Contents

3 Foreword

Economics Policy Roundtable

5 Are the Current Account Deficits in the Baltic States Sustainable?
   *Jorgen Drud Hansen and Morten Hansen*

Articles

25 Optimal Commodity Taxes With Tourist Demand
   *Sinnika Hämiäläinen*

39 Income Taxation and Equity
   *Peter J. Lambert*

55 Effectiveness of the Czech Tax System
   *Leoš Viték, Jan Pavel, and Jana Krbova*

72 Exports, Investments and Economic Growth: An Empirical Investigation of the Three Baltic Countries
   *Dritsaki Chaio, Vazakidis Athanasios, and Adamopoulos Antonios*

Book Review

   *Anders Paalzow*
This is the fourth issue of the Baltic Journal of Economics (BJE) since its re-launch in 2002. Thanks to the continuing generous financial support of our sponsors – the Bank of Latvia, the Bank of Estonia and EuroFaculty – we continue to publish and distribute, free of charge, 1,000 copies of the journal to libraries, universities and think-tanks all around the world. The BJE is establishing itself as the leading peer-reviewed economics journal in the Baltic States.

This issue contains the first in our series of ‘economics policy roundtable’ discussions. Jorgen Drud Hansen (editor-in-chief of the BJE) and Morten Hansen, two Danish economists who have lived in Lithuania and Latvia, respectively, for a number of years, discuss the sustainability of the current account deficits in the Baltic States. The three following articles were presented at the Conference on ‘Tax Policy in the EU Candidate Countries’ in Riga, Latvia in September 2003. The paper by Sinnika Hämäläinen was scheduled to be published in the previous issue of the BJE. However, an unexpected editorial glitch meant that this did not happen. The article by Peter J. Lambert originally appeared in Volume 4, Number 1, but is being republished because a number of figures and equations were wrongly formatted in the typesetting process. We apologise to both authors for the inconvenience this has caused. We are confident that these tooting problems will not be repeated. The article by Leo? Vitek, Jan Pavel, and Jana Krbova discusses the effectiveness of the Czech tax system. Finally, Chaido Dritsaki, Athanasios Vazakidis, and Antonios Adamopoulos, all from the University of Macedonia in Greece, present a comparative case study of exports, investments and economic growth in the three Baltic States.

Finally, I would urge prospective authors to submit original articles to the Baltic Journal of Economics at: bje@eurofaculty.lv

Daonis Auers
Managing Editor
Abstract: For almost a decade all three Baltic countries have witnessed substantial deficits on the current accounts of the balance of payments. This paper discusses whether this situation should be a matter of concern. Recent literature on the sustainability of balance of payments deficits is reviewed and put into a Baltic context. The main conclusion is that the recurrent large deficits in the Baltic countries pose a risk for the fixed exchange rate policies until the countries adopt the euro. In the longer term large deficits will influence the time path of convergence of living standards between the Baltic countries and the EU as a whole.

1 Introduction
After the huge initial output declines and high inflation rates in the Baltic states following the breakaway from the Soviet Union and the establishing of open market economies, the three Baltic states appear like success stories: Since 1995 real GDP has grown at an average annual rate of 5.6% in Estonia, 5.9% in Latvia and 6.0% in Lithuania, inflation has been in single digits since 1998, budget deficits are below 3% of GDP, debt-to-GDP ratios would make most EU countries envious, trade has increased and seen a major reorientation towards the west and FDI inflows have been substantial.

However, in this flattering list of excellent marks for economic performance at least one possible sign of weakness might be identified. For most of the past decade the current accounts of the balance of payments have been severely in deficit for all three Baltic countries and there is no apparent sign of a reversal of this general pattern. Lawrence Summers, writing in an article in 'The Economist' warned that ‘close attention should be paid to any current account deficit in excess of 5% of GDP if it is financed in a way that could lead to rapid reversals’ (Dec. 23, 1995 – Jan. 1996, pp. 46-48). If this statement is to be taken at face value warning signs should be flashing for the Baltic countries – average annual current account deficits have for the period 1995 – 2003, been 8.6% for Estonia, 7.3% for Latvia and 8.4% for Lithuania. The purpose of this article is to pay attention to this problem and discuss whether the present trend of current account deficits in the Baltic countries is sustainable.

Sustainability of the balance of payments position of a country is not a concept easily dealt with. Basically, it is associated with the long-term solvency of a country, see e.g. Roubini and Wachtel (1998) and Edwards (2001). A more policy-oriented definition of sustainability is suggested by Milesi-Ferretti and Razin (1996) who characterize a given balance of payments deficit as sustainable if the balance of payment position is consistent with a continuation of present...
economic policy i.e. no dramatic changes in the economic policy are deemed necessary. Attention is paid in particular to the question of whether the balance of payments deficit endangers the exchange rate policy of a country and thus exposes the country to the risk of a currency crisis. A currency crisis is defined, in case of a flexible exchange rate regime as a sharp depreciation, or, in case of a fixed exchange regime, a depletion of central bank foreign reserves and ultimately a forced devaluation, see Edwards (2001) for a more thorough discussion.

All three Baltic countries have adopted fixed exchange rate systems as the main pillar for their economic policy. Estonia established in June 1992 a currency board arrangement based on a peg of the Estonian kroon to the Deutschmark and from 1 January 1999 the Estonian kroon was automatically re-pegged to the euro. Similarly, in April 1994, Lithuania established a currency board arrangement although the Lithuanian currency, the litas, was initially pegged to the US dollar. In February 2002 the litas was smoothly re-pegged to the euro. Latvia introduced a hard peg to the SDR in February 1994 and since then the exchange rate of the Latvian lat has been linked to this basket with dollar and euro as its most important currencies.

All three Baltic countries voted overwhelmingly in 2003 in favour of joining the EU (Lithuania on May 10-11, Estonia on September 14 and Latvia on September 20). With membership of the European Union from 1 May, 2004, the new member states are committed to aim at joiningEMU and thus adopt the euro when they fulfill the Maastricht convergence criteria. One of the criteria demands that the countries should subordinate their exchange rate policy to the Exchange Rate Mechanism II (ERM II), a target zone system with broad (+/- 15%) fluctuation bands around a central parity to the euro. Technically, the Baltic countries might therefore be prone to currency crises until adoption of the euro. When the euro is finally adopted, probably after 3 – 5 years from membership of the European Union the risk of currency crises is ultimately removed.

Concerns over the high deficits on the balance of payments in recent years in the Baltic countries have been addressed in several papers, see e.g. McGettigan (2000), IMF (2003b, 2003c) and Gurtner (2003). The latest assessments, IMF (2003b, 2003c), paint a comparatively bright picture of the future development for the Baltic economies although it is stressed that the economic policy ‘strategy [in these countries] is not without risks’ and the report later adds that the actual current account deficits in Estonia and Latvia at 12.5% and 7.75%, respectively, ‘are clearly unsustainable over medium-to-longer term’ (IMF, 2003b, pp. 4-5) and the high current account deficit ‘render the economy more vulnerable to external shocks’ (IMF, 2003b, p. 14). Gurtner (2003) provides evidence from the currency board arrangement in Argentina before the crisis there in 2001 and this experience is used for a discussion of the stability of the exchange rate regime in Estonia. Because of several structural differences between Argentina and Estonia, such as differences in the degree of openness, flexibility in the labour markets and inflows of foreign direct investment (FDI), it is concluded that Estonia is in a more favourable situation than Argentina.

Two main arguments have been put forward to support a mild view on the balance of payments problem in the Baltic countries. Firstly, all the three Baltic countries have for years benefited from a large inflow of foreign direct investment (FDI), which has contributed substantially to finance the deficits. Furthermore, this source of long term financing is perceived as a ‘stable’ source of financing, making reversals of capital flows less likely in the immediate future. Secondly, international competitiveness is seemingly fine in all three Baltic countries, see IMF (2003b) for an extensive analysis of this issue.

However, even by the most optimistic scenario it will take 3 to 5 years before the national currencies of the Baltic countries are replaced by the euro and the risks of a damaging currency crisis during this period needs to be taken seriously. Although there are no serious signs of an imminent currency crisis for the Baltic currencies, evidence from currency crises in the 1990s have repeatedly demonstrated that such crises may erupt suddenly, taking most analysts by surprise. Notable examples are the Mexican peso crises in 1994 – 1995 and the crisis in Argentina 2001 – 2002, which were not foreseen by highly esteemed forecast institutions. Based on past experience (and surprises) this paper addresses the question of whether the Baltic countries might face the risk of a currency crisis in the future due to the large and persistent structural current account deficits. The paper is organized as follows. Section 2 puts the concept of sustainability of a balance of payments deficits into the framework of intertemporal optimisation of consumption in open economies. The section concludes by suggesting the Milesi-Ferretti and Razin definition stating that a balance of payments deficit is sustainable if the present economic policy can be continued in the long run. Crucial for an assessment of this question are the prospects for long-term debt as well as various risk indicators for economy policy. Section 3 therefore examines the long-term dynamics of external debt and section 4 discusses various economic factors of importance for the vulnerability of an economy for a given long-term debt burden, i.e. external debt relative to GDP. Based on the sustainability indicators presented in sections 3 and 4, the case for the Baltic countries is analysed in section 5. As the long-term debt burden for a given current account deficit varies inversely with the rate of economic growth a part of section 5 is devoted to an analysis of the growth prospects for the Baltic countries using Ireland and Portugal as benchmark economies. Addressed in particular in section 5 are also the prospects of inflows of foreign direct investments (FDI), perceived, as they are, to be the most stable form of current account deficit financing and the impact on the balance of payments of structural funds transfers from the European Union to the Baltic countries under the present EU Financial Framework for 2000 – 2006. Section 6 provides concluding remarks.

2 Balance of payments deficits and intertemporal optimisation of consumption and saving

In open economies with borrowing and lending possible, the current account reflects intertemporal optimisation by consumers. The position on the current account equals national savings minus national investments; savings reflect the endeavours of consumers to smooth consumption across periods, based on a utility-maximising framework, and investments reflect manufacturers’ expectations of future profitability, or growth opportunities. Differences across countries of investment opportunities or differences with respect to consumer preferences may cause temporary discrepancies between savings and investments. However, fulfilling an intertemporal budget constraint implies that deficits on the current account will be reversed to surpluses in later periods, making external debt repayable. Hence, from a purely theoretical point of view, current account deficits or surpluses do not pose a problem. On the contrary, they provide an opportunity in open economies for consumers to increase welfare by smoothing consumption over time. This basic view on current account deficits can be traced back to Irving Fisher (1930) but has since then been stated several times in standard textbooks on macroeconomic theory, see e.g. Obstfeld and Rogoff (1996) or Barro (1997).
Public investments and public savings do not change the above conclusion in case of ‘ultra rationality’ or Ricardian equivalence of public debt and taxes. Rational forward-looking consumers take the public budget and debt into account in their intertemporal optimisation and public deficits are thus perceived as a future tax commitment, which the consumer includes among his liabilities. Frustrated expectations e.g. following external shocks or shifts in the perceptions of public sector debt in case of imperfect internalisation of the public sector finances may lead to changes in the optimal consumption plans but apart from very big negative shocks the consumers should be able to adapt planned future consumption such that claims from external creditors are not endangered.

However, as addressed initially by Eaton and Gersowitz (1981) the above reasoning only addresses the ability but not the willingness to live up to the obligations of debt servicing. To deal with the latter question a political economy analysis is necessary with voters and interest groups as the main agents. The outcome of such an analysis might describe cases where the political system pursues a macroeconomic policy, which may be unsustainable in the long run. If the debt burden tends to infinity in the long run then the present economic policy for sure cannot be continued – but even in the case where the debt burden tends to stabilise at a finite but high level the present economic policy might collapse because of unexpected refinancing problems. However, there is no exact critical maximum value for the debt burden beyond which a collapse of the economic policy will invariably appear. For a given debt burden the risk of a collapse depends on various factors in the economy. The following two sections describe, (a), the long-term dynamics of the debt burden and, (b), factors, which may be important to assess the vulnerability of the present economic policy for a given debt burden.

3 The dynamics of the long term debt burden

The dynamics of the debt problem can be analyzed formally by defining the debt burden $b$ by:

$$ b = \frac{D}{PY} \quad (1) $$

where $D$ is the total amount of external debt in current prices, $P$ the price level and $Y$ real GDP. Disregarding foreign direct investment and capital gains and losses on foreign assets and liabilities in the following simple calculation, the increase in total external debt is equal to the deficit on the current account of the balance of payments i.e.:

$$ D = CA = (IM - EX) + iD \quad (2) $$

where CA is the position on the current account, (EX – IM) the trade deficit and $i$ the nominal deficit on the current account of the balance of payments i.e.:

$$ IM - EX = h PY \quad (3)$$

To calculate the long run implications for the debt burden if the present economic development continues indefinitely we assume that the real rate of growth of GDP, $Y$, the rate of inflation, $P$, and the nominal interest rate $i$ are all constant. Furthermore it is assumed that the primary deficit $i.e.$ the trade deficit, constitutes an exogenous share, $h$, of nominal GDP i.e.

$$ IM - EX = h PY \quad (3) $$

Using these assumptions and substituting the nominal interest rate, $i$, with the real interest rate, $r$, defined by $r = (i - p)$, the dynamics of the debt burden can be written as:

$$ b = h (Y - r) \quad (4) $$

If the real interest rate is less than the real rate of growth of GDP, i.e. $r < y$, the debt burden will in the longer term tend to stabilize at the level:

$$ b^* = h / (y - r) \quad (5) $$

If the real interest rate exceeds the real rate of growth, i.e. $r > y$ (and the country is initially indebted), the debt burden will be rising indefinitely. Any deficit on the primary balance is, thus, in such cases unsustainable.

In the former case of $r < y$ the long run debt burden, although finite, might be very high and the required income transfers thus massive. Such cases might also be deemed unsustainable since the willingness to service the debt might be put into question. An unexpected, even minor, increase of the real interest rate might trigger a default of the debt.

This simple calculation of the dynamics of the debt burden illustrates the role of the two variables, economic growth and the real interest rate. Stronger economic growth for a given real interest rate will slow down the growth of the debt burden and in some cases even bring the debt burden to a halt. A higher real interest rate for a given rate of real growth will increase the long term debt burden, possibly to unsustainable levels.

For an assessment of the development of the debt burden the composition of the current account is important i.e. the current account deficit decomposed into trade and transfer deficits (Roubini and Wachtel, 1998). If the current account deficit is primarily caused by a deficit on income transfers, this will reflect a more mature and stable structural situation for the debt burden, being close to its long run equilibrium. If, on the contrary, the deficit is caused by large trade deficits the actual debt burden might still be far below its long run equilibrium and, hence, the deficit should be of more concern.

Attention should also be paid to the sources of the current account deficits, i.e. the balance between savings and investments (Roubini and Wachtel, 1998). A deficit reflects the insufficiency of national savings to finance national investment. As high investment is (usually) associated with strong growth, it follows straightforward from the equation for the dynamics of the debt burden that a given balance of payments deficit is less concerning if the deficit is caused by high investment rather than low savings.

4 Economic policy vulnerability for a given level of long-term debt burden

The risk that a chosen economic policy collapses in the long run depends not only on the implications for the long term debt burden but also on various factors such as (1) the structure of capital flows, (2) the public sector deficit, (3) exposure to ‘original sin’, i.e. currency mismatch or maturity mismatch of assets and liabilities, (4) the exchange rate regime and, finally, (5) the degree of openness of the economy and flexibility of the labour market. Those factors will be described in more detail in the following.

(1) The structure of capital flows and the role of FDI

The dominating view concerning the stability of the various sources to finance balance of payments deficits ranks short-term borrowing (‘hot money’) highest on the list as the most risky and unstable source of financing. The need for frequent renewals of short-term loans provides opportunities for easy withdrawals. Long-term borrowing, on the other hand, is more stable as the debtor is allowed more time to solve possible liquidity problems stemming from the renewal of a loan. Foreign direct investment is usually perceived to be the most stable source of deficit

$^9$The ratio between the transfer deficit and the trade deficit is given by $D$ per PY. In steady state where the debt burden is given by (5) this equals $i(i-r)$. The transfer deficit thus varies proportionally with the trade deficit in the longer term for given $i$, $y$ and $r$. Note that the ratio between the transfer deficit and the trade deficit in the longer term increases with the nominal interest rate and hence with the rate of inflation. This is due to money illusion when calculating the balance of payments deficit.
considerations and empirical experience point to the existence of an unpleasant problem of dividends payments. As argued by Brada and Tomsik (2003) theoretical and empirical knowledge may gradually pose an unpleasant problem of dividends payments. There are indirect effects on the current account and in the longer term also on the real rate of growth.

The indirect effects on the current account of foreign direct investment are rather complex and they may be both positive and negative. In the very short term the effect on the trade balance is probably negative since the establishment of a subsidiary is likely to trigger investments and induce imports of capital goods. However, in the longer term foreign direct investment represents not only physical capital but also new technology in the form of codified and tacit knowledge and this may lead to import substitution and/or an increase in exports. Empirical analysis seems to corroborate the positive relationship between foreign direct investment and the trade balance of the host country, see e.g. ECE (2001, Chapter 5) for a survey of findings. The same survey also reports strong evidence of a positive relationship between transfer of technology, productivity growth and inflow of foreign direct investment. The overall conclusion is therefore that capital inflows in the form of foreign direct investment are beneficial for the host economy, partly because it represents a stable source of financing of balance of payments deficits and, partly, due to the assumed beneficial effects on the trade balance and on the real rate of growth.

At least three caveats should be kept in mind, however, when contemplating the optimistic view on the beneficial effects of foreign direct investment. Firstly, foreign direct investment is not an asset of the firm but one of its liabilities and financial claims can easily revert as stressed by Fernández-Arias and Hausmann (2001). Physical capital might be bolted down but owners of such assets still have the possibility to protect the value of their assets (measured in the currency of the home country) from possible exchange rate loss by hedging using the assets as collateral. Ultimately, the owners may also have the possibility of selling their claims in the market and withdraw their money, for example sell their shares and convert the revenue to the currency of the sending country. Such endeavours will aggravate problems of a looming currency crisis.

Secondly, net inflows of foreign direct investment is in principle a stock adjustment where investors abroad realize their plans to establish a subsidiary in a foreign country. When the actual stock of foreign subsidiaries equals the optimal stock, the net flow of new investment will decline to a lower level given by the incentive to adjust the existing stock of foreign owned capital in accordance to growth of the economies and to offset depreciation of the capital already invested (World Bank, 2003). FDI is therefore not a reliable source of balance of payments deficits in the longer term.

Thirdly, the prospects of transfers of income of foreign direct investment may gradually pose an unpleasant problem of dividends payments. As argued by Brada and Tomsik (2003) theoretical considerations and empirical experience point to the existence of an ‘FDI financial life cycle’. In a first phase, profits from foreign direct investment are usually reinvested in the host country to finance further expansion of the subsidiaries and, hence, a substantial part of the income transfers from foreign investment is automatically financed as no actual payment takes place. In a more mature second phase the investor wants to repatriate profits as openly paid dividends and at that time the debit side on the current account needs to be financed from alternative sources.

(2) The public sector deficit
Attention should also be given to the size of the public deficit. Public deficits may not be fully incorporated by optimizing consumers in case of non-rationality. A simultaneous deficit on the current account and on the public finances may in a future period result in severe negative surprises for consumers when the twin deficits are going to be redressed. This risk has been framed in the so-called Lawson Doctrine, associated with the former British Chancellor of the Exchequer, Nigel Lawson. The Doctrine states that current account deficits should not be a matter of concern if they are caused entirely by private sector imbalances and not by fiscal imbalances. This view on the sustainability of a balance of payments deficit has also been stated by Corden (1994) who argues that, contrary to private agents, politicians are myopically driven by ambitions to stay in power. Hence, the public sector may distort national savings and investment via public deficits and macroeconomic instability might prevail. The Lawson Doctrine, however, is seriously challenged by evidence from several recent balance of payments crises, see e.g. Edwards (2001). A notable example is the Mexican currency crisis of 1995, which was preceded by a substantial balance of payments deficit but without fiscal imbalances.

(3) The problem of original sin
The quality of the financial markets is also very important for the risk of a currency crisis. If it is not possible to borrow abroad in own currency or if it is not possible to borrow long-term domestically a risk of insolvency of financial institutions and domestic companies is prevalent in case of a currency crisis. The reason is a currency mismatch or a maturity mismatch, which imply balance sheet effects in case of exchange rate changes or changes in the domestic interest rate. This risk has been coined the problem of ‘original sin’, see e.g. Fernandez-Arias and Hausmann (2001). Most obviously, if external debt liabilities are denominated in foreign currencies, a depreciation will have direct and immediate balance sheet effects as the solvency of firms will be eroded. In a worst case scenario companies will go bankrupt and give impetus to a collapse of output and a surge in unemployment. Argentina, 2001 – 02 provides an ominous example.

(4) Exchange rate regime
Countries with a fixed exchange rate regime are most vulnerable to currency crises. An unpleasant policy dilemma exists for troubled economies with a fixed exchange rate regime. On the one hand, frequent small devaluations will ruin the credibility of the system and will result in high interest rates. On the other hand, complete rigidity of the parity preclude that growing tensions in the exchange market might be eased by a gradual change of the exchange rate. If widespread feelings develop, suggesting that the economic policy is too lax the market might ‘test’ the parity by launching a speculative attack. The ability of the central bank to defend the parity depends on the size of foreign exchange reserves and its external credit facilities. This vulnerability of fixed exchange rate regimes exists in the case of hard pegs e.g. institutionalized through currency board arrangements as well as for target zone systems, particularly for systems with narrow band margins. In a flexible exchange regime or in a target zone system with wide fluctuation bands the risk of losses and gains for agents considering to speculate in a change of the exchange rate are considerable and, hence, speculative attacks are less likely.

(5) Other aspects
The degree of openness and the flexibility of labour markets are also important factors when evaluating the risk of a currency crisis for a given external indebtedness. Open economies are more able to restructure and improve the trade balance if the obligations to service the debt
unexpectedly worsen. The same argument applies if the labour market is flexible.

