Is the flat tax working in the Baltic countries?

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Abstract

The flat tax rate is increasingly under scrutiny in West European countries as a model for taxation. Progressive taxation might be deemed as unsatisfactory to attract investment in the 21st century in a world of more global competition. Using macroeconomic data, this paper investigates whether the Baltic flat tax countries in Europe have higher growth rates than other transition economies. The findings are (1) the Baltic countries have higher growth rates than the control group. (2) Economic freedom and flat tax seem attractive to FDI, but mainly in the case of Estonia. (3) Economic inequality has not increased in the Baltic states despite low marginal income taxes.

Keywords: flat tax, economic growth, Eastern Europe, tax compliance, investment

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I. Introduction

Growth rates in Western European countries have declined over the last few decades. At the same time, the need for economic growth is rising on the agenda as the side-effects of neglecting it are becoming evident: lower economic growth in the long term. Besides, emerging economies with high growth rates – e.g., China, India, and East European countries – are competing with incumbents – USA and Western Europe – for investment in a global world.

This raises the question, whether there be a set of supply side reforms that could stimulate investment through a series of microeconomic channels and thereby enhance the growth rate. A group of emerging economies (Estonia, Latvia, Lithuania, Russia, the Ukraine, Romania and Croatia) have adopted the flat tax to attract FDI.

The purposes of this essay are:

- To define the flat tax concept and to explain its implications.
- To evaluate the flat tax regimes of the Baltic states with a control group (Czech Republic, Hungary, Slovakia and Slovenia) and conclude whether it has contributed to a higher growth rate or if there is another set of possible explanations.
- To evaluate the conflict with equity: has economic growth reduced or widened the gap between poor and rich?

The flat tax is subject to hot political controversy: in the USA the flat tax has been debated for 25 years but never introduced; Paul Kirchhof (the proposed candidate of Finance minister in Germany by CDU, but later he resigned) suggested a flat tax of 25 % at the federal level. Amongst the opponents, Gordon Brown, the Chancellor of the Exchequer in the UK, has flatly rejected it.

The whole issue to West European countries is not whether they should adopt the flat tax or not, but rather, generally, instigate the debate on economic reform.

A. Purpose

The target of investigation is the Baltic countries and their growth performance over the last 10 years versus a control group. Early on in the 90's, they all adopted the flat tax regime and embarked on a path of economic reform to attract investment and stimulate growth. The purpose is therefore to compare the Baltic countries with the control group.

One school of thought, the supply-side economists, argues that too high taxes is damaging to the economy and limits total investment in the economy, because taxation reduces the returns to investment and thus reduces the incentives of private investment. The long-run results are a limited capital stock and lower welfare. The flat tax may be attractive to investment and spur growth. One important proponent is of the supply-side economists is Arthur Laffer.

On the other side, we have the Keynesians, who argue that the government should actively be involved in reducing volatility in the economy and a tax regime with high marginal income taxes can do just that. Again, this might be an impediment to investment and therefore growth.

B. Method

In this paper, I will compare the Baltic countries with a control group, which shall consist of Czech Republic, Hungary, Poland, Slovakia, and Slovenia. None in the control group has the flat tax. This group of countries is also in transition to a market economy and similar in many respects, therefore they are suitable for comparison. I have excluded Bulgaria and Romania from the control group on the ground that they have incomplete data.

Econometric models are not suitable to this study, because the period of interest is far too short, thus few observations available in the data. Using graphs and tables is more appropriate. The period of study, 1996-2005, was chosen because it allows to correct for the initial period of recovery after the dissolution of the Soviet Union and the early period of reform, which was characterised by a fall in output.

As far the study, I have tried to compare different characteristics of the Baltic countries with those in the control group. More information on this procedure can be found on page 18.

Data on qualitative factors of economic environment was available from the HF, the FI, the WEF and Reporters sans Frontières. Data on income distribution was gathered from the World Bank Data Group and Eurostat. Everything else was collected from Eurostat.

C. Disposition

This paper consists of eight chapters. The second chapter deals with the income tax concept and the different taxes that can be used by the government. In the third chapter, I will introduce briefly the Solow-Swan growth model, and clarify the distinction between exogenous and endogenous growth models. Different measurements of poverty are introduced in chapter four. In the fifth chapter, I will deal with the Baltic countries, concerning how they have managed GDP growth, investment and income distribution from 1996 to 2004. Finally, the course of debate goes to appraising the suitability of a similar tax regime in West European countries. Chapter seven summarises the main findings.

D. Abbreviations

CA	Current Account
FDI	Foreign Direct Investment
FI	The Fraser Institute
GDP	Gross Domestic Product
HC	Human Capital
HE	Horizontal Equity
HF	The Heritage Foundation
PIT	Personal Income Tax
R&D	Research and Development
VE	Vertical Equity
WEF	World Economic Forum
WTO	World Trade Organisation

II. What is the flat tax?

In this chapter, the flat tax is defined and then a description about some of the types of taxes and designs follows to give an overall view of the implications of a tax system.

The flat tax can have several different designs. The unifying characteristic is one single tax rate for the same type of tax. In the case of PIT, we could have a 20 % tax rate for all levels of income, independent of how much a person is earning from work.

Another question is whether this tax rate should hold for other taxes. The flat tax is most often discussed in the context of income taxes. For income, we could then include work income, capital income, etc. each of which would have slightly different effects. Third, we could the same tax rate to other types of taxes, e.g. sale tax.

Most countries have a progressive tax system so that high-income earners are paying more than low-income earners. Some are highly complex (Germany might have the most complex tax code[1]). In contrast, the Alvin-Rabushka flat tax proposal claims such a degree of simplicity that all taxation of a household could be filled in on a single sheet of paper. Clearly, there must be vast differences between the structure of tax systems.

Th first flat tax came into political discussions in the US in the 1970's. The first proposals of the flat tax appeared then and particularly many during the years of the Reagan administration. Two famous proposals were the Hall-Rabushka (1985) and Bradley-Gephardt (1985).

B. What are the purposes of taxation?

Taxation has got many purposes. I will introduce the main reasons for taxation and explain implications of them.

1. *Government revenue*. The government has expenditure goals and it needs money from its population to attain these goals. Such expenditures are education, infrastructure, health care, etc.
2. By taxing people differently, their purchasing power is affected and this can ensure some degree of equality amongst tax subjects. In economics, *equity* is the term interest. Encyclopaedia Britannica defines it as "justice according to natural right or law"[2]. There are two sorts of equity (Howell, 2005), HE and VE.
    1. HE is defined as "equal tax treatment of equal groups". The definition of "equals" is not clear: Does it mean equality of income or welfare, at a given point of time or over the life cycle? And "equal tax treatment" could mean,e.g., tax payments that are absolute or proportional relative to income.
    2. VE is defined as unequal treatment of unequal groups. It is often subject to value judgement, and used to justify the subsidising of education and health care for the public, etc. This would in turn justify income redistribution through progressive taxation.

[1] Www.wikipedia.net, (flat tax)
[2] Www.britannica.com

3. It is not easy to separate the two. What is relevant is not necessarily income distribution within countries, but rather between countries, since the countries that adopted the flat tax may as a matter of policy be interested in catching up with richer countries.

3. Clearly, there do arise conflicting goals, such as whether economic growth or income distribution is more important in the short-run. Emphasis, here, is on the long-run performance of the economy. This is in contrast in to *macroeconomic stabilisation*, which deals with short-run output.

Fiscal policy is playing a key role in growth economics. To enhance output, the government can attract investment, both foreign and domestic. A related issue is public and private indebtedness. Too high a debt means that current expenditure is used to pay interest payments. The amount of debt is therefore a central issue. For instance, the current policymaker could encourage public expenditure and indebtedness. The purpose is to restrict the fiscal freedom of movement of future policymakers[3].

C. How can the flat tax be designed in theory?

There are five primary taxes of state income and many lesser ones. The most important ones are income tax, capital income tax, consumption tax, property taxes, inheritance tax and tariffs. Tariffs are usually beyond the power of domestic governments in these days and restricted in international agreements that are bilateral, signed by two countries, or multilateral, negotiated within the WTO.

Many taxes are described as follows[4]:

Personal income tax (PIT)

The ideal flat tax PIT should have only one tax rate. In practice, this has not appeared in any tax proposal to date. To allow for some degree of income progressivity, one can have a *personal allowance,* meaning a minimum amount of income exempt from PIT. The purpose is to increase the purchasing power of low-income earners. For a £5,000 personal allowance, there is – in practice – a zero marginal tax rate for all income up to this level. If so, then we have two tax brackets, but we are still treating it is one tax bracket – hence it is still regarded as being a flat tax.

