BALANCE OF PAYMENTS CONSTRAINED ECONOMIC GROWTH IN THE BALTICS

Jorgen Drud Hansen

Professor
Vilnius University
Eurofaculty Vilnius Centre
Tel. (370 2) 5 2366291
e-mail Jorgen-Drud.Hansen@ef.vu.lt

Virmantas Kvedaras

Assistant Professor
Vilnius University
Eurofaculty Vilnius Centre
Tel. (370 2) 5 2366141
e-mail Virmantas.Kvedaras@ef.vu.lt

Abstract: *This paper examines, the prospects for economic growth in the three Baltic countries in a framework of a balance of payment constrained growth model. Based on an estimation of income elasticities of imports and assumptions about export growth, GDP growth rates are calculated consistent with balance of payment equilibrium or alternatively, consistent with a given growth rate of capital imports. The results show that the calculated rates of growth for Estonia and Lithuania are lower than the growth rates predicted from traditional supply side oriented growth models.*

1 Introduction

This paper looks at the prospects for economic growth in the Baltics from a balance of payments point of view. Most growth literature focuses on the development of the individual country's capacity to produce, i. e. the growth of the laborforce, the accumulation of physical and human capital and technological progress. However, as is stressed by Harrod (1939) and Domar (1946) in their seminal articles about economic growth, aggregate demand must also grow if the increased capacity to produce is to be utilized.

The balance of payment constrained growth model states that the rate of growth in an individual country is restrained by the balance of payment as the economy cannot grow faster than what is consistent with the balance of payment equilibrium, or at least consistent with a sustainable deficit in the balance of payments. This demand side growth theory appeared about fifty years ago in the writings of Kaldor, Myrdal and Verdoorn. The formalized version of the theory was presented in an article by Thirlwall (1979) and has since been the basis for several works, see, e. g. Thirlwall and Hussain (1982), Bairam (1988), McCombie and Thirlwall (1994) and Moreno-Brid (1999).

The basic idea is that export performance and import behaviour determine the rate of economic growth in a longer term. Increasing revenues of foreign exchange from exports of goods and services make up the only sustainable means to finance increasing import caused by the expansion of domestic activity. In its simplest version the trade balance equilibrium is assumed and imports are related to domestic income only. This leads to a growth equation, the so-called 'Harrods income multiplier' or 'Thirlwall's Law' (Thirlwall, 1979), where the rate growth of production consistent with the balance of payments equilibrium equals the rate of growth of exports divided by the income elasticity of import.

In more general versions of the growth theory, changes of terms of trade and capital flows have been taken into account in expanded versions of the growth equation, see, e. g. Thirlwall and Hussain (1982) and Hussain (1999).

Several empirical growth studies have applied this theoretical framework. The theory has been tested by comparing the predicted growth rates for a historical period with actual growth rates for developed as well as less developed countries, see e. g. McCombie and Thirlwall (1994).

Economic growth in the transition economies has been analyzed in a large number of papers during the last ten years (see, e. g., Havrylyshyn (2001) for a survey of several contributions). Most studies have analyzed the causes of recovery and growth in the transition economies by testing the 'growth equation' with economic growth as a dependent variable and a set of independent variables that might be relevant for economic growth. The list of variables includes not only traditional growth variables, such as capital accumulation and population growth, but also variables for 'degree' of reform transition to a market economy, such as privatisation, restructuring and quality of institutions.

Some conclusions arise from this large number of studies. There is almost a consensus about the conclusion that the 'traditional' growth determinants related to the growth of factor inputs have not played a significant role the growth process. There is also a consensus about the conclusion that monetary stability has had a strong beneficial effect on economic growth. Finally, many analyses also demonstrate that the quality of institutions and the credibility of the legal system are important for economic growth.

The potential for future long-term economic growth has also been dealt with in several studies. Most of these studies build on the mainstream of the recent supply oriented economic growth theory related to the development of the capacity of the economy. Future economic growth is predicted by growth equations with variables for growth of population (labor force), capital accumulation, school enrolment (human capital) and initial per capita income (see, e. g. Cohen, 1991 and Fisher et al., 1996). The last variable captures the potential for diffusion of technology from advanced to less advanced economies.