The above list of indicators provide information about the vulnerability of a currency crisis. However, should a currency crisis materialize it also needs a trigger, i.e. a negative shock which initiates a vicious circle difficult to control by the authorities. An unexpected decline in the real rate of growth, an increase in the interest rate or an unexpected real appreciation of the currency for a country with a fixed exchange rate regime could be the trigger, which initiates a currency crisis. A currency crisis is therefore not predictable in a deterministic way but should be seen as a possible outcome in a risk assessment.

5 Scrutinizing economic development in the Baltics in the past decade

The theoretical analysis in the two preceding sections outlines a list of relevant factors for an assessment of whether or not the present economic policy can be maintained in the longer run. This set of indicators will be applied in this section to the three Baltic countries.

(a) Prospects for the debt burden: composition and sources of the deficit

The current account balance and the trade balance for the Baltic countries are reported in Table 1 for the period 1995 – 2003.

It appears from the table that current account deficits have been the norm in the Baltic countries since 1995. They have usually been very large, almost never below 5% of GDP, often exceeding 10%. As is also evident from Table 1, the current account deficits are caused by substantial trade deficits implying an upward pressure on the debt burden. However, as will be noticed later the massive inflow of FDI has dampened the effect from current account deficits on the debt burden.

By 1 May 2004 the Baltic countries formally entered as members of the European Union with the obligation later to seek membership of the Economic and Monetary Union (EMU). These changes of the future institutional environment will have a direct impact on the current accounts of the balance of payments.

The removal of the remaining trade barriers will influence the trade balance but as both exports and imports will be stimulated the net effect on the trade balance is ambiguous. More clear is the impact on the balance of income transfers. Firstly, the current accounts might be improved because of an increased flow of remittances from labour migrating from the Baltic countries to the Western European countries. Secondly, and probably more important, the countries will be net recipients of transfers from the EU budget. The Baltic countries are expected to benefit substantially from access to the structural funds for member countries of the EU. The Common Agricultural Policy might also provide net benefits to the Baltics, especially for Lithuania due to its relatively big agricultural sector.9

In a recent analysis by Mayhew (2003) the net financial transfers from the EU to the new member states have been assessed. The calculations are based on the present medium-term EU ‘Financial Framework for the seven periods 2000 to 2006’. The results concerning the Baltic countries are reported in Table 2.

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Table 1. Composition and sources of balance of payments deficits in the Baltic countries, percent of GDP

<table>
<thead>
<tr>
<th></th>
<th>Current account</th>
<th>Trade Balance1</th>
<th>Gross investment</th>
<th>Gross Savings</th>
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<td>Estonia</td>
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<tr>
<td>1995</td>
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<td>-8.0</td>
<td>26.6</td>
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<td>1996</td>
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<td>27.8</td>
<td>16.8</td>
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<td>1997</td>
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<td>1998</td>
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<td>1999</td>
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<td>2000</td>
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<td>2001</td>
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<td>2002</td>
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<td>2003</td>
<td>-12.7</td>
<td>-8.0</td>
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<td>-8.1</td>
<td>28.7</td>
<td>19.2</td>
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<td>Latvia</td>
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<td>-0.4</td>
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<td>1995-2003, average</td>
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</tr>
<tr>
<td>1999</td>
<td>-11.2</td>
<td>-10.3</td>
<td>23.1</td>
<td>11.9</td>
</tr>
<tr>
<td>2000</td>
<td>-6.0</td>
<td>-6.4</td>
<td>20.2</td>
<td>14.2</td>
</tr>
<tr>
<td>2001</td>
<td>-4.8</td>
<td>-5.5</td>
<td>21.0</td>
<td>16.2</td>
</tr>
<tr>
<td>2002</td>
<td>-5.2</td>
<td>-5.5</td>
<td>22.5</td>
<td>17.7</td>
</tr>
<tr>
<td>2003</td>
<td>-6.7</td>
<td>-5.5</td>
<td>21.9</td>
<td>15.3</td>
</tr>
<tr>
<td>1995-2003, average</td>
<td>-8.4</td>
<td>-8.6</td>
<td>23.0</td>
<td>14.7</td>
</tr>
</tbody>
</table>

Note: Small discrepancies between external savings (gross investment minus gross savings) and the current account appear due to different measuring methods.

1 Goods and services


---

8 Data preceding 1995 is notoriously unreliable in all three Baltic countries, which is why 1995 has been chosen as the starting point.

9 However, this transfer will be relatively small the first years of membership as direct subsidies will be paid on a sliding scale starting from 25 % of the level to the farmers in the old member states in 2004 to full payments in 2013 (Mayhew, 2003).
Table 2. Net transfers from the EU to the Baltic countries, percent of gross national income (GNI)

<table>
<thead>
<tr>
<th>Year</th>
<th>Estonia</th>
<th>Latvia</th>
<th>Lithuania</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003, pre-accession aid</td>
<td>0.8</td>
<td>0.9</td>
<td>0.8</td>
</tr>
<tr>
<td>2004</td>
<td>1.6</td>
<td>1.9</td>
<td>1.8</td>
</tr>
<tr>
<td>2005</td>
<td>2.2</td>
<td>2.8</td>
<td>2.8</td>
</tr>
<tr>
<td>2006</td>
<td>2.3</td>
<td>3.1</td>
<td>3.2</td>
</tr>
</tbody>
</table>

Note: Transfers relative to GDP are by and large the same as in the table as the difference between GNI and GDP is usually negligible and does not exceed 6% for any year for any of the three countries.


It appears from Table 2 that the expected net transfers to the Baltic countries from the EU are substantial, especially at the end of the present Financial Framework and this might offset parts of the current account deficits, which would otherwise have prevailed. An assessment of the future net transfers during the ‘2007 – 2013 Financial Framework’ is not possible as no detailed agreement about budgetary issues beyond 2006 has been made at the EU level. However, it is reasonable to assume that, given the relative poverty of these countries, the net flows to the Baltic countries in 2006 make up the minimum of what might be expected for the following years.

Baltic data for savings and investment are also reported in Table 1. The current account deficit reflects the gap between investments and savings and optimistic growth expectations might have contributed negatively to savings because of incentives to smooth consumption. The three countries have performed rather differently regarding the share of gross investment to GDP. For the period 1995 – 2002 Estonia’s level of investment has been high with shares ranging between 25% and 31%. For Latvia the share of investments increased from relatively low levels of 17-18% in 1995-96 to about 29% for 2002, while, for Lithuania, the evidence points at investment shares, which have stagnated in the 20-25% range.

To put those figures into an EU perspective, the share of gross investment to GDP for the EU-15 countries for the same period hovered in the interval 19.2% (2002) – 21.0% (2000) of GDP while the current account was almost in balance, being in an interval of a surplus of 1.3% (1997) and a deficit of 0.3% (2000), (EU Commission, 2003, Table 78). A simple comparison with the EU thus indicates that the large current account deficits in Estonia and Latvia are related to high investment levels and not a low level of savings in these two countries. The same mitigating feature does not, however, hold for Lithuania where the current account deficit goes hand in hand with a quite low level of savings.

Future growth prospects after EU membership for the eight new Eastern European EU member countries (the Czech Republic, Hungary, Poland, Slovakia, Slovenia and the three Baltic countries) plus the applicant countries Bulgaria and Romania have been assessed in a report by the EU Commission (2001). An adapted Solow model was used for an assessment of future growth potential. For the period 2000 – 2009 the annual average real rate of growth of GDP is projected at 4.0% in a ‘central scenario’ and 4.8% in an ‘optimistic scenario’. The central scenario assumes that the share of gross investment to GDP constitutes around 26 – 27% whereas the optimistic scenario assumes an increase in the share of investment from around 27% to about 32% during the calibration period. If applied specifically to the three Baltic countries, Lithuania falls below this investment condition even for the central scenario. Moreover, all three countries need to raise the share of investments significantly to match the conditions of the optimistic scenario. But an increase of the investment share might cause a further deterioration of the current accounts unless the share of savings does not see at least an equivalent increase.

The brighter growth prospects following EU membership will definitely pose a challenge for macroeconomic policy. Investment ratios should be raised to support the growth process but consumers may be inclined to smooth consumption and decreased savings ratios may be envisaged. This might aggravate the current account problem and ultimately threaten the growth process.

However, economic growth is not only dependent on the accumulation of physical capital but is influenced by a range of other determinants. This is well illustrated by the growth performance of Ireland and Portugal over the past decade and the experience from those two countries might provide a useful benchmark for an assessment of the possible growth process for the Baltic countries. Ten years before the turn of the century GDP per capita measured at current exchange rates was substantially below the EU-15 average in these two countries, see Table 3. However, during a relatively short span of years Ireland jumped from a meagre 70% to 134% of the EU level and also Portugal improved its position albeit less impressively from 38% to 50% of the EU level.

The challenging question is whether a future scenario of the Baltic countries might mimic an Irish growth miracle or a Portuguese slower convergence. To explore this question Table 3 and 4 present some key macroeconomic figures for the two benchmark economies, Ireland and Portugal, and for the three Baltic countries.

A closer look at the growth process in Ireland and Portugal reveals interesting differences in the nature of growth in the two countries. Table 3 decomposes, based on the Solow approach, the overall growth rate into what is caused by growth in factor inputs (labour and capital) and growth of total factor productivity. In the Irish case growth has been associated with high growth rates of employment and total factor productivity. Only a minor role can be ascribed to capital deepening i.e. the increase in physical capital per person employed. The average share of investment in Ireland is by and large at the same level as the present shares in Lithuania, which, as mentioned earlier, fall below the target shares used in the EU Commission’s growth calculation. In contrast, capital deepening has played a more important role for economic growth in Portugal as the larger shares of investment have translated into growth through capital deepening. The recent experiences from the two countries thus offer the insight that high investment shares are neither a necessary nor a sufficient condition for fast growth, at least not in the medium term.

The astonishingly high growth in Ireland has been dealt with in several analyses, see e.g. Coorey...
which is sensitive to differences in economic growth in the two countries.

Ireland has benefited from its trade openness and its huge inflow of FDI, which has raised – for most of the years during the 1990s the Irish current account was in fact in surplus. Finally, stimulated aggregate demand and enabled growth without severe balance of payments problems due to a larger participation rate among women) from a relatively low level in 1990. A dramatically shrinking unemployment rate, the much diminished role of labour from an initially large agricultural sector and the reversal of Ireland’s long history of emigration have contributed to secure a flexible labour supply during the several years of high growth12. Secondly, the educational attainment of the population is also quite high and has even improved significantly during the last decade and this feature of the labour market has facilitated growth in technically advanced sectors. Thirdly, strong international competitiveness of the Irish economy has increased substantially, especially because established subsidiaries have been export-oriented.

Thirdly, strong international competitiveness of the Irish economy has dramaticaly raised productivity, especially because established subsidiaries have been export-oriented. Factors that have benefited growth in Ireland. Firstly, the very strong growth has been possible because of an ample supply of labour from various sources, see Table 4. The activity rate, i.e. the labour force as a share of population aged 15 to 64, has increased substantially during the 1990s (not least due to a larger participation rate among women) from a relatively low level in 1990. A dramatically shrinking unemployment rate, the much diminished role of labour from an initially large agricultural sector and the reversal of Ireland’s long history of emigration have contributed to secure a flexible labour supply during the several years of high growth12. Secondly, the educational attainment of the population is also quite high and has even improved significantly during the last decade and this feature of the labour market has facilitated growth in technically advanced sectors. Thirdly, strong international competitiveness of the Irish economy has dramaticaly raised productivity, especially because established subsidiaries have been export-oriented.

A comparison of the structural indicators in Table 3 and 4 for Ireland and Portugal illustrate the more limited growth potential for Portugal on all accounts apart from the share of investment14. Noticeable is in particular the lower educational attainment in Portugal, the substantial balance of payments deficits in Portugal and the wedge between gross domestic product and gross domestic income due to foreign debt.


<table>
<thead>
<tr>
<th>Year</th>
<th>Ireland</th>
<th>Portugal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real GDP</td>
<td>6.9</td>
<td>2.1</td>
</tr>
<tr>
<td>Employment</td>
<td>3.4</td>
<td>1.0</td>
</tr>
<tr>
<td>Capital deepening</td>
<td>0.4</td>
<td>0.4</td>
</tr>
<tr>
<td>Total factor productivity</td>
<td>3.0</td>
<td>0.7</td>
</tr>
<tr>
<td>Gross investment, average percentage of GDP 1991-2002</td>
<td>20.3</td>
<td>25.6</td>
</tr>
</tbody>
</table>

Table 4. Growth framework for Ireland, Portugal and the Baltic countries, various years

<table>
<thead>
<tr>
<th>Year</th>
<th>Ireland</th>
<th>Portugal</th>
<th>Estonia</th>
<th>Latvia</th>
<th>Lithuania</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity rate1</td>
<td>70.9</td>
<td>69.7</td>
<td>68.4</td>
<td>71.9</td>
<td>69.9</td>
</tr>
<tr>
<td>Unemployment rate</td>
<td>13.4</td>
<td>4.8</td>
<td>3.8</td>
<td>4.1</td>
<td>12.4</td>
</tr>
<tr>
<td>Share of employment in agriculture</td>
<td>13.6</td>
<td>12.8</td>
<td>7.0</td>
<td>10.9</td>
<td>7.1</td>
</tr>
<tr>
<td>Degree of openness2</td>
<td>54.7</td>
<td>36.2</td>
<td>84.4</td>
<td>34.0</td>
<td>88.9</td>
</tr>
<tr>
<td>Inward stock of FDI, $ per capita</td>
<td>9757</td>
<td>1057</td>
<td>40220</td>
<td>4256</td>
<td>3105</td>
</tr>
<tr>
<td>GNI/GDP</td>
<td>0.89</td>
<td>0.89</td>
<td>0.80</td>
<td>0.90</td>
<td>0.95</td>
</tr>
</tbody>
</table>

Note: Secondary education defined in accordance with ISCED (International Standard Classification of Education).


12 As analyzed more extensively by Honohan and Walsh (2002) the Irish and UK labour markets are very integrated through migration, which is sensitive to differences in economic growth in the two countries.

13 See Vamvakidis and Zanfirin (2002) for a recent growth analysis of Portugal.
and for Latvia and Lithuania a potential labour supply from the future restructuring from agriculture to other industries. However, the activity rates are already quite high and very similar to the situation in Portugal in 1990, thus probably not leaving any major potential for an increase in the labour supply. On the optimistic side is also the relatively high educational level in all three Baltic countries although comparative measures are difficult to establish. The high degree of trade openness and a substantial inflow of FDI places Estonia closer to the Irish case – contrary to Latvia and Lithuania which seem more to mirror the Portuguese case. All three Baltic countries suffer from severe balance of payments deficits, which under the present exchange rate regimes might endanger future strong growth if no determined efforts to improve international competitiveness take place.

The pattern is therefore quite complex. Most of the indicators paint an optimistic picture for an assessment of the growth prospects, especially in the case of Estonia.

(b) Vulnerability of the economic policy

(1) The stability of capital flows

All three Baltic countries have experienced massive inflows of FDI, which have financed a substantial part of the current account deficits of these countries. For some years the net inflows of FDI have even exceeded the current account deficits, see Table 5, allowing either for a reduction of net foreign debt or for an increase in foreign exchange reserves.

Membership of the EU and the EMU might also temporarily stimulate net inflows of foreign direct investment to the Baltic countries due to the credibility of membership. This might ease the financial problem of a current account deficit in the vulnerable period in the near future where the Baltic countries must display exchange rate stability.

The conclusion to be drawn is that the composition of the capital inflows supports the milder view on the possible dangers for the economic policy of the large current account deficits. It should be noted, however, that the FDI inflows, albeit substantial, have been highly volatile and since FDI inflows represent a stock adjustment this contribution to financing the deficits will eventually come to a halt. Furthermore, the large inflow of FDI to the Baltic countries in recent years might in the coming years cause large future payment obligations in the form of dividends. Foreign direct investment income will increase substantially in the future and, sticking to the FDI financial life cycle hypothesis, the balance of payments deficits might be more difficult to finance.

Table 5. Current account deficits, FDI capital flows and FDI related income transfers to the Baltic countries, percent of GDP

<table>
<thead>
<tr>
<th>Year</th>
<th>Estonia</th>
<th>Latvia</th>
<th>Lithuania</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>-4.4</td>
<td>-0.4</td>
<td>-10.2</td>
</tr>
<tr>
<td>1996</td>
<td>-9.1</td>
<td>-5.5</td>
<td>-9.2</td>
</tr>
<tr>
<td>1997</td>
<td>-12.2</td>
<td>-6.1</td>
<td>-11.9</td>
</tr>
<tr>
<td>1998</td>
<td>-9.2</td>
<td>-10.7</td>
<td>-11.2</td>
</tr>
<tr>
<td>1999</td>
<td>-5.7</td>
<td>-9.8</td>
<td>-6.0</td>
</tr>
<tr>
<td>2000</td>
<td>-5.7</td>
<td>-6.9</td>
<td>-5.2</td>
</tr>
<tr>
<td>2001</td>
<td>-6.1</td>
<td>-9.6</td>
<td>-6.7</td>
</tr>
<tr>
<td>2002</td>
<td>-12.3</td>
<td>-7.8</td>
<td>-4.8</td>
</tr>
<tr>
<td>2003</td>
<td>-12.7</td>
<td>-9.3</td>
<td>-5.2</td>
</tr>
</tbody>
</table>

Note: Reinvested earnings are gross for Latvia for the years 1996, 1999 and 2000 and for Lithuania for 1996. Reinvested earnings invested abroad are negligible for all three Baltic countries for the years where those figures are reported.


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15 The effects on the flows of foreign direct investments of a reduction of trade barriers are from a theoretical point of view ambiguous. On the one hand, the decline of trade costs weakens the incentive to set up a subsidiary in foreign markets as exporting will become cheaper and by concentrating production in one location only, cost efficiency improves because of internal economies of scale. On the other hand, market integration makes it more important for a company to be present in the partner country and this points to a positive effect on FDI of membership. Based on previous experience from enlargements the latter effect seems to dominate.

16 The reported actual foreign direct investment income as well as reinvested earnings might, as mentioned by Brada and Tomsik (2003), both be underestimated as some accumulation of tangible and intangible capital in the company’s accountancy might be reported as costs. The figures in Table 5 therefore understate the existing potential for dividends.
(2) Public finances

As appears from Table 6 the public finances have been largely sound for all Baltic countries. Public budgets have for most of the period been close to balance and even in surplus for some years. This is therefore a positive element in the assessment of the current account deficits of the Baltic countries, whether or not the Lawson-doctrine applies.

Table 6. General Government Budget Balance, percent of GDP

<table>
<thead>
<tr>
<th>Year</th>
<th>Estonia</th>
<th>Latvia</th>
<th>Lithuania</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>-0.6</td>
<td>-4.0</td>
<td>-4.8</td>
</tr>
<tr>
<td>1996</td>
<td>-0.8</td>
<td>-1.6</td>
<td>-3.6</td>
</tr>
<tr>
<td>1997</td>
<td>2.5</td>
<td>0.7</td>
<td>-1.9</td>
</tr>
<tr>
<td>1998</td>
<td>-0.3</td>
<td>0.1</td>
<td>-0.4</td>
</tr>
<tr>
<td>1999</td>
<td>-0.2</td>
<td>-3.6</td>
<td>-7.1</td>
</tr>
<tr>
<td>2000</td>
<td>0.2</td>
<td>-2.7</td>
<td>-1.3</td>
</tr>
<tr>
<td>2001</td>
<td>2.3</td>
<td>-1.4</td>
<td>-0.4</td>
</tr>
<tr>
<td>2002</td>
<td>1.2</td>
<td>-1.9</td>
<td>-1.1</td>
</tr>
<tr>
<td>2003</td>
<td>-</td>
<td>-1.5</td>
<td>-</td>
</tr>
</tbody>
</table>

(3) Foreign debt, foreign owned assets and original sin

In spite of the persistent high level of current account deficits in all three Baltic countries, net debt as a percentage of GDP is still at a one-digit level for both Estonia and Latvia and make up less than 20% for Lithuania at the end of 2002, see Table 7. These levels do not seem alarming. The reason for the modest growth of foreign debt to GDP is the massive inflow of FDI and also the strong economic growth.

The inward stock of FDI to GDP has therefore risen considerably for all three countries but mostly for Estonia where the inward stock constituted approximately 58% of GDP by the end of 2001. Adding foreign debt to the inward stock of FDI gives the stock of foreign owned assets. For all three Baltic countries this stock of foreign owned assets makes up around half of GDP by the end of 2002. This figure reveals some information about the future flow of income transfers. If the capital-output ratio in a catching-up country is assessed, roughly, to be about 2, a quarter of capital income constitutes the income transfer to foreign owners and creditors. However, given the high productivity of capital in the Baltic countries the stock of foreign owned capital reflects an efficient allocation of capital which might benefit the citizens of the Baltic countries through higher real wages as well as the capital owners abroad due to a higher real return on capital.

The data available does not allow for an empirical assessment of the problem of original sin. However, all casual evidence leaves no doubt that foreign borrowing in the Baltic countries is denominated in foreign currencies, mainly euro and US dollars. It leaves the countries vulnerable to balance sheet effects in case of changes of the current parities. However, this seems not to be a big problem given the relatively low debt burden for all three countries.

Table 7. Foreign debt, inward stock of FDI and foreign owned assets, percent of GDP

<table>
<thead>
<tr>
<th>Year</th>
<th>Estonia</th>
<th>Latvia</th>
<th>Lithuania</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>3.2</td>
<td>51</td>
<td>54</td>
</tr>
<tr>
<td>2001</td>
<td>2.7</td>
<td>58</td>
<td>62</td>
</tr>
<tr>
<td>2002</td>
<td>3.1</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

(4) Exchange rate regime and other aspects

The present fixed exchange rate systems in the Baltic countries have delivered monetary stability in recent years but have exposed the countries to higher risks of a currency crisis compared with flexible exchange rate regimes. The risk of currency crises has been limited by a high degree of openness of the Baltic countries measured by the share of exports and imports to GDP. This ensures a high capability to influence the current accounts through changes in economic policy and hence provides foreign creditors with the belief that debt obligations will be met. The Baltic countries are also perceived to have a high degree of flexibility in their labour markets because of weak trade unions and low levels of welfare benefits and this also contributes to reduce the risk of currency crises.

