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ARTICLE



# The economic output growth of Baltic countries in 1913–1938: a quantitative cross-country comparison

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## ABSTRACT

This article surveys and appends the available quantitative research on the interwar economic growth of Baltic countries to compare gross domestic product (GDP) (in 1990 Geary–Khamis dollars) growth in Estonia, Finland, Latvia, and Lithuania between 1913 and 1938 in a broad international context. Finland's GDP per capita recovered to the 1913 level in 1923, in Estonia recovery was complete by 1922, in Lithuania by 1924, and in Latvia by 1924–1925. By high-end estimates, the growth performance of Estonia, Latvia, and Lithuania was not weaker than Finland's. By 1938, the GDP per capita of all Baltic countries exceeded the level of the Soviet Union with the possible exception for Lithuania.

**KEYWORDS** Economic growth; GDP per capita; Estonia; Finland; Latvia; Lithuania; interwar period; Colin Clark

## Introduction

Our research question is as follows: how much did the economic output of the Baltic countries change during the interwar independence period? Which of the three countries – Estonia, Latvia, or Lithuania – grew faster in terms of the total size of their economies? Importantly, we will apply the contemporary standard measure of the total output, gross domestic product (GDP), calculated in constant prices at currency purchasing power parity (PPP), allowing us to rank the Baltic countries in a broad international comparative context. In 1938, British–Australian economic historian Colin Clark (1905–1989) published a paper entitled ‘International Comparison of National Income’ (Clark 1938), which was praised as a breakthrough in rigorous cross-time and cross-country comparable macroeconomic measurement (Maddison 2004). Clark was the first to estimate the economic ranking of the interwar Baltic countries in a broad international context using PPP data. Approaching the 80th anniversary of this landmark contribution, this article attempts to update and extend it, corresponding to contemporary situation in macroeconomic measurement.

The standard source reflecting this situation is the famous Angus Maddison ‘Historical Statistics of the World Economy: 1–2008 AD’ data collection (Maddison 2010), which was extended until 2010 in its 2013 update (The Maddison Project 2013; Bolt and van Zanden 2014). It contains cross-country and cross-time comparable GDP data for most countries in the famous Clark list (see Table 1). Baltic

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**Table 1.** National income per capita (in  $\text{\$}_{C1929}$ ) of 27 countries between 1925 and 1934.

Rank	Country	National income per capita (in $\text{\$}_{C1929}$ )	Rank	Country	National income per capita (in $\text{\$}_{C1929}$ )
1	USA	533	15	Spain	226
2	Canada	500	16	Norway	216
3	UK	477	17	Czechoslovakia	193
4	Switzerland	481	18	Hungary	177
5	New Zealand	385	19	Greece	145
6	Australia	381	20	Finland	138
7	Netherlands	333	21	Italy	131
8	Ireland	309	22	Latvia	131
9	France	304	23	Estonia	127
10	Sweden	300	24	Poland	122
11	Denmark	285	25	Romania	104
12	Germany	271	26	Bulgaria	87
13	Belgium	253	27	Lithuania	80
14	Austria	242			

Source: Clark (1938). Clark provides only the national income value per head of the occupied population. National income per capita is calculated by the author.

countries are an exception: their data series starts in the Maddison Project dataset only from 1990. We will attempt to fill the gap for the interwar period, using primary data, cross-country comparisons, by aggregating or extrapolating existing estimates, including those formerly published by the author. For this task, the primary data are the pioneering calculations by economists from the Baltic countries during the interwar period, Dresdner Bank (1930) estimates, and those by Clark himself. They are, however, directly incomparable with the Maddison Project data and need considerable recycling to become useful to answer the research question of this article.

'In recent years, the quest for scientific understanding has become to be equated with the quest for a causal understanding of the world across the social sciences' (Gerring 2012, 108). Probably because of this equation, some researchers associate scientific novelty only with profound explanations of possible reasons for different growth patterns among national economies and the predictions of future trends. This assumption, however, may only be valid for research on the economic history of the Baltic states during postcommunist period, where we can draw on the rich supply of ready-made cross-time and cross-country comparable statistical data in standard sources like Eurostat or World Development Indicators (World Bank 2017). With no cross-country and cross-time comparable data, the search for explanations of causes in the overall growth patterns of Baltic economies during the interwar era may be premature: first, the patterns themselves should be identified.

Arguably, cross-time and cross-country comparable total output and its growth data are not only of academic interest. 'One of the beliefs that helped sustain the peoples of the three Baltic states reincorporated into the Soviet Union at the end of the Second World War was that they had enjoyed a prewar living standard comparable to that of the Finns' (Kirby 1995, 379). But was this really the case? After the restoration of independence, interest in the economic achievements of the interwar period remained strong in all three Baltic countries, shifting to the cross-time comparison of the interwar and restored independence periods (see Seleckis 2000; Krastiņš

2001; Zile 2001; Valge 2008; Norkus 2014). Before comparing the two periods, we need to establish facts about growth performance during each of them. This article is limited in scope to fact finding about first period.

Such facts are also very much needed for the estimation of the economic damage inflicted upon the Baltic states by Soviet occupation and the establishment of the inferior state socialist economic system (see Mertelsmann 2006, 2012; Prikulis 2012; Satkauskas 2003). Did the annexation of Baltic countries in 1940 'save' them from economic stagnation after separation from the Russian empire (as Soviet historiography claimed and some post-Soviet Russian outlets would prefer to maintain), or did it just interrupt the growth trajectory, whose gradient was steeper than in the Soviet Union itself? This article contributes to the discussion of these topical issues.