However, production capacity is an ill-defined concept, at least in transition economies, where large productivity gains still might be achieved from restructuring. Both technical and allocation efficiencies remain in these economies (see, e. g. Havrylyshyn, (2001) for a discussion of this issue).

The balance of payment constrained growth model assumes that productivity gains are induced by the growth of actual production through the process of learning by doing, and this effect is assumed to make production capacity a non-binding constraint for economic growth. The last assumption has been especially controversial, as it demands a strong learning by doing effect. Empirical analysis for developed economies points to a relatively low value of the elasticity of learning by doing with respect to cumulative output. Developed economies might therefore run short of capacity in case of strong growth of output, and the lack of production capacity will then be the binding constraint for growth. In transition economies growth is less likely to be constrained by capacity. Strong growth of demand in transition economies stimulates restructuring and triggers substantial productivity gains under a growth promoting institutional framework.

The purpose of this paper is to analyse the prospects for economic growth in the Baltic countries on the basis of the balance of payment constrained growth theory. It is not possible to test the balance of payment growth theory for the Baltic countries, as it demands time series for several decades for production, exports and imports. Such long time series are not available, as the Baltic countries first regained their independence as sovereign countries only about a decade ago. The changes of definitions in statistics in the 90's, the Russian crisis in 1998–99 and the restructuring process also complicate the analysis. However, the data allow us to estimate the import function. Using the estimation results together with assumptions about export performance allows us to calculate growth trajectories consistent with an unchanged position on the balance of payments.

The paper is organized as follows: Section 2 presents the basic balance of payments constrained growth model, where the effective constraint of growth is equilibrium on the balance of payment or an exogenous rate of growth of capital imports. Section 3 describes the data and presents the results of the estimations of the import function for each of the three Baltic countries. Section 4 presents the growth scenarios consistent with the balance of payment equilibrium, and the potential balance of payment constrained growth rates are compared with resource constrained growth rates calculated by the European Commission. Section 5 concludes and looks at some caveats of the analysis.

2 The Model

The balance of payment constrained growth model in its simplest version is based on the assumption that a current account deficit cannot be financed indefinitely and, hence in the long-term, the balance of payment equilibrium has to prevail. This section outlines a generalized version of the model similar to that of Thirlwall and Hussain (1982), allowing for a constrained current account deficit.

The model in this paper differs from the Thirlwall and Hussain version in two respects. Firstly, to allow for a long-term real appreciation in transition economies, the Balassa–Samuelson effect is included in the specification of the import function. Secondly, real import is assumed to depend on the structure of aggregate demand as the import function allows for different elasticities of real import with respect to domestic demand and export demand, respectively. Allowing for such disaggregation of demand seems, at least for the Baltic countries, to give a more satisfactory estimation of the import function compared with a traditional specification of import as a function of GDP.

The crucial assumption in the model for a developing country is not that current account on the balance of payments is in balance but that the deficit is constrained by a ceiling given by the maximum amount that can be financed through capital inflows. In a generalized version of the model by Thirlwall and Hussain (1982), capital inflow is therefore included in the model, i. e. the equation for balance of payment equilibrium is given by

$$X + C = (P^*E / P)M, \qquad (1)$$

where X stands for real exports, M for real imports, C real net capital inflow, P domestic price level, P^* the foreign price level of imports in foreign currency and E the exchange rate, i.e. the units of local currency per unit of foreign currency. The real exchange rate R is defined by

$$R = P^*E / P, \qquad (2)$$

where C is real net capital inflow, i. e. the current account deficit deflated by the domestic price level.

Differentiating (1) with respect to time gives

$$\theta x + (1-\theta)c = r + m, \qquad (3)$$

where θ measures the share of imports financed by exports ($\theta = X/MR$) and a lower letter case represents growth rates of the variables.