More important for sustainability than the abovementioned effects are the expected changes of the monetary policy regimes for the new member countries after accession. The new member countries are committed eventually to join the EMU and adopt the euro. In the interim period the new member countries should as a first step join the European Exchange Rate Mechanism II (ERM II) i.e. a target zone system with the euro as anchor currency. To avoid a ‘double regime shift’ the existing currency board arrangements in Estonia and Lithuania have been accepted as a substitute for participation in the ERM II system, (Statement by the then President of the ECB, W. F. Duisenberg, at a press conference on April 13, 2000). Latvia is expected to re-peg the lat from SDR to euro by 1 January 2005 and at the same time join ERM II. After at least two years of exchange rate stability within ERM II and after fulfilling the other convergence criteria for ‘sound public finances’ as well as for inflation and interest rate convergence the countries can apply to the European Council of Ministers for adoption of the euro.

The new member countries face a dilemma when planning the timetable for adopting the euro. On the one hand, the accession countries are still in a transition process from the planned economy of half a century. In this still ongoing restructuring process the countries might benefit from having the exchange rate instrument as a last resort in case of an asymmetric shock between the EU and the new member state. The points to a relatively long period before the euro should be adopted. On the other hand, adopting the euro eliminates once and for all the risk of a currency crisis and by this argument a short interim period is to be preferred.
The Baltic countries will probably go for a swift change to the euro. The fixed exchange rate systems during the past decade have delivered monetary stability without severe problems. Furthermore, the public finances are not in disarray in any of the three Baltic countries so the Maastricht criterion of public deficits not exceeding 3 percent of GDP is not a serious hindrance for membership of the EMU.

However, ‘demand’ for membership should be matched by ‘supply’ of membership of the euro zone if the entrance into EMU is to become reality. Regarding the supply of membership the final decision of accepting new member countries will be taken by the European Council of Ministers with voting rights only for the present group of euro countries. However, there are no signs that EMU membership for the new member countries will be blocked or delayed by the present group of euro countries so a plausible scenario might see the Baltic countries adopt the euro after 3 – 5 years of membership of the EU, i.e. in 2007 – 2009.

6 Concluding remarks
A superficial glance at the main macroeconomic indicators for the three Baltic countries reveals several positive trends but also one major issue of concern: the very substantial and persistent deficits on the current accounts of the balance of payments, implying a risk for the fixed exchange rate policies and the smooth process towards the eventual adoption of the euro. This article has dealt with these topics and has revealed a picture with more nuances.

At least three issues have been highlighted. 1) Many – but not all – indicators support a mild view on the balance of payments problems. 2) The problems of current account deficits are neither similar nor equally serious in the three Baltic countries. 3) Even in the absence of devaluation and with a successful entry into EMU some 3 – 5 years from now, the current account deficits will remain an important issue although the focus will shift from possible devaluation to the development of standards of living.

Supporting a mild view on the balance of payments problem are indicators such as public finances (generally sound), low levels of debt, EU membership (increased income transfers from EU structural funds will alleviate current account problems), huge inflows of FDI (not ‘hot money’), very open economies and flexible labour markets. On the negative side are the size and persistence of the deficits on the balance of payments, the prospect of a substantial decrease of the net inflow of FDI because of completion of the capital stock adjustment and an increasing outflow of dividends in the second part of the FDI financial cycle. The latter has still not appeared (except to some extent in Estonia, see Table 5) and may appear too late to put pressure on the exchange rates due to the upcoming adoption of the euro. Also on the negative side is the problem of original sin, especially for Lithuania where foreign debt is substantially higher than in the two other countries.

Although all three Baltic countries have had large deficits on balance of payments for all years since 1995 the ranking of countries by size of deficit has changed. Currently, the deficit is the highest in Estonia and the smallest in Lithuania. Yet it may be argued (see Table 1) that the issue is more problematic in Lithuania. In Estonia the deficit may be viewed as mainly caused by very substantial investment whereas for Lithuania it is to a larger extent caused by a low savings rate. Moreover, budget deficits have consistently been lower and foreign debt much smaller in Estonia than in Lithuania, portraying, perhaps, Lithuania’s exchange rate regime as more shaky than Estonia’s. Latvia appears somewhere in between.

In the case of a successful adoption of the euro, the current account deficits will cease to be possible indicators of devaluation – but they will neither cease to exist, nor to be of importance. Rather, the focus will shift. The increasing external debt and the increasing share of foreign ownership of Baltic companies, which is implied by the deficits, will cause an increase in the flows of income transfers abroad and thereby widen the gap between GDP and GNI – and it is GNI, which is the relevant measure for standards of living. However, the huge FDI inflow embedded in subsidiaries, which produce and export, points to a strong growth effect and the gap between GDP and GNI might reflect intertemporal optimisation by consumption-smoothing consumers in a financially integrated world economy.

The main conclusion in this article is therefore that the large deficits on the current accounts in the Baltic countries pose some risk for the sustainability for the fixed exchange rate policies and ultimately for the endeavours of these countries to keep their economies on a fast track of convergent growth to the European Union level of standards of living. To minimize the risk it seems important that the economic policy of these countries preserves and even improves the international competitiveness through a strategy based on monetary stability and fiscal prudence. As the fundamental equilibrium real exchange rate tends to appreciate due to the Balassa-Samuelson effect a policy which ensures a rate of inflation not above the level in the euro area will gradually lead to an improvement of the international competitiveness for given nominal exchange rates. Such a strategy will not only minimize the risk of a currency crisis but also ease the way to the adoption of the euro.

References
Earlier versions of this paper have been presented at the seventh EAERE Conference in Lisbon, at the 52nd IBPF Congress in Tel Aviv and at the 14th EEA Congress in Santiago de Compostela. I thank the participants at these presentations, and particularly Frank J. Convery and Umberto Galmarini, for valuable comments and suggestions.

OPTIMAL COMMODITY TAXES WITH TOURIST DEMAND*

Sinikka Hämäläinen**

Abstract The existence of country-specific commodities that have to be bought and consumed locally plays an essential role in tourism. This paper discusses how optimal taxation rules are modified when the taxable goods include goods demanded by tourists. The main point is that tax rates can be manipulated to shift some of the tax burden from domestic residents onto tourists. There is indeed a reason why an optimum taxation approach is useful for tourism, as the goods are consumed inside the host country, and discrimination is difficult.

This paper combines several scenarios where tourism may be relevant for optimal tax policy. It begins by considering the determinants of tourist demand. Then, the well-known optimal commodity tax rules are modified to include the effect of foreign demand. Tourists are assumed to trade at the same prices as domestic consumers, but to have zero welfare weight. Thus, the government must balance the desire to tax tourists with the deadweight loss suffered by its own residents. The government should raise some taxes, when tourism begins. Tourism-oriented goods with low price elasticities should bear the highest taxes. However, tourism-related pollution cannot be taxed at prohibitive rates or tourist revenue would be lost altogether. Possible extensions are introduced, for example competition among destination countries. Should tourism dependent countries that are geographical neighbours and substitutes have closely linked tax systems? What kind of tax policy is best when the tourist destinations serve as complements to each other?

Keywords: tourism, optimal taxation

JEL Category: H, J

1. Introduction

Tourism today is not only a vital source of foreign currency, but is one of the fastest growing industries in many parts of the world. Travel is placed rather high in the consumers’ scale of preferences. The tourist explosion cannot be regarded as a passing phenomenon. The growth of incomes, the reduction in working hours and the saturation of other forms of consumer spending will cause the trend to continue.

Government policy can play an important role in tourism. First, the government may encourage tourism by advertising tourist attractions abroad. Second, by adopting an appropriate pricing policy it may ensure that the economy achieves the full benefits from tourism. Tax revenue is likely to be the major source of benefits. It provides a method of extracting rents from tourists for


the services of the unpriced natural amenities that they consume.

Despite the positive impacts tourism can present a threat to the environment. Environmental impacts grow in line with increases in the number of tourists. Natural and built environments can be damaged by excessive flows of tourists. Congested museums, polluted beaches and eroded landscapes can be problems in tourism areas. A balance between tourism and the environment should be maintained.

The literature on tourism has had its focal point in modelling tourist demand. The framework of consumer demand theory has been used in econometric studies to examine how demand for tourist services or tourist destination areas will react to changes in the main determinants of demand, such as income levels and relative prices. Other issues remain scarce. Copeland (1991), however, has examined the effects of an increase in tourism on welfare, output and factor prices in the host country using a general equilibrium international trade model. He shows that in the absence of taxes, foreign ownership and distortions, an increase in foreign visitors will increase welfare only if the price of non-tradeables increases. Commodity taxes tend to increase the gains from tourism, while factor mobility and foreign ownership tend to reduce them. Diamond (1969) has written a paper on tourism, dealing with optimal pricing.

This paper investigates the effects of international tourism on optimal commodity taxes. There is indeed a reason why an optimum taxation approach is useful for tourism, as the goods are consumed inside the host country, and discrimination is difficult. The investigation starts by considering tourist demand for goods and the motivation to travel. In the third section the well-known commodity tax rules will be modified to include the effect of foreign demand. An extended version of the problem is considered, where the number of tourists, previously taken exogenous, is a function of a typical tourist’s utility level. In section 4 externalities such as congestion and other costs due to tourism are discussed. The model is amended to allow for an externality associated with the consumption of one of the goods purchased by tourists. In section 5 possible extensions are introduced. Section 6 concludes.

2. Tourist Demand

The fundamental motivation for tourist travel is a need, real or perceived, for a break from routine that can best be achieved by a physical change of place. People travel for pleasure. Tourism is about consuming goods and services which are in some sense unnecessary. They are consumed because they supposedly generate pleasurable experiences which are different from those typically encountered in everyday life.

A basic distinction between tourism and other forms of leisure is the travel component. To be able to satisfy his desire to travel, the tourist must be able to afford both the time and the money. Tourism in turn gives rise to various service demands. It should be noted that almost all the

services provided to tourists have to be delivered at the time and place in which they are produced. Tourist products cannot be stored.

Tourism-oriented products include such as accommodation, restaurants, transportation and entertainment. As tourists extend their stay at destination sites, they may increase the use of resident-oriented products, such as hospitals, bookstores, or barber shops. However, their main reason for travelling is to enjoy the background tourism elements: natural, sociocultural and manmade attractions. Some background tourism elements are often free goods, for example sunshine.

Tourist demand for goods is similar to the demand for most other products and services. The basic determinants are prices, disposable incomes, tastes, habits and preferences.

A considerable number of studies of the determinants of tourist demand have been published. There are wide variations in the values of estimated elasticities. However, most of the significant price elasticities were below one, and demand turned out to be highly responsive to income changes. The high income elasticity of demand for tourist services will classify tourism as a luxury. As incomes increase the proportion spent on necessities lessens, leaving more money available for discretionary spending. This income will be spent on leisure, recreation and travel.

3. Optimal Commodity Taxes and Tourism

Most countries use commodity taxes and subsidies to raise revenues or to meet social objectives. When a country is visited by tourists, the main question that arises in this context is: How tax rates should be manipulated to shift some of the tax burden from domestic residents onto tourists? Unless rebates to visitors are feasible, tourists will trade at the same prices as resident consumers. When the government collects an exogenously determined sum in taxes, the welfare of the inhabitants in the country could be raised by more the greater the part tourists pay of it. But we have to keep in mind that taxes, which are assumed to be the same for all consumers, also affect home welfare.

3.1. The Economy

Let us consider the simplest economy imaginable. Suppose that the consumer side of the economy can be treated as if there were only one consumer. Tourists are regarded as an important trading opportunity for the country, and the aim is to maximize the welfare of domestic consumers only. Price discrimination between tourists and residents is not allowed: both visitors and domestic consumers will face the same prices.

Let us assume that there are \( m+1 \) commodities in the economy. Labour is denoted commodity and the remaining commodities are consumer goods. Suppose now that the government wants some

1 Johnson - Ashworth (1990)
2 Goods and services, such as restaurant meals, that are normally non-tradeable, become partially tradeable when the country is visited by tourists.
3 This section is based on Hämäläinen (1982, pp.76-95).
Further, from the budget constraint of the consumer we get:

\[ \sum_{i=0}^{m} q_i \left( \frac{\partial x_{ih}}{\partial q_k} + x_{kh} \right) = 0 \]

Thus, the condition (5) can be written as

\[ \alpha x_{kh} = \lambda \left[ \sum_{i=1}^{m} t_i \left( \frac{\partial x_{ih}}{\partial q_k} + x_{kh} \right) \right] \]

\[ (k = 1, 2, \ldots, m) \]

where \( -\alpha x_{kh} \) is the direct impact on social welfare from having a higher consumer price. The expression in the brackets tells us how the tax revenue changes when the tax of commodity \( k \) is raised. The equation states that the impact of a tax increase on social welfare is proportional to the induced change in tax revenue (at fixed producer prices). In general it is not possible to solve explicitly for the optimal taxes, since the quantities demanded depend on the taxes.

Let us now denote the aggregate consumption of commodity \( k \) by \( X_k \), so that

\[ X_k = x_{kh} - x_{kf} \]

Then it is possible to rewrite (6) in the form

\[ \alpha = \frac{\lambda \left( \sum_{i=1}^{m} t_i \right)}{x_{kh}} \]

\[ (k = 1, 2, \ldots, m) \]

The formula states that for all commodities the ratio of marginal tax revenue from an increase in the tax on that commodity to the quantity of that commodity consumed by the domestic consumer is constant. Thus if we adopt a tax-reform perspective it is directly obvious that if \( t_i \) should rise relative to \( t_j \) (at constant revenue). If the reverse holds, then \( t_i \) should fall relative to \( t_j \) (at constant revenue).

To obtain detailed results on the optimal tax structure, we need to make more specific assumptions. There are some special cases that can give some intuitive insight. First, let us consider the special case that all cross derivatives of the demand functions vanish as between the taxed goods. Condition (6) may then be rewritten as

\[ \Phi_k = t_k \frac{1 - \alpha \cdot x_{kh}}{q_k} = \frac{\partial X_k}{\partial q_k} \frac{q_k}{X_k} \]

\[ (k = 1, 2, \ldots, m) \]

1 Since is negative (as the marginal social value of an increase in), no account being taken of the uses of, it follows that is.
2 The statement holds true whether there are tourists visiting the country or not. See Diamond-Mirrlees (1971) pp. 261-262.
3 A more reasonable assumption would be that commodities fall into groups so that goods are more or less independent between the groups, but dependent within the group.
The idea behind this rule is to impose the highest tax rates on the commodities with the lowest price elasticities of aggregate demand. But the higher the share of domestic consumption of good $k$ is the lower the tax rate on that commodity should be. Thus, if we have good $j$ purchased only by domestic consumers, condition (8) is simplified to the well-known inverse elasticity rule

$$
\phi_j = \frac{1 - \alpha_k}{\varepsilon_{jk}}
$$

where $-\varepsilon_{jk}$ is the direct price elasticity of demand for the good. Recall that the factor $\alpha_k$ is positive, and can be interpreted as the marginal rate of substitution between private and public income. So, if the marginal value of private income $\alpha$ is higher than that of public income, commodity $j$ should be subsidized. In the case $\alpha=1$ of the optimal solution is the zero tax rate on good $j$. If, instead, the commodity $l$ is produced only for tourists, we should have

$$
\phi_l = \frac{1}{\varepsilon_{lf}}
$$

where $-\varepsilon_{lf}$ is the price elasticity of tourist demand for the good. For such a good social welfare $U$ is independent of its price and the government should set the tax rate to maximize tax revenue from tourists. Souvenirs are a good example. They are produced merely for tourists and they are goods whose prices hardly affect other types of demand. In summary, the results indicate that a simple tax structure (uniform sales or value-added taxes) is very seldom optimal.11

Equations (5) were derived only for $k=1$. But they hold also for $k=0$. Thus, it is possible to rewrite (7) as

$$
\frac{\alpha_k}{\lambda} = \frac{\partial}{\partial p_k} \left[ \sum_{i=0}^{m} (q_i - p_i) \frac{x_{ik}}{x_{ik}} \right] \left( k = 1, 2, ..., m \right)
$$

The tourist side of the economy is treated as if there were only one tourist. Further, since the tourist does not work, the expenditure structure in the country is assumed to be some constant.12

Using ordinary demand elasticities,

$$
\varepsilon_{ik} = \frac{\partial x_{ik}}{\partial q_k} \cdot \frac{q_k}{x_{ik}} \quad \text{and} \quad \varepsilon_{lf} = \frac{\partial x_{lf}}{\partial q_k} \cdot \frac{q_k}{x_{lf}}
$$

we can now rewrite the optimal taxation formula in the form

$$
\frac{\alpha_k}{\lambda} = \frac{1}{q_k x_{ik}} \left[ q_k x_{ik} + \sum_{i} t_i x_{ik} \varepsilon_{ik} + \sum_{i} t_i x_{lf} \varepsilon_{lf} \right]
$$

If we have a good whose price does not affect other types of demand, implying a unitary own-price elasticity ($\varepsilon = -1$)13, equation (9) simplifies to yield the optimal tax on that good:

$$
\frac{q_k}{P_k} = \frac{\lambda}{\alpha} \left( 1 + \frac{x_{lf}}{x_{ik}} \right) \quad (x_{ik} \neq 0).
$$

Thus, the more the consumption of good $k$ is concentrated in the tourist sector, the higher taxes we have to impose on the good. For goods consumed in the same proportion by tourists and domestic households tax rates become equal. If tourists do not consume the commodity, the tax rate should be set according to

$$
\frac{q_k}{P_k} = \frac{\lambda}{\alpha},
$$

which is the well-known optimal tax result found in Diamond-Mirrlees (1971, p. 264). If the good $k$ is consumed only by tourists, so that $x_{ik} \to 0$, but $x_{lf} > 0$, the rule degenerates to:

$$
\frac{q_k}{P_k} \to \infty
$$

The same pricing rule will follow also from $\phi_{lf} = \phi_{lf}$ in the above, provided that the elasticity $-\varepsilon_{lf}$ takes the value -1.14 For the commodity, the result indicates an extremely high consumer price as compared to the production costs. Either the production costs or the production costs $p_k$ are insignificant. The result is equivalent to choosing the price level so that taxes paid by tourists by consuming the good are maximized. - The commodity is free in the sense that the production costs are of minor importance. For one reason or another, the inhabitants of the country are not interested in consuming it. However, since tourists demand it and are willing to pay for it, a tax can collected.15 An example could be a tourist beach. According to the tax rule an entrance fee (= tax) for tourist beaches should be set.16

3.3. The Number of Tourists

Tourist expenditure is likely to be of more interest for policy purposes than the number of visits, but fewer econometric studies have looked at this aspect. The most frequently used dependent variable is the total number of visits.17

A tourist maximizes his utility under budget constraints. The supernumerary income that remains after expenditure necessary to maintain the standard of living at home can be allocated among various products abroad.

Thus far we have considered tourist demand as an aggregate. Let us now allow separately for the number of tourists and the demand of the typical tourist for different commodities. Write the tourist demand for good $i$ to be $x_{if} = N \cdot x_{if}$, where $N$ is the number of visitors and $x_{if}$ the demand for good $i$. Assume $N$ to be a function of tourist utility level: $N = N(t_{ij})$. Both $t_i$ and so also $N$, and $x_{if}$ are functions of the price structure of the country. In fact, we are assuming that prices determine the tourist type as well as the number of them.

- In reality, currency restrictions are imposed on people travelling abroad and limits are imposed on foreign tourists concerning the importation or exportation of the currency of the country visited. (Applicable only to a fraction of world vacation travel spending.)

- Countour aggregation condition.

- This is also the pricing rule of a monopolist operating at zero cost if.

- Goods produced at zero marginal cost should be free if there is no rivalry (no congestion) in use and if fixed costs can be covered by a lump sum tax. Otherwise they should be charged according to the Boiteux-Ramsey rule (Atkinson-Stiglitz, 1980), provided excludability can be organized.

- In general, the entry fees of tourists help governments to maintain scenic and historic heritage; monuments, buildings and parks.

In expression (10) the marginal tax revenue associated with a marginal increase in the tax rate on the commodity are written in two separate components. The first component contains the effect for a given level of tourist visits while the latter contains the effect via the change in visitor numbers only. If the numbers remain constant, then increased expenditure implies increasing average expenditure per tourist, implying longer-staying and/or higher expenditure tourists. On the other hand, if the numbers increase faster than the increase in expenditure the exact opposite effect could be postulated.

Let us consider goods that are produced only for tourists and especially a good / whose price does not affect other types of demand. Then the optimal tax rule \( q_{i}^{\text{opt}} = \frac{\lambda}{\alpha} p_{i} A \) above, where \( -\epsilon_{i} \) is the price elasticity of tourist demand of the good, can be rewritten in the form

\[
\phi_{i} = \frac{\lambda}{\alpha} p_{i} A \left[ \sum_{i} a_{i} \frac{\partial f_{i}}{\partial x_{i}} \frac{\partial x_{i}}{\partial x_{1h}} \right]
\]

Here the elasticity \( -\epsilon_{i} \) is divided into two components: to “the price elasticity of tourists”

\[
\gamma = \sum_{i} a_{i} q_{i} \frac{\partial f_{i}}{\partial x_{i}} \frac{\partial x_{i}}{\partial x_{1h}} N
\]

and the price elasticity of the good at constant number of visitors

\[
\epsilon_{i} = \frac{\partial f_{i}}{\partial x_{1h}} x_{1h}^{h} - \gamma
\]

In making their travel plans tourists may assess the price of just a certain good or service. Such goods and services are naturally important for domestic policies designed to attract foreign visitors. Through its pricing policy the country can affect not only the number of tourists’ visits, but the quality of visitors as well. Resorts that are fairly cheap places to visit cater for a mass of middle-class visitors, while wealthier holiday-makers go elsewhere looking for superior accommodation, scenery and social tone. Holiday-making is a form of conspicuous consumption. The attractiveness of a place depends on how many other people are staying there and especially how many other people there are like oneself. Most countries are nowadays opponents of high-price level country will deliver economic benefits while causing severe social disruption. High price level country will attract wealthier tourists if it attracts tourists at all.