As for any tax system, we need to define

- The number of rates
- The range of the rates
- State allowances
- Indexing of inflation
- Costs of compliance

The first two concern question of who should pay how much tax at a specific amount of income. Because PIT is technically easy to implement, the construction of higher tax rates for higher income levels is probably the easiest way to attain a progressive tax system. State allowances can do the same, but on the expenditure side of government instead of the the income side.

[3]See Romer (p. 582-592, 2006) for a short introduction.

[4] Howell (2005) offers a very good introduction to this and other concepts and issues related to tax systems and income distribution.

If there is no indexing for inflation, then taxpayers with constant real income tax will experience higher marginal tax rates as their nominal income rises with inflation. This is clearly inequitable. This should be manageable as long as inflation is not too high because it has a tendency to affect relative incomes which will be affecting real income for some groups more strongly than others. Problems are more likely to occur in hyper-inflation countries, but relative incomes might still be under pressure even in the long-run in a zero-inflation economy.

The costs of compliance deals with the costs of collecting. Generally, the aim should be to minimise these. High compliance costs should be treated as inefficiency and wasteful spending.

What else needs to be taken into account? Other issues are:

- *The unit of taxation*: households or individuals?
  - Individual taxation is internationally the most common.
  - If households are taxed, then a progressive tax system would mean a higher average tax for married couples.
- *Personal allowances*
  - *General allowances* (unconditional) are used for progressivity.
  - Excluding too many from the tax base implies less tax revenue[5].
  - *Targeted allowances* (conditional) can be used to address VE concerns (e.g., medical expenses) or to encourage certain activities (e.g., charity or culture).
    - Too many allowances tend to entail heavy administrative costs
    - Too generous targeted allowances may lead to the moral hazard problem.
  - *Pensions*
    - Pensions can be taxed at the contribution, investment and payout stage.
    - To avoid early withdrawals, penalties could be imposed.
    - The most common model today in the OECD is to have the same tax rate when paying in and when paying out money (Howell, 2005).

Because pensions cover long periods of time, small changes in taxation can have large effects on the final amount that is paid out, after adjusting for inflation.

Capital income

Capital income is defined as *interest*, *dividends* and *capital gains* (gains or losses from purchasing and selling financial assets at different prices). Capital income can be treated as a personal income and might therefore be subject to the same tax schedule. It would simplify the system.

There are two issues that concern the tax treatment of interest.

- Certain assets could be exempt from taxation. This happens usually to government bonds. It creates distortions between the allocation of financial assets. Investors differ over preferences of risk and return to financial assets. Finally, in an open economy, it would affect the interest rate or exchange rate

[5]Shome (2005, p. 26-27) argues that, in the case of developing countries, especially small taxpayers should not be neglected on revenue concerns, although tax compliance may be a problem. Simple and effective tax systems should be in use to satisfy the revenue goal. Insufficiency could otherwise lead to a growing informal sector and affect economic growth negatively in the long run.

if foreign investors face different tax rates owing to source-based rather than residence-based tax systems.
- Deductibility of some interest-related expenses. Often, this concerns mortgage interest.

Taxation of dividends is often subject to criticism. Because firms' profits are already taxed at the corporate level, double-taxation arises if dividends are taxed as well at the shareholder level, second time being subject to personal income tax.

Critiques argue that all income should only be taxed once.

Capital gains is a difficult area of taxation. The question is why and how it should be taxed differently. It is different in two respects:

- Gains might be difficult to calculate and measure, concerning advanced forms of financial instruments such as derivatives
- The costs of compliance might be high, at least for instruments that are not traded on a continuous basis. If tax is due upon the realisation of sale, the trader can choose the timing which could have distortionary effects.
  - If capital gains taxes are paid upon realisation, then the issue arises whether long-term gains should be subject to a different tax rate than short-term gains. This is often the case to promote long-term investments.
  - Another issue concerns the deductibility of capital losses and whether such losses can be carried forward to later years to average out different incomes between periods.

Consumption tax

The reason for writing *consumption tax* rather than *sales tax* is that there are two types of taxes on consumption, one of which is sales tax, the other two being *value added tax* (*VAT*) and *excise tax*. Usually, sales tax refers to consumption tax, but I will not be using this definition.

Sales tax is added to the sales of final products and services in the economy. So, if a producer wants to charge £10,000 for the cost of a car, a 20 % sales tax would add another £2,000 to the price of the final product. Hence, the car would cost £12,000. It is very easy to administer and the costs of compliance are low.

A flat sales tax on final goods and services would imply that there is no distinction made between them by the policymaker. This is generally the case, but never completely in reality since since products like petrol and alcohol are subject to higher tax rates than other goods. This is justified on grounds of environmental concerns and health concerns respectively.

A VAT is similar but instead applies to every operation that creates value. For example, a mine breaks iron ore and sells it to an iron foundry. The iron foundry refines the iron ore into steel, which is then sold to the car manufacturer. He, in turn, produces a car out of it. In each step, there is value added from one product to another. In each of these and for each intermediary product, the government will collect the full amount of the VAT upon purchase and then pay back the same amount upon sale. In effect, for producers of intermediary goods, the government collects tax and then pays it back, except for the consumer of the final good, who pays the full amount of the VAT and recovers nothing.

VAT is more difficult to avoid taxation than a sales tax, since any firm needs to sell a product to someone else in order to recover the tax. This lessens the incentive to cheat.

An excise tax is similar to sales tax and VAT. The difference is that it is based on a quantity (volume or weight) instead of the value of the product.

Property tax

Property tax can be levied on houses, boats, cars, etc. The timing of taxation can be either on a recurrent basis, annually for instance, or upon a certain event, such the sale of an asset. Property tax can be levied on houses, boats, cars, etc. *Inheritance tax* is levied when the property of a deceased is transferred to the relatives.

Other taxes

There are many other sources of income that potentially could be subject to some form of tax. If different incomes are treated differentially, then it is obvious that taxpayers would transfer as much income as possible to the type of income that has a lower tax rate. It could lead to serious abuse if in force for a long time.

- Fringe benefits can be earned in cash or in kind from, e.g., an employer and should be regarded as income. Specifically benefits in kind are difficult to be brought to tax.
  - Common forms of benefits should be taxed when possible. Such are medical benefits contributed by the employer, insurance, transportation allowances, food discounts, education, etc.).
  - These tax benefits can be brought upon the employer or the employee.

D. Global Capital Mobility and Taxation

One fundamental question concerning the design of the flat tax is whether a single rate schedule or multiple rate schedule should apply to all forms of taxes. The former is referred to as a *global* approach of taxation and the latter as a *schedular* approach to taxation. This question is very important, because "it would determine, amongst other things, whether labour and capital income should be taxed separately – and differently" [Zee, 2005, p. 5].

- For the PIT, the global approach is always easier to use both for tax administration and for the taxpayer. The benefits are lower costs of compliance, better predictability for investors of calculating returns.
- The schedular approach is more useful if we want to achieve maximum tax returns. Assuming that this is the only objective of the policymaker, we could levy higher taxes on certain items and lower taxes on others. The key is to levy higher taxes on those items that are less mobile. Some examples are petrol and houses. People may need their cars to travel to work, and assuming that this is their only choice of transportation, they have to pay the tax in full and cannot escape taxation. This is at least the case of the current time period.

Thus, the revenue maximising strategy is to tax those things that have a lower price elasticity of demand.

However, owing to an increasingly higher mobility of capital, it is becoming increasingly difficult to levy taxes on financial assets. Higher taxes on capital income may simply result in people trying to hide their income or move abroad to escape the taxation requirements of their current jurisdiction. The effects of recent strategies can be summarised (Zee, p. 40):

- Some countries attempt to reduce the tax burden on capital income altogether.
  - This targets consumption more and investment less.
- Adopt a lower rate of tax on capital income than labour income.
  - PIT has a schedular basis.
  - This is common in the Nordic countries.

To conclude, we can state that HE concerns should be weighed against relative mobility of capital to labour.

III. Economic Growth

Here, it is first first explained how the flat tax translates into higher levels of output. Second, a short explanation of different growth models is made to show how economists view output.