Estonian historians Jaak Valge (2003, 2006) and Martin Klesment (2008) were the first researchers who attempted to derive estimates of the GDP of Estonia in presently used cross-time and cross-country comparable units (Geary–Khamis 1990 international dollars, hereafter  $\$_{GK1990}$ )<sup>1</sup> from interwar calculations by Juhan Janusson (1932, 1937) and Arvo Horm (1940). Their estimates cover the period 1923–1938. In 2010, Joan R. Roses and Nikolaus Wolf (2010, 187–90) published estimates of the GDP per capita of Latvia in  $\$_{GK1990}$  for 1922, 1929, and 1938 and provided alternative estimates about Estonia in the same years. The first attempts to do the same for Lithuania were made by Gediminas Vaskela (2014) and Zenonas Norkus (2014, 2015, 2016, 2018), who recycled the calculations by Albinas Rimka (1926) and F. Šipica (Reichskommissar für das Ostland 1942, 120). They did not, however, take into consideration the work of Roses and Wolf (2010). In this article, we provide the update to our former work, rectifying this and other omissions. For the first time, we also attempt to provide an encompassing picture for all three countries, covering the entire interwar period. To do this, we extend retrospectively available intervals by output estimates for 1913 to get benchmarks for estimates of the overall economic progress made during the interwar independence period and offer suggestions for criticism in future research. We will also propose solutions for divergent estimates of the GDP per capita in 1938, which may be pragmatically acceptable under the current state of research of the economic performance of particular countries.

After a conceptual and methodological introduction, we proceed with the estimation of the total output of Lithuania, which was the least known of the three countries in international research and the area where we claim our original contribution. The survey and critical discussion of the calculations and estimates of the total output of Estonia and Latvia follows in third section. The fourth section provides a summary comparison of all three countries, including a picture of the economic progress of Baltic countries placing them in a broader international context. Due to limitations of space, we leave explanations of patterns in the variation of the rates of economic growth for further research. Finally, we conclude with the update of Clark's (1938) famous ranking of selected countries according to their output per capita.

In our comparisons, we also include the output performance of Finland. During the interwar period, Western observers and travelers perceived and described Finland as one of the Baltic states because it also emerged from Russian domination along with the other three countries under similar circumstances (Gibbons 1939; Graham 1927; Polson Newman 1930). In popular discourse, it is commonly perceived in post-Soviet Baltic countries that Finland is the kind of country they could have been, had they not been taken over by the USSR, assessing the growth performance of their countries in

terms of the progress in catching up or convergence with the Finland as a typically advanced country at the frontier of technological achievement. The economic history of Finland is well researched. Therefore, the findings of macroeconomic measurement of Finland's growth provide useful benchmarks for the estimation of the output of other Baltic countries in cross-time and cross-country comparable measurement units.

The choice of the base year is a decisive factor in statistical comparisons. For 1918–1921, there are no pertinent sources or they are too fragmentary (for 1939–1940 in part too). By 1918, Baltic economies were heavily damaged by the war. Even if there were requisite primary statistical evidence for 1918, its selection as the base year would not provide a realistic picture of the progress achieved by Baltic countries after their separation from Russia and facing the challenges of integration into the world economy. Economic historians use 1913 as the base year for the statistical analysis of the economic dynamics of the interwar period (see e.g. Aldcroft 2006; Kaser and Radice 1985; Turnock 1997). There are no compelling reasons to deviate from this convention to estimate economic progress during interwar period in the case of the Baltic countries. The measure of economic progress during the interwar independence period is how much their economies grew after recovering from the devastation of the war in comparison to the highest level achieved under foreign rule on the eve of World War I. Therefore, we selected the period 1913–1938.

### **Methodological challenges and tools of cross-country and cross-time comparable output measurement**

Although criticized in this role (see, for example, Coyle 2014; Fioramonti 2013; Philippsen 2015), GDP remains the standard macromasure of economic output. Quite simply, GDP is the sum of the gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. Equivalently, GDP can be defined as the total of incomes (from the viewpoint of distribution) or as the total of expenditures (from the viewpoint of consumption). Calculated in current prices, GDP measures nominal output. To take into account the depreciation (inflation) or appreciation (deflation) of a unit of measurement (money), the value of output should be calculated at constant prices, selecting a base year for calculation of the real output. This is important in calculating the GDP of the interwar Baltic countries because two of them (Estonia in 1933 and Latvia in 1936) devalued their currencies, while Finland did this in 1931. Real output data are cross-temporally comparable, while the cross-temporal comparison of output at current prices makes no sense.

Importantly, GDP is only one of the set of interrelated macroeconomic indicators and indexes that constitute the encompassing system of standard calculation conventions called the system of national accounts (SNA). Related measures of total output are gross national income (GNI) and net national income (NNI). GNI is the monetary value of output produced by enterprises owned by a country's citizens. Therefore, the GDP of countries with significant foreign capital investments is larger than GNI, while part of the GNI of rich countries' exporting capital is created abroad. GNI may, however, also be greater than GDP in poor countries receiving large remittances from emigrants employed abroad. To calculate the NNI, the value of fixed capital consumption (depreciation) should be deducted from the GNI.

To derive cross-country comparable output measures, the value of the output should be calculated in the same currency, which in the contemporary world for all practical purposes is US dollars (US\$). The simplest way to do this is to convert the GDP value calculated in the local currency into US\$ at the foreign currency exchange rate. A more sophisticated cross-country comparison procedure takes into account the difference in the price levels between countries, the purchasing power of currencies. Rich countries are more expensive than poor ones, so GDP per capita calculated at the PPP of a poor country is larger than its GDP calculated at the market exchange rate of the numeraire currency (in this case, US\$).<sup>2</sup>

The pioneer of output measurement using PPP was British–Australian economic historian Clark, who published his landmark calculations of the national income of 28 countries in 1938. Clark used 1929 as the benchmark year and the United States as the numeraire country. So following contemporary usage, his monetary measurement can be designated as ‘1929 international Clark’s \$’ ( $\$_{C1929}$ ). In his famous publication, Clark provided mean annual national income figures per worker for 1925–1934 period. In the [Table 1](#), we recalculated them to the per capita values, dividing Clark’s 1925–1934 national income annual mean totals by populations as of 1930, provided by Maddison (2010).<sup>3</sup>

For many decades, Clark’s (1938) figures served as established wisdom about international economic standing of Baltic countries. About many countries, they were superseded by the estimations of the influential Paul Bairoch (1976). Bairoch, however, collapsed all three Baltic countries into one comparison unit. Therefore, they are of no use for our research question. Clark’s 1938 estimates (but not his subsequent book Clark 1951 [1940]; see below) are of limited usefulness too. Providing only the national income annual means for the 10-year period 1925–1934, his estimates allow for cross-country comparisons to establish an international ranking of Baltic countries but are not helpful for the assessment of their economic progress. Meanwhile, Clark’s pioneering research was methodologically outdated by the later research (see Maddison 2004).