### 3.4. An Example

In order to illustrate our theoretical results let us consider a three good economy with fixed producer prices. Assume that the consumer has Cobb-Douglas preferences:

\[
U = x_{1}^{a_{1}}x_{2}^{a_{2}}x_{3}^{a_{3}} \quad a_{1}+a_{2}+a_{3}=1, \quad a_{1}, a_{2}, a_{3}>0, \quad 0<a_{3}<1.
\]

\[18\] The findings of Pyo-Uysal-McLellan (1991) suggest that among the tourist-oriented products, transportation is the most price sensitive product. Expenditures on food consumption away from home cannot be reduced very much. Thus transportation cost reduction can be persuasive and attractive. The income elasticity of transportation turned out to be greater than one, suggesting that transportation is a luxury product, whereas demand for food services was inelastic. Other income elasticities of demand were almost unitary. The uncompensated price elasticities of the study were -0.580 and -0.250 for transportation and food service. Cross price elasticities were very small, except in the transportation equation. If the price of any good increases, people tend to decrease spending on transportation most. In the uncompensated price elasticity context, the resident-oriented products were more price elastic than the tourism-oriented products suggesting that many higher income tourists would travel even though there were a price increase. All uncompensated cross-price elasticities had negative signs.

The rule (7) can now be written as

\[
\frac{\alpha}{\lambda} = \frac{\partial}{\partial t_{k}} \left[ \sum_{i} t_{i} x_{i} \right] + \frac{\partial N}{\partial t_{k}} \sum_{i} t_{i} \phi_{i} \left( k = 1,2,...,m \right)
\]

The marginal tax revenue paid by tourists associated with a marginal increase in the tax on the commodity, i.e.

\[
\frac{\partial}{\partial q_{k}} \left[ \sum_{i} t_{i} \phi_{i} \right] \left( k = 1,2 \right)
\]

can be positive, negative or zero. If it happens to be zero, instance with \( k=1 \), the optimal price \( q_{1}=\lambda p_{1} A \) will be lower than the corresponding price \( =\lambda p_{1} A \) before tourism.\[19\] The greater the value of this term is, the higher the tax that can be set on the commodity concerned. This gives the rule to tax more heavily the commodity with high tax export character. Raising the price \( q_{k} \) which means higher taxes, normally makes the demand \( x_{k} \) lower, which lowers the sum of taxes received. But raising \( q_{k} \) may induce tourists to substitute \( x_{k} \) to \( x_{k} \) which at the same time may produce a higher tax sum.

Note that uniform taxation may still be optimal when tourism begins. The rate can, of course, be different. This is true, if

\[
\frac{\partial}{\partial x_{k}} \left[ \sum_{i} t_{i} \phi_{i} \right] = a_{1}
\]

\[
\frac{\partial}{\partial q_{k}} \left[ \sum_{i} t_{i} \phi_{i} \right] = a_{2}
\]

Now from the FOC’s for the consumer’s utility maximization we know that

\[
\frac{a_{1}}{a_{2}} = \frac{q_{1} x_{1k}}{q_{2} x_{2k}}
\]

Thus, if the change in taxes paid by tourists due to a change in \( q_{1} \) divided by that due to a change in \( q_{2} \) is equal to the ratio of the expenditure shares of those goods for resident citizens, uniform taxation is preferable.

\[20\] The marginal social value of an increase in is smaller with tourist demand, i.e. \( \lambda_{s} \), is equal to the ratio of the expenditure shares of those goods for resident citizens, uniform taxation is preferable.
Further, the tourist budget may be fixed. In that case the optimal tax rates can be expressed as
\[ \frac{q_k}{p_k} = \lambda p_1 A \left[ 1 + \frac{X_k}{X_{mh}} \right], \quad \text{where} \quad X_{mh} = \left( a_1 A p_1 \right) / q_k \quad (k = 1, 2). \]

A uniform tax rate is now preferable provided that,
\[ \frac{q_m}{q_f} = \alpha \frac{a_1}{a_2}, \]

i.e. if the expenditure shares of the commodities in the tourist budget equal the expenditure shares of those goods for domestic consumer. \(^{21}\)

### 4. Optimal Taxation in the Presence of Externalities

Tourism is often based on a country’s natural attractions, and the quality of these attractions plays a very important role in tourist demand. Quality in turn depends on the exploitation of the resource. As a consequence, there is a negative relationship between quality and the tourist population. Consider, for example, a natural attraction such as a beach. The higher the number of tourists allowed to stay there, the lower the per-capita availability of the resource is and the lower the quality of the good.

Preferences are such that more of the natural resource is preferred to less. Consumers are adverse to crowding, and human congestion has a significantly negative impact on the users’ willingness to pay for those services. However, in the absence of public restrictions most resorts are likely to become overcrowded, since individual tourists may ignore their own contribution to the depletion of the natural resource. There may come a point when more people use the area than can be supported by it. The result is a spoiling of the environment.

When externalities are present, Pigovian taxes can be used to correct the inefficiencies. But the government may need other, distortionary taxes in order to satisfy its revenue requirements. Sandmo (1975) has shown that the Pigovian principle holds in a modified form in a second-best situation.

Let us now consider the theoretical problem of determining optimal taxes when a negative externality is present and the country is visited by tourists. The individual is assumed not to take account of his own contribution to congestion, so that the first order condition corresponding (6) is
\[ \alpha X_{mh} = \frac{\partial u}{\partial x_{m+1}} + \sum_{i=1}^{m} \left( \frac{\partial x_{ih}}{\partial q_k} \right) + x_{m+1} + X_f \]

Rule (13) is an extension of Sandmo’s result to cover the demand of visiting tourists as well. Here the optimal tax on the externality-creating commodity is not a weighted average of the two terms, but the additivity property holds: the marginal social damage of commodity enters the tax formula for that commodity additively.

Let us consider goods purchased only by tourists. If the commodity does not involve a negative externality, social welfare is independent of its price, and the government should set the tax rate to maximize tax revenue from tourists. However, if the commodity purchased only by tourists is externality-generating \(^{23}\), marginal social damage should be reflected in the tax on the good. Setting the tax rate to maximize tax revenue from tourists is not optimal in this case. For such a good
\[ \frac{t_m}{q_m} = \frac{1}{\lambda} \frac{\alpha}{\lambda} \frac{X_m}{\lambda} \frac{\alpha}{\lambda} \frac{u_{m+1}}{\lambda} \frac{1}{\lambda} \frac{1}{\lambda} \frac{\beta}{\lambda} \frac{u_{m+1}}{\lambda} \frac{\gamma_m}{\beta} \]

where \( q_m = \frac{Y_m}{\beta} \) follows from the tourist’s utility maximization under the budget constraint; denoting the tourist’s utility function and the marginal utility of the tourist’s budget. In Sandmo’s case, marginal rate of substitution between private and public income \( = \alpha / \beta \) is equal to 1 implied the first best solution with a tax on good \( m \) only. When the foreign demand is present as in our case, the first best would require \( u_{ih} \) to be equal to \( X_f / X_i \) \( i = 1, 2, \ldots, m \) which is a very demanding condition. However, if the externality-generating commodity is purchased only by tourists, the Pigovian tax alone does never satisfy the tax requirements exactly. Additional taxes will be called for. This is the standard “fishing-in-a-lake” story, but things become a bit more complicated depending upon who the “fishers” are (h or f), who they hurt, and whose utility is taken into account for setting taxes. Social damage should be reflected in the tax on the good, but tourism-caused pollution cannot be taxed at prohibitive rates (or simply prohibited, as a taxable good is probably an excludable good, too) or tourist revenue would be lost altogether.


\(^{23}\) An example could be the noise of a tourist beach.
5. Possible Extensions

(1) More structure on the decision problem of tourists. There may be more mileage to be gained by imposing rather more structure on the decision problem of tourists. A tax instrument missing from the analysis can be introduced: the departure tax (or entry fee). The ability to deploy such a tax might perhaps affect the optimal tax rules. For example, one could presumably raise the same revenue from each tourist and make them better off (so attracting more of them) by exempting them from commodity taxes but charging them an equal-yield entry-fee. Furthermore, tourists are effectively constrained to take large amounts of leisure during their visit. Consequently, the presence of tourists presumably strengthens the conventional Ramsey-type presumption that complements with leisure should be taxed especially heavily. Moreover, and perhaps more subtly, since tourists have no earned income in the country visited, a uniform commodity tax will cease to be equivalent to a wage tax. This suggests that not only the structure of commodity tax rates but also their level will be affected by tourism. One might expect the balance between direct and indirect taxes to be shifted by tourism towards indirect taxation.

(2) Externalities. Regarding externalities, there seems to be two potential problems. One is that increased tourist congestion harms domestic consumers, and the other is that excessive tourist use makes the area unattractive to other tourists. We considered the case, where demand depends only on prices. When demand also depends on congestion, the optimal price structure is different. Consumers may even be price insensitive and congestion sensitive in their demands. If the destination is allowed to deteriorate, tourists may well be turned away, for the very thing that attracted them in the first place is no longer attractive. It could be interesting to combine the section on endogenous number of tourists with a congestion externality using the well-known formulation of the consumption benefits of a good (x) as x=x/N, 0<u<1. Thus for a=0, x=x, (no congestion), while for a=1, x=x/Na, (full congestion).

(3) Tax Competition. The tourist sector is entering an age of more competition among destination regions and countries. Moreover, consumers are both more knowledgeable about tourist destinations and travel options, and more demanding regarding the travel and tourist products and services chosen. The competing countries24 share many common characteristics specific to the group, such as natural and climatic conditions, otherwise they would not be substitutes. They compete for the destinations and travel options, and more demanding regarding the travel and tourist products and services chosen. According to Syriopoulos-Sinclair (1993) the elasticities of expenditure demonstrated considerable differences in tourist demand preferences between origin countries, and between traditional and newly developing destinations. The own and cross-price elasticities indicated the importance of effective prices. Although tourism plays a major role in the economies of all the destinations considered, the elasticity values indicate that the effects of an increase in tourist expenditure differ notably between destinations. Turkey, followed by Portugal and Greece, appeared to be the most tourist expenditure elastic destinations, while Spain and Italy seemed to benefit only marginally from increases in total tourist expenditure by the origin countries. Tourist’s reactions to effective price changes varied considerably, both by origin countries, for a given destination, and by destination, for a given origin. The estimated cross-price elasticities also varied considerably, and indicated a range of substitutability and complementarity among destinations. Tourists originating from Sweden, followed by the UK and Germany, seem to pay considerable attention to effective prices, and real price changes in the destinations considered would have a major impact on tourist flows from these countries. Effective prices were an important determinant of the demand for tourism in the Mediterranean. Whereas the Mediterranean destinations considered might be expected to be substitutes for each other, given the similar tourism characteristics, complementarity would not be unrealistic, as tourists may include more than one destination in their holiday decisions. Spain and Portugal turned out to be substitutes, Greece and Italy complements.

6. Concluding Remarks

Tourism represents a special category of demand. It is a demand for a bundle of goods and services. Furthermore, tourist goods and services are not transported to their users, but rather the consumers are transported to the goods and services. Tourist demand functions may look quite different than the demands for the same commodities by domestic residents.

Time is a very important factor in tourism. A person determines how much time and money should be allotted to the holiday. Different people in different circumstances look for different ways to spend their holidays. Natural, sociocultural and manmade attractions are the elements that constitute the main reasons for travel. Prices would be expected to be the most important along with special factors of a noneconomic nature which potential tourists would encounter at the tourist destinations.

Tourism is an economic activity that provides the countries receiving tourists with a dependable source of income and foreign currency. The magnitude of the economic benefit depends on price strategies. Tax revenue is likely to be the major source of benefits from tourism. Economists have long recognized that the ability to export taxes to out-of-state taxpayers should affect the choice of tax instruments.

This paper has analysed optimal tax policy in the presence of tourism with a very simple model. Tourists were assumed to trade at the same prices as resident consumers, but to have a zero welfare weight. Taxes assumed to be the same for all consumers also affect home welfare. Thus we cannot charge tax rates that will only maximize tax revenue from tourists. The home country government must balance the desire to tax tourists with the deadweight loss suffered by its own residents.


25 Syriopoulos-Sinclair (1993) found out that individual countries within the Mediterranean group may be substitutes or complements. According to Syriopoulos-Sinclair (1993) the elasticities of expenditure demonstrated considerable differences in tourist demand preferences between origin countries, and between traditional and newly developing destinations. The own and cross-price elasticities indicated the importance of effective prices. Although tourism plays a major role in the economies of all the destinations considered, the elasticity values indicate that the effects of an increase in tourist expenditure differ notably between destinations. Turkey, followed by Portugal and Greece, appeared to be the most tourist expenditure elastic destinations, while Spain and Italy seemed to benefit only marginally from increases in total tourist expenditure by the origin countries. Tourists' reactions to effective price changes varied considerably, both by origin countries, for a given destination, and by destination, for a given origin. The estimated cross-price elasticities also varied considerably, and indicated a range of substitutability and complementarity among destinations. Tourists originating from Sweden, followed by the UK and Germany, seem to pay considerable attention to effective prices, and real price changes in the destinations considered would have a major impact on tourist flows from these countries. Effective prices were an important determinant of the demand for tourism in the Mediterranean. Whereas the Mediterranean destinations considered might be expected to be substitutes for each other, given the similar tourism characteristics, complementarity would not be unrealistic, as tourists may include more than one destination in their holiday decisions. Spain and Portugal turned out to be substitutes, Greece and Italy complements.
1. Introduction

As the unique tax instrument through which the government approaches its citizens directly, the income tax is particularly subject to criteria of equity. Classical horizontal equity (HE) and vertical equity (VE), two basic commands of social justice, state respectively that equals should be treated equally, and unequals appropriately unequally. HE can be seen as a minimal rule of fairness, offering protection against arbitrary discrimination and reflecting the basic principle of equal worth. VE requires differentiation among unequals, and its degree is a matter of societal taste and political debate. See Musgrave (1990) and Steuerle (1999) for thoughtful discussion. In this paper, we outline the conceptual and measurement issues involved in characterizing the equity perspective, taking as a case in point a putative EU-wide income tax, formed as an additional layer of tax rather than through harmonization of Member States’ existing direct tax systems.

In thus exposing the equity (or, indeed, inequity) characteristics of an existing tax, alongside the identification of equals is done using an appropriate ‘equivalent income function’, and the equal treatment command modelled in terms of it, the resultant tax will in general be differentiated between countries. A supplementary command, “equal progression among equals”, can be achieved if equals are defined as those at the same percentile point in the within-country distributions, and if these distributions differ in logarithms only by location and scale. Differentiated proportional taxes could even be equitable in this scenario, the flat rate being higher in less unequal countries. The value judgements implicit in a given tax system can be exposed in terms of an equivalence scale which is in general “base dependent”.

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INCOME TAXATION AND EQUITY

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Abstract This paper provides an exposition and explanation of the various ways in which value judgements can be instilled into an income tax system, or, if inherent in a pre-existing one, can be drawn out and understood. A putative EU-wide income tax, additional to the national income taxes of the Member States, is used as a vehicle for the analysis. When the identification of equals is done using an appropriate ‘equivalent income function’, and the equal treatment command modelled in terms of it, the resultant tax will in general be differentiated between countries. A supplementary command, “equal progression among equals”, can be achieved if equals are defined as those at the same percentile point in the within-country distributions, and if these distributions differ in logarithms only by location and scale. Differentiated proportional taxes could even be equitable in this scenario, the flat rate being higher in less unequal countries. The value judgements implicit in a given tax system can be exposed in terms of an equivalence scale which is in general “base dependent”.

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to mean?). Analysis of the HE stance of the tax system is, in almost all current literature, essentially normative. As for the vertical stance, distributional analysts tend to assume that the social decision-maker has selected, and enacted, a desired degree of progressivity, manifest in the tax system’s impact on inequality; if this belief is followed, the characterization of a tax system’s VE becomes an exercise in positive economics.

The structure of the paper is as follows. In Section 2, we explain briefly the concepts underlying vertical and horizontal equity. This involves discussion of progressivity and redistributive effect, the definition of equals and the meaning of equal tax treatment. We begin Section 3, on evaluating existing tax systems, by outlining the dominating strand of literature of the 1990s, according to which HE violations are captured by indices as loss of redistributive effect (vertical performance) in a measurement system that attributes to the policymaker the same degree of aversion to both horizontal and vertical inequality. We go on to describe a recent development in HI measurement which obviates this restriction.

In Section 4, we discuss some of the issues that would face the designer of a new income tax, taking as a “vehicle” for this analysis a putative EU-wide income tax, additional to the national income taxes of the Member States, whose revenue would go directly to the centre. The question of an EU-wide social welfare function (henceforth SWF) arises, in which a person’s domicile may or may not be a relevant factor. By drawing on recent work in the regional context, we observe that if a common income tax were devised, applicable in all countries, then however equitable, the VE of the entire system (in fact, overall inequality and welfare) can be unambiguously improved by allowing an element of differentiation in this tax, potentially admitting HI.

In Section 5, we explicitly allow for differences in the taxable capacities of persons or households in the Member States, and discuss the design issues this raises. A recently developed equity command, equal progression among equals, which could be said to mix vertical and horizontal aspects, may be achievable alongside HE and VE, and is so if the equals in different countries are defined as those at the same given percentile point in their within-country distributions, and if these distributions differ in logarithms only by location and scale (as would be the case for lognormality). In such a scenario, we show, differentiated proportional taxes would be equitable, with the flat rate being higher in less unequal countries.

Finally, in Section 6, we discuss the detection of the value judgements that might underlie such a future EU-wide tax, were it to have been imposed by the politicians without the advice of the economists. New work is explained which can draw out of the tax itself the implied value judgements of the decision makers about equals, through a base-dependent equivalence scale, turning horizontal tax analysis into a positive exercise, much as vertical analysis now is. Section 7 concludes with an assessment of what has been achieved in the paper, namely, an exposition and explanation of the various ways in which value judgements can be instilled into an income tax system, or, if inherent in a pre-existing one, can be understood.

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1 A third equity criterion, that of “no reranking” (NR), has coexisted with HE and VE in the measurement literature for almost 25 years, and is variously seen as an alternative to HE or a supplement to VE. According to this line of analysis, inequality is conceptualized as lack of perfect association between pre-tax and post-tax living standards and “addresses the fairness of a process of redistribution” (Potter, 1981, p. 283). The classical view is that HE “enters as an end-state principle” (Mauagrace, 1990, p. 120). We shall not dwell upon NR much in this paper; see Lambert and Yitzhaki (1994) and Dardanoni and Lambert (2001) for further discussion. For discussion of equity issues surrounding indirect taxes, which are not dealt with here, see e.g. Loomis and Revier (1980) and Decoster et al. (1997).

2 But see Eichhorn et al. (1984) for a relaxation of some of the assumptions.

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2. Vertical and horizontal equity

The simplest model of an income tax schedule is one in which the tax liability on an income of x is a pure function of that income; let us write it t(x). We might assume that t(x) is differentiable (almost everywhere), that 0 ≤ t(x) ≤ x and 0 ≤ t'(x) ≤ 1 for all x, and, for progression, that t(x)/x is increasing (i.e. t'(x) > t(x)/x). If net incomes n(x) = x - t(x) are plotted against gross incomes x, the relationship is typically upward sloping and concave, showing clearly that relative income differentials get compressed in the transition from gross to net income (see Figure 1). As this figure also shows, negative income taxes, i.e. cash benefits, can be incorporated into the model simply by dropping the assumption that 0 ≤ t(x). Then the graph cuts the 45° line at the break-even point between cash benefits and taxes. Letting g be the fraction of all income taken in tax, or ‘total tax ratio’, g = ∑t(x)/∑x, the distributive effect of the actual tax can be compared with that of an equal-yield proportional tax (hence at rate g) on all income units: clearly the rich pay more, and the poor pay less, under the actual (progressive) schedule. It is as if, first, a flat tax at rate g were imposed, with no exemption, and then rich-to-poor transfers undertaken. The redistributive effect (RE) of such an income tax schedule is measured by its inequality effect relative to that of the flat tax (which is, of course, neutral in inequality terms):

\[ RE = I_N - I_X \]

where I is an index of relative inequality and the subscript indicates the distribution of income concerned (N for net incomes n(x), X for gross incomes x, etc).

This model stood throughout the late 1970s and 1980s, following the seminal articles of Fellman (1976), Jakobsson (1976) and Kakwani (1977a,b). The model is good if the population in question is homogeneous in all attributes but income, but plainly inadequate if we wish to take account of non-income attributes which differ between income units in the tax code. This is very common. For example, deductions and exemptions may be awarded for charitable giving, medical expenditures, mortgage interest (Johnson and Mayer, 1962), life insurance premia, work expenses, childcare costs, etc. Differences in income tax treatment on non-income grounds may also arise through different sources and disposition of income (Gravelle, 1992), tax evasion and
non-compliance (Bishop et al., 1994), and the different treatment of urban and rural incomes especially in developing countries. In such cases, we need to model the income tax code as a multi-attribute one.

The question arises, whether the tax deductions (etc) are equitable, and this is usually taken to mean horizontally equitable: do pre-tax equals get equal tax treatment? Towards the end of the paper, we shall see how to impute a concept of equal treatment to the tax designer, which is such that an automatic response of “yes” can be given in answer to this question. More typically, we might want to know if a given multi-attribute income tax can be judged equitable in its treatment of families of different compositions and needs. The HE ideal, or aspiration, typically refers to individuals. To extend it to families, equivalence scales are usually invoked.