Would a higher growth rate be attained by the the flat tax? To the proponents, this is the main argument. But we need to consider how it would happen. The tax system is one of many public policies to do this. Case et al. (1996) (p. 813-815) give the following advice in regard to tax policy and economic growth:

(1) Policies to increase the saving rate. Capital accumulation enhances the production possibilities of the economy, and the size of the capital stock depends on savings and depreciation. A higher level of savings means that more money is available for investment. We may therefore want to shift to a tax system that favours saving.

(2) Policies to stimulate investment. Savings for investment can come from domestic sources or foreign sources. Foreign investment will only work if the domestic economy is deemed as being attractive to invest in. For FDI, attractiveness to operate in it is also important. The general investment climate has both material and non-material requirements. Many of the non-material requirements are difficult to measure (industrial relations, infrastructure, the legal system). Low tax rates can attract FDI.

(3) Policies to improve the quality of education. HC is one of the factors of production and therefore important to a country's production possibilities. More education is associated with a higher standard of living.

(4) Policies to increase R&D. This is a form of investment into HC and has a positive return on growth.

(5) Control of government deficits. If governments are spending too much in relation to revenue, then, over time, they will accumulate lots of debt. If interest on this debt becomes too burdensome, there might be a conflict with other expenditure goals such as those that promote growth. This could have negative long-term consequences.

A. Exogenous growth models

Models are used in economics to show how a system or society works. They are often simplified versions of the real world and based on strict assumptions. The *Solow-Swan* model is the basic model for reference on exogenous growth.

It assumes that there are two types of inputs (capital and labour) and one type of output. There are diminishing returns to capital and labour, and joint constant returns. A third variable is the *Solow-residual*, which represents the state of technology and other factors that affect the level of output, such as organisational efficiency and HCl. It is assumed to be exogenous, meaning that it taken for granted and cannot be affected.

In the long run, output converges to a constant level, referred to as the *steady-state* level of output. The only way to increase output per person in the long run is by increasing the amount of capital, by saving and investing more. There are two problems associated with this:

- It assumes that the only source of investment is domestic investment, completely neglecting FDI which is the case today. Frycklund (1997) shows that domestic investment is still the major source of funding, accounting for about 60 % of investment.
- It fails to explain the variability of the Solow-Residual, and how or why technological progress occurs. Data from many countries show that there is an increase in output that cannot be explained by labour or capital[6].

In other words, there must be something else that can explain the increase in output.

B. Endogenous growth models

Endogenous growth models appeared to overcome the problem of an exogenously determined rate of technological progress. Therefore, policy can affect output, without affecting the saving rate.

One way of dealing with this is by allowing increasing or constant returns to scale of the aggregate capital stock. Hence, more capital investment would allow increases in output at an even higher rate.

Other authors on endogenous growth models

Many economists use models to quantify changes in output when tax rates, the level of education and other things affecting factors of production, are changing. Therefore, we are asking the question how some authors think that a flat tax would affect output.

Cassou and Lansing (1990) write that a flat tax, based on a calibrated model, would permanently increase growth between 0.009 % and 0.143 % annually. This is in relative comparison to a model that matches the current characteristics of the US tax model. The growth after the tax reform is the result of higher physical capital accumulation, HC accumulation and more work hours.

Garner (2005), in an evaluation of other authors' work, concludes that both a pure consumption tax and a flat tax, replacing the current federal income tax of the US, would enhance growth, by providing incentives to work and save. Using estimates from Altig (2001), he claims that output would lie above baseline by 9.4 %

[6] Barro and Sala-i-Martin (1995)

in the case of a proportional consumption tax and 4.5 % in the case of a flat tax – after 150 years. Now, this would add per year another 0.06 % and 0.03 %.

Zagler and Dürnecker (2003) make an investigation focusing only on the short-run impacts of fiscal policy on growth and disregarding completely of the long-run impact. They find that taxation is an instrument of affecting private saving and consumption decisions. A tax on physical capital investment affects the rate of return on physical investment and leads to a lower level of investment. But instead of being spent on consumption, money may be invested in HC. The impact on growth due to taxation depends ultimately on the which kind of capital has a greater impact on output.

Stokey's and Rebelo's (1995) main point is that many estimates of the growth effects of a tax reform are plagued by bias. The depreciation rate of physical capital is overestimated (it should be 6 % rather than 10 % as estimated by others), and that of HC is underestimated (2.7-8 % rather than, e.g., 0.2 % (Heckman 1976), or 3-4 % (Haley 1976)). As a result, "capital taxation can lead to a rather large bias in the composition of of the capital stock between its physical and its human components" (Stokey and Rebelo, p. 548).

Cugno and Zanola (2002) analyse only the welfare effects of a flat tax in an endogenous growth model of knowledge spill-overs. The focus of their paper is investment deductibility. If the intertemporal elasticity of substitution is sufficiently low, then the increases in future consumption resulting from lower income tax rates are not sufficient to compensate for the decrease in initial consumption. Therefore, a consumption tax above a certain level may be more distortionary than an income tax rate.

Rebelo (1991) holds that the neoclassical growth model – which states that too high taxes have negative impact on growth – fails to explain the observed cross-country variations in growth rates. Economic policy is restricted to affect growth rates during a transition phase to a steady state. The effect of fiscal policy is therefore temporary and not permanent.

C. The open economy

In the open economy, financial capital can be transferred across borders. In other countries, therefore, it can be used for investment, either directly (FDI) or indirectly in the form of loans. In either case, this makes countries less dependent on their own domestic savings for investments and there is another way of increasing the capital stock.

This has implications for the economy:

- For loans on the international capital market, the bearer of the loan must repay the loan and interest. These amounts can vary in value depending on changes in the foreign nominal interest rate and the exchange rate. This brings two more sources of risk.
- For FDI, the foreign owner of domestic capital can sell their investment and they earn money on their investments. All financial capital can move across international borders at short notice.
- Specifically, if domestic indebtedness to foreign lenders is too high and domestic residents fail too pay their loans, then they are facing default. Under such circumstances, they would be at risk of not being able to save enough for replacing the current capital stock. This would harm long-term growth.

- Thanks to diffusion and additional investment capital, a country can achieve a higher growth rate than would otherwise occur. A country can approach the standard of living of other countries at a shorter space of time.

Not only financial capital, but labour too is mobile. Importing labour is another way of importing HC. This may reduces the need of growing HC at home.

Financial capital can transferred from abroad, which is not capital investment. For instance, many foreign workers may work abroad for some years and then return home with the money earned, or they may send money regularly to relatives at home. This can affect patterns of consumption and investment.

D. Labour supply and savings

Labour can contribute to increases in output in two ways. One is through investment into HC, obtained through education and on-the-job training. The other is to increase the amount of time input at work. Working hours is a controversial issue and strongly associated with welfare of the work force. They tend to be strongly regulated and difficult to change – at least in industrialised countries. Increasing the working hours of the most productive workers can affect growth rates positively, at least in the short run.

Whether people will engage in more work or not depends on the income and substitution effects. Since almost always income tax rates are higher than those of consumption taxes (e.g., Zee p. 46-49), a revenue-neutral flat tax reform affecting both sales tax and income tax would imply higher taxes on consumption and lower ones on work. This will increase the relative price of consumption and lower the price of work, or stated differently, increase the relative price of consumption today to consumption tomorrow.

In the case of a higher tax rate, which would reduce income, the substitution effect will induce people to work more since the opportunity cost of leisure increases. On the other hand, the income effect will lead people to work less, if income is a normal good. This happens because people will substitute labour for leisure leading to an in increase in the total volume of labour supplied. The income and substitution effects work opposite directions, and the net effect depends on the size of each. Low-income earners tend to lose a lot from to the substitution effect, and to increase income, they must therefore have a strongly positive income effect leading them to work more net of time input. For high income earners, the opposite is usual: the income effect is weak, leading them to work less net of time input.

What we should take into account is that especially labour elasticities are different amongst different groups. We would need to identify relevant groups (men and women; age groups; immigrants; income groups; etc.), estimate their elasticities and share of the work force, before arriving to a prediction of the net effect on the whole economy.

E. The Laffer Curve and Capital Investment

The main idea of the Laffer curve is that there are both benefits and costs to taxation, and the government needs to address both in order to maximise welfare in society. Higher tax rates increase tax revenue, up to a certain point but will fall thereafter. This is shown in illustration 1.