The dynamic import function is specified by (4):

$$m = -\beta(r + \sigma) + \gamma d + \eta x,$$
$$-\beta, \gamma, \eta, \sigma > 0, \qquad (4)$$

where d is the real rate of growth of domestic demand (private and public consumption plus private and public investments), $-\beta$ is the price elasticity of imports, and γ and η are elasticities of imports with respect to domestic demand and exports, respectively. The parameter σ specifies the Balassa–Samuelson effect connected with a higher rate of growth of productivity in the sector for tradeables in the Baltic countries compared with their trade partners.

The estimation of the export function has not been successful and hence the real rate of growth of export is assumed to be exogenously given. The rate of growth of real capital import is also assumed to be exogenously given by lending the possibilities abroad and inflow of foreign direct investments.

Given the simplifying assumptions used in (1) of a single variable representing the domestic price level P for output Y, export X, and domestic demand D, respectively, we have from the national accountancy Y = D – C, which corresponds to the dynamic equation:

$$y = s_D d - (s_D - 1)c, \qquad (5)$$

where s_D stands for the share of domestic demand in GDP.

Inserting (4) and (3) and substituting d with y by using (5) gives the growth equation (6) which specifies the real rate of growth of GDP y_b consistent with a given growth rate of the balance of payment deficit:

$$y_b = [s_D(\theta - \eta)x + (s_D(1-\theta) - \gamma(s_D-1))c -$$
$$-s_D(1-\bar{a})r + s_D\bar{a}\sigma] / \gamma \qquad (6)$$

Based on the estimated parameters of the import function and the assumptions about the export growth, the rate of change of real exchange rate, the Balassa–Samuelson effect, the growth rate of deficit and the shares of demand and deficit, the real rate of growth might be calculated from (6).

A benchmark case is calculated in the following based on the assumption that the change of the real exchange rate exactly chokes off the growth effect of the Balassa–Samuelson effect, i. e. the Baltic currencies appreciate in real terms exactly at the rate $r = \beta\sigma/(1-\beta)$. Inserting this assumption simplifies the growth equation to

$$y_b^* = [s_D(\theta - \eta)x + (s_D(1-\theta) -$$
$$-\gamma(s_D-1))c] / \gamma. \qquad (6a)$$

It should be noted that the variable θ might change in the longer run if the rate of growth of real capital imports is different from the rate of growth of real exports. It is obvious that θ tends to 0 (1) in the long run if c exceeds (falls below) the rate of growth of real exports.

In the special case where the rate of growth of real capital imports is equal to the rate of growth of exports, θ is constant. This case has also been examined by Thirlwall and Hussain (1982). They show that the growth rate of output in this case is equal to the growth rate in the model with balance of payment equilibrium.

Long run sustainability of the balance of payments deficit might depend on whether the balance of payments deficit is consistent with a long-run ratio of external debt to income. This question has been addressed by Morena-Brid (1999) in an analysis where the constraint of a constant long-term debt ratio is entered into the model by a restriction of capital inflow to be a constant fraction in income. In the longer term the share of debt to income will stabilize at a level equal to the share of deficit in income, divided by the rate of growth of income[1].

3 The data and the estimation of the import function

The data for estimation of the import function are drawn from the websites of the Departments of Statistics and Central Banks of Estonia, Latvia, and Lithuania[2]. The real exchange rate is calculated directly from these data as the ratio of implicit import and domestic demand deflators. There are only a few yearly observations, because the reliable data are mainly available from the year 1995. Therefore we base our estimates on 33 quarterly 1995:1–2003:1 period observations.