The first step is to turn the business of identifying the equals - and the unequals, for that matter - into a unidimensional problem. We shall require income units’ pre-tax incomes, or living standards, call these \(x\), to be measured on a scale which identifies the equals: equals will be those having the same pre-tax income \(x\). Manser (1979) discusses the modelling of household objectives including different leisure times of their members, and Rosen (1978) demonstrates an empirical procedure which, given rich enough microdata, will “generate two vectors, one of family utilities before tax and one of family utilities after tax”, and he goes on to say that “the real problem in measuring horizontal equity is to summarize the differences between these vectors in a meaningful way” (p. 314). Gravelle (1992) quotes Steuerle (1983) as advocating an equivalization procedure to provide “a working definition of equity” across family sizes. As we shall see, a generalized notion of equivalence scale is called for in order to explain some features of the typical income tax system, and to articulate new equity criteria.

If the first problem is how to define the equals, the second, which follows hard upon it, is, what do we mean by “equal treatment”? A widely accepted equal treatment command is, equal post-tax living standards for pre-tax equals; other commands, equal average tax rates and equal taxes among equals respectively, can be interpreted as variants on this (see Lambert, 2003).

The income unit may be the individual, the family, the household or that virtual person known as the ‘equivalent adult’, advocated for welfare analysis when using equivalent income distributions by Ebert (1997). 3

One equivalence scale which is popular with distributional analysts is the doubly-parametric scale of Cutler and Katz (1992), in which household money income is deflated by a factor \(m = (N_A + \theta N_C)^{\phi}\), in which \(N_A\) and \(N_C\) are the numbers of adults and children in the household respectively, \(\theta \in [0,1]\) measures the relative importance of children and \(\phi \in [0,1]\) represents economies of scale. Figure 2 shows the relationship between gross equivalent income and net equivalent income for the UK tax and benefit system for 1993 when \(\theta = \phi = 1/2\). As is apparent, there are plenty of instances of HI here: vertically aligned data points represent families with the same pre-tax living standard but differing post-tax living standards. 4

A problem that has been perceived with equivalent income-based studies of HI is that the equivalence scale is typically selected by the analyst, from the outside as it were. Some commentators have expressed the view that this amounts to “imposing HI from outside” if the tax is not, in fact, a family income tax designed to be coherent with an equivalence scale - or indeed if it is and the scale selected by the analyst is not the one being used by the policymaker. We return to this point shortly.

3. Measuring VE and HI

Procedures have been developed during the 1990s to measure the extent of HI in the personal income tax by means of summary indices capturing HE violations as loss of vertical performance. Look at Figure 2. The vertical stance of the tax can be thought of loosely as its effect ‘on average’ as between equals groups (i.e. between people with different living standards); according to the progressive principle, this effect should be to reduce inequality. Within any given equals group, however, a tax system with HI in fact introduces new inequality - where there was none before (pre-tax). So there is a tension between the vertical and horizontal effects of a tax system with HI. This “between and within groups” insight invites the application of decomposable inequality indices (more usually employed in a demographic context) to the problem; it is this which has yielded the HI measures of the 1990s. Papers by Aronson et al. (1994), Lambert and Ramos (1997) and Duclos and Lambert (2000) each provide a decomposition of redistributive effect into orthogonal vertical and horizontal components:

\[
RE = V - H
\]
in which \( V \) measures the inequality-reducing impact of the tax system on average, and \( H \) a loss due to the ‘new’ inequality introduced by the presence of \( H \).

All three of the studies just cited could be said to ‘impose \( H \) from the outside’ since they use the Cutler and Katz (1992) equivalence scale for selected parameter values. A more defensible procedure would be to search for the \( H \)-minimizing choice of equivalence scale parameters for each regime, breaking any inter-regime comparisons; this could both reveal the equivalence scales most nearly implicit in the tax systems under examination, and enable comparisons of residual \( H \) given those scales. This kind of analysis has not been seen yet (but see Aronson et al. 1994, and van de Ven et al. 2001 for steps in this direction).

Finally, we mention a very recent \( H \) contribution, that of Auerbach and Hassett (2002), which offers new scope for understanding a tax system’s horizontal and vertical equity characteristics. The authors’ point of departure from the mainstream of the 1990s, as already described, is to institute a measurement system in which the SWF ‘need not evaluate ‘global’ (vertical equity) differences in after-tax income using the same weights as it applies to ‘local’ (horizontal equity) differences’. It is the very sameness of these weights, in the studies already cited, which leads to the commensurate vertical and horizontal components \( V \) and \(-H\) of redistributive effect. Auerbach and Hassett allow that a social decision-maker could have a different aversion to inequality between unequal \( x \) from his aversion to inequality introduced by the tax system among equal \( x \)’s.

With the measures these authors present, a search for the \( H \)-minimizing values of the two respective inequality aversion parameters could reveal the horizontal and vertical stance most nearly implicit in the tax system.

4. A putative EU-wide income tax: \( V \) and \( HE \)

Suppose, for the sake of argument, that a new layer of income tax were to be introduced in the EU, with the proceeds going directly to the center. What would be the issues facing the designer of such a tax? What would be the appropriate base for it? Should the tax be proportional, or one embodying the progressive principle? One can imagine the new tax being levied at a flat rate on all disposable incomes, in order not to interfere with relative income differentials within countries. It is a small leap from there to suppose that a concessionary rate for the poorest countries might be instituted, and another small leap to a plethora of flat rates, negotiated country-by-country by the politicians. (Note, though, that an EU-wide income tax has not been advised by economists, see e.g. Chosen 2002, pp. 76-76 on this; however the specter of such a development has been mentioned from time to time in the popular press, in the UK of the paper, we make some pertinent observations, before proceeding, in the next section, to develop formally an equity criterion taking into account, through an EU-wide SWF, the possibly differing taxable capacities of persons or households in the various Member States.

A theoretical construction of Cubel and Lambert (2002a,b) points the way. Even in the absence of country-specific dimensions in the EU-wide SWF, it can be welfare improving, and inequality reducing in the strongest sense (of Lorenz dominance), to impose country-specific income taxes rather than a common one across all countries. Specifically, these papers demonstrate that if two (or more) regions in a federation have very different levels of well-being then, whatever common new tax layer \( t(x) \) one might envisage, where \( x \) is a person or household’s disposable income regardless of domicile, be it proportional or progressive, \( V \) can be enhanced by reweighting the tax code to include an appropriate differentiation. Let \( n(x) = x - t(x) \) be a person or household’s net disposable income after application of the EU-wide tax \( t(x) \). Let A and B be regions (groups of countries, for example) such that people in A are ‘generally poorer’ than people in B (there is a precise technical condition for this which can be found in either paper; it permits significant overlap between the distributions). A welfare improvement and inequality reduction obtains if, instead of \( t(x) \) being imposed, a differentiated tax was instituted such that net incomes became \((1+\lambda)n(x)\) for a person with income \( x \) living in A, and \((1-\lambda)n(x)\) for a person living in B, where \( \lambda \) and \( \lambda \) are small, and such that total revenue is maintained.\footnote{But of course this recipe introduces \( HI \); people with a given income (living standard) \( x \) who live in A will pay less tax than people with \( x \) who happen to live in B. It may seem strange that the introduction of \( HI \) could improve matters, for the conventional wisdom says the opposite: whenever disparity is introduced, where there was equality before, welfare is reduced (Atkinson, 1970). In the tax context, Kakwani and Lambert (1999, p. 28) put their finger(s) on it: ‘Discrimination can be interpreted as the loss of vertical equity attributable to group specificity of schedules in the tax code. If the code were to be replaced by the averaged schedule, there would be a welfare increase’. There appears to be a conundrum here. Starting with a common schedule \( t(x) \), differentiation reduces inequality and raises welfare; but then averaging liabilities across the differentiated regions would also do that - and so on, re-differentiating, re-averaging.... welfare improvements ad infinitum?}

The conundrum is resolved by noticing that the informational requirements involved in this (continual) re-processing of tax liabilities place a limit on its feasibility. After averaging the differentiated tax, net income for somebody with living standard \( x \) would become \((1+\lambda)p(x)n(x) + (1-\lambda)(1-p(x))n(x)\), where \( p(x) \) is the proportion of income units having living standard \( x \) who live in region A. This would bring demographics into the tax code (when \( p(x) \neq 0 \) or 1), complicating the informational requirement and causing a loss of transparency, surely an important consideration.

Differentiation of an income tax across countries can as well be rationalized if the EU-wide social welfare function contains country-specific dimensions, and in this case obviously need not involve \( HI \). For example, the equal sacrifice model, but with a different utility-of-income function in each country, could be invoked to rationalize different taxes.\footnote{Atkinson and Bourguignon’s (1987) utilitarian SWF admits of dimensions other than income. For a population divided into “needs groups” \( i \) = 1,2,‘n’, a different utility-of-income function \( U(x) \) is attributed to each group,}
with a hierarchy of needs specified by a systematic ordering of marginal utilities $U_i'(x), i = 1,2,...,n,$ at each fixed income level $x.$ This model could perhaps be adapted to the equal sacrifice framework, but such an extension has not yet been made. In fact, it is not clear that such a model would be appropriate within the EU context. As between an income unit in Germany having $60,000 p.a. and an income unit in Latvia also having $60,000 p.a., which is socially the more deserving of an additional dollar? Arguably the one in Germany suffers more relative deprivation than the one in Latvia, being further down its country-specific distribution of living standards (Runciman, 1976); but would this merit a more lenient income tax in Germany? Does not one’s intuition go the other way? There is an intricate issue here for income tax design, to which we now turn.

5. Designing a differentiated income tax: equity issues

For simplicity at this point, let us confine attention to a population divided into two mutually exclusive and socially homogeneous subgroups, A and B say, and let us assume that group membership enters into the SWF as well as income level. Then we may adopt the equalizing concept, and posit an *equivalent income function*, which can be used to identify the equals across groups in terms of their living standards. For group A, we could suppose that living standard is expressed by money income, and then let $S: \mathbb{R}^+ \rightarrow \mathbb{R}^+$ be the function which expresses the living standard of an income unit belonging to group B with income $x$. For $n > 2$ groups, $n-1$ such functions would be needed. The equivalent income function has been proposed in this more general setting by Donaldson and Pendakur (1999), and examined in detail in Ebert (2000). The functions would be needed. The equivalent income function has been proposed in this more general setting by Donaldson and Pendakur (1999), and examined in detail in Ebert (2000). The most obvious context for all of this is when A and B denote different household characteristics, e.g. Acomprising singles and B couples. We shall use this example to interpret some of the results which follow, but the setting is general enough for A and B to be two (groups of) countries. The function $S(x)$ need only be continuous and strictly increasing.

Thus a member of group A with income $x_A$ and a member of group B with income $x_B$ are equals if and only if $S(x_B) = x_A$. Let the tax schedules for A and B be $t_A(x)$ and $t_B(x)$ respectively, and let $v_A(x) = x - t_A(x)$ and $v_B(x) = x - t_B(x)$ be post-tax income functions. If by equal treatment we mean that those with the same pre-tax living standard should also have the same post-tax living standard, this requires the following property: $S(v_B(x)) = S(v_A(x)) \Rightarrow S(v_B(x)) = S(v_B(x))$; or, writing $x_B$ as $x$ and substituting,

$$S(v_B(x)) = S(v_A(x))$$

In words, the living standard after tax of a member of group B (e.g. a couple) having $x$ before tax should be the same as that of a member of A (single) having $S(x)$ before tax.

The equivalent income function for a constant relative equivalence scale is of the form $S(x) = x/m$ where $m$ is the deflator for the money incomes in B. This is the familiar scenario for equalizing household incomes. In a regional context, $m$ could be a price deflator representing region B money incomes into real terms as measured in A; then equals are those with the same real incomes (but see on for other possible definitions of equals in this context). Substituting in (3), the horizontally equitable tax for B, given a schedule $t_B(x)$ for A, must satisfy:

$$v_B(x) = m \cdot v_A(x/m)$$

In the context of families, this is precisely the *quotient familial* tax system, as used in France and Luxembourg and already anticipated by Vickrey (1947, pp. 295-6): "A more thoroughgoing and equitable procedure [than exemptions and credits] would be to set up some factor indicative of the needs of the entire family, divide the total income by this factor, compute a per capita tax on this ‘per capita income’, and multiply the tax so computed by the family size factor to obtain the total tax for the family". In the regional context, with $m$ as the price deflator, it simply says that people in B should be taxed as they would be in A on the real value of their incomes.

The equivalent income function for a constant absolute equivalence scale is of the form $S(x) = x-a$, where $a > 0$ is a constant. Members of B (couples) need a fixed addition $a$ to their income to be judged equal to members of A (singles) at the same income level. Substituting in (3), the horizontally equitable tax for B satisfies

$$v_B(x) = v_A(x-a) + a$$

In the singles/couples context, the constant $a$ is a married couple’s exemption or allowance: couples should receive the first $a$ of their income tax-free and pay tax at the same rate as singles on the balance $x-a$ (assuming $x > a$).

In the family context, if an income tax system is *not* of one of these two very straightforward types, then it cannot be rationalized in terms of a constant relative or absolute equivalence scale using the equal treatment command in (3). Insofar as the British, Spanish and Canadian direct tax systems are not of this type - and they certainly are not - the analyses of Aronson et al. (1994), Lambert and Ramos (1997) and Duclos and Lambert (2000) of HI in the UK, Spanish and Canadian direct tax systems, which are undertaken using constant relative equivalence scales, are indeed vulnerable to the accusation of “imposing HI from the outside”.

In order to design an equitable EU-wide additional layer of tax, an equivalent income function $S: \mathbb{R}^+ \rightarrow \mathbb{R}^+$ (or set of equivalent income functions $S_i: \mathbb{R}^+ \rightarrow \mathbb{R}^+, 2 \leq i \leq n$) would first be needed, to relate living standards in countries in group B at a given taxable income level with those in group A (or to relate living standards in countries 2,3,..., $n$ with those in country 1, in the case of fully differentiated taxes). Then, setting $t_A(x)$ as the “reference” schedule which can embody any chosen degree of $V_E$, $t_B(x)$ would have to be designed to satisfy (3) or, $(t_B(x) \geq 2 \leq i \leq n)$ would have to be designed to satisfy (3) with respect to $t_A(x)$ for full-blown equity. This kind of analysis has not been undertaken as yet, even in the family context, but a recent finding of Ebert and Lambert (2004) provides a potentially interesting way forward.

Suppose that the equivalent income function can be argued to take the isoelastic form, $S(x) = (x/b)^a$ where $a > 0$ and $b > 0$ are constants. Ebert and Lambert (2004) examined the consequences for the degree of progression faced by equals in this scenario. When the tax system $(t_A(x), t_B(x))$ is constructed to obey (3) and $S(x)$ is isoelastic, members of group A with a given pre-tax living standard face the same degree of progression as members of group B with that same pre-tax living standard. Thus an extended concept of equity, *equal progression among equals*, is attainable in this case (and in fact, in only the isoelastic case).)

Putting $S(x) = (x/b)^a$ into (3), and taking $t_A(x)$ as given, a formula for $t_B(x)$ results which is in general complicated, but in the special case in which $t_A(x)$ is proportional, $t_A(x) = g \cdot x$, say, we

### Notes

12 If, on the other hand, “equal treatment” would mean that pre-tax equals should experience equal average tax rates, the criterion would be $t_A(S(x)) = t_B(x)$ if equal treatment is taken to mean equal tax payments, then $t_A(S(x)) = t_B(x)$ is the criterion. For more on these two, see Lambert (2003).

14 See op cit. for further details, and also Dardanoni and Lambert (2002). The progression measure is residual progression, defined for a tax schedule $x$ as the elasticity of post-tax income $v(x)/v(x)$ with respect to pre-tax income, i.e. as $\frac{v_1(x)}{v_0(x)}$. In the family context, the isoelastic form has been recommended by Donaldson and Pendakur (1999) on positive grounds, as one which provides less restrictive household demand functions than any constant equivalence scale in $(x)$, than $S(x) = x/m$ for any $m > 0$, and can be uniquely estimated from demand data.
find from (3) that for equity, $t_B(x)$ should also be proportional:

$$t_B(x) = g_B x \text{ where } g_B = 1 - (1 - g_A)^{1/a}$$

In contradistinction to the result discussed in the previous section of the paper, we see from this that an EU-wide layer of differentiated proportional taxes could be supported as fully equitable if $a > 1$. 16

An intriguing possibility arises if we suppose that the country-specific income distributions are all lognormal, or indeed, belong to any family of distributions which differ in logarithms only by location and scale. In precisely this case, an isoelastic function $x_B = S(x_A)$ exists which matches the incomes in A and B position by position. If in this case we would assert that, in the different EU countries, the $equals$ are those at the same percentile point, then (3) can be used to specify an EU-wide layer of additional income tax which both assures “equal treatment by percentile” in the classical sense and also “equal progression by percentile”. Propositional EU taxes (which, as we have said, have the advantage of not interfering with relative income differentials within countries) would have to be differentiated to the extent that inequality differed between countries; the rate would be higher in less unequal countries, and lower in more unequal countries. 18

6. Understanding a differentiated income tax

It is more than likely that any eventual EU-wide layer of direct tax will be the outcome of negotiations by the politicians, each seeking to build in concessions for the country he or she represents. If such a tax package emerges, how may we infer its equity characteristics? In formal terms, the problem is this. Suppose that we the economists are presented, fait accompli, with differentiated schedules {$t_A(x)$, $t_B(x)$} for countries classified into two groups A and B (or more generally with a bundle {$t_i(x)$: $1 \leq i \leq n$} of schedules, one for each country). Can we find an equivalent income function $S(x)$ (or bundle of $n$ such functions {$S_i(x): 2 \leq i \leq n$}) such that (3) holds between the net income functions $y_A(x)$ and $y_B(x)$ (or the analogue of (3) for each $y_i(x)$ and each $S_i(x)$: $2 \leq i \leq n$)? If so, we can judge the package to be equitable, and explain to the public through an examination of $S(x)$ the value judgement about equals across EU countries that is implicit. If not, the EU-wide tax must be judged inequitable by the standard of our equal treatment command (3).

In general, given {$t_A(x)$, $t_B(x)$}, no such function $S(x)$ exists. A particular result of Lambert and Yitzhaki (1997) demonstrates this: in the family context, there exists no equivalent income function $S(x)$ compatible with the equal treatment criterion (3) for a tax system which corrects for differences in need by means of a tax credit. 15

Of course, we can recognize the equity characteristic of a tax system {$t_A(x)$, $t_B(x)$} satisfying (4), (5) or (6), since we drew these tax systems out of particular functional forms for $S(x)$. We could push things a little further. If $S(x)$ does exist for a tax system {$t_A(x)$, $t_B(x)$} define $m(x)$ and $a(x)$ from (3) that $S(x) = a(x) + m(x)$. The case $a = 1$ in the family context would be that of a constant relative equivalence scale. In this case, if the singles are taxed proportionally, then for equity so should the couples be, and at the same rate. That is, a common proportional tax on the living standards of all households is equitable. 16

Other examples include the Pareto and Singh-Maddala distributions. 17

Clearly this would argue for the different tax treatment of an income unit in Germany having $60,000 p.a. and in Latvia $10,000 p.a. which we would argue corresponds to the family context rather than that of a single. The case of the Pareto distribution is somewhat special since it implies a constant relative equivalence scale.

The interpretation of these forms is clearest in the family context. On the left, we have a quotient familial-type rule, in which the household is split into $m(x)$ parts, each being taxed separately - but then the taxes are re-combined with a correction, for equity, to allow for the change in the scale value in the transition from pre-tax to post-tax income. On the right, we have an income-related married couple’s deduction: couples receive the first portion $a(x)$ of their income $x$ tax-free, and pay tax at the same rate as singles on the balance $x-a(x)$, but again there is a correction for equity, an extra $a(v_B(x)) - a(x)$ of tax-free income being given to allow for the change in the absolute equivalence scale value in the transition from pre-tax to post-tax income. If the putative EU-wide tax system {$t_A(x)$, $t_B(x)$} took either one of these two forms, it would be equitable for the relevant income-related equivalence scale.

How should we analyze the $VE$ and $HI$ characteristics of an EU-wide income tax system for which we cannot recognize a function $S(x)$ providing the definition of equals? We are left only with normative analysis. If the tax is in operation then, starting with sample data drawn from the joint distribution of pre-tax and post-tax living standards across EU countries, we could impose a constant relative scale (e.g. one rendering nominal incomes in B into real values in A’s terms), and assess the vertical and horizontal contributions to overall redistributive effect as in (2). This would tell us to what extent the EU-wide tax departs from an idealized tax on citizens’ real incomes, and how unequally citizens at different real income values are dealt with on average.

In fact, a model of Ramos and Lambert (2003) may be appropriate here, which extends the $HI$ measurement framework of the 1990s by admitting some “deserving attributes” into the idealized tax function, in addition to (real) income. The idea here would be to assess the performance of the EU-wide tax against that of an idealized tax schedule $t(e,d)$, where $e$ is living standard and $d$ denotes domicile (in the EU context; but more generally $d$ can be any attribute for which special tax treatment has been sanctioned by the politicians or tax authorities). The measurement system permits the inequity effect of sanctioned tax breaks to be distinguished from the inequity effect of non-sanctioned differences in tax treatment (if any), the former amounting to an authorized loss of $VE$, and the latter to a residual form of classical $HI$. Equation (2) becomes

$$RE = [V - D] - J,$$

in this context, where, as in (2), $V$ is the redistributive effect of the tax on average (in our case, on the real incomes of EU citizens), $D$ denotes the loss of $VE$ due to the country-specific factors in the tax system, and $J$ is the loss from non-domicile related differences in tax treatment apparent in the data (such as assessment and recording errors) at given real income levels.