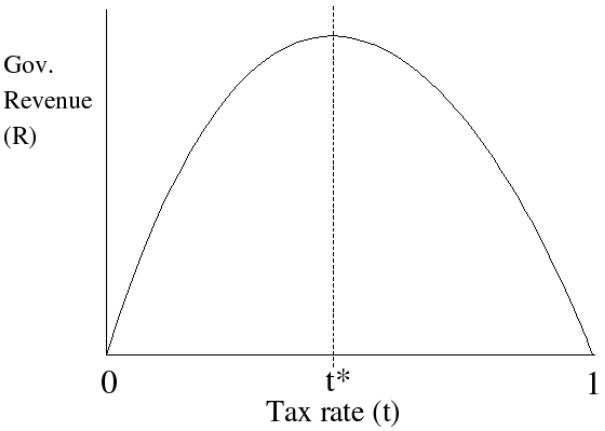

Illustration 1: The Laffer curve: government revenue will peak at t. Anywhere else it is lower.*

The best point is somewhere between a zero tax rate and 100 %, which is perfectly the main point of the Laffer curve. However, to fully understand its meaning, let me quote Laffer: "The Laffer curve itself does not say whether a tax cut will raise or lower revenues. Revenue responses to a tax change will depend upon the tax system i place., the time period being considered, the ease of movement into underground activities, the level of tax rates already in place, and the proclivities of the productive factors"[7].

Laffer emphasises four effects to prove his point. During three periods of lower tax rates in the US in the 20th century, he concludes that as relative to the period before:

- The federal tax revenue rose by more than during the period before.
- Real GDP growth was strong
- Unemployment fell
- People's standard of living increased.

But how does it all work? On the input side of the economy, we have, as factors of production, land, labour and capital. Out of these, only labour and capital (through investment) can increase GDP in the short-term response that Laffer puts forth. For a long-term effect, we would need a stronger productivity growth performance.

There are some points that cannot be explained or that need further investigation before we can conclude that the tax cuts actually did work. Some questions are:

- *What components increased the most*? We do not know this, but it is likely that it was investment that increased the most, since it tends to be more cyclical than consumption and government consumption. And we do not know if it was a permanent increase in growth or only a strong business cycle effect. Laffer takes Estonia's strong growth performance as a sign of proof of effectively directed tax cuts. But as he mentions himself, Estonia's GDP had fallen by 50 % before the tax cuts, so the response might simply have been catching-up to the previous level of output rather than the long-term performance that we are looking for.

[7]Laffer (2004), p. 5

- *Tax revenues*. There might be a grey sector of the economy. An increase in tax compliance will increase tax revenue, which happened in Russia[8], but then the increase in tax revenue is not the result of more economic activity, but rather the grey sector becoming "white".
- *People's standard of livin*g. Especially in the 1920s, the Average American seems to have gone through an increase of the standard of living (Laffer, p. 6). We cannot cease to speculate if this was the result of effective R&D by firms or increasing purchasing power. Was tax reform the cause?

Taxes and growth: Empirical Results

Arthur Laffer is undoubtedly a supporter of tax cuts as a mean to enhance the growth rate. But does this stand up to empirical evidence? If tax cuts, generally, did give the supply-side response that we want, it should show up in data somewhere.

I would like to quote Robert Lucas[9] on this matter: "The Supply-side economists, if that is the right term for those whose research I have been discussing, have delivered the largest genuinely free lunch I have seen in 25 years in this business, and I believe we would have a better society if we followed their advice." "Free lunch" is a good description, if it is true, since the tax effects on output are immediate in Laffer's view.

Plosser (1989) reports that data on GDP and its components between 1954-1985 show that investment component of GDP growth was correlated at 92 % with output growth. This suggests that investment is a more volatile component than government expenditure and consumption. If now investment is highly cyclical, and if tax cuts trigger investment, then the conclusion is that tax cuts has a procyclical effect.

What about the long-run effects of taxation? Stokey and Rebelo (1995) compared growth rates of per capita real income with income tax as a percentage of GNP for the period 1889-1989. Income taxes were restricted in the Constitution before being approved by a new amendment in 1913, and remained negligible until 1942 when they increased to finance the war effort. 1942 therefore marks a structural break of income taxation. The difference in growth performance between the two period is not statistically different.

The findings of Plosser and Stokey and Rebelo convey the view that tax cuts exhibit a procyclical and not long-turn effect on output.

IV. Poverty and income distribution

Initially, high growth rates tend to increase the inequality in society, since a few people are moving into high-income sectors. As more people are moving into these sectors, inequality will decrease. China is a good recent example. The early phase of inequality may cause protests and social unrest. There are some measurements of income inequality mentioned here that appear in the academic literature.

[8]Ivanova, Keen and Klemm (2005), p. 431
[9]Lucas (1990), p.314

A. Measurements of inequality

In *percentile distributions*, one percentile is compared to another. A common measure is the *income quintile share ratio*, which is the ratio of the total income of the fifth quintile to that of the first quintile. It can stretch from 1 (perfect equality) to infinity (perfect inequality).

The *Gini coefficient* is derived from the ratio A/(A+B), where A is the area in yellow background colour between the line of perfect equality (the 45 degree line) and the Lorenz curve (the curved line), and B is the area below the Lorentz curve. The ratio always ranges between 0 (perfect equality) and 1 (perfect inequality).

Illustration 2: Graphical representation of the Gini coefficient. Source: www.wikipedia.org, Gini coefficient

The *Lorenz curve* shows the cumulative proportion of income on the y axis to the cumulative proportion of income recipients ranked in order of rising income on the x axis. In the graph, the 45º line from origin shows the case of perfect income equality, i.e. everyone is earning precisely the same amount, because marginal income is constantly rising at the same rate from one person to the next as we move up from the bottom of the individuals' earnings.

The *Kakwani index* is, like the Gini coefficient, derived from the Lorenz curve. It shows how the dispersion of tax payments differs across quantiles. It can be used to show whether a tax system is progressive, neutral or regressive. Other indices of inequality are the Suits index, Theil index, the Robin Hood index and the standard distribution of income.

For comparison, there is no easy way to compute variances and estimate confidence intervals. One way to evaluate the statistical significance of an observed sample is by comparing it to another one using bivariate normal distribution. See Kakwani (1993)[10]
.

V. The East European Experience

In this chapter, I will be looking at East European countries that followed different paths of transition. There is a target group and a control group.

Transition economies is a term referring to countries that reformed their economies from a communist system of central planning to a capitalist system, in which the decisions of production and pricing lie with the entrepreneur and not with the political authorities. Many of them went through a period of falling output and standards of living in the initial period of transition, and then had positive GDP growth rates, often at very high levels.

[10]Nanak Kakwani, *Statistical Inference in the Measurement of Poverty*, 1993

Some chose the flat tax and others did not. In the former group, we find Estonia, Latvia, and Lithuania, each of whom has had it since at least 1995. As a control group, I will be using Czech Republic, Hungary, Poland, Slovakia and Slovenia. They have not adopted the flat tax, except for Romania and Slovakia who have the flat tax. I have included neither Romania nor Bulgaria since both of them are lacking adequate data. Slovakia has experienced only a short period of the flat tax and is fit for comparison since the flat tax may not have affected growth rates yet. Finally, Russia also has the flat tax, but this country is inherently different and hence not fit for comparison with the other countries.

This section is organised as follows:

1. First of all, a simple a comparison of qualitative data for both groups will be made. Data from the HF, the FI, WEF, and Reporters sans Frontières are used. We should expect higher degree of economic freedom, and maybe political freedom, in the target group.
2. We make a comparison of the different tax regimes in each of the countries. A lower tax rate of income and a smaller total government revenue of GDP are expected in the target group.
3. We see whether there is a difference in the growth rate in GDP of the target group and the control group. According to theory, the target group should excel here. A reference to the validity of the Laffer curve is made.
4. Data on aggregate productivity are used to compare overall productivity growth, and data on sectoral growth is used to evaluate where the growth is taking place. We should expect a higher growth of productivity in the target group.
5. We analyse the sources of investment in the groups. The rate of investment should be higher in countries with the flat tax. Especially, FDI should be higher.
6. Lastly, changes in income distribution are investigated. This emphasises whether the result of taxation and growth has been more equality or less.

A. Economic Freedom and Competitiveness of the Baltic countries

Economic freedom is one of the drivers of economic growth. The flat tax is one of the instruments to enhance economic growth, but policy reform should be regarded from a wider spectrum, as there are many other determinants of it. The question is: have the Baltic countries, apart from the flat tax, also made efforts to improve the environment for economic growth in other ways?