It is the long run elasticities of imports, which are relevant for the balance of payments constrained growth model. As will be shown later, some variables are integrated and some co-integrated, and from an the econometric point of view the import equation (4) formulated for percentage changes in variables is therefore not appropriate to describe the long run relationship. In the case of integrated non-stationary time series, the co-integration property describing the statistical behaviour of economic time series illustrates the long run or equilibrium relationship. Therefore we apply the co-integration analysis in order to get the long run elasticity, and instead of (4) the following version of the import function is estimated:

$$\log M_t = -\beta \log(R_t) - \beta\sigma t + \gamma \log D_t + \\ + \eta \log X_t + s_t + u_t. \qquad (7)$$

Here all capital letters denote the levels of the respective variables; productivity is assumed to grow according to the trend ($\Sigma_t = e^{\sigma t}$); s_t denotes another deterministic part of the equation that comprises a constant and the seasonal dummies; u_t is the respective residual that should be stationary, if co-integration holds.

The relatively few observations we have do not allow us to apply the system methods, e. g. Johansen (1988), to test for co-integration. Therefore we employ the single equation method to test for co-integration and, particularly, the Engle-Granger two-stage procedure (Engle and Granger, 1987) is used. In the first stage the equation (7) is estimated using the

[1] Total debt D at time T equals the accumulated deficits, i. e. $D = \int_0^T \lambda Y_0 e^{yt} dt = \lambda Y_0 (e^{yT} - 1)/y$, where λ stands for the ratio of deficit in income, y is the rate of growth of income and Y_0 income at time 0. Hence, $D/Y \to \lambda/y$ for $T \to \infty$.

[2] See www.stat.ee and www.eestipank.info/frontpage/en/, www.bank.lv and www.csb.lv/avidus.cfm, and www.lbank.lt and www.std.lt for Estonian, Latvian and Lithuanian data respectively.

ordinary least squares method and in the second step the stationarity of the estimated residuals u_t is tested.

For variables to be co-integrated, however, the precondition of the same order of integration should hold. Therefore, we first analyse the integration order of variables by applying the augmented Dickey-Fuller (ADF) test[3]. The ADF equation (8) is estimated:

$$\Delta^d Z_t = \delta_0 + \delta_1 t + \gamma \Delta^{d-1} Z_{t-1} + \Sigma_{j=1}^{k} \eta_j \Delta^d Z_{t-j} +$$

$$+ \varepsilon_t, \varepsilon_t \sim WN(0, \sigma_\varepsilon^2), \quad (8)$$

where Z_t denotes some variable under investigation and d = 1, 2, is the tested order of integration under H_0. Using the critical values of the Dickey–Fuller distribution[4], the null H_0: $\gamma = 0$ against the alternative $H_1: \gamma < 1$ is tested. If the null cannot be rejected, we treat a variable as integrated at least of order d and by increasing d we test whether it has more unit roots. When for some d the null is rejected, we treat the variable as integrated of the order d-1. A constant and a trend term are included into the initial test regression. If they are not significant, we drop them from the test equation and repeat the procedure. The selection of the lag augmentation order k is based on the Schwarz information criterion[5] (SIC). Test results are presented in Annex A Table A.1.

All Estonian and Lithuanian variables are integrated of order one and therefore could be co-integrated. In the case of Latvia, exports and domestic demand are trend stationary and imports and real exchange rate are integrated of order one. Nevertheless, (7) still can be a co-integrating regression, if the import and the real exchange rate variables were co-integrated. This allows us to use the co-integration analysis and to test whether residual u_t from the potential co-integrating regression (7) is stationary.

The estimated empirical counterparts of the import function (7) for the Baltic countries[6] are as follows:

Estonia

$$\log M_t = -0.27\log R_t - 0.007t + 0.82\log D_t + 0.80\log X_t + s_t + u_t, \quad (9a)$$

(0.09 (0.001) (0.05) (0.03)

$$s_t = -6.08 + 0.05 s_{1t} - 0.03 s_{2t}$$

(0.52) (0.01) (0.01)

$R^2 = 0.9975$, DW = 2.32

Latvia

$$\log M_t = -0.44\log R_t - 0.019t + 1.51\log D_t + 0.74\log X_t + s_t + u_t, \quad (9b)$$

(0.13) (0.002) (0.13) (0.07)

$$s_t = -8.53 - 0.04 s_{2t}$$

(0.92) (0.01)