The situation changed in 2010, when Joan Roses and Nikolaus Wolf (2010, 187–90) published their estimates for the GDP per capita of Estonia and Latvia in  $\$_{GK1990}$  for 1922, 1929, and 1938, together with their average annual growth rates in 1920–1929 and 1929–1938. For Estonia, they drew upon the work of Estonian historian Valge (2003), revising and extending the period he studied (see below). For Latvia, they presented no information about their sources and calculation methods.<sup>4</sup> Nevertheless, as they were published in the authoritative *The Cambridge Economic History of Modern Europe*, they may deem a new international standard in the macroeconomic measurement of output and growth performance for Estonia and Latvia. This contribution, however, does not provide any estimates for Lithuania. Therefore, our efforts will concentrate on this country, surveying, critically discussing, and updating the calculations and estimates of the total output of interwar Lithuania in the next section. In section “The growth performance of Estonia and Latvia in 1913–1938”, we will put the estimates of Roses and Wolf into context for Estonia and Latvia, who also provide no information about their Baltic sources except Valge (2003).<sup>5</sup>

## The growth performance of Lithuania in 1913–1938

In Clark's (1938) famous ranking (see Table 1), Lithuania with 80  $\$_{C1929}$  per capita (or 207  $\$_{C1929}$  per employed person) was the poorest country in interwar Europe with the possible exceptions of Albania and Yugoslavia, which were not covered by his research because of the lack of primary statistical information. Clark's estimate refers to the average value of Lithuania's national income per capita in 1924–1928. Clark derived this from Dresdner Bank's data from 1930 about the total national income of Lithuania in 1928 (700 million Reichsmark (RM) or \$166 million at gold parity), and the estimate of Lithuania's total national income in 1924 (\$126 million), published in Fisk (1930, 23). Clark added indirect taxes (\$13 million) to the mean of the two aforementioned national income figures (i.e. \$146 million). Then he increased the sum (\$159 million, or 1590 million in the local currency Litas, at gold parity) to 190 million  $\$_{C1990}$  to account for the difference in price levels between Lithuania and the United States. The per capita values are derived by dividing this figure by the estimates of the total and the employed population of Lithuania in 1930 (Clark 1938, 64).

Unlike for Estonia and Latvia, Clark provided no additional information of value about Lithuania in his magisterial work (Clark [1940] 1951). He presented here the estimates of the national income of Lithuania for 1913 and 1924, but they are misleading or useless (Clark [1940] 1951, 161). For 1913, he cites Dresdner Bank (1930) estimate for the national income of Lithuania in 1913 (600 million RM). According to the same source, this amounts to 235 RM on a per capita basis. Instead of using Dresdner Bank's per capita estimate, however, he claims that Lithuania's national income per capita was 300 RM. This implies that population of Lithuania (using its 1930 borders) in 1913 was only 2 million, which contradicts all available sources (Vaitekūnas 2006, 119; Gosudarstvennyi komitet SSSR po statistike 1987, 374). These sources agree with or are close to Dresdner Bank's estimate (2.55 million). For 1924, Clark uses rounded Lithuania's national income data from Fisk (1930, 23): a total of 1270 million Litas and 580 Litas per capita. This time these calculations were converted to international units not for 1929, but at 1939 PPP ( $\$_{C1939}$ ). According to Clark's explanation, the estimates in local currency are 'converted at current exchange rate and then adjusted according to the change in retail prices in USA between 1939 and the year in question' (Clark [1940] 1951, 161).

This procedure leads Clark to the conclusion that in 1913, the national income of Lithuania was 95  $\$_{C1939}$ , but only 48  $\$_{C1939}$  in 1924, far below the pre-World War I level. This claim contradicts the qualitative judgments of contemporary observers and Lithuanian historians (Krikščiūnas 1938, 15; Vaskela 1998, 241) that by 1924 the Lithuanian economy had recovered to its prewar level. Clark most probably went astray because he ignored Lithuania's decision not to devalue its currency (unique among European countries) in the wake of the worldwide economic crisis of 1929–1933. Consequently, from 1934, the official exchange rate was 5.91 Litas to \$1, while for the period 1922–1933 it was 10 Litas to \$1. Therefore, a quick fix for Clark's mistake may be to multiply his 48  $\$_{C1939}$  for 1924 by a factor of 10/5.91, arriving at 81  $\$_{C1939}$ . Assuming that Dresdner Bank (1930) original estimate of Lithuania's pre-World War I national income per capita (235 RM) was more accurate than Clark's 300 RM, and correcting his estimate on this basis in  $\$_{C1939}$  by a factor of 235/300, we arrive at 74  $\$_{C1939}$  per capita output for Lithuania in 1913. It is close to 81  $\$_{C1939}$  for 1924 and thus

agrees with the consensus view of 1924 as the year the Lithuanian economy recovered.

Clark's work, however, provides no further help for estimating the extent of economic growth of Lithuania during the independence years. The same applies to Dresdner Bank data because it only covers two data points (1913 and 1928) and at current prices. Together they only help to establish the ranking order by the end of the first decade of independence. Thus, in 1928, the national income of Lithuania was 304 RM per capita, around 77% of Latvia's (397 RM) and Estonia's (395 RM) level.<sup>6</sup> This Dresdner Bank (1930) view of the output per capita parity between Latvia and Estonia corresponds very closely to most recent estimates by Roses and Wolf (2010, 190), who claim 2802 \$<sub>GK1990</sub> for Estonia and 2798 \$<sub>GK1990</sub> for Latvia in 1929. If the Dresdner Bank estimates correctly reflect the disparity between Lithuania on the one hand and Estonia on the other, then Lithuania's GDP per capita in 1928–1929 was 2156 \$<sub>GK1990</sub>.