One example of this debate is the effect of the Thatcher reforms. Card and Freeman (2002) claim that the Thatcher reforms improved the business climate in England, which subsequently improved the growth performance of the UK and cannot be explained alone by changes in capital or labour.

Indices of economic freedom

The FI produces indices of economic freedom that are published once a year in the *Economic Freedom of the World Report*. The index itself is obtainable free of charge to the public, for all countries and all time periods. It contains five indices for each country, which are the size of government (expenditure, taxes and enterprises); legal

structure and security of property rights; access to sound money; freedom to exchange with foreigners; and regulation of credit, labour and business.

Data for the sample countries are shown in table 1. It is interesting to see how big an effort particularly the Baltic countries have made. The ranking of Estonia in 1995 was 76, indeed in the bottom half of the sample of 125 countries. 8 years later, it ranks amongst the elite of that league, number 9. Latvia and Lithuania are much farther in behind, although their effort, in terms of change in the summary index, to improve themselves was at par with Estonia.

The five indices and manifold sub-indices allow the reader to construct many rankings on his own. They can be unweighted or weighted. As for the Baltic countries, we just need to conclude that a general improvement of economic freedom has been accomplished, both on the macroeconomic level and the microeconomic level.

HF compiles a list on the fiscal burden and is quite similar to FI. This is in table 2. Hanke and Walters (1997) report that both the HF and FI indices are highly correlated. They obtained a correlation of 0.85 from the data 1995-96. The areas covered are to do with macroeconomic data mainly, but there is one for the "informal market" (not shown in list of tables) which can be interesting to measure the degree of lawlessness and corruption in society. East European are quite similar in this respect, but particularly Estonia and Slovenia score well. The data match entirely the author's subjective view and there is no information on how this information was compiled.

From the data, we can say that the Baltic countries are enjoying a sounder macroeconomic environment than the control group.

The WEF releases annually many indices for the social sciences. Of interest here are the Growth Competitiveness Index (table 3) and the Corruption and Transparency Index (table 4). Past time series is only obtainable for free three and two years back respectively. There are no restrictions on cross-country data, allowing a comparison of all countries.

These indices are based on questionnaires that are filled in by executives in the respondent countries. The response rate should be deemed as being sufficiently high for possessing a good quality and correspond to what is being sampled. The competitiveness score is quite subjective and weighed toward actual or expected performance of the economy in the medium-run.

The conclusion from this is that the Baltic countries should outperform the countries in the control group, and as the data allow us to make estimates of prospective performance, it is fair to say that the Baltic countries are likely to remain competitive in growth performance. I judge this from the relative ranking foremost.

Unfortunately, we cannot evaluate any changes of performance as short-term changes may be unimportant. If changes were of interest, then both the competitiveness score and the ranking of the Baltic countries are worsening. But so are the countries in the control group. No certain conclusion can be drawn from this.

State aid to the private sector shows how protective the government is of jobs in the private sector. This conserves jobs temporarily and therefore might be welfare-maximising since some are workers are not being threatened by unemployment. However, it may not be output maximising since money is being used inefficiently in low-productive sectors instead being invested into sectors of higher productivity. Less

state aid should therefore be better for long-term output is what we are expecting in the Baltic countries.

Data from Eurostat (table 10) are showing that state aid to the private sector is quite small in the Baltic countries. The amount of state aid is on a downward trend: between 2000 and 2003, it fell from 0.31 % of GDP to 0.12 %. In the control group, it remained quite high, and there is less evidence of a downward trend. There, total state aid went from 1.43 % to 1.35 % in the same period. Czech Republic is the most vigorous supporter of state aid at 2.76 %.

Labour Market Scores

Labour market characteristics can be obtained from the FI data, using sub-index 5B (not shown here). Data before 2000 is very scarce, but all the countries have at least some data from 2000 and later. The average of labour market regulations is not that different amongst Eastern European countries. Most of them have an average of around 5, except for the lower score of Slovenia.

One characterising fact is that wage negotiations in these labour markets tend to be highly decentralised and lack central administration. This should make the wage-setting process flexible in theory. Hiring and firing practises have been made marginally easier in most countries. Not much data are available on unemployment insurance for the Baltic countries. For those that have such data, the score has worsened on average.

One striking feature of the Baltic countries is that they score high on the impact of the minimum wage. One possible reason is that they try to make the gross wage structure more progressive rather than using taxation to affect the net wage structure. In fact, the flat tax does not allow much flexibility in tax rates.

No certain conclusion can be drawn from this sub-index: all countries have quite similar scores.

Political freedom

The organisation Reporters sans Frontières publishes an index on press freedom, which is based on a questionnaire and the data should therefore be objective if carried out properly. This is shown in table 5.

It is unsure how this kind of freedom would help business and growth performance. Usually, political freedom and freedom of the press lie fairly close to economic freedom, and therefore, they might be correlated so that press freedom could be used as a proxy variable for economic freedom. But there is nothing to guarantee that they are far apart. For instance, Singapore scores consistently high in the FI's economic index, but ranks very low in the index on press freedom. Apparently, the Baltic countries have a greater degree of press freedom.

Sub-index 2, “legal system and property rights” by the FI, could also be used (table 6). What we would value highly is especially judiciary independence, impartial courts, and low military influence in politics. Especially Estonia ranks high but Latvia and Lithuania are modest.

The judiciary needs experience and training, which could take a long time as many more people need to enter the legal profession and phase out the current generation of people who grew up during communism. Only if this improves will East European states be able to have the legal and professional framework of a modern capitalist state.

Compared to the control group, the Baltic countries score high on press freedom, which is a prerequisite to less corruption and a proxy for economic freedom.

No state seems to have an excellent legal system, but they should be improving over time.

Overall, we conclude that

- The Baltic countries have done a lot to improve their macroeconomic and microeconomic environment for businesses.
- When it comes to actual performance by businesses, the Baltic countries should have a competitive edge.
- Labour market conditions are not that free and could need improvement in all countries.
- Their degree of political and press freedom is satisfactory, but a new generation of lawyers needs to replace the current generation.

B. Tax rates

Data on the different tax regimes are obtainable from the FI (table 7), which covers top marginal income tax rate and top marginal income and payroll tax rate since 1995 for most countries in the sample. Data that was not obtainable in the 1995 data set is proxied using data from the 2000 data set. The Heritage Foundation organisation has data on the income tax rate and corporate tax rate for 2006 (table 8). Unfortunately, the same data are not obtainable for free for earlier years. On the other hand, the Fiscal Burden Score is available for all countries for 1996 (table 9). It includes – except for taxes – also a score on the change in budget deficit. This can be used as a proxy for the tax score, albeit not being a primer.

Starting with the data from the FI in table 7 for the years 1995 and 2003,

- The top marginal income tax rates have fallen in all countries except for Slovenia where they remain high.
- The Baltic countries and Czech Republic form the group that currently have the lowest top marginal income tax rates. They remain high in Hungary, Poland, Slovakia and Slovenia.
- The top marginal income and payroll tax rates have increased in all countries except for Czech Republic and Poland and Slovenia (unchanged).
- The Baltic countries have the lowest tax rates in this category, but the other countries differ by only 10 % or so.

Using the data on tax rates from the Heritage Foundation in table 8, we can conclude that

- In each country, the corporate tax rate is lower than the income tax rate, reflecting the higher mobility of financial capital.
- The corporate tax rates are similar in all countries except for Estonia (0 %) on the one hand, and Slovenia (25 %) and Czech Republic (26 %) on the other hand.
- Income tax rates are lowest in Slovakia (19 %), much lower than in the Baltic countries.
- Poland and Slovenia have very high tax rates in this category.

Using data on the Fiscal Burden Score from the Heritage Foundation in table 9, which includes a aggregate score on the corporate tax rates, the income tax rates and the change in government expenditure,

- In 1996, the average score and its spread was much greater than in 2006.

- The average and the spread in the score have decreased a lot, therefore either tax rates or the change in government expenditure or both have changed a lot in the sample. But these effects cannot be separated.
- Only Slovenia remains in a bad position, in part because of high taxes (see data from the FI).

Overall, we conclude that

- Slovenia has very high tax rates.
- The top marginal tax rates have decreased in most countries, though not in the Baltic countries, where they were low from the start. Tax rates are more equal now.
- The top marginal income and payroll tax rates are higher on average and have almost equalised across countries except for Estonia (low), Slovakia (high) and Slovenia (high).