$R^2 = 0.9876$, DW = 1.05

Lithuania

$$\log M_t = -0.26\log R_t - 0.004t + 0.72\log D_t + 0.68\log X_t + s_t + u_t, \quad (9c)$$

(0.08) (0.001) (0.09) (0.05)

$$s_t = -3.72 - 0.11 s_{3t}$$

(0.81) (0.01)

$R^2 = 0.9856$, DW = 1.52

R^2 stands for the coefficient of determination and DW denotes the Durbin–Watson statistics. In all the models, only statistically sig-

[3] To test for stationarity, we use seasonally adjusted data. To remove seasonality, the Census X-12 method is used as implemented in EViews 4.1.

[4] See Maddala and Kim (1998, p. 64).

[5] the possible maximum order is chosen according to $k_{max} = int(12(T/100)^{1/4})$.

[6] Standard errors are presented in brackets.

nificant seasonal terms are included in the deterministic part s_t.

The null-hypothesis of the non stationarity of the estimated u_t (H_0: $\gamma = 0$ with H_1: $\gamma < 1$) is tested using the augmented Dickey–Fuller (ADF) equation (8) without a constant and a trend by applying the above described methodology. The only difference is that the appropriate critical values for the unit root test should be used (see MacKinnon, 1991), because co-integration parameters are estimated rather than known in advance. Test results are presented in Annex A Table A.2.

The null hypothesis of non- co-integration can be rejected even at a 1% significance level for Estonia and Lithuania. In the case of Latvia, (7) cannot be treated as a co-integrating regression even at a 10% significance level, therefore the related BOP constrained growth rates for Latvia presented in the next section should be treated with caution.

4 Growth arithmetic

The estimated import functions allow for making simple growth predictions on assumptions about the real exchange rate, Balassa–Samuelson effect, inflow of foreign direct investments, and exports growth. The real rate of GDP growth consistent with an assumed sustainable balance of payment deficit is specified by equation (6). The rates of growth calculated in Table 1 are based on the estimation results presented in Section 3.

A 'baseline' calculation has been made by using the following assumptions:

- The long-term growth of world income causes a 10% yearly real rate of growth of exports for each of the three Baltic countries.
- The appreciation of the real exchange rate neutralizes the Balassa–Samuelson effect, i. e. $r = \beta\sigma/(1-\beta)$, which reduces the respective BOP constraint (6) to (6a).
- The real net capital inflow is growing by 5% per year.
- The actual value for 2002 of the domestic demand share in GDP for each of the three Baltic countries is inserted as the parameter θ in the growth equation (6a).

The assumed real rate of growth of exports in the baseline calculation is by and large at level with the average figures for the real rate of growth of exports during the last decade. The assumptions about the real appreciation and the growth of capital inflow are purely arbitrary.

The results for the baseline scenario are presented in Column 1 of Table 1. The calculated growth rates differ among the three countries, with the highest growth rate being for Lithuania and the lowest for Latvia. However, given the limited set of observations for the estimations, the uniform baseline assumptions for all three countries and the problems of getting reliable results for Latvia, the importance of these differences of calculated growth rates should not be exaggerated. Probably more important is the relatively low level of the calculated economic growth for the Baltic countries. If the present EU is expected to grow in real terms by 2 to 3 percent per year, the Baltic countries will not catch up or it will at least be a very protracted process if the baseline scenario will be realized.

The level of the growth rates is lower than the recent growth predictions based on supply oriented growth models. In a neoclassical type growth model made by Commission (2001), the yearly rate of growth for the Central and Eastern European countries after membership in the EU is predicted to be in the interval of 4.6 to 6.1 percent.

Table 1. Contingent balance of payment constrained growth rates

	The baseline	*5% growth of X*	*15% growth of X*	*0% growth of C*	*10% growth of C*	*1% appreciation of R compared to Balassa Samuelson effect*	*1% depreciation of R compared to Balassa-Samuelson effect*
Estonia	2.5	1.8	3.1	1.3	3.6	1.1	3.8
Latvia	2.0	1.4	2.6	1.2	2.8	1.3	2.7
Lithuania	4.3	2.6	5.9	3.3	5.3	2.8	5.8

Note. The rates of growth are calculated from equation (6a) by inserting income elasticities of imports reported in equations (9a)–(9c) and the assumptions presented in the text to this table. The underlined growth rates are based on the estimated income elasticities, which that are not reliable.