Comparing this estimate with the available Lithuanian research (published mainly in the vernacular), it can only be described as overly optimistic. The real author of the estimate of Lithuania's national income in 1924, circulated by Fisk and used by Clark, was Albinas Rimka (1886–1944). Rimka completed this work in preparation for the job of Minister of Finance in the center-left coalition government of Lithuania, which briefly ruled the country from June to December 1926 before being ousted by the authoritarian coup. Rimka's (1926) estimate that Lithuania's national income was 1266,900 Litas (582 Litas per capita) in 1924 became quasi-canonical after it was endorsed in the synoptic history of the industrial development of Lithuania in the nineteenth and first half of the twentieth century, coauthored by a group of researchers led by Director of the Institute of Economics of the Lithuanian Academy of Sciences Kazimieras Meškauskas (Meškauskas, et al. 1976). These researchers also used calculations from the Central Statistical Bureau published by German administration of the *Reichskommissariat Ostland* (Reichskommissar für das Ostland 1942, 120). According to these results, the national income of Lithuania in 1938 was 1165.9 million Litas (482 per capita), and in 1939, it was 1259.1 million Litas (515 per capita) at current prices. Recalculating in constant 1924 prices, Meškauskas derived 2460.0 million Litas (1017 per capita) for 1938 and 2499.7 million Litas (1023 per capita) for

**Table 2.** National income of Lithuania and its structure in 1924, 1938, and 1939.

Economic branches	1924		1938		1939	
	Litas	%	Litas	%	Litas	%
Agriculture	782.5 m	61.76	539.3 m	46.27	577.9 m	45.90
Forestry	6.2 m	0.50	55.3 m	4.70	55.6 m	4.42
Fishing	n/a	n/a	0.6 m	0.05	0.6 m	0.04
Industry	136.2 m	10.75	170.1 m	14.60	208.5 m	16.56
Crafts			197.3 m	16.93	199.1 m	15.81
Trade	312.0 m	24.62	149.1 m	12.80	161.4 m	12.82
Transport			19.2 m	1.65	25.4 m	2.02
Other	30.0 m	2.37	35.0 m	3.00	30.6 m	2.43
Total	1266.9 m	100.00	1165.9 m	100.00	1259.1 m	100.00
Total at 1924 prices	1266.9 m	100.00	2460.0 m	100.00	2499.7 m	100.00
Per capita	582		482		515	
Per capita at 1924 prices	582		1017		1.023	

Source: Norkus (2014, 87).



1939 (Meškauskas, et al. 1976, 408–411). Table 2 summarizes all available primary source information about the total output of interwar Lithuania.

The measurement of interwar Lithuania's output is complicated by the instability of its borders. Rimka's calculations refer to Lithuania's 1924 borders (with Klaipėda but without Vilnius region), while those for 1938 and 1939 do not include Klaipėda and Vilnius. Region around Klaipėda was the most socioeconomically advanced area in interwar Lithuania. According to Vaskela, national income per capita in Klaipėda region in 1938 was circa 750 Litas at current prices, surpassing the rest of Lithuania by 45.6% (Vaskela 2014, 89). Therefore, the exclusion of Klaipėda's region in the available 1938–1939 output data lead to a downward bias in assessing interwar Lithuania's growth performance. To rectify this underestimate, Vaskela suggests upwardly correcting the total national income estimate for 1938 by 115.4 million Litas.

Accepting this correction, the final estimate for 1938 is 1281.3 million Litas at current prices or 2703 million Litas at constant 1924 prices. With the estimated population of Lithuania at 2575,363 as of 31 December 1938, these figures imply a per capita of 498 Litas at current prices (Vaskela suggests rounding to 500 Litas for mnemonic reasons) and 1050 Litas at constant 1924 prices. Using these data, the total real national income of Lithuania increased in 1924–1938 by 113.3% or by 80.4% per capita. This means an average annual growth of 4.3% for national income per capita and 5.6% for total national income. The rates differ because of the growth of the total population despite significant emigration (some 80,000 people) during interwar period (Gaučas 1978, 62). If the consensus about 1924 as the recovery year of Lithuania's economy is correct, the average annual growth rate of the output per capita for the period 1913–1938 was 2.38% and 2.42% for total output (Norkus 2015, 22).<sup>7</sup>

What do these estimates mean in cross-country comparative terms? There are two attempts to relate them to intervals in  $\$_{GK1990}$ , published in the Maddison (2010) and Maddison Project (2013) version. Norkus (2014, 101–117, 2015) assumed that GDP per capita on the territory of the future independent state of Lithuania in 1913 corresponded to the all-Russian average value or was lower. Dresdner Bank estimates (242 RM for Russia and 235 RM for Lithuania) speak in favor of such a hypothesis. The lower estimate corresponds with the consensus about the retardation effect of Tsarist rule on the economic development of Lithuania (see Šapoka [1936] 1989, 492–94; Meškauskienė 1963; Meškauskas, et al. 1976; Terleckas 2011). Due to restricted local economic opportunities, Lithuania experienced intense emigration, some 25% of its population (600,000) left the country between 1868 and 1914 (Truska 1961, 79). The emergence of large Lithuanian emigrant communities in neighboring industrial Riga and other Latvian cities (Jēkabsons 2003) offer compelling evidence of the large disparity between Lithuania and its northern neighbor on the eve of World War I.