Let us turn to the Baltic countries. Data from Eurostat show that the average growth rate of target group in the period 1996-2005 was 6.4 %, while that of the control group was only 3.8 % (table 10). We would expect the Baltic countries to be growing at a higher pace than or the same pace as the control group. To test for this, a one-sided right tail test was performed. The t-statistic was 6.426. With 6 degrees of freedom, the critical t value at a 5 % level of significance was 1.943. This t statistic is highly significant and we can safely conclude that the Baltic countries had on average a growth rate that was considerably higher than that of the control group.

It should be taken into account though that the Baltic countries had a lower initial level of GDP than the control group. It should not be ruled out that their performance may have been the result of catching up rather than taking the lead. In 1996, the Baltic countries had GDP per capita in PPS that was one third of EU-25. The control group had 55 % relative to EU-25. The average PPS per inhabitant converged. The Baltic countries had an average PPS per inhabitant of €5,433 in 1996 and €11,833 in 2005. The control group had €8,960 and €13,683. The average of the Baltic countries to that of the other countries rose from 61 % to 79 %.

We conclude that

- There are different views whether tax rates affect growth rates or not. There is some evidence suggesting that it may primarily be affecting investment and therefore has a cyclical effect on output.
- The Baltic countries had a higher growth rate than other East European countries in the control group for the period 1996-2005.
- The reason for this extraordinary growth performance can have two explanations: (1) due to better growth policy, inter alia the flat tax; or (2) relative convergence implying a higher growth rate for the Baltic countries since they had initially a lower level of GDP.

C. Productivity growth

In order to find the sources of growth, a sectoral composition of output changes must be made. To evaluate productivity changes in different sectors, data on labour input and capital input must be obtained. Data on capital input cannot be acquired; data on labour input broken down into sectors cannot be obtained. It is thus impossible to find data on productivity changes in different sectors.

It is only possible to find data on output changes in separate sectors in different countries. This can serve as a proxy for productivity, albeit a bad one, due to not accounting for changes in capital or labour input. This is shown in table 12. In a breakdown of six separate sectors, it appears that the Baltic countries have had considerable output growth in industry, construction, wholesale and retail trade, repair, hotels and restaurants, etc.

Eurostat does have some aggregate data on productivity growth, shown in table 13. There is no sectoral composition. Productivity growth per employee was strongly in favour of the Baltic countries. A one-sided t test shows that the difference of the mean productivity growth is statistically significant with a value of 4.440 versus the critical value of 1.943 at a 5 % level of significance and with 6 d.f. At the same time, the productivity per hour seems to be highly insignificant with a t statistic of 1.059 and a critical value of 2.015 at 5 % and with 5 d.f.

- A sectoral composition of productivity growth cannot be obtained for East European countries.
- Data on aggregate productivity suggest weakly that the Baltic countries have a higher level of productivity growth than other countries.
- The question is if sectoral growth performance is due to domestic or foreign investment.

D. Investment and Trade

There are two trends of globalisation: on the one hand, more trade in the world, which means integration of the goods and service markets; and on the other hand, increasing FDI in the world, which is a sign of integration of the financial markets. It is expected that those countries with more economic integration are also those who have better economic environments. The Baltic countries should be ahead of the control group in both areas.

Investment

It would be relevant to see how attractive the Baltic countries have been faring in receiving FDI. FDI flows as a percentage of GDP (table 14) have been higher in the Baltic countries than in the target group, with 0.9 % vs. 0.5 %. This is what we should be expecting. However, Estonia has a much higher level than Latvia and Lithuania and the amounts are not evenly distributed, which is confusing.

Using data on FDI from Eurostat (table 15), and dividing aggregate FDI received over the period 2000 and 2004 by the size of the population and workforce respectively (table 15), it appears that particularly Estonia has a very high level of investment with €5.09 per person employed and €2.20 per inhabitant. Czech Republic ranks just above Estonia, but both Latvia and Lithuania had a lower level than all the remaining countries: Hungary, Poland, Slovakia and Slovenia. The result of this contradicts everything what we saw from FDI as a percentage of GDP, since – all of sudden – the Baltic countries do not seem to have received more financial resources of FDI than the other countries. In truth, they have received less.

The conclusions are:

- Latvia and Lithuania are not at par with Estonia concerning FDI, despite a similar tax regime.
- FDI flows as a percentage of GDP is higher in the Baltic countries, which is what we have expected.

- Aggregate FDI flows per worker or per inhabitant in terms of the same currency are showing that the Baltic countries have not received less, but rather less. This is highly contradictory with the result above.

The CA

Trade integration can be measured as exports plus imports divided by GDP (table 16). The Baltic countries have a higher degree of trade integration of services but not of goods relative to the control group. Estonia is a top performer in both leagues, but in goods trade, Slovakia scores slightly higher in 2004. The one country that has the least integration with other countries is Poland, but that could be explained that it has a large domestic market and is less dependent on trade for many goods.

The Baltic countries have huge CA deficits. It arises if net export, i.e. the value of exports in goods and services minus the value of imports of goods and services, is negative. It needs to be financed either through loans or through investment from abroad, i.e. FDI.

Transfers arising from profits earned and interest earned on foreign assets, are called income transfers. Unfortunately, no data on the size of these transfers in relation to GDP could be found. It is quite expected that they should increase over time as foreign ownership of assets is increasing to finance imports. Specifically trade of goods makes up a large proportion of the deficit.

- The Baltic countries have a higher degree of integration with trade in services but not goods compared to the control group.
- The Baltic countries have a huge CA deficit, mainly due to import of goods but probably (no statistics shown) due to rising income transfers as well.
- Future income transfers could prove costly if they are not kept under control.

E. Income distribution

The argument against the flat tax is that it would increase income inequality in society. As a country is experiencing economic growth that is characterised by increases by a shift from low-productive sectors to high-productive sectors, it can experience a sharp increase in inequality in the beginning of the transition process. This happens because the high-productivity sector is paying high wages, and if only a small proportion of the workforce works there, the median income is rising much more slowly than the mean wage. However, toward the end of the process, a greater proportion of people will work in the high-productive sector and thus inequality is reduced[11].

The key question in this essay is whether economic growth has increased or reduced inequality in the transition economies in Eastern Europe. Datasets on the Gini coefficient can be obtained from the World Bank Data Group and Eurostat. I do not know how these estimates from different sources differ. Therefore, it is more relevant to compare only statistics from the same source.

Starting with the income quintile share ratio data (table 18), it seems that inequality has been reduced in Estonia and Lithuania, whereas it rose sharply in Latvia between 2002 and 2003, for reasons unknown. In Poland and Hungary, the gap between rich and poor seems to be widening. In the other countries, there is no discernible trend.

[11]Kuznets S. (1955), "Economic Growth and Income Inequality", American Economic Review

Using the data on the Gini coefficients (table 17), only Latvia seems to have been experiencing a widening gap of income differences, whereas in every other country it seems to be narrowing. In Hungary, the trend is not linear, but is going up and down in a strange fashion.

- Income distribution in the Baltic countries seems to be narrowing except for Latvia where it is rather widening. Therefore, the flat tax is not causing more inequality in these countries.

VI. Western Europe: Is the flat tax for us?

I would like to conclude that the flat tax may be worthwhile in Western Europe but the conditions here are different. Nevertheless, if a tax reform is carried out, it could have huge transitional effects. Care should be taken to avoid this. Besides, the overall tax burden may have to be reduced to avoid a huge tax burden on the middle classes.

When Estonia was first to introduce its flat tax in 1993, it was the first modern country to do so and the transitional effects were anything but risky since it had already lost tens of percent of its GDP in the years prior to reform. The tax reform did therefore not put strain on the economy and Estonia had anything to win.

The Baltic states have a much lower tax burden than other countries. In the Nordic countries, the taxes as a % of GDP is 50 % in Sweden and 49 % in Denmark (Eurostat news release, 2005). Tax incomes at such levels are used for income redistribution and to employ a large public sector. A flat tax reform that has a personal allowance of income that is not taxable and a single tax rate above that for all income would have huge income-redistributive effects, if combined with income neutrality, because the reduced marginal tax rates of those with a high incomes would shift the a larger share of the tax burden onto the middle classes. I am assuming that the personal allowance should be large enough so as not to cause impoverishment of those furthest down the income distribution.

Since the flat tax rate must be set very high to attain income-neutrality, a low income tax rate coupled with lower government expenses is a possible tax design to high tax regimes. Where those budget cuts would be take place is another issue. With current expenditure levels of general government, the flat tax may is difficult to implement in West European countries.