The calculated growth rates are sensitive to inserted assumptions. In order to illustrate the sensitivity of the results, Table 1 reports the results of calculated rates of growth for alternative cases of growth of exports and real exchange rate changes. The results of these simulations illustrate that the calculated rate of growth is relatively insensitive, with a possible exception of the Lithuanian case, to the assumed export growth but relatively sensitive to changes in real exchange rates. The reason for a small impact on the real rate of growth with respect to export growth is the estimated to be a relatively high elasticity of imports with respect to export and domestic demand. In other words, the export boom will trigger a large increase of imports and hence only allow for a modest increase of economic activity.

5 Concluding remarks

Several analyses have dealt with the growth prospects for the Central and Eastern European countries. Most of this literature leans toward supply side oriented models, where growth is predicted from a model based on a macro production function and assumptions about the development of resources, technology and institutions. This paper presents a model for the Baltic countries where economic growth is demand-driven and constrained by the problems or concerns about the balance of payments position.

A full estimation of this balance of payments constrained growth model has not been possible because of the short period of experience for the Baltic countries. However, the estimated import function for each of the three Baltic countries allows for simple calculations of growth rates based on specific assumptions by others about the growth of exports. The predicted growth rates in a baseline scenario with a constant real exchange rate are low and less than predictions from supply-side neoclassical growth models. However, the growth rates seem quite sensitive to the real exchange rate. If further research confirms these results, the faster growth and the convergence in living standards with the present EU member countries might then depend on a gradual real depreciation of the Baltic currencies.

REFERENCES

1. Bairam E. Balance of Payments, the Harrod Foreign Trade Multiplier and Economic Growth: the European and North American Experience, 1970–85 // *Applied Economics*. 1988 December.

2. Cohen D. "The Solvency of Eastern Europe" in *European Economy* "The Path of Reform in Central and Eastern Europe, 1991, Special edition No. 2, Commission of the European Communities . Bruxelles.

3. Domar E. D. "Capital Expansion, Rate of Growth, and Employment"// Econometrica, 1946, Vol. 14, 137–147.

4. EU Commission. "The Economic Impact of Enlargement" // *Enlargement Papers No 4*. 2001. Bruxelles.

5. Engle R. F. and Granger C. W. J. "Cointegration and error-correction: Representations, estimation, and testing"// *Econometrica*. 1987. Vol. 55. P. 251–76.

6. Fisher S., R. Sahay, and C. A. Vegh "Stabilization and growth in transition economies: The early experience" // *Journal of Economic Perspectives*. 1996. Vol. 10, p. 45–66.

7. Harrod R. F. "An Essay in Dynamic Theory"// *The Economic Journal*, Vol. XLIX March 1939, 14–33.

8. Havrylyshyn O. "Recovery and Growth in Transition: A Decade of Evidence" // *IMF Staff Papers*. 2001. Vol. 48, Special Issue. P. 53–87.

9. Hussain M. N. "The Balance-of-payment constraint and growth rate differences among african and East Asian economies" // *African Development Review*, 1999, Vol. 11, 103–137. African Development Bank.

10. Johansen S. "Statistical Analysis of Cointegration Vectors" // *Journal of Economic Dynamics and Control*. 1988. Vol. 12. P. 231–254.

11. Maddala G. S. and In-Moo Kim *Unit Roots, Cointegration and Structural Change*. Cambridge: Cambridge University Press, 1998.

12. MacKinnon J. G. "Critical Values for Cointegration Tests". Chapter 13 in R. F. Engle and C. W. J. Granger (eds.) "*Long-run Economic Relationships: Readings in Cointegration*". Oxford: Oxford University Press, 1991. P. 267–276.