Such a measurement exercise, intrinsically normative, can be said to “impose $HI$ from the outside” since it assumes a definition of equals known not to be implicit in the tax system, and measures departures of the tax from such an ideal. In a recent and very exciting development, Mullbauer and van der Ven (2002, 2003) have found a way forward for positive analysis, by varying the definition of equals and the equal treatment command used in this paper to show that: “...tax and benefits systems are consistent with the equivalence scale methodology, even if they are not designed in coherence with it”. 18

Income-related equivalence scales have been around in the equity context since at least Seneca and Taussig (1971), who remark that “the most interesting and important issues involving the application of equivalence scales to tax equity questions are intimately bound up with the variation of equivalence scales with the level of income” (ibid, p. 255).
Thus far we have defined equals through the equivalent income function \( S(x) \), and equal tax treatment by (3). Defining income-related equivalence scales \( m(x) \) and \( a(x) \) by \( S(x) = x/m(x) = x - a(x) \), we demonstrated how the equitable taxes (in (7)) would have to contain “equity corrections” for the variations which take place in the scale value in the transition from pre-tax income \( x \) to post-tax income \( v_B(x) \). But if we think of \( m(x) \) and \( a(x) \) as constant for the couple with gross income \( x \) – defined, for example, in terms of their ability or effort - that is, base-dependent rather than income-level-dependent\(^{21}\) - then a different equal treatment command obtains. Specifically, the command becomes \( x_A = x_B/m(x_B) \Rightarrow v_A(x_A) = v_B(x_B)/m(x_B) \) in the relative case and \( x_A = x_B - a(x_B) \Rightarrow v_A(x_A) = v_B(x_B) - a(x_B) \) in the absolute case. These lead to a quotient-familial-type tax in the one case, and a tax with an income-related deduction in the other, but in each case no correction is required for equity:

\[
\begin{align*}
\forall B(x) = m(x), v_A(x/m(x)) & \quad \text{and} \quad \forall B(x) = v_A(x-a(x)) + a(x) \\
\end{align*}
\]

The specifications in (9) cannot be represented by our (3). For members of group B, the same deflator \( m^* = m(x_B) \) or subtraction \( a^* = a(x_B) \) is applied to create equals after tax as was used to identify the equals before tax, which our (3) does not do. Muellbauer and van de Ven show that there exists a base-dependent equivalence scale which is implicit in (almost) any tax system \( \{t_A(x), t_B(x)\} \) - the case of a family tax credit included - and they also provide an algorithm to recover that scale.\(^{22}\)

The Muellbauer and van der Ven construction thus rationalizes (almost) any tax system as horizontally equitable, finding, by the use of positive analysis, the implied equivalence scale, which is base-dependent in general. According to this approach, HE is imposed from the outside, by assuming rationality on the part of the policymaker, and HI analysis all but ruled out.\(^{23}\)

7. Concluding remarks

In this paper, we first explained the value judgements which underlie the concepts of VE and HE. We then described the measurement system that stood throughout the 1990s for capturing the extent of HI in a tax system, and showed that, in essence, invoking this methodology amounts to “imposing HI from the outside”. A common degree of aversion to both horizontal and vertical inequality is implicit in this methodology, and this is why the horizontal and vertical stances of the tax system are assessed commensurately. A more recent HI development, that of Auersbach and Hassett (2002), breaks the link between horizontal and vertical inequality aversion and brings possibilities for deeper analysis.

We went on to discuss some of the issues that would face the designer of a new income tax, taking as a vehicle for this analysis a putative EU-wide income tax, additional to the national income taxes of the Member States. By drawing on recent work in the regional context, we observed that, relative to a common tax on (the real disposable) incomes of all EU citizens, VE could be enhanced, without necessarily introducing HI, by admitting an element of differentiation in this tax. By formally modelling the identification of equals in different countries through an ‘equivalent income function’, we developed a criterion, in equation (3), for the equal treatment command of HE, and discussed the design issues this raised. In particular, we showed that a new command, “equal progressions among equals”, can be achieved if the equals in different countries are defined as those at the same given percentile point in their within-country distributions, and if these distributions differ in logarithms only by location and scale. Differentiated proportional taxes would be equitable in this scenario, the flat rate being higher in less unequal countries.

Finally, we discussed in greater depth the detection of value judgements in an existing tax system, adding recent work of Muellbauer and van der Ven (2002, 2003) which allows the analyst to draw out of the tax itself the implied value judgements of the decision makers, in terms of an equivalence scale which is in general “base-dependent”. We observed that this development turns horizontal tax analysis into a positive exercise, in essence “imposing HE from the outside” through the assumption of a rational tax designer.

References


21 Muellbauer and van der Ven (2002) discuss this form of equating in some detail in an optimal tax scenario, showing how it could arise if the government’s objective is to relate needs to ability but cannot due to an unobservability constraint.

22 See Muellbauer and van der Ven (2003, pp. 86-90). As the authors remark, “...continuity, monotonicity and progressivity are sufficient for the equivalence scale function \( m(x)/a(x) \) to be unique”.

23 A residual term in Muellbauer and van der Ven’s econometric estimation procedure provides an upper bound for HI in their system. It is interesting to note that the studies cited earlier, which “impose HI from the outside”, all assume VE, and detect it in terms of the stance of the tax “on average between unequal” (following Musgrave, 1990, in fact). In the NR strand of the literature, a suggestion of King (1983) is followed, such that the vertical stance of a tax system is given by breaking the disassociation between pre- and post-tax living standards, that is, by independently sorting pre- and post-tax living standards vectors and making a one-to-one mapping. In each case, analysts effectively “impose VE from the outside”. See Lambert (2003, chapter 10) for more on this.


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Effectiveness of the Czech Tax System

Leoš Vítek*, Jan Pavel, Jana Krbova

Abstract

The first part of the paper discusses methodologies of measurement for the administrative and compliance costs of taxation. The next section analyzes the overall administrative costs of the Czech tax system. The results show that the overall administrative costs of the Czech tax system are approximately 1.5% of the total tax revenue. The third part of the paper shows the measurement of the compliance cost in the Czech Republic. Our results show that the most effective Czech taxes for business taxpayers are the value added tax, the corporate income tax and the road tax. Relatively higher costs are connected with the personal income tax and real estate tax.

Keywords: tax policy, tax effectiveness, administrative costs, compliance costs, Czech Republic

JEL Classification: H21

1. Introduction

The evaluation of the efficiency of tax collection in the Czech Republic suffers from a lack of supporting data. Data is available on an aggregate level, but are inapplicable for the measurement of administrative costs and the analysis of costs for particular taxes. Measuring the administrative costs of the whole tax system, as well as the costs connected with individual tax collection, depends on the selected methodology. As Sanford, Godwin and Hardwick (1989) show, the usual measurement procedure is based on government accounting that allows monitoring and assigning the particular costs to those public administration activities that correspond to the collection of particular taxes. Therefore, a necessary condition for measuring administration costs is project control and accounting of government projects, while any tax will be considered the basic project.

Unfortunately, there is no financial territorial authority in the Czech Republic collecting taxes (Customs Authority, the Czech Social Security Administration, health insurance companies) with project financing. The situation in the Czech Republic is similar to that in other countries in continental Europe – as presented in Vaillancourt (1987) and Sandford (1994); mostly Anglo-Saxon countries, in particular the United Kingdom, the USA and Australia, are the exception. Therefore, the issue of administrative and induced tax costs is most extensively analyzed in these countries. Special measuring runs in other countries stemming from ad hoc analysis (for example Allers (1984) shows data for the Netherlands and most recently data for Germany are presented in *Monatsbericht* 7/03, Bundesmin. der Finanzen, pages 81-92).

Compliance costs of taxation are used in the economics of taxation very often, for more than 220 years. In spite of this, during the previous twenty years, there have appeared methodological concepts, mainly after Sandford (1995), modifying the classical understanding of tax system costs

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Compliance costs of taxation concern two fundamental types of economic entities. Firstly, these are compliance costs of taxation of taxpayers – natural persons. Secondly, there are compliance costs of all other tax entities, i.e. legal persons. This classification corresponds to the legal classification of taxpayers and it is not directly connected with the division of compliance costs of taxation between the private and public sectors.\(^2\) As an example of compliance costs which cannot be avoided it might be mentioned the operation adjusting the accounting (economic) result to tax basis. Moreover, it might be said that concerning a large group of tax entities (natural persons) the existence of the whole accounting agenda is a compliance cost of taxation.

Among compliance costs of taxation resulting from the voluntary decision of a taxpayer costs for tax planning, auditors, accounting or tax advisors might be involved.\(^2\) We may think about voluntary and non-voluntary compliance costs of taxation even if their distinction might be a problem and their outline vague. In spite of this, we can imagine that bookkeeping conducted primarily to ensure the tax base might be conducted voluntarily even after the taxpayer applies tax expenses as a percentage of incomes.\(^3\) This will provide him information he has already got used to which might be developed towards the hypothesis that a tax cost generates a certain benefit (e.g. so called managerial benefit).

The most representative international survey of methods and results in studies of measuring the compliance costs of taxation may be found e.g. in Vaillancourt (1987), Sandford (1994) and (1995). Data gathered for this study was obtained by means of structured questionnaires submitted to the respondents (taxpayers) during personal structured interviews. We find this combination of methods the best to obtain the information we need. Vaillancourt (1987) shows advantages and disadvantages of all methods and instruments to gather data properly. The main attention is concentrated in developed countries (as for a majority of empirical tax research); in the field of measuring compliance (administration) costs of taxation, on the Anglo-Saxon countries – especially the USA, United Kingdom and Australia.

There are no other analytical studies on measuring administrative and compliance costs of tax system in the Czech Republic. The first partial study performed by the method of time and work case studies and studies on compliance costs methodology and measurement in the Czech Republic were made e.g. in Nemec at al. (2002), Vítek and Pübal (2002) and Vítková (2002). As far as other transition economies are concerned, research results are presented only by Klun (2003) for VAT in Slovenia and by Ott and Bajo (2001) for Croatia.

\(^1\) Income tax is in the Czech Republic administered separately as an „income tax of natural persons“ and „income tax of legal persons“. Legislatively, it concerns amendment included in one regulation (Act No. 586/1992Coll., on income taxes), there are as separate parts relating only to one group of payers as common provisions valid for all persons submitted to income tax.

\(^2\) Of course, there is an option between paying the service to a taxpayer or own time investment of the taxpayer that might be evaluated – compliance cost of taxation might be classified in both cases.

\(^3\) Afterwards, the law would not impose him/her the duty to be so called accounting unit, this concerns only natural persons, i.e. payers of personal income tax.

---

**Table 1. Tax System in the Czech Republic**

<table>
<thead>
<tr>
<th>Tax</th>
<th>Tax base</th>
<th>Number of taxpayers (2002, thousands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal income tax (PIT)</td>
<td>Personal incomes</td>
<td>3,900</td>
</tr>
<tr>
<td>Corporate income tax (CIT)</td>
<td>Corporate incomes</td>
<td>321</td>
</tr>
<tr>
<td>Health and Security insurance</td>
<td>Personal and corporate incomes</td>
<td>More then 5 000 for every system</td>
</tr>
<tr>
<td>contributions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real estate tax</td>
<td>Lands and buildings</td>
<td>2,955</td>
</tr>
<tr>
<td>Inheritance tax, gift tax,</td>
<td>Transfer of movable or immovable</td>
<td>440</td>
</tr>
<tr>
<td>real estate transfer tax</td>
<td>property</td>
<td></td>
</tr>
<tr>
<td>Road tax</td>
<td>Vehicles used for business activities</td>
<td>971</td>
</tr>
<tr>
<td>VAT</td>
<td>Taxable supply realized on the</td>
<td>434</td>
</tr>
<tr>
<td></td>
<td>territory of the CR, an imported</td>
<td></td>
</tr>
<tr>
<td></td>
<td>goods</td>
<td></td>
</tr>
<tr>
<td>Excise taxes (apply to</td>
<td>Volume, weight and piece of units of a</td>
<td>5</td>
</tr>
<tr>
<td>hydrocarbon fuels, alcohol,</td>
<td>commodity</td>
<td></td>
</tr>
<tr>
<td>beer, wine and tobacco</td>
<td></td>
<td></td>
</tr>
<tr>
<td>products)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customs</td>
<td>Imported goods</td>
<td>6,105 common customs declarations</td>
</tr>
<tr>
<td></td>
<td>(JCD)</td>
<td>n.a.</td>
</tr>
<tr>
<td>Local taxes(^2)</td>
<td>Ownership of goods, dogs, accommodation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>slot machines</td>
<td></td>
</tr>
</tbody>
</table>

---

1. Income tax is in the Czech Republic administered separately as an „income tax of natural persons“ and „income tax of legal persons“. Legislatively, it concerns amendment included in one regulation (Act No. 586/1992Coll., on income taxes), there are as separate parts relating only to one group of payers as common provisions valid for all persons submitted to income tax.

2. Of course, there is an option between paying the service to a taxpayer or own time investment of the taxpayer that might be evaluated – compliance cost of taxation might be classified in both cases.

3. Afterwards, the law would not impose him/her the duty to be so called accounting unit, this concerns only natural persons, i.e. payers of personal income tax.

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**The Czech Tax System**

Determination of taxes existing in the Czech Republic, this work underpins the analysis of their administrative costs, stems from determination of taxes as compulsory payments flowing out of the private sector into the public sector. This determination corresponds to the OECD and GFSY IMF definitions of taxation.

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**Source:** Czech Republic’s Laws

Health insurance contributions and social insurance contributions are administrated and collected by offices outside of tax offices. In respect to alignment of broad tax administration, it also concerns centrally administrated taxes.\(^4\)

The survey of individual taxes yields in the Czech Republic since 1998 is shown in the following table.

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4. Ministry of Finance shows as a number of „...tax entities, number of so called personal tax accounts (PTA). A particular tax administrator manages it for each taxpayer per all sorts of incomes (taxes) individually. This means that one tax payer may have several PTA’s according to fiscal declaration, report or other basis necessary to lay down a tax a tax payer is obliged to declare in the monitored period.“

5. Fee for dogs, fee for accommodation capacity, fee for spa stay, recreation fee, fee for special way to use free /municipal/ space, admission fee, fee for operation of a price playing slot machines.

6. This project does not concern administrative measuring of payment expenses (not even induced) that might probably be considered taxes but there is no consent in the economic community about their character. It mainly concerns highway fees, some sorts of administrative fees, television and broadcasting fees, compulsory insurance etc.
Table 2. Tax Revenues in the Czech Republic 1998 - 2002, bill. CZK

<table>
<thead>
<tr>
<th>Tax</th>
<th>Administrator</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal income tax</td>
<td>TO</td>
<td>34,63</td>
<td>95,37</td>
<td>98,19</td>
<td>104,58</td>
<td>115</td>
</tr>
<tr>
<td>Corporate income tax</td>
<td></td>
<td>63,88</td>
<td>64,14</td>
<td>65,34</td>
<td>86,74</td>
<td>100</td>
</tr>
<tr>
<td>VAT</td>
<td></td>
<td>119,36</td>
<td>138,22</td>
<td>145,93</td>
<td>151,94</td>
<td>155</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>-37,43</td>
<td>-27,38</td>
<td>-63,53</td>
<td>-82,12</td>
<td>-65</td>
</tr>
<tr>
<td>Excise taxes</td>
<td></td>
<td>156,79</td>
<td>165,66</td>
<td>209,44</td>
<td>234,00</td>
<td>224</td>
</tr>
<tr>
<td>Customs admin. (CA)</td>
<td></td>
<td>67,83</td>
<td>73,14</td>
<td>76,88</td>
<td>76,30</td>
<td>79</td>
</tr>
<tr>
<td>TO</td>
<td></td>
<td>30,03</td>
<td>30,53</td>
<td>30,71</td>
<td>33,60</td>
<td>38</td>
</tr>
<tr>
<td>CA</td>
<td></td>
<td>37,77</td>
<td>42,62</td>
<td>40,17</td>
<td>42,70</td>
<td>40</td>
</tr>
<tr>
<td>Customs</td>
<td></td>
<td>13,65</td>
<td>12,03</td>
<td>13,66</td>
<td>10,92</td>
<td>9</td>
</tr>
<tr>
<td>Road tax</td>
<td></td>
<td>4,37</td>
<td>5,23</td>
<td>5,59</td>
<td>5,28</td>
<td>5</td>
</tr>
<tr>
<td>Real estate tax</td>
<td></td>
<td>4,14</td>
<td>4,27</td>
<td>4,47</td>
<td>4,54</td>
<td>4</td>
</tr>
<tr>
<td>Inheritance tax</td>
<td></td>
<td>0,15</td>
<td>0,15</td>
<td>0,12</td>
<td>0,11</td>
<td>0</td>
</tr>
<tr>
<td>Gift tax</td>
<td></td>
<td>0,43</td>
<td>0,41</td>
<td>0,41</td>
<td>0,48</td>
<td>0</td>
</tr>
<tr>
<td>Real estate transfer tax</td>
<td></td>
<td>5,68</td>
<td>6,27</td>
<td>5,44</td>
<td>5,83</td>
<td>7</td>
</tr>
<tr>
<td>Other taxes</td>
<td></td>
<td>5,28</td>
<td>5,30</td>
<td>6,65</td>
<td>5,04</td>
<td>7</td>
</tr>
<tr>
<td>Tax and customs admin.</td>
<td></td>
<td>579,73</td>
<td>404,41</td>
<td>416,66</td>
<td>459,48</td>
<td>48</td>
</tr>
<tr>
<td>- Tax administration</td>
<td></td>
<td>171,18</td>
<td>184,31</td>
<td>153,43</td>
<td>164,12</td>
<td>20</td>
</tr>
<tr>
<td>- Customs administration</td>
<td></td>
<td>208,2</td>
<td>220,3</td>
<td>263,2</td>
<td>286,7</td>
<td>27</td>
</tr>
<tr>
<td>Health insurance companies</td>
<td></td>
<td>80,0</td>
<td>83,4</td>
<td>88,7</td>
<td>99,5</td>
<td>10</td>
</tr>
<tr>
<td>Czech Social Security Adm.</td>
<td></td>
<td>198,1</td>
<td>204,6</td>
<td>215,7</td>
<td>234,8</td>
<td>25</td>
</tr>
<tr>
<td>Municipalities (local taxes only)</td>
<td></td>
<td>2,1</td>
<td>2,0</td>
<td>2,1</td>
<td>2,1</td>
<td>2</td>
</tr>
<tr>
<td>Total revenue</td>
<td></td>
<td>659,6</td>
<td>694,3</td>
<td>723,2</td>
<td>787,2</td>
<td>84</td>
</tr>
</tbody>
</table>

Source: Ministry of Finance of the Czech Republic

3. The Administrative Costs of Administration

Before the individual taxes or tax groups will be analyzed in terms of the administrative costs corresponding with their collection, it is necessary to briefly survey the structure of different taxes administration being collected in the Czech Republic. In view of the static character of administration costs analysis (this mainly concerns their measuring within the period of one year), the description of taxes administration structure is rather a static; „one-year” glance at the basic characteristics of institutions administrating taxes.

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7 For year 2001: Euro = 34,1 CZK; USD = 38,0 CZK. For year 2002: Euro = 30,8 CZK; USD = 32,7 CZK.
collected tax incomes is shown in the following table. This data as well as data of the Customs Administration is not precise as it includes also “non-tax” agenda of financial authorities and financial directorates.

Table 3. Gross Administrative Costs of Tax Administration of the Czech Republic as % of its Collected Tax Revenues

<table>
<thead>
<tr>
<th>Year</th>
<th>Administrative cost share</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>1.51</td>
</tr>
<tr>
<td>1994</td>
<td>2.25</td>
</tr>
<tr>
<td>1995</td>
<td>2.71</td>
</tr>
<tr>
<td>1996</td>
<td>2.96</td>
</tr>
<tr>
<td>1997</td>
<td>2.73</td>
</tr>
<tr>
<td>1998</td>
<td>2.68</td>
</tr>
<tr>
<td>1999</td>
<td>2.65</td>
</tr>
<tr>
<td>2000</td>
<td>3.41</td>
</tr>
<tr>
<td>2001</td>
<td>3.62</td>
</tr>
<tr>
<td>2002</td>
<td>2.83</td>
</tr>
</tbody>
</table>

There is no project financing and budgeting at TFA and therefore it is not easy to find out the costs connected with collection of individual taxes. However, financial authorities and financial directorates use “Dial of activities (agendas)” dividing workload of TFA employees into more than 100 groups. Through this dial it is possible to classify all activities performed within TFA. Territorial financial authorities use the personal management software VEMA. This software anticipates shares of workload for employees of individual units of particular authority. This concerns the workload employees devote to agendas. Capital as well as current non-wage expenses can only be assigned to individual taxes by means of a workload coefficient for individual taxes. The procedure of calculation of administrative cost for individual taxes is as follows (example for corporation income tax - CIT):

Equation of total expenses of tax administration:

\[ TC_{to} = DC_{pit} + DC_{cit} + DC_{vat} + DC_{ex} + DC_{rt} + DC_{rst} + DC_{it} + DC_{gt} + DC_{rett} + DC_{nta} + TIC_{ta} + TIC_{to} + TNC_{to} \]  

\[ (1) \]

\( DC_{pit} \) as direct costs to collect personal income tax (PIT), \( DC_{cit} \) as direct costs to collect CIT, \( DC_{vat} \) as direct costs to collect value added tax (VAT), \( DC_{ex} \) as direct costs to collect excise taxes (EX), \( DC_{rt} \) as direct costs to collect road tax (RT), \( DC_{rst} \) as direct costs to collect real estate tax (RST), \( DC_{it} \) as direct costs to collect inheritance tax (IT), \( DC_{gt} \) as direct costs to collect gift tax (GT), \( DC_{rett} \) as direct costs to collect real estate transfer tax (RETT), \( DC_{nta} \) as direct costs on non-tax administration, \( TIC_{ta} \) as indirect costs to collect taxes (so called “close indirect costs”), \( TIC_{to} \) as indirect costs of tax offices and \( TNC_{to} \) as investment costs of tax offices.

Equation of company’s total number of employees

\[ TE_{to} = DE_{pit} + DE_{cit} + DE_{vat} + DE_{ex} + DE_{rt} + DE_{rst} + DE_{it} + DE_{gt} + DE_{rett} + DE_{nta} + IE_{ta} + IE_{to} \]  

\[ (2) \]

\( DE_{pit} \) - \( DE_{rett} \) as number of employees directly contributing to collect the particular tax, \( DE_{nta} \) as number of employees directly contributing to non-tax administration, \( IE_{ta} \) as number of indirect employees of tax administration and \( IE_{to} \) as number of indirect indistinguishable (left) employees.