As for investment, the outcome is unclear. Most West European countries may not need more investment. The flat tax would therefore not have the suitable effect of increasing investment, at least for attracting FDI. It should be mentioned though that FDI is increasing in the world and a tax structure that increases mergers and acquisitions could improve competition and business structure within the European Union. This would be a relevant point. Besides, international competition is increasing. The rise of India and China will be a source of more competition and Europe may need more larger companies to be able to compete in the future. A better tax structure could be a good answer to this matter.

Lastly, we should discuss the relevance of the labour market. There should be enough elasticity to allow for increases in labour supply if, which is likely to be the case, the tax base is shifting from income taxes to consumption taxes. Aaberge, Colombino and Strøm (1999) (p. 603) find that elasticities in Sweden and Italy are small. This happens because of strictly regulated working conditions and labour hours. Of course,

this can all be changed and decoupled by introducing more part-time work, higher geographical mobility, greater integration of international labour markets, more small and medium enterprises (SMEs), deregulation of the labour market, etc. There are endless possibilities. A more flexible labour market could be necessary before introducing a tax reform.

VII. Conclusion

Transition economies are those that are relatively backward but want to catch up with the level of their neighbours. In any case, they are initially trying to construct an economic policy that is successful to attract investment, enhance productivity and give the current and future generations a higher standard of living. All East European countries are transition economies but at various stages.

For instance the Baltic countries have performed well in terms of growth and FDI. Especially Estonia is the star of performance with a higher growth rate and higher level of FDI than Latvia and Lithuania. What they have in common is that they adopted a tax design that allows a single tax rate on income and other taxable items in the first half of the 1990's. Other less successful countries are those in the control group that may not have the flat tax but have still performed well: Czech Republic, Hungary, Poland, Slovakia and Slovenia.

I have used data on these countries to make a comparison of what it is that is causing their growth.

1. We can conclude that data on growth rates are saying that the Baltic countries have had a higher growth rate than the other East European transition economies between 1996 and 2005.
2. It is assumed that economic freedom brings about more investment than otherwise. Therefore, it is relevant to see if this can be measured and evaluated. Apparently, the Baltic states have a higher degree of economic freedom, political freedom and press freedom. All of those are correlated with high standards of living. Also, the Baltic countries score better on business performance and the do not conserve old industries with state subsidies.
3. Lower tax rates should attract investment. Low corporate tax rates are more attractive to FDI because they get a better return on investment than elsewhere. Besides, the flat tax is attractive because of its low cost of compliance for firms. The Baltic countries do have lower marginal income tax rates and corporate tax rates.
4. The question remains where we can observe the higher growth rates. The Baltic states have enjoyed a higher aggregate productivity growth and aggregate output growth, relative to the control group, in sectors except for those that are associated with the public sector. It is difficult to say whether FDI is playing a role here, since no data was obtained on sectoral growth and the use of inputs.
5. The question is whether the better economic environment and lower taxes can attract investment. Specifically Estonia has enjoyed a much higher level of FDI than other countries, but it is difficult to say why that is in relation to Latvia and Lithuania who have not experienced the same increase despite the presence of a flat tax. One peculiarity is that if dividing aggregate FDI in Euros by inhabitants or the size of the workforce, the Baltic states look small in comparison. Estonia is receiving much more than Lithuania and Latvia. One

reason could be the lower GDP per capita in the Baltic countries and therefore the FDI as a % GDP looks large in comparison.

6. The Baltic states have a higher degree of trade integration than the control group, but this could in part be reflected by low domestic production of certain goods and a higher dependency of trade. The CA is very high in the Baltic states.
7. When it comes to income distribution, the Baltic states have not experienced a higher degree of inequality. Lower taxes combined with higher growth rates is not causing widening inequality.

It remains inconclusive whether the flat tax has been a key to growth or not in the Baltic states. They have a greater degree of economic freedom and lower taxes, but at least the combination of those seem to have had positive effects. An alternative interpretation is that the Baltic countries are growing more quickly due to a catching-up effect from low initial levels of GDP.

I would recommend other investigations to look at a decomposition of the different sectors that have received FDI and see whether those sectors have higher productivity growth rates than other transition economies; to investigate the microeconomic foundations of the flat tax and see how individual firms are faring better; investigate the quality of HC in the countries concerned since this could be an unknown determinant of growth.

Tables and Graphs

Economic Freedom of the World Index								
	1995		***2000***		***2003***		***Change 1995-2003***	
Estonia	5.6	75	7.1	34	7.8	9	2.2	-66
Latvia	5.1	91	6.6	53	6.8	44	1.7	-47
Lithuania	4.9	93	6.3	68	6.8	44	1.9	-49
Czech Republic	5.8	68	6.7	46	6.8	44	1.0	-22
Hungary	6.3	48	6.7	46	7.4	20	1.1	-28
Poland	5.2	88	6.4	63	6.1	78	0.9	-10
Slovakia	5.4	80	5.9	80	6.6	54	1.2	-26
Slovenia	4.9	93	6.3	68	6.3	70	1.4	-23
Average (Baltic)	5.2		6.7		7.1		1.9	
Average (other)	5.5		6.4		6.6		1.2	

Table 1: Source: Fraser Institute index. The column on the left of each year shows the summary index, which is an average of all scores of the sub-indices. The column on the right is the rank. Data are not obtainable before 1995. A higher score is better.

Index of Economic Freedom				
	1996	***2000***	***2006***	***Change 1996-2006***
Estonia	2.44	2.19	1.75	-0.69
Latvia	3.19	2.69	2.43	-0.76
Lithuania	3.45	2.84	2.14	-1.31
Czech Republic	2.28	2.20	2.10	-0.18
Hungary	3.03	2.38	2.44	-0.59
Poland	3.29	2.84	2.49	-0.80
Slovakia	3.13	3.18	2.35	-0.78
Slovenia	3.79	3.20	2.41	-1.38
Average (Baltic)	3.03	2.57	2.11	-0.92
Average (other)	3.10	2.76	2.35	-0.75

Table 2: Source: The Heritage Foundation. A lower score is better.

Growth Competitiveness Index								
	2003		2004		2005		Change 2003-2005	
Estonia	4.96	22	5.08	20	4.95	20	-0.01	-2
Latvia	4.54	37	4.43	44	4.29	44	-0.25	7
Lithuania	4.39	40	4.57	46	4.30	43	-0.09	3
Czech Republic	4.48	39	4.55	40	4.42	38	-0.06	-1
Hungary	4.61	33	4.56	39	4.38	39	-0.23	6
Poland	4.15	45	3.98	60	4.00	51	-0.15	6
Slovakia	4.23	43	4.43	43	4.31	41	0.08	-2
Slovenia	4.70	31	4.75	33	4.59	32	-0.11	1
Average (Baltic)	4.63		4.69		4.51		-0.12	
Average (other)	4.43		4.45		4.35		-0.09	

Table 3: Source: World Economic Forum. This information is obtainable on the Internet for free or on print for a fee. Score is in the left columns rank is in the right columns. A higher score is better.

Corruption and Transparency						
	2004		2005		Change 2004-2005	
Estonia	6.0		6.4	27	0.4	
Latvia	4.0		4.2	51	0.2	
Lithuania	4.6		4.8	44	0.2	
Czech Republic	4.2		4.3	47	0.1	
Hungary	4.8		5.0	40	0.2	
Poland	3.5		3.4	70	-0.1	
Slovakia	4.0		4.3	47	0.3	
Slovenia	6.0		6.1	31	0.1	
Average (Baltic)	4.9		5.1	41	0.2	
Average (other)	4.5		4.6	54	0.1	

Table 4: Source: World Economic Forum. This information is obtainable on print or on the Internet. In the left columns, scores of each country are printed, and on the right, the rank of each country. A higher score is better.

Index of Press Freedom		
	2005	
Estonia	2.50	12
Latvia	2.25	11
Lithuania	2.83	17
Czech Republic	2.50	12
Hungary	3.33	21
Poland	6.17	33
Slovakia	2.50	12
Slovenia	3.00	20
Average (Baltic)	2.53	
Average (other)	3.50	

Table 5: Source: Reporters sans Frontières. A lower score is better.