According to The Maddison Project (2013) data, the GDP per capita of Russia in 1913 was 1414  $\$_{GK1990}$ . Following the consensus about the position of Lithuanian lands in comparison with all-Russian average, Norkus concluded that Lithuania's GDP per capita in 1913 and then again in 1924 was 1200–1400  $\$_{GK1990}$ . Applying the growth rates of real output in 1924–1938 described above to this base, Norkus derived the 2165–2526  $\$_{GK1990}$  estimate for 1938 (Norkus 2015, 47). By this estimate, Lithuania's GDP per capita was 57.4%–67.0% of Estonia's, 53.5%–62.4% of Latvia's, and 90.4%–105.4% of Poland's (2396  $\$_{GK1990}$ )<sup>8</sup> level according to Roses and Wolf's (2010, 190) estimate. The latter figure may add credibility to Norkus's estimate. Due to the legacy of their common history as constituent parts of the Polish–Lithuanian

Commonwealth, the social–economic structures of Poland and Lithuania were similar. This estimate, however, may be too dependent on the situation in the macroeconomic measurement of Russia in 1913. In the original Maddison (2010) dataset, used by Roses and Wolf (2010), its estimated value is 1488 \$<sub>GK1990</sub>. This all-Russian GDP per capita value entails a slightly higher estimate of Lithuania’s GDP per capita both in 1913 (1280–1480 \$<sub>GK1990</sub>) and an increase in the 1938 level (2309–2670 \$<sub>GK1990</sub>).

Vaskela (2014) proceeds in more sophisticated way. Following Valge’s example (see below), he uses Clark’s calculation of the annual means of national income for 1925–1934 at PPP (in \$<sub>C1929</sub>) as a stepping stone to build a bridge between the output data series in Litas at constant prices and the Maddison data series in \$<sub>GK1990</sub>. Maddison (2004, 18–19) himself compared his own estimates and Clark’s using the size of the output gap between the given country and numeraire country as the measure of divergence, which is the same for both authors. So according to Clark, Finland’s per capita annual average output in 1925–1934 was 25.5% of the US value for the same period, while Maddison’s data imply 43.9% (1725 \$<sub>GK1990</sub>) of the US value. Accepting Maddison’s criticisms, Vaskela uses Clark’s figures of Estonian, Latvian, and Lithuanian output only after adjusting them for underestimation bias.

At the same time, Vaskela believes that Clark’s measurements accurately describe GDP per capita differences between the Baltic states, with Estonia’s national income per capita at 92%, Latvia’s at 95%, and Lithuania’s at 58% of Finland’s value. Ultimately, Vaskela (2014, 108–109) arrives at the following average annual GDP per capita estimates for 1925–1934: 1200–1500 \$<sub>GK1990</sub> in Lithuania, 2000–2450 in Latvia, and 2000–2400 in Estonia. Vaskela, however, does not use his own figures for Estonia, accepting Valge’s (2003) GDP in \$<sub>GK1990</sub> estimates for Estonia (see Table 3) at face value. Drawing upon his former research (Vaskela 2007), Vaskela presents the 1800–1900 \$<sub>GK1990</sub> estimate for Lithuania and 2800–2900 \$<sub>GK1990</sub> for Latvia (Vaskela 2014, 113–16).

There is no noticeable disagreement between Norkus’s estimate of 1200–1400 \$<sub>GK1990</sub> GDP per capita of Lithuania in 1924 and Vaskela’s 1925–1934 annual mean

**Table 3.** Change of the aggregate and per capita output of Estonia between 1923 and 1938.

Year	National income at current prices in millions of kroons (Janusson and Horm)	GDP at current producer’s prices in millions of kroons (Valge)	GDP at constant producer’s 1929 prices in millions of kroons (Valge)	Total GDP according to Valge in % (1929 = 100)	GDP per capita according to Valge in % (1929 = 100)	GDP per capita in \$ <sub>GK1990</sub>
1923	n/a	377.6	419.6	82.3	83.0	1811
1924	n/a	458.2	545.5	106.9	107.1	2337
1925	n/a	506.3	532.9	104.5	104.5	2280
1926	n/a	532.6	566.6	111.1	111.1	2422
1927	n/a	478.5	525.8	103.1	103.1	2249
1928	n/a	498.9	514.3	100.8	100.9	2201
1929	342	510.1	510.1	100.0	100.0	2182
1930	315	484.1	543.9	106.6	106.8	2330
1931	260	415.4	519.3	101.8	101.7	2219
1932	224	361.0	494.5	96.9	96.7	2110
1933	249	381.4	560.9	110.0	109.3	2385
1934	259	391.4	575.6	112.8	112.0	2443
1935	284	417.3	613.7	120.3	119.1	2598
1936	318	470.8	611.4	119.9	118.5	2585
1937	342	533.1	658.1	129.0	127.4	2779
1938	376	552.5	650.0	127.4	125.8	2745

Compiled by the author from: Valge (2003, 2211, 2719, 2721, 2726).

1200–1500  $\$_{\text{GK1990}}$  GDP value. The estimates of both authors significantly differ, however, about 1938 (Norkus's 2165–2526  $\$_{\text{GK1990}}$  vs. Vaskela's 1800–1900  $\$_{\text{GK1990}}$ ). Vaskela's estimate for 1938 is not compatible with the consensus about Lithuania's growth between 1924 and 1938, established by Meškauskas, et al. (1976). Using a calculation for interval boundary mean values (1350 for 1924 and 1850 for 1938), we get a 2.28% annual average growth rate, which is significantly below the consensus 4.3% value accepted by Norkus. Vaskela's implicit estimate of the GDP per capita increase in 1924–1938 (137.0%, 1924 = 100%) is calculated in a similar way as the ratio of these average values (1850/1350). Most challenging to prior assumptions, Vaskela's estimates imply that in 1938, Lithuania's GDP per capita was not only below that of Poland but also below the GDP per capita of the USSR (2150  $\$_{\text{GK1990}}$  according to Maddison 2010; The Maddison Project 2013; version).

