *CERP Discussion Paper* # 462,September.
- Dean,J and M.Bowe.1997.Has the market solved the sovereign-debt crisis? *Princeton Studies in International Finance* # 83 (August).
- Dooley, M.P.1989. Buybacks, Debt-Equity Swaps, Asset Exchanges, Market Prices of External Debt, in Frenkel, J.A., Michael P. Dooley, andPeter Wickham, eds.,*Analytical Issues in Debt,IMF*.
- Dornbusch, Rudiger .1988. Comments and Discussion. *Brookings Papers on Economic Activity* 2: 699-704.
- Eaton, Jonathan .1990. Debt Relief and the International Enforcement of Loan Contracts, *The Journal of Economic Perspectives* V.4, I.1 (Winter):43-56.
- Froot, Kenneth .1988. Buybacks, Exit Bonds, and the optimality of debt and liquidity relief, *NBER Working Paper* # 2675.
- Hoffman, B. and Helmut Reisen.1990.Debt Overhang Liquidity Constraints and Adjustment Incentives, *CEPR Technical Papers* # 32 (October),  
www.cepr.org.
- ING Barings. 2000. Ukraine's debt exchange: context and

analysis, *ING Barings Emerging Europe research, unpublished*

Krugman, P.1989. Market-Based Debt-Reduction Schemes, in Frenkel, J.A. , Michael P. Dooley, and Peter Wickham, eds., *Analytical Issues in Debt,IMF*.

Sachs, J. 1988. Comprehensive Debt Retirement: The Bolivian Example.*Brookings Papers on Economic Activity*2, pp. 705-715.

Sounders, Antony .1999. Financial Institutions Management: A Modern Perspective, *Irwin McGraw-Hill*.

Szyrmer, Janusz .1996. Foreign Sector in a Transition Economy: Ukraine's Vicious Circle, *The Ukrainian Economic Review*, 137-144.

Ukrainian Economic Trends, *Ukrainian –European Policy and Legal Advising Center*. Kyiv. Various Issues.

The World Bank.1999. Ukraine. Restoring Growth with Equity : A participatory Country Economic Memorandum, October 1999, *A World Bank Country Study*.