13. McCombie J. S. L & Thirwall A. P. *Economic Growth and the Balance of Payment Constraint*. St Martin's Press, 1994.

14. Moreno-Brid J. C. "On capital flows and the balance-of-payments constrained growth model" // *Journal of Post Keynesian Economics*. Winter 1998–99. Vol. 21 (2). P. 283–298.

15. Thirlwall A. P. "The Balance of Payments Constraints as an Explanation of International Growth Rates Differences" // Banca Nazionale del Lavoro Quaterly Review. 1979. Vol. 128. P. 45–53.

16. Thirlwall A. P. and Hussain N. N. "The balance of payments constraint, capital flows and growth rates differences between developing countries" // *Oxford Economic Papers*. 1982. Vol. 34. P. 498–509.

Annex A

Table A.1. Unit root test results

Country	*Variables in logarithms (seasonally adjusted***	*Levels (H_0: d=1)*			*First differences (H_0: d=2)*		
		ADF	*Augmentation*	*Test form*	*ADF*	*Augmentation*	*Test form*
Estonia	X	–2.14	1	c	–3.76*	0	b
	Y	–2.38	1	c	–4.50*	0	b
	M	–3.06	1	c	–3.46*	1	b
	D	–1.63	0	c	–5.68*	0	b
	R	–2.50	0	c	–755*	0	b
Latvia	X	–3.75*	2	c			
	Y	–2.14	0	c	–5.63*	0	b
	M	–2.49	0	c	–6.20*	0	b
	D	–3.86*	0	c			
	R	–3.05	0	c	–7.18*	0	a
Lithuania	X	–2.15	3	c	–2.33*	1	a
	Y	–2.31	0	c	–7.31*	0	b
	M	–1.85	0	c	–5.60*	0	b
	D	–2.37	0	c	–6.75*	1	b
	R	–3.01	0	c	–5.77*	0	c

* – The null hypotheses of the presence of a dth unit root is rejected at the 5% significance level.

a – without constant and trend; b – with constant; c – with constant and trend.

Table A.2. ADF test for unit root in cointegration regression residual u_t

Country	*Variable*	$H_0: d=1$ $H_1: d=0$		
		ADF	*Augmentation*	*Test form*
Estonia	u_t	-5.76*	0	a
Latvia	u_t	-3.28	0	a
Lithuania	u_t	-5.68*	1	a

* – The null hypotheses of the presence of a dth unit root is rejected at the 5% significance level.
a – without constant and trend.

MOKĖJIMŲ BALANSO APRIBOJIMO POVEIKIS BALTIJOS ŠALIŲ EKONOMIKOS AUGIMUI

Jorgen Drud Hansen, Virmantas Kvedaras

Santrauka

Straipsnyje nagrinėjama mokėjimų balanso apribojimo įtaka ekonomikos augimui Estijoje, Latvijoje ir Lietuvoje. Darant prielaidas apie šių šalių eksporto augimą ir užsienio prekybos deficito lygį bei remiantis straipsnyje įvertintomis šių šalių importo funkcijomis yra apskaičiuojami ekonomikos augimo tempai, suderinami su mokėjimo balanso apribojimu. Tokiu būdu įvertinti ekonomikos kilimo tempai yra mažesni nei Europos Komisijos pasiūlos pusės modeliais apskaičiuoti potencialūs augimo tempai. Todėl tikėtina, kad pereinamosios ekonomikos laikotarpiu Baltijos šalyse ekonomikos augimą labiau ribos paklausos, o ne pasiūlos veiksnys. Atlikta analizė taip pat atskleidžia didelį importo elastingumą vidaus paklausos ir eksporto rodikliams. Todėl norint užtikrinti ilgalaikį spartų Baltijos šalių ekonomikos augimą ir gyvenimo lygio artėjimą prie ES lygio, be didelio paklausos augimo, būtina, kad realaus valiutos kurso kilimas nekompensuotų bendrojo šalies produktyvumo didėjimo.

Įteikta 2004 m. sausio mėn.