Norkus's estimate for 1938 (2165–2526 or a mean of 2345  $\$_{\text{GK1990}}$ ) dovetails with those of Roses and Wolf for other Baltic countries (see next section and Table 5). It implies that Lithuania's GDP per capita in 1938 was 57.9% of Latvia's and 62.1% of Estonia's. Meanwhile, Vaskela's estimates of Lithuania's GDP per capita in 1938 imply a huge disparity between Lithuania and its northern neighbors; Lithuania's GDP per capita in 1938 being only 45.7% of Latvia's and 49% of Estonia's according to Roses and Wolf's estimates. This implication contradicts Vaskela's own claim that in this year Lithuania's GDP per capita in 1938 was circa 66% of Latvia's and 67.4% of Estonia's (Vaskela 2014, 115–16).<sup>9</sup>

## The growth performance of Estonia and Latvia in 1913–1938

The crucial advantage of the estimates by Roses and Wolf's is their cross-time and cross-country comparability because these scholars use  $\$_{\text{GK1990}}$  as the numeraire, which is the measurement unit used in the Maddison and Maddison Project datasets. So, according to Roses and Wolf (2010, 190), the GDP per capita of Latvia in 1922 was 1929, in Finland 2058, and in Estonia 2311  $\$_{\text{GK1990}}$ ; increasing by 1929 to 2802  $\$_{\text{GK1990}}$  in Estonia, 2798 in Latvia, and to 2717 in Finland. By 1938, Latvia emerged as the leader with GDP per capita of 4048  $\$_{\text{GK1990}}$ , followed by Estonia (3771) and Finland (3589).

In terms of European ranking, Latvia rose from 18th position in 1922 to 15th in 1929, and to the 10th by 1938, trailing just behind Norway (4337), France (4466), and Sweden (4725). Estonia fell from 13th position to 14th in 1922–1929 and then rose to 11th place by 1938. Finland's trajectory was similar, including downward movement (from 15th to 17th place) in 1922–1929 and then an upward surge to 12th place in 1938, just behind Estonia and Latvia. These changes are explained by different growth rates, in which Latvia was the best performer during both decades. For the first period, the average annual growth rate for Latvia was 5.31%, for Finland 4.94%, and for Estonia 2.75%. Roses and Wolf (2010, 188) provide these figures for the 1920–1929 period. For 1922–1929, they are 2.79% for Estonia, 5.47% for Latvia, and 4.5% for Finland. In the period 1929–1938, Latvia's GDP per capita increased 4.1%, Estonia's 3.3%, and Finland's 3.09% annually (Roses and Wolf 2010, 188). The implied average annual growth rates for the 1922–1938 period are as follows: 4.74% for Latvia, 3.54% for Finland, and 3.11% for Estonia.

For our aim of comparing the economic progress of Baltic countries during the interwar period in a broader international context, the estimates by Roses and Wolf

are found wanting. The periods 1922–1938 and especially 1920–1938 encompass both recovery and post-recovery growth periods. Therefore, by selecting as the base year 1920, 1921, or 1922, we risk overestimating growth performance during first period of independence. More specifically, we would risk overestimating the achievements of those countries, which were more devastated by the war (Latvia), and underestimate the progress of those that suffered less (Estonia and Finland). We can avoid this risk by choosing 1913 as the base year. Roses and Wolf (2010, 187) themselves provide the estimates of GDP per capita in 1922 relative to 1913 (in percentages) and specify the year when the 1913 level was regained by most European countries. For the four countries we are concerned with, however, they provide information about only Finland (drawing upon Maddison 2010). By this source, Finland's economy completely recovered in 1923.

Therefore, we need to look for other sources, which could help to extend Roses and Wolf's data on these issues. These sources can also provide a broader, more reliable basis for the concluding estimates (in the final section) of the overall growth dynamics of Estonia and Latvia because Roses and Wolf do not disclose their source and do not discuss the reasons for divergence from other authors, who attempted to provide estimates using the same measurement units ( $\$_{GK1990}$ ). For Estonia, such attempt was made by Jaak Valge (2003), whose work Roses and Wolf cite in their references without discussing their reasons for different conclusions.

Valge estimated the real output of Estonia in 1923–1938, using the pioneering work of the interwar time statisticians (Janusson 1932, 1937; Horm 1940) on Estonia's national income at current prices as his source. Most daringly and instructively, Valge used his results to fill the gap for interwar Estonia in the Maddison dataset (Maddison 2010). For this aim, he used Clark's (1938) annual averages of national income for the 1925–1934 period. According to Clark, Finland's output per capita was 138, Latvia's was 131, and Estonia's was 127  $\$_{C1929}$  (see Table 1). So, Estonia's national income annual average value for 1925–1934 was circa 90% (2282  $\$_{GK1990}$ ) of Finland's. Finland's GDP per capita mean value for same period was 2543  $\$_{GK1990}$ . Then Valge merely guesses that 1925 was the year when the GDP of Estonia was nearly equal (2280  $\$_{GK1990}$ ) to the 10-year period mean value. This figure serves as an 'Archimedean point' to derive the annual GDP per capita values and annual GDP totals in 1923–1924 and 1926–1938, using annual growth rates, calculated for GDP at constant prices in Estonia's national currency, the Kroon.

Valge's estimates of the GDP per capita for 1923 and 1924 (1811 and 2337  $\$_{GK1990}$ ) are in line with that of Roses and Wolf (2010, 190) for 1922 (2331  $\$_{GK1990}$ ). They strongly disagree, however, about 1929 (Valge's 2182 vs. Roses and Wolf's 2824  $\$_{GK1990}$ ) and 1938 (2745 vs. 3771  $\$_{GK1990}$  correspondingly). Nevertheless, Valge's annual average growth rate for 1923–1938 (2.96%) is close to that of Roses and Wolf for 1922–1938 (3.11%). There is no significant disagreement between the implied growth rate estimates of Roses and Wolf for 1922–1929 and Valge's for 1923–1929 (2.79% and 3.15% correspondingly). The difference about the 1929–1938, however (Valge's 2.58% vs. Roses and Wolf's 3.3%), is noticeable. Namely, Valge's estimates imply that Estonia's growth performance was weaker than Finland.