Coefficient to recount close indirect employees:

\[ C1_{cit} = \frac{DE_{cit}}{DE_{pit} + DE_{cit} + DE_{vat} + DE_{ex} + DE_{rt} + DE_{rst} + DE_{it} + DE_{gt} + DE_{rett}} \]  

\[ (3) \]

Direct and close indirect employees allocated to CIT:

\[ PE_{cit} = DE_{cit} + C1_{cit} \times IE_{ta} \]  

\[ (4) \]

\( PE_{cit} \) as partial number of employees contributing to collect CIT. There will be the same procedure as far as other taxes are concerned and the result would be \( PE_{pit} \) to \( PE_{rett} \).

Coefficient to recount indirect costs:

\[ C2_{cit} = \frac{PE_{cit}}{PE_{pit} + PE_{cit} + PE_{vat} + PE_{ex} + PE_{rt} + PE_{rst} + PE_{it} + PE_{gt} + PE_{rett} + DEnta} \]  

\[ (5) \]

Total number of employees allocated to collect CIT:

\[ TE_{cit} = PE_{cit} + C2_{cit} \times IE_{to} \]  

\[ (6) \]

Calculation of coefficient to recount costs:

\[ C3_{cit} = \frac{TE_{cit}}{TE_{to}} \]  

\[ (7) \]

\( TE_{cit} \) as total number of employees contributing to collect DPPO.

Calculation of absolute value of administrative costs:

\[ TC_{cit} = C3_{cit} \times CC_{to} + C3_{cit} \times TNC_{to} \]  

\[ (8) \]

\( CC_{to} \) as current costs of Tax Offices (= \( TC_{to} \) - \( TNC_{to} \)).

Calculation of percentage expression of administrative costs:

\[ AC_{cit} = \frac{TC_{cit}}{TR_{cit}} \times 100 \]  

\[ (9) \]

\( AC_{cit} \) as administrative costs of DPPO collection as a percentage of return, \( TR_{cit} \) DPPO returns.

On the basis of the above mentioned data and these simplifications, it is possible to determine the gross estimate of administrative costs stated in the following table. Total amount of TFA costs stems from the values of 2001 published by the Ministry of Finance of the Czech Republic.
Table 4. Administrative Costs for Taxes Managed by TFA in CR (2001)

<table>
<thead>
<tr>
<th>TAX</th>
<th>Administrative Costs on Collection</th>
<th>Tax Revenue</th>
<th>AC/TR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>3</td>
<td>23</td>
</tr>
<tr>
<td>PERSONAL INCOME TAX</td>
<td>1389</td>
<td>104580</td>
<td>1.33</td>
</tr>
<tr>
<td>CORPORATION INCOME TAX</td>
<td>682</td>
<td>86740</td>
<td>0.79</td>
</tr>
<tr>
<td>VALUE ADDED TAX</td>
<td>1329-2193</td>
<td>151890</td>
<td>2.32</td>
</tr>
<tr>
<td>EXCISE TAXES</td>
<td>142±600</td>
<td>76300</td>
<td>0.94</td>
</tr>
<tr>
<td>ROAD TAX</td>
<td>356</td>
<td>5280</td>
<td>6.74</td>
</tr>
<tr>
<td>PROPERTY TAXES</td>
<td>1584</td>
<td>10960</td>
<td>14.45</td>
</tr>
</tbody>
</table>

Source: previous tables, Ministry of Finance and own calculation

Despite strong simplifications of calculation, the values stated in this table surprisingly well correspond with the presumption of the analysis as well as with foreign projects’ results. In particular, the values for corporation and excise taxes correspond to generally published opinions on the amount of administrative costs as far as these taxes are concerned. Extremely high values of inheritance (169.8 %) and gift tax (43.4 %) as well as relatively high values of real estate tax (17.1 %) will have to be checked (low “finesse” in VEMA software does not enable lower than 5 % of employee workload to be assigned for a particular agenda) – with regard to return of these taxes and probably in view of the administrative costs these taxes are highly non-efficient.

Customs Administration

Customs Administration of the Czech Republic is a system of customs offices formed by the Ministry of Finance – General Directorate of Customs, Directories of Customs (8) and Customs Offices (91). Customs offices are entrusted with broad area of activities. Not all of these activities are connected with the income part of tax system – e.g. duties when waste or nuclear material is imported or statistical data collection.

In the area of value added tax, customs and collection of selective excise taxes the total administrative costs of customs offices are shown in the following table. If we overlook that not all of the activities of Customs Authority, Directories of Customs and General Directorate of Customs are connected with collection of these taxes, we receive the figure of administrative tax costs.

Table 5. Gross Administrative Costs of Customs Authority of the Czech Republic as % of its Collected Tax Revenues

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.45</td>
<td>2.17</td>
<td>1.89</td>
<td>1.83</td>
<td>1.51</td>
<td>1.50</td>
<td>1.54</td>
</tr>
</tbody>
</table>

Source: Customs Authority of the Czech Republic (2003)

The fiscal significance of Customs Authority of the Czech Republic (CS or CA) lies mainly in administration of VAT and selective excise taxes – customs yield is not in fact significant, see Table 2. More than 96 % of obtained yields is formed by VAT and excises. VAT is influenced by tax connection with territorial financial authorities. In that case, the tax duty substantially differs from tax collection because of equalizing excessive tax-deduction. The excessive deduction results in negative value added tax balance as far as financial authorities are concerned. In spite of this, value added tax represents the highest income item of the state budget (if we do not take into account insurance contributions), as customs offices do not return excessive tax deduction of value added tax and through the tax collection from their side equalization is reached.

Spending more than 96 % of obtained yields is formed by VAT and excises. VAT is influenced by administration of VAT and selective excise taxes – customs yield is not in fact significant, see Table 2. More than 96 % of obtained yields is formed by VAT and excises. VAT is influenced by the fiscal significance of Customs Authority of the Czech Republic (CS or CA) lies mainly in administration of VAT and selective excise taxes – customs yield is not in fact significant, see Table 2. More than 96 % of obtained yields is formed by VAT and excises. VAT is influenced by administration of VAT and selective excise taxes – customs yield is not in fact significant, see Table 2. More than 96 % of obtained yields is formed by VAT and excises. VAT is influenced by the fiscal significance of Customs Authority of the Czech Republic (CS or CA) lies mainly in administration of VAT and selective excise taxes – customs yield is not in fact significant, see Table 2. More than 96 % of obtained yields is formed by VAT and excises. VAT is influenced by administration of VAT and selective excise taxes – customs yield is not in fact significant, see Table 2. More than 96 % of obtained yields is formed by VAT and excises. VAT is influenced by the fiscal significance of Customs Authority of the Czech Republic (CS or CA) lies mainly in administration of VAT and selective excise taxes – customs yield is not in fact significant, see Table 2. More than 96 % of obtained yields is formed by VAT and excises. VAT is influenced by administration of VAT and selective excise taxes – customs yield is not in fact significant, see Table 2. More than 96 % of obtained yields is formed by VAT and excises. VAT is influenced by the fiscal significance of Customs Authority of the Czech Republic (CS or CA) lies mainly in administration of VAT and selective excise taxes – customs yield is not in fact significant, see Table 2. More than 96 % of obtained yields is formed by VAT and excises. VAT is influenced by administration of VAT and selective excise taxes – customs yield is not in fact significant, see Table 2. More than 96 % of obtained yields is formed by VAT and excises. VAT is influenced by the fiscal.
where the amount of collected insurance contributions is 2.5 times higher than insurance contributions for public health insurance. In that case, the fixed costs connected with collection decompose and are lower as far as one unit of insurance contributions is concerned. Another reason of such a high efficiency of insurance contributions collection is derivation of basis to calculate insurance contributions from the personal income tax basis – especially of employees. This relation enables considerable reduction of costs connected with the collection of tax – as administrative costs are concerned mainly in the field of auditing.

B. Results

The following table shows the amount of administrative costs of the Czech tax system. VAT and excise taxes have the administration costs and yields of these taxes for Tax Offices and Customs Offices connected. The middle value of estimate is given for AC estimates at Customs Offices. Property taxes are also bound into one item.

<table>
<thead>
<tr>
<th>TAX</th>
<th>ADMINISTRATIVE COSTS ON COLLECTION</th>
<th>TAX REVENUE</th>
<th>AC/TR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PERSONAL INCOME TAX</td>
<td>1389</td>
<td>104580</td>
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<tr>
<td>PROPERTY TAXES</td>
<td>1584</td>
<td>10960</td>
<td>14.45</td>
</tr>
<tr>
<td>CUSTOMS</td>
<td>94</td>
<td>10015</td>
<td>0.94</td>
</tr>
<tr>
<td>HEALTH INSURANCE CONTRIBUTIONS</td>
<td>2116</td>
<td>134800</td>
<td>1.57</td>
</tr>
<tr>
<td>SOCIAL INSURANCE CONTRIBUTIONS</td>
<td>1720</td>
<td>234800</td>
<td>0.73</td>
</tr>
<tr>
<td>TAX SYSTEM</td>
<td>12183</td>
<td>815365</td>
<td>1.49</td>
</tr>
</tbody>
</table>

Source: Previous tables and own calculation

The calculation of total value determining the share of administrative costs to collect taxes and tax yields is shown in the following table. This value is 1.49 %. Data is taken from annual reports and ad hoc investigations of analyzed institutions or it stems from local investigations from authors of this project. In spite of the fact that some data (health insurance companies) is based on the structure of activities from 2000, it is possible to presume that due to stability of laws and institutional structure concerning the collection of insurance premium very similar values would be measured even for year 2001.

The height of administrative costs connected with collection of all taxes in the Czech Republic corresponds to the values mentioned in other foreign projects. As mentioned before, most available sources indicate total administrative costs of tax system within the interval from 1 to 3 % of total tax yields. Measured by means of this criterion the Czech tax system as well as its administration is comparable with tax systems functioning in other countries.

4. The Compliance Cost of Taxation

We used the expenditure method to measure compliance costs generally existing which is based on measuring the costs at the level of taxpayers. The advantage of this method is based on the possibility of precise measurement of compliance costs for individual taxpayers and individual types of taxes.

The best way to proceed during the research was to fill in the questionnaire together with a payer or his/her entrusted person. Since this research is at the very beginning in the Czech Republic, we consider it necessary to obtain a precise image of how taxpayers are or are not able to cope with the questionnaire. Of course, the representativeness of the sample is significantly qualified by its size and thus within the larger gauge personal data detection would be irrelevantly expensive. Not only the size but also the structure of the sample has a crucial impact on ability to predict. This project was motivated by an endeavor to open this issue in the Czech Republic where almost no research within this field was made so far. To this end, a varied sample was chosen as there are natural as well as legal persons with different turnovers and from different business sectors. With regard to the absolute amount of interrogated respondents, the presumed object of this project is representativeness of the sample. Non-representativeness of the sample is balanced to certain extent by the accuracy of measurement. All data was obtained by means of personal questioning. Thus, we also avoided expensive distribution of questionnaires whose return is according to literature around 10 – 20 % while data is of less quality and its representativeness might be threatened.

A. Methodology and Data Collection

The structure of the group is shown in the following tables, the monitored characteristics were mainly the legal form of entrepreneurship, subject of activity, annual revenues, and furthermore the region of entrepreneurship, registration to particular taxes and number of employees.

| Table 7. Structure of the Respondents According to Legal Form of Entrepreneurship |
|---------------------------------|-----------------|
| Natural person – entrepreneur   | 11              |
| Public business company         | 2               |
| Limited company                 | 15              |
| Joint-Stock Company             | 1               |
| Cooperation                     | 1               |
| Others                          | 1               |
| Total                           | 31              |

Around one third of monitored tax entities are natural persons and around one half are limited companies, which is the most common type of company being established in the Czech Republic. In all cases, it concerned business entities. Taxpayers unfounded/not-established with respect to entrepreneurship are not included in this sample.
Data obtained from bookkeeping is crucial to determine the tax basis for the payer. As far as an accounting unit making bookkeeping within the single entry bookkeeping system is concerned, crucial data to determine the tax basis is the difference between incomes and expenditures, and concerning an accounting unit making bookkeeping within the double entry bookkeeping it is an economic result, in other words, the difference between benefits and costs. The significance of information arising from bookkeeping for tax purposes (mainly determination of the tax basis) often, particularly in case of natural persons, remarkably advances other functions of bookkeeping.

Concerning natural persons, it is possible to say that most natural persons conducting single entry bookkeeping use data arising thereof only to determine the tax basis, eventually ex-post as a proof instrument in relation with the tax administrator. Therefore, all costs connected with the duty to conduct bookkeeping are in fact compliance costs of taxation. Moreover, a natural person easily determines the tax basis even without conducting bookkeeping but due to the Act on bookkeeping and possible tax control he/she must compile the cash book and further accounting evidence. (There are actually any „managerial benefits“ nulls.)

From the above, it follows that it would be convenient to connect all costs connected with bookkeeping and wage agenda, being evoked by taxes, to compliance costs. We will take no account of them in this work and we will work only with exact data for externally provided tax counseling (tax advisors, auditors, lawyers, accountants). We will not mention costs for employees undertaking the given agenda or costs for independently performed activity in the field of fulfillment of tax duties. If we include calculation costs for employees of accounting departments in companies (including their insurance contributions), software and hardware etc., we would get higher numbers.

The results of measurement are given in the following tables. Before their analysis, it is also necessary to add a methodological note to time evaluation the payer dedicates to duties caused by the existence of taxes. Two evaluations were used:

- The average salary stated by the Czech Statistical Office for the previous year, i.e. 15 187 CZK. If we take into account the month amount of working time as 168 hours, thus hour rate is 90 CZK.
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The questionnaire also found out proper, subjective evaluation of time a tax entity dedicates to the activity under review to make a comparison and idea. The subjective price of time was twice as high in comparison with the price used, that price was 200 CZK per hour on average.

### B. Results

The following tables summarise results of measurement only for compliance costs with external supply of services connected with tax counseling. In ten cases, employees of the payer processed tax returns to one tax at least. On the contrary, tax duties in 28 cases (i.e. 90 %) were solved (one tax at least) by hiring an external supplier of services as another table indicates. External services in connection with income tax of legal persons (18 times) and value added tax (14 times) are purchased most often. In this brief table, we can see the average annual compliance costs connected with particular tax. The processing of tax returns does not involve only the last part of tax counseling but all invoiced works connected with determination of the tax basis and tax, for example control during the period of taxation etc.
Table 11. Compliance Costs Share in the Czech Republic (in %)

<table>
<thead>
<tr>
<th></th>
<th>PIT</th>
<th>CIT</th>
<th>Insurance contributions</th>
<th>VAT</th>
<th>Road tax</th>
<th>Real estate tax</th>
<th>PIT for employee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total in CZK</td>
<td>42 100</td>
<td>911 350</td>
<td>6 800</td>
<td>167 900</td>
<td>29 200</td>
<td>24 100</td>
<td>1 800</td>
</tr>
<tr>
<td>Average per taxpayer in CZK</td>
<td>4 210</td>
<td>50 631</td>
<td>756</td>
<td>11 993</td>
<td>2 920</td>
<td>4 820</td>
<td>360</td>
</tr>
</tbody>
</table>

Source: Data collection and Ministry of Finance of the CR

If we include to cost of compliance also costs connected with employees from companies undertaking the tax agenda, the part of bookkeeping connected only with taxes, the part of entrepreneurs and managers following the tax agenda and insurance medium, part of software and hardware for tax agenda, studying tax issue and part of overhead costs (rooms, energy, maintenance), which proportionally corresponds to tax agenda, we would obtain compliance costs in multiplied values of costs for processing the tax return and tax counseling. Unfortunately, this data is not available so far and therefore it is not included in the analysis.

In this phase of research, we try to compare the size of average compliance costs in the investigated sample with the size of average paid tax for all payers in the Czech Republic. Due to the small sample, we could not recount compliance costs on all taxpayers. The entities under review employed from 0 to 30 employees (5 on average). The file does not involve large enterprises and this fact probably underestimates detected compliance costs mainly on income taxation of natural persons.

Compliance costs of taxation on external processing of tax returns, tax counseling and costs arising to payers when they make the tax return themselves, are recounted from processed sample of tax entities to one respondent (employee) and compared with average tax yield of collected tax entities. The file does not involve large enterprises and this fact probably underestimates detected compliance costs mainly on income taxation of natural persons.

The results of measuring administrative as well as compliance costs in the Czech Republic correspond with the results of similar research in developed countries. The comparison of the costs with transitional countries is however very difficult – there are no available data for other CEE countries that allowed us to compare these costs. The most effective administration at the central level is indicated in social security contributions, corporate income tax, excises and customs. The highest administrative cost has been identifying for administration of small property taxes, road tax and VAT. Local taxes were not analyzed in this study.

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In the case of legal persons’ taxation, the value reached almost 30 % of the tax yield of each company and its employees, and it is not hired externally.

In spite of the objection concerning the representativeness of the sample, the presented results are very interesting and it is necessary that particular government bodies undertake it while managing tax policy. In comparison with foreign measurements mentioned in section 1 and furthermore Aaron and Gale (1993), Slemrod and Sorum (1984), Chan (1999) and Seltzer (1997), the compliance costs values obtained in this pilot measurement are higher in the Czech Republic. The question is which values will be obtained after triple enlargement of the sample of taxpayers and after recounting the results on the whole tax system. Even now it might be said that in view of the compliance costs of taxation, the value added tax is surprisingly the most efficient – most of the literature focused on tax policy consider this tax as a tax with high requirements on taxpayers. On the contrary, for the income tax of natural persons declaring the tax return is very expensive.

The results of measuring administrative as well as compliance costs in the Czech Republic imply these conclusions and recommendations for tax policy. Firstly, administrative costs are lower than compliance costs, which mean that government administration charges payers by this additional (hidden) tax burden. Unfortunately, the estimates of compliance costs of taxation are not a compulsory part of reports on drafts of laws affecting the imposition of taxes.

Due to very restricted representativeness of the sample, the predicate value of results is decreased. On the other hand, we do not consider the stated results much too different from those obtained in more representative samples. It should be taken into account that the performed measurements was one of the unique attempts in the Czech Republic and its sense was mainly to support the research in this area and contribute to further work on this methodology.

5. Conclusion

The administrative costs of taxation on the central level in the Czech Republic correspond with the results of similar research in developed countries. The comparison of the costs with transitional countries is however very difficult – there are no available data for other CEE countries that allowed us to compare these costs. The most effective administration at the central level is indicated in social security contributions, corporate income tax, excises and customs. The highest administrative cost has been identifying for administration of small property taxes, road tax and VAT. Local taxes were not analyzed in this study.

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Secondly, the income taxation of natural persons declaring tax returns themselves is very expensive (unlike income taxation arising from dependent activity where experimental calculations according Vítková (2002) do not exceed 20 %). The imposition of another direct tax – real estate tax and probably even transfer tax is not efficient which is signaled by administrative and compliance costs measurements. Nevertheless, we do not believe that for example abolition

Table 10. Compliance Costs Connected with External Supply of Tax Counseling

<table>
<thead>
<tr>
<th></th>
<th>PIT</th>
<th>CIT</th>
<th>Insurance contributions</th>
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<td>Total in CZK</td>
<td>46 825</td>
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<td>30 528</td>
<td>26 058</td>
<td></td>
</tr>
<tr>
<td>Average per taxpayer in CZK</td>
<td>3 602</td>
<td>50 631</td>
<td>346 066</td>
<td>6 431</td>
<td>1 747</td>
<td></td>
</tr>
</tbody>
</table>

Source: Data collection and Ministry of Finance of the CR

* Taxpayers, natural persons declaring tax returns and referred collected income tax of natural persons are considered.
of these direct taxes (apart from real estate transfer tax) would be a solution. In any case, a simplification of natural persons’ tax basis should be implemented. We also warn of substantial disparity in taxation of various parts of the natural persons’ tax basis.

Finally, while dividing the tax to income, excise and property, the taxation of consumption is more efficient than income taxation. The real estate tax results are distorted in the Czech Republic due to the low yield.

References


Abstract

This paper investigates the relationship among exports, investments and economic growth, in the three Baltic countries which have recently joined the European Union. The purpose of this paper is to examine the long run relationship between these variables using quarterly data for the period 1992:1-2000:IV and applying the co-integration analysis as suggested by Johansen and Juselius. Then a trivariate autoregressive vector model (VAR) is used to estimate the short and long run relationships of variables of this model. The results of this paper suggested that the exports growth in combination with the increase of investments have a positive effect on the economic growth of the three Baltic countries.

Keywords: exports, investment, economic growth, co-integration, Baltic countries

1. Introduction

The issue of the growth promoting effect of exports has been a central theme in trade and development literature. Numerous studies have focused on testing whether export expansion leads to improved growth performance, while others have attempted to examine how exports affect economic growth. Economic theory suggests that export expansion promotes economic growth via two paths: (i) by improving efficiency in the allocation of productive resources and (ii) by increasing the volume of productive resources through capital accumulation (Bardham and Lewis 1970; Romer 1989; Basu and McLeod 1991; Edwards 1992; Ghirmay et al. 2001).

Many attempts have been made to empirically test whether exports promote economic growth (Edwards 1992). Utilizing cross-country regression analysis, they suggest that there is a positive relationship between export growth and economic growth. However, such studies were criticized for confusing statistical association with causality. In light of this, the evidence in support of the positive effect of exports on economic growth was considered spurious. Consequently, interest shifted to the use of co-integration and causality analysis to determine the relationship between export growth and economic growth.

Early works, in most cases, provided little statistical evidence in favour of the significant causal effect between the variables examined (Jung and Marshall 1985; Chow 1987; Dodaro 1993; Sharma and Dhakal 1994). However, if the used variables were non-stationary then the tests would be mis-specified. Hence, recently there have been attempts to fix the above limitations by employing the co-integration technique and error-correction models.

The economic rationale for offering special incentives to attract foreign direct investment derives from the belief that foreign investment produces externalities in the form of technology transfers. Romer (1993), for example, argued that there are important “idea gaps” between rich and poor countries. He noted that foreign investment can ease the transfer of technological and business know-how to poorer countries. These effects may have substantial spillover effects for the entire economy.