Legal System and Property Rights						
	Judiciary Independence	***Impartial Courts***	***Protection of intellectual property***	***Military in Politics***	***Law and Order***	***Sub-index summary score***
Estonia	7.5	6.5	6.2	8.3	6.7	7.0
Latvia	4.0	3.8	3.5	8.3	8.3	5.6
Lithuania	3.8	4.0	4.0	8.3	6.7	5.4
Czech Republic	5.8	3.7	4.8	10.0	8.3	6.5
Hungary	6.0	4.8	5.3	10.0	6.7	6.6
Poland	3.5	3.0	3.0	10.0	6.7	5.2
Slovakia	4.3	4.2	4.7	10.0	6.7	6.0
Slovenia	4.8	5.2	5.8	6.3	8.3	6.5
Average (Baltic)	5.1	4.8	4.6	8.3	7.2	6.0
Average (other)	4.9	4.2	4.7	9.3	7.3	6.2

Table 6: Source: "Legal System and Property Rights" in Economic Freedom of the World, Fraser Institute. Data are only shown for 2003. A higher score is better.

	Top marginal income tax rate,%		***Top marginal income and payroll tax rate, %***	
	1995/2000	***2003***	***1995/2000***	***2003***
Estonia	26	26	44	47
Latvia	35	25	48*	48
Lithuania	35	33	51	51
Czech Republic	43	32	64	58
Hungary	44	38	44	64
Poland	45	40	62.8	52
Slovakia	42	38	42	64
Slovenia	50*	50	70*	70
Average (Baltic)	32	28	48	49
Average (other)	45	40	57	62

*Table 7: Source: Fraser Institute. * indicates that was missing for 1995 and data was obtained from 2000 instead.*

	Income Tax Rate	***Corporate Tax Rate***
Estonia	24	0
Latvia	25	15
Lithuania	33	15
Czech Republic	32	26
Hungary	38	16
Poland	40	19
Slovakia	19	19
Slovenia	50	25
Average (Baltic)	27	10
Average (Other)	36	21

Table 8: Source: Heritage Foundation. Data cover the year 2006

Fiscal Burden Score		
	1996	***2006***
Estonia	3.4	2.0
Latvia	3.4	2.3
Lithuania	3.5	2.4
Czech Republic	4.8	2.5
Hungary	2.8	2.4
Poland	4.5	2.4
Slovakia	4.8	2.0
Slovenia	4.4	3.6
Average (Baltic)	3.4	2.2
Average (Other)	4.2	2.4

Table 9: Source: Heritage Foundation. A lower score is better

Total State Aid as % of GDP (average 2000-2003)	
Estonia	0.11
Latvia	0.27
Lithuania	0.24
Czech Republic	2.76
Hungary	1.04
Poland	1.32
Slovakia	0.51
Slovenia	0.69
Average (Baltic)	0.21
Average (Other)	1.26

Table 10: Source: Eurostat.

Average % GDP growth rates (1996-2005)	
Estonia	6.5
Latvia	6.8
Lithuania	6.0
Czech Republic	2.4
Hungary	4.1
Poland	4.2
Slovakia	4.2
Slovenia	3.9
Average (Baltic)	6.4
Average (Other)	3.8

Table 11: Source: Eurostat, Real GDP growth at constant prices 1996-2005. Averages were computed. 2005 values are only forecasts.

Aggregate sectoral output of 6 branches		
	Baltic countries	***Control group***
Total output change	6.2 %	3.5 %
(1) Agriculture, hunting, forestry and fishing	0.8 %	2.8 %
(2) Total industry (excluding construction)	6.7 %	3.9 %
(3) Construction	7.9 %	0.4 %
(4) Wholesale and retail trade, repair of motor vehicles, motorcycles and personal and household goods; hotels and restaurants; transport, storage and communication	7.4 %	4.0 %
(5) Financial intermediation; real estate, renting and business activities	6.9 %	4.6 %
(6) Public administration and defence, compulsory social security; education; health and social work; other community, social and personal service activities; private households with employed persons	3.9 %	2.6 %

Table 12: Source: Eurostat. Unweighted average of each group. Output in years 1996-2004.

Productivity growth		
	Per employee, %	***Per hour, %***
Estonia	5.5	4.0
Latvia	4.0	3.4
Lithuania	5.8	5.4
Czech Republic	1.6	1.5
Hungary	2.3	
Poland	3.9	4.9
Slovakia	2.9	1.8
Slovenia	2.3	
Average (Baltic)	5.1	4.3
Average (Other)	2.6	2.7

Table 13: Source: Eurostat. 1996-2003. Productivity per employee. Productivity per hour was obtainable for Czech Republic, Slovakia and Slovenia (1996-2003); Estonia, Lithuania and Poland (2000-2003); and Latvia (1998-2003)

	Direct investment flows as % of GDP (average 2000-04)
Estonia	2.1
Latvia	0.3
Lithuania	0.3
Czech Republic	0.3
Hungary	1.0
Poland	0.1
Slovakia	0.1
Slovenia	1.0
Average (Baltic)	0.9
Average (Other)	0.5

Table 14: Source: Eurostat.

Aggregate FDI flows					
	Sum of FDI (2000-2004)	***Total Employment (2002)***	***Total Population (2002)***	***FDI per Working Person***	***FDI per Inhabitant***
Estonia	2995	588	1361	5.09	2.20
Latvia	1695	980	2346	1.73	0.72
Lithuania	2462	1411	3476	1.74	0.71
Czech Republic	26272	4912	10206	5.35	2.57
Hungary	14614	3856	10175	3.79	1.44
Poland	25247	13782	38242	2.56	0.92
Slovakia	9307	2127	5379	4.38	1.73
Slovenia	3552	912	1994	3.68	1.68
Sum (Baltic)	7152	2979	7183	2.40	1.00
Sum (Other)	88792	25589	65996	3.47	1.35

Table 15: Source: Eurostat and author's own calculations. FDI is million Euros. Total Employment is and Total Population are in thousands of people. FDI per Working Person and FDI per Inhabitant are in thousands of Euros per person.

Trade integration and the CA deficit					
	Trade integration of goods (2004)	***Balance of int. trade in goods (2000-03)***	***Trade integration of services (2004)***	***Balance of int. trade in services (2004)***	***CA deficit***
Estonia	61.8	-17.6	20.3	10.2	-8.6
Latvia	41.3	-15.4	10.9	5.7	-6.8
Lithuania	47.1	-10.8	9.2	2.7	-5.7
Czech Republic	62.4	-5.2	8.8	2.2	-5.5
Hungary	57.1	-4.7	10.3	2.7	-7.2
Poland	34.9	-5.7	5.3	1.2	-3.4
Slovakia	69.4	-7.8	8.7	1.0	-5.2
Slovenia	51.4	-3.8	9.3	2.5	-0.4
Average (Baltic)	50.1	-14.6	13.5	6.2	-7.0
Average (Other)	55.0	-5.4	8.5	1.9	-4.3

Table 16: Source: Eurostat. All values are in % of GDP. Higher values of trade integration imply a greater degree of integration with the global economy.

Summary of income Gini coefficients										
	1996	***1997***	***1998***	***1999***	***2000***	***2001***	***2002***	***2003***	***2004***	***2005***
Estonia					36[E]	35[E]	35[E]	34[E]		
Latvia		32.6[G]	32.1[G]		34[E]		34[E]	36[E]		
Lithuania	35.7[G]				31[E]	31[E]	30[E]	29[E]		
Czech Republic	26.6[G], 26.1[G]					25[E]		25[E]		
Hungary			25.3[G]		26[E]	25[E]	24[E]	27[E]		
Poland	34.3[G]	34.7[G]	32.7[G]		30[E]	30[E]	31[E]	31[E]		
Slovakia								33[E]	33[E]	
Slovenia	26.1[G]				22[E]	22E	22[E]	22[E]		

Table 17: E=Eurostat, G=World Bank Data Group. A lower number means a lower total income inequality.

Summary of Income Quintile Share Ratio										
	1996	***1997***	***1998***	***1999***	***2000***	***2001***	***2002***	***2003***	***2004***	***2005***
Estonia					6.3	6.1	6.1	5.9	5.9	
Latvia					5.5		5.5	6.1	6.0	
Lithuania					5.0	4.9	4.7	4.5	4.5	
Czech Republic						3.4		3.4	3.4	
Hungary					3.3	3.1	3.0	3.3	3.3	
Poland					4.7	4.7	4.8	5.0	5.0	
Slovakia								5.8	5.8	
Slovenia					3.2	3.1	3.1	3.1	3.0	

Table 18: Source: Eurostat. The Income Quintile Share Ratio is the aggregate income of the top quintile divided by the bottom quintile of the income distribution. A lower number means less inequality.

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