This is what Valge (2003, 2727–728) explicitly claims, provocatively arguing that the GDP per capita gap between Estonia and Finland did not emerge only under (and because of) Soviet occupation. Valge (2006, 173) estimates that in 1929, Estonia's GDP per capita was 106% of the 1913 level, which implies 2058  $\$_{GK1990}$  for Estonia's GDP

per capita on the eve of World War I.<sup>10</sup> Justifying this estimate, Valge (2003, 2728) refers to the work of Arno Kõorna (1961, 15–16) who claimed that Estonia and Finland in 1913 were nearly on a par in their economic performance. According to Maddison (2010) and The Maddison Project (2013) data, Finland's GDP per capita in 1913 was 2111  $\text{\$}_{\text{GK1990}}$ . Averaging and rounding both figures, we may assume that Estonia's GDP per capita was circa 2100  $\text{\$}_{\text{GK1990}}$  in 1913. Then assuming Valge's own estimates (see Table 3), 1924 was Estonia's economic recovery year. The estimates of Roses and Wolf (2010, 190) imply that this may have happened in 1922 or even in 1921. Assuming Estonia and Finland's pre-World War I parity thesis, Estonia's annual average growth in 1913–1938 was 1.07% according to Valge, but 2.37% under Roses and Wolf's (2010, 190) Estonia GDP per capita estimate for 1938.

What about Latvia? Alfrēds Ceihners (1927) first calculated Latvia's annual national income (for 1925) and continued this work for many years, occasionally improving his earlier estimates (Zeichner 1931; Ceichners 1933).<sup>11</sup> Latvia's state statistical office published semiofficial measurements of its national income for 1933–1935 (Valsts statistiskā pārvalde 1936, 276–77). All these calculations, however, were at current prices. Somewhat disappointingly, the recent impressive synthesis of Latvia's economic history (Krūmiņš 2017) and does not attempt to estimate the overall dynamics of the total output of interwar Latvia at constant prices or cross-nationally comparable measurement units, despite richly available sources from this period.<sup>12</sup> Therefore, along with recent Roses and Wolf (2010) work, Clark's estimates (see Table 4), published in the first and second editions of his magisterial *The Conditions of Economic Progress*, remain the only attempts to measure the total output of interwar Latvia in cross-time and cross-country comparable units (Clark [1940] 1951).

In our observations, these data escaped the notice of researchers on Baltic economic history. The most probable reason is their absence in the last edition of Clark's magisterial book (in 1957), which is usually consulted along with his landmark paper (Clark 1938) as the standard reference source. Updating the book for 1957 edition, Clark took into account changes in the political map of the world after World War II, which seemed irreversible by the late 1950s. So, Clark just eliminated valuable data about macroeconomic performance of interwar Baltic states from his standard work. Following the rule to use the last available editions, the researchers lost Clark's valuable calculations on Latvia. It seems we are the first to return them to scholarly use.

**Table 4.** National income of Latvia between 1913 and 1938.

Year	National income, in million $\text{\$}_{\text{C1929}}$	Population in thousands	Working population in thousands	National income per capita of occupied population	National income per capita in $\text{\$}_{\text{C1929}}$
1913	342	2493	1023	335	137
1925–1926	288	1871	747	385	154
1928	327	1895	757	431	173
1930	367	1910	763	481	192
1932	295	1931	769	383	153
1936	400	1961	783	510	204
1937	430	1968	791	544	218
1938	420	1978	793	630	212

Source: Clark [1940] 1951, 118). Clark provides only the national income value per head of the occupied population. National income per capita is calculated by the author.

**Table 5.** Growth performance of the Baltic countries between 1913 and 1938.

Country	Source	GDP per capita, 1913, in $\$_{GKI1990}$	GDP per capita, 1922, in $\$_{GKI1990}$	GDP per capita, 1929, in $\$_{GKI1990}$	GDP per capita, 1938, in $\$_{GKI1990}$	1938% 1913 = 100	Mean annual growth rate, 1913–1938	Mean annual growth rate, year of recovery minus 1938
<b>Estonia</b>	Valge (2003)	2100	<1811	1924	2182	130.7	1.07	2.57
	Roses and Wolf	n/a	2311	n/a	2802	n/a	n/a	n/a
<b>Finland</b>	Author	2100	2311	1922	2802	179.6	2.37	3.11
	Maddison Project	2111	2058	1923	2717	170.0	2.15	3.36
<b>Latvia</b>	Roses and Wolf	n/a	1929	n/a	2798	n/a	n/a	n/a
	Vaskela	n/a	n/a	n/a	2000–2450	n/a	n/a	n/a
<b>Lithuania</b>	Author	2100	<2100	1924/25	2798	192.8	2.66	4.80–5.18
	Vaskela	1414–1500	<1200–1500	1924	1200–1500	137.0	0.84	2.28
	Author	1200–1400	<1200–1400	1924	>1200–1400	180.4	2.38	4.30

Sources: The Maddison Project (2013); Valge (2003); Roses and Wolf (2010); Vaskela (2014); Norkus (2014, 2015).

Most importantly for our research question, Clark provides estimates also for 1913, grounding them in the figures published by Dresdner Bank (1930). Clark's book also presents national income estimates for Finland and Estonia (Clark [1940] 1951, 113–14, 118). While for Estonia, only estimates for 1913 and 1938 are provided, for Latvia, Clark presents nearly as many data points as for Finland.<sup>13</sup>

According to Clark ([1940] 1951, 118), Estonia's total national income in 1913 was 170 million  $\$_{GK1929}$ , and 169 million  $\$_{GK1929}$  in 1928. Per capita, this amounts to 148 (for a population of 1.15 million) in 1913 and 151  $\$_{GK1929}$  in 1928 (for a population of 1.116 million). So in 1928, Estonia's national income per capita was 102% of the 1913 level, which rather neatly dovetails with Valge's figure (106%) for 1929 as a percentage of the 1913 level (Valge 2006, 173). Both estimates and Valge's data (see Table 3) imply that after the rather rapid recovery, Estonia's economy largely stagnated until the worldwide economic crisis of 1929–1933, and nearly all growth beyond the pre-World War I level was achieved during the first few years after the recovery from this crisis.