Thus, foreign direct investments may boost the productivity of all firms, which in turn lead any country to its economic growth. Many macroeconomic studies using total foreign investments for a wide range of countries show that there is a positive relationship between foreign direct investments and economic growth (De Gregorio 1992; Borensztein et al.1998; Alfaro et al. 2000).

In this study a trivariate VAR model is used, where, except for exports and economic growth, the variable of investments is included. The focus of the multivariate dynamic model permits us to investigate the impact of exports on investments, and identify the factors through which exports affect economic growth.

The trivariate VAR approach premises the possible existence of short-term relationships between exports and the other variables. Moreover, it allows us to study the long-run effects of exports on the other variables.

Since previous studies have largely ignored the dynamic interactions between exports and these variables (such as investment), it could be argued that the integration of these variables is a very important element in this approach. Therefore, exports can affect economic growth directly and indirectly through their interactions on investment, and in turn economic growth will affect exports.

In the empirical analysis of this study we used quarterly data for the period 1992:1 until 2000:IV for all variables. The remainder of the paper is organized in the following way. Section 1 contains the introduction. The data and the trivariate VAR model are presented in section 2. Section 3 applies the Dickey-Fuller tests and investigates the stationarity of the used data. The co-integration analysis between the used variables is implied in section 4. Section 5 describes the error-correction model. Finally, section 6 presents the conclusions of the paper.

2. Data

For the cointegration analysis between exports, investments and economic growth, we use the following trivariate VAR model:

\[ GDP = f(EXP, INV) \]  (1)

where:

GDP is the economic growth

INV is the investment

EXP are the exports

The economic growth variable is measured by the real GDP (nominal GDP deflated by GDP deflator). The investment variable (INV) is measured by the gross fixed capital deflated by the GDP deflator. The exports variable (EXP) is measured by the revenues of real exports and is obtained, adjusting the nominal export value by an export price index from the International Financial Statistics (IFS). The data used in this analysis are quarterly, covering the period 1992:1 -2000:IV regarding 1996 as a base year and derived from the OECD database (Business Sector Data Base).

All data are expressed by logarithms in order to include the proliferate effect of time series, and are symbolized with the letter L preceding each variable name. If these variables share a common stochastic trend and their first differences are stationary, then they can be cointegrated. Economic theory provides little guidance for which variables appear to have a stochastic trend, or when...
The results of Table 1 suggest that the null hypothesis of a unit root in the time series cannot be rejected at a 5% level of significance in variable levels. Therefore, no time series appear to be stationary in variable levels. However, when the logarithms of the time series are transformed into their first differences, they become stationary and consequently the related variables can be characterized integrated order one, I(1). Moreover, for all variables the LM(4) test first differences shows that there is no correlation in the disturbance terms.

3. Unit root test

The cointegration test among the variables that are used in the above model requires testing for the existence of the unit root for each variable and specifically for economic growth, exports, and investment, using the augmented Dickey-Fuller (ADF) (1979) test on the following regression:

\[ \Delta X_t = \delta_0 + \delta_1 t + \delta_2 X_{t-1} + \sum_{i=1}^{k} \alpha_i \Delta X_{t-i} + u_t \]  (2)

The ADF regression tests for the existence of the unit root of \( X_t \), namely in the logarithm of all model variables at time \( t \). The variable \( \Delta X_{t-i} \) expresses the first differences with \( k \) lags and final \( u_t \) is the variable that adjusts the errors of autocorrelation. The coefficients \( \delta_0, \delta_1, \delta_2, \) and \( \alpha_i \) are being estimated. The null and the alternative hypothesis for the existence of unit root in variable \( X_t \) is:

\( H_0 : \delta_2 = 0 \quad H_\varepsilon : \delta_2 < 0 \)

The results of these tests appear in Table 1. The minimum values of the Akaike (AIC) (1973) and Schwartz (SC) (1978) statistics have provided the better structure of the ADF equations as well as the relative numbers of time lags, under the indication "Lag". As far as the autocorrelation disturbance term test is concerned, the Lagrange Multiplier LM(4) test has been used. The MFIT 4.0 (1997) econometric package that was used for the estimation of ADF test, provides us the simulated critical values.

Table 1 – DF/ADF unit root tests

<table>
<thead>
<tr>
<th>Country</th>
<th>Variables</th>
<th>In levels</th>
<th>1st differences</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(X_t)</td>
<td>Lag</td>
<td>Test statistic</td>
</tr>
<tr>
<td></td>
<td>LGDP</td>
<td>4</td>
<td>-0.3291</td>
</tr>
<tr>
<td></td>
<td>Estonia</td>
<td>3</td>
<td>-0.3924</td>
</tr>
<tr>
<td></td>
<td>LINV</td>
<td>2</td>
<td>-0.4881</td>
</tr>
<tr>
<td></td>
<td>Lithuanian</td>
<td>4</td>
<td>-0.1225</td>
</tr>
<tr>
<td></td>
<td>Latvia</td>
<td>2</td>
<td>-1.3020</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>-1.1247</td>
</tr>
<tr>
<td></td>
<td>Lithuania</td>
<td>3</td>
<td>-1.9555</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>-1.4903</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>-1.5712</td>
</tr>
</tbody>
</table>

*Critical value: -3.5279

**The numbers in brackets show the levels of significance

4. Cointegration and Johansen test

If the time series (variables) are non-stationary in their levels, they can be integrated with integration of order 1, when their first differences are stationary. These variables can also be cointegrated if there are one or more linear combinations among variables that are stationary. If these variables can be cointegrated, then there is a constant long-run linear relationship among them.

Since it has been determined that the examined variables are integrated of order 1, then the cointegration test was performed. The testing hypothesis is the null of non-cointegration against the alternative that is the existence of cointegration using the Johansen (1988) maximum likelihood procedure, Johansen and Juselious (1990, 1992). An autoregressive coefficient was used for the modelling of each variable (that is regarded as endogenous) as a function of all lagged endogenous variables of the model.

Given the fact that in order to apply the Johansen technique a sufficient number of time lags is required, we have followed the relative procedure, which is based on the calculation LR (Likelihood Ratio) test statistic (Sims 1980). The results show that the value \( \hat{\lambda} = 3 \) is the appropriate specification for the above relationship. Then we determined the cointegration vector of the model providing that table 2 has the rank \( r < n \) (n=3). The process of estimating the rank \( r \) is related with the assessment of eigenvalues, which are the following:

\[ \hat{\lambda}_1 = 0.54282 \quad \hat{\lambda}_2 = 0.25135 \quad \hat{\lambda}_3 = 0.048976 \]

Table 2 – Johansen and Juselius test for multiple cointegrating vectors in (LGDP, LEXP, LINV) Maximum lag in VAR = 3

<table>
<thead>
<tr>
<th>Country</th>
<th>Statistic</th>
<th>k = 0</th>
<th>k ≤ 1</th>
<th>k ≤ 2</th>
<th>No. of Cointegrating Vector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estonia</td>
<td>( \hat{\lambda} )– max</td>
<td>189146</td>
<td>59551</td>
<td>21197</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>( \hat{\lambda} )– trace</td>
<td>256983</td>
<td>78283</td>
<td>21197</td>
<td>1</td>
</tr>
<tr>
<td>Latvia</td>
<td>( \hat{\lambda} )– max</td>
<td>192416</td>
<td>61743</td>
<td>37636</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>( \hat{\lambda} )– trace</td>
<td>267872</td>
<td>91811</td>
<td>37636</td>
<td>1</td>
</tr>
<tr>
<td>Lithuania</td>
<td>( \hat{\lambda} )– max</td>
<td>204712</td>
<td>48725</td>
<td>33645</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>( \hat{\lambda} )– trace</td>
<td>297310</td>
<td>73261</td>
<td>33645</td>
<td>1</td>
</tr>
</tbody>
</table>

Notes: The critical values for the \( \lambda \) – max test for \( k = 0, k \leq 1, k \leq 2 \) at 5% level of significance are respectively 17.68, 11.03, 4.16. At 10% significance level they are 15.57, 9.28, 3.04. For the \( \lambda \) – trace statistics the critical values for \( k = 0, k \leq 1, k \leq 2 \) at 5% level of significance are respectively 24.05, 12.36, 4.16. At 10% significance level they are 21.46, 10.25, 3.04.

The results that appear in Table 2 suggest that the number of statistically significant cointegration vectors equals 1 and are the following:

\[ \text{LGDP} = 0.59532 \text{LEXP} + 1.1911 \text{LINV} + 2.8967 \text{Estonia} (3) \]
Table 3 reports the VEC estimates for the three Baltic countries. The VEC specification forces the long-run behavior of the endogenous variables to converge to their co-integrating relationship, while accommodating short-run dynamics. The dynamic specification of the model suggests deleting the insignificant variables until a parsimonious representation is obtained. Changes in economic growth appear to react in the short-run in its own one-period lag for Estonia and Latvia and two lagged periods for Lithuania, to changes in exports lagged one and two periods (except for Latvia), to changes in investments lagged one period for Estonia and Lithuania and lagged two periods for Latvia. From all lagged variables only the variable of investments for Estonia and exports for Lithuania are insignificant at 5% level of significance.

VEC models provide a way of combining both the dynamics of the short-run changes and long-run levels adjustment processes simultaneously. According to the co-integration theory, the estimated co-integrated residual should appear as the error correction term in a dynamic VEC model. An important finding from this dynamic model of the three Baltic countries is that the error correction terms are statistically significant at 10%. Namely there seems to exist a subject of extensive sensitivity relating to the dynamic model of economic growth for the three Baltic countries. This means that both short-run and long-run components of the VEC model are very strong (Dritsakis 2004). Although all coefficients of regression for the VEC models for the three countries are insignificant, there are no problems related to linear correlation, specification, residuals and heteroskedasticity. The final form of the Error-Correction Model was selected according to the approach suggested by Hendry, (Maddala 1992). The initial order of time lag for the model is 2, because it is large enough to enclose the system’s short-run dynamic. We also apply a number of diagnostic tests on the residuals of the model. We apply the Lagrange test (LM) for the possible existence of autocorrelation and heteroskedasticity, the Bera-Jarque (C) normality test and the Ramsey’s Reset test for the functional form of the model. The Error Correction Model appears in table 3.

Table 3. Error Correction Model

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Estonia</th>
<th>Country</th>
<th>Lithuania</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.79823 (1.8327)</td>
<td>1.01755 (2.3712)</td>
<td>0.47167 (1.9576)</td>
</tr>
<tr>
<td>ΔLGDP_{t,t-1}</td>
<td>0.45734 (3.6723)</td>
<td>0.37276 (2.0567)</td>
<td>0.57231 (2.1756)</td>
</tr>
<tr>
<td>ΔALEXP_{t-1}</td>
<td>0.67845 (4.2317)</td>
<td>0.56723 (2.7856)</td>
<td>0.49123 (4.1856)</td>
</tr>
<tr>
<td>ΔLINV_{t-1}</td>
<td>0.19675 (3.8945)</td>
<td>0.72138 (1.7367)</td>
<td>0.13607 (1.7423)</td>
</tr>
<tr>
<td>ΔLINV_{t-2}</td>
<td>0.72138 (1.7367)</td>
<td>0.73421 (3.0342)</td>
<td>0.56176 (2.0231)</td>
</tr>
<tr>
<td>ut-1</td>
<td>-0.11676 (-0.9834)</td>
<td>-0.13786 (-1.6813)</td>
<td>-0.0945 (-1.9902)</td>
</tr>
<tr>
<td>R²</td>
<td>0.57347</td>
<td>0.68312</td>
<td>0.61816</td>
</tr>
<tr>
<td>DW</td>
<td>1.7123</td>
<td>0.6815</td>
<td>1.2345</td>
</tr>
<tr>
<td>S.E. of Regression</td>
<td>0.072387</td>
<td>0.074314</td>
<td>0.066783</td>
</tr>
<tr>
<td>Serial Correlation</td>
<td>X'(4)= 3.6712</td>
<td>X'(4)= 1.5634</td>
<td>X'(4)= 2.9834</td>
</tr>
<tr>
<td>Functional Form</td>
<td>X'(1) = 1.0342</td>
<td>X'(1) = 2.0675</td>
<td>X'(1) = 0.0453</td>
</tr>
<tr>
<td>Normality</td>
<td>X'(2) = 2.2856</td>
<td>X'(2) = 2.1325</td>
<td>X'(2) = 1.7843</td>
</tr>
<tr>
<td>Heteroscedasticity</td>
<td>X'(1) = 0.6732</td>
<td>X'(1) = 0.9823</td>
<td>X'(1) = 0.8965</td>
</tr>
</tbody>
</table>

Notes: numbers in brackets are t-ratios
1. R² is the determination coefficient
2. DW is the Durbin-Watson statistic
3. SE is the standard error of regression
4. SC is the Lagrange multiplier test of residual serial correlation
5. FF Ramsey Reset test for the functional form
6. Norm is the normality test for the residuals and is based on skewness and kurtosis
7. Het is the heteroscedasticity test and it is based on squared fitted values
8. Table 3 reports the VEC estimates for the three Baltic countries. The VEC specification forces the long-run behavior of the endogenous variables to converge to their co-integrating relationship, while accommodating short-run dynamics. The dynamic specification of the model suggests deleting the insignificant variables until a parsimonious representation is obtained. Changes in economic growth appear to react in the short-run in its own one-period lag for Estonia and Latvia and two lagged periods for Lithuania, to changes in exports lagged one and two periods (except for Latvia), to changes in investments lagged one period for Estonia and Lithuania and lagged two periods for Latvia. From all lagged variables only the variable of investments for Estonia and exports for Lithuania are insignificant at 5% level of significance.

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heteroscedasticity and normality.

6. Conclusions

This paper employs the relationship among exports, economic growth and investment for three countries of former Soviet Union which have recently crossed the gateway of the European Union, using quarterly data for the period 1992:I-2000:IV. The empirical analysis suggested that the variables that determine economic growth in the three Baltic countries present a unit root. On this basis, the cointegration analysis has been used (as suggested by Johansen and Juselious) to arise a long-run equilibrium relationship among the examined variables. The results of this analysis show that there is a positive relationship among exports, investment and economic growth. Then the error correction models methodology was used to estimate the short-run and long-run relationships. The selected vectors gave the error correction terms, which proved to be statistically significant in 5% level of significance during their introduction in short-run dynamic equations.

The results of the positive long-term effects of exports and investments on economic growth are consistent with the arguments for positive external effects of these variables from a theoretical perspective (as reported to section 2). Greater export opportunities should promote investment not only in the export sector but also in other sectors related to exports. Table 3 suggested that investments growth is the most important factor for the economic growth of the three Baltic countries as a result of Levine and Renelt's (1992) study in which they argue that economic growth is more through capital accumulation.

Finally, the effects of exports on economic growth through investment proved to be positive for the three Baltic countries. This fact emphasizes the role of indirect factors through which exports growth affects economic growth in these countries.

References


BOOK REVIEW


This book challenges much of the conventional wisdom of the European post-communist economic transformation, and as Stanley Fischer writes in the advance praise of the book: "Whether you agree with the argument or disagree with it, you should not be indifferent to this book." Being written by one of the most influential policy advisors on post-communism transformation, Åslund’s book definitely lives up to Fischer’s statement.

The purpose of the book is to provide the reader with a broad empirical and analytical overview of the first decade of post-communist transformation. During this decade, Åslund was economic advisor to the Russian and Ukrainian governments, and later to the President of Kyrgyzstan. As an advisor, he was one of the major advocates of radical reform. Åslund’s background is the book’s main strength, but also its main weakness. His insight and knowledge makes it interesting and challenging reading, whereas the analysis of the policies pursued, in several cases becomes too biased in favor of radical reform.

The book covers twenty-one former communist countries; Bulgaria, the Czech Republic, Hungary, Poland, Romania, Slovakia and the fifteen former Soviet Republics (including Estonia, Latvia and Lithuania). The empirical analysis is built around a dataset compiled mainly from the following three sources: EBRD, IMF, and UN ECE (United Nations, Economic Commission for Europe). The data covers the last years under communist rule and the first ten years of post-communist transformation. Naturally, the quality of the data can be challenged. However, Åslund is aware of the shortcomings and thoroughly discusses the issue, making adjustments where necessary. The empirical overview is comparative in its nature since the quality of the data set does not allow for a more rigorous econometric analysis. The strength of the empirical overview is its breadth in terms of themes and countries covered. It can to a large extent be read as the economic history of the first decade of post-communist economic transformation. As economic history, the empirical parts of the book are economic history as its best, written by an author with deep insight in the field and backed by statistical data.

To prepare the ground for the analytical overview, Åslund discusses what Soviet-type of communism actually meant, as well as its decline and fall. The preconditions of the countries in the study are systematically analyzed. Particular attention is paid to the development of markets communism actually meant, as well as its decline and fall. The preconditions of the countries in the study are systematically analyzed. Particular attention is paid to the development of markets.

The main hypothesis is that gradual reform, in terms of market liberalization, privatization and macroeconomic stabilization, has bred corruption and rent seeking, and hence that radical reform dominates gradual reform. In many of the countries that chose gradual reform or no reform at all, the rents grew so large that the rent seekers bought political power, impeding further reform in order to maximize their personal rents. These findings are far from non-controversial, challenging the commonly held view where privatization is seen as the main vehicle of rent seeking. However, the author manages to underpin his findings fairly well and to show that radical reform dominates gradual reform. En route to this conclusion the author has to debunk several “myths” of post-communist transformation such as the unprecedented collapse in output and the high social costs in terms of falling standard of living.

To analyze the fall in output, Åslund begins with the official data on output, then deducting the slump in production during the last years of communist rule, then adding the informal economy (which increased considerably during the first years of transformation), and then deducting worthless production or value detraction from the last communist GDP figures. The conclusion reached is that radical and some of the gradual reform countries in fact did not experience any contraction of output in the first years after communism, while war-torn and non-reforming countries experienced an output collapse. As an intellectual exercise it is interesting, but it is fairly speculative since it gives the author too many degrees of freedom. Hence, one can in many cases easily reach an opposite conclusion within the same framework. In addition, the data is still rather unreliable as the recent discussion of the impact of transfer pricing on Russian GDP shows. However, in Åslund’s defense, it should be said that he gives the reader a fair opportunity to disagree by being transparent when building his arguments.

In the discussion of the social consequences, Åslund shows that the post-communist economic reform advocated by Joseph Stiglitz among others, and gradual reform as advocated by Åslund, Jeffrey Sachs, and Andrei Shleifer among others, and gradual reform advocated by Joseph Stiglitz among others.

Throughout the book, Åslund builds a case challenging the view that more or less all countries going through post-communist transition have pursued the same policies, and that the different outcomes were due to different preconditions. The author argues that this was actually not the case, and that the governments intentionally chose different economic policies, leading to substantially different outcomes. The main theme of the book’s analytical part is that radical reformers were the most successful ones in creating market economy and democracy, and reducing rent seeking. However, in the discussion Åslund underestimates the importance of the above mentioned path dependency. It might well be the case that in several of the countries discussed, the prerequisites for example for radical reform were not fulfilled, hence restricting the set of feasible policies available to the policy makers at the eve of post-communist transformation. If this was the case, then several of the findings supporting radical reform could be questioned.

Åslund characterizes the post-communist transition as the struggle between capitalism and rent seeking in the public sector. His main argument is that the speed of reform is crucial. Furthermore, he argues that the speed (in many cases interpreted as radical reform) is actually more crucial than the quality of reform. To build his argument he analyzes three key elements of post-communist transformation: creation of markets and market liberalization, privatization, and macroeconomic stabilization. They are all positively correlated, both logically and empirically. Liberalization was necessary to create freedom of choice, but enterprise restructuring only started when the enterprises faced hard budget constraints, which in return required that macroeconomic stabilization had taken hold. It is worth noting that to be able to focus on speed, the author has to downplay the role of institutions and their quality, since they are not explicitly considered as one of the key elements of post-communism transformation. Something, which, given the last decades’ findings on the importance of institutions for economic growth and development, is quite troublesome and could easily be challenged.

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In the discussion of the social consequences, Åslund shows that the post-communist economic
transformation is not a social catastrophe, and that the social trauma is greatly exaggerated. The analysis covers many aspects of human development, such as life expectancy, infant mortality, health care in general, income differentiation and poverty, consumption, unemployment and labor market reform, social reforms and welfare, and education. One of the more interesting findings is that pensioners were better off in early transition in comparison to workers and peasants. However, the overall outcome of the analysis of the social aspects is highly dependent on the weight assigned to different aspects of standard of living and human development. Needless to say, slightly different weights would yield a different outcome.

Finally, having analyzed a number of different aspects of post-communism economic transformation, Åslund scrutinizes the role of the outside world, i.e. Western Europe, the U.S., IMF, the World Bank and the NGOs. This discussion is thought-provoking and original, and Åslund manages to challenge the myth of huge international financial flows and Western assistance. He shows that there was a significant outflow of government funds from the region during the first years of transition. This was due to the fact that the Western governments extracted more in debt service on debt accumulated during the communist-era, than they provided in support. Furthermore, the West mainly supported the Central European and Baltic countries, whereas the support to the other transforming countries was tardy and hesitant at its best. When it comes to the private sector’s role, Åslund demonstrates that once liberalization had taken place, there was a considerably inflow of funds from the private sector.

The virtue of the book, in addition to the number of countries and themes covered, is Åslund’s transparency, giving the reader an opportunity to disagree and to come up with counterarguments. However, the book suffers from being too biased in favor of radical reform as well as from the widespread tendency of thinking about economic transition in terms of pure models not recognizing the fact that all economic systems combine market, command and traditional elements. Nevertheless, Åslund’s book is a must for anyone interested in the transformation of the post-communism economies. Furthermore, it should be on the reading list for every course in transition economics, preferably accompanied by a book reaching opposite conclusions, such as “The New Russia: Transition Gone Awry”, edited by Lawrence R. Klein and Marshall Pomer.

ANDERS PAALZOW

SSE RIGA