Clark's national income at PPP estimates for Latvia imply that the total volume of national income of Latvia in  $\$_{C1929}$  in 1913–1938 increased by only 22.8%. Yet, per capita, growth was much more considerable, by 54.7% or 1.76% annually. The reason for this discrepancy was the slow increase in population, which on the eve of World War II still was significantly behind the 1913 level. For the same reason, the total output of Latvia reached its prewar size only by the time of the Great Depression in the 1930s. Calculating by per capita, however, this already happened in 1924. According to Clark's data for 1925/26–1938, the annual growth rate of Latvia's output per capita in 1924–1938 was 2.49–2.70%. This is below the 4.74% figure for the 1922–1938 period by Roses and Wolf. Due to the disparity in the periods, this difference does not necessarily translate as a real discrepancy because 1922–1925 may have been a period of very rapid recovery growth. This interpretation is difficult to apply to the disagreement about the shorter 1929–1938 period, where Roses and Wolf (2010, 188) claim 4.1% average annual per capita GDP growth. According to Clark's data for the 1928–1938 period, the output per capita annual growth rate was 2.05%.

Importantly, Clark's (and Dresdner Bank's 1930) data basically agree with the Kõörna-Valge thesis about GDP per capita parity between Estonia and Finland before World War I. According to Dresdner Bank (1930), Estonia's national income per capita in 1913 at current prices was 304 RM and Finland's was 310 RM.<sup>14</sup> According to Clark (1940, 1951), Estonia's national income per capita in 1913 was 148  $\$_{C1929}$  per capita and that of Finland 188  $\$_{C1929}$ . While the second series of figures differs more than the first, this difference arises because of Clark's estimate of Finland as a more inexpensive country and is not large.

Dresdner Bank analysts may have underestimated the national income in the future Latvian lands, claiming that in 1913 it was only 274 RM per capita, misleading Clark to estimate it as equivalent to 137  $\$_{C1929}$ . Dresdner Bank (1930) figures imply that the output in the lands of future Latvia was only some 15% above the all-Russian level of 242 RM per capita (for Russia in its 1913 borders). This is difficult to accept not only because of the reputation of Latvian lands as the 'Belgium of East' (Hiden and Salmon 1991, 76–77; Kahk and Tarvel 1997, 98–102). According to the research results of Yuri Netesin (1980, 55), per capita industry and trade turnover in these lands exceeded its mean values in the European part of Russian empire by almost two times. The difference between all-Russian mean per capita output in 1913 and that in Courland

and the Latvian part of Livland provinces could be of that order. However, all-Latvian mean values could be significantly smaller because of the steep gradient between underdeveloped eastern Latvia (Latgale, comprising 25% of Latvia's population in 1913 and 29.3% in 1925) and other regions of country.<sup>15</sup>

Pending further research, the most reasonable guess about pre-World War I Latvia's GDP per capita in the cross-time and cross-country comparable values may be to simply extend Estonia and Finland's pre-World War I parity thesis to Latvia. Setting Latvia's GDP per capita level at 2100  $\$_{GK1990}$  and accepting Roses and Wolf estimates, we may tentatively conclude that its per capita output recovered to its prewar level in 1924 or 1925, while its average annual growth was 2.66% for the 1913–1938 period and 4.8–5.18% for the 1924/1925–1938 period. This is a brighter view than that emerging from Clark's figures (1.76% and 2.49–2.70% correspondingly).

## Concluding comparisons and discussion

Table 5 provides the summary of the available research about the output and growth performance of Baltic countries during first independence period. It includes only estimates describing economic performance at selected intervals (1913, 1922, 1929, 1938) in contemporary standard measurement units ( $\$_{GK1990}$ ), used in Maddison (2010) and The Maddison Project (2013), allowing for their comparison in the broader international context, presented in the last table (Table 6). Roses and Wolf (2010), referring to the post-World War I recovery and the last year of postwar prosperity, ending with the outbreak of the world economic crisis, suggest these intervals.

Latvia emerges from these data as the most rapidly growing Baltic country both according to its GDP per capita growth rates during the entire 1913–1938 period, and during the shorter post-recovery era. The 2100  $\$_{GK1990}$  for Latvia in 1913 is credible as a lower end estimate. The upward revision would imply a longer recovery period and a lower average annual growth estimate for the 1913–1938 period. As a matter of principle, the post-recovery period annual average growth rate may remain high even after the upward revision of the GDP per capita value for the base year. Clark's research, however, whose results allow only for 1.76% and 2.49–2.70% average annual

**Table 6.** National income per capita (in  $\$_{GK1990}$ ) of 27 countries from Clark's (1938) list (see Table 1) in 1938.

Rank	Country	National income per capita, in		Rank	Country	National income per capita, in
		$\$_{GK1990}$				$\$_{GK1990}$
1	Switzerland	7967		15	Austria	3559
2	New Zealand	6462		16	Latvia	3449
3	UK	6266		17	Estonia	3258
4	USA	6126		18	Ireland	3052
5	Australia	5886		19	Czechoslovakia	2882
6	Denmark	5762		20	Italy	2830
7	Netherlands	5250		21	Greece	2667
8	Germany	4994		22	Hungary	2655
9	Sweden	4901		23	Poland	2182
10	Belgium	4832		24	Lithuania	2098
11	Canada	4546		25	Spain	1790
12	France	4466		26	Bulgaria	1499
13	Norway	4262		27	Romania	1242
14	Finland	3589				

Source: The Maddison Project (2013) and author's estimates (for Estonia, Latvia, and Lithuania).



growth rates for 1913–1938 and the post-recovery periods, respectively, provides a more pessimistic picture of Latvia's growth performance.

The upward revision of Lithuania's GDP per capita in 1913 would have the same effect on its post-World War I growth performance statistics. Vaskela (2014, 73–74) suggested such an upgrade, arguing that GDP per capita in Lithuania under Tsarist rule was markedly above the all-Russian average, although he did not specify his own figures. Vaskela does not dispute the consensus that Lithuania completely recovered to its prewar level in 1924, endorsing it in his earlier work (Vaskela 1998, 241). Proceeding from the 1500 \$<sub>GK1990</sub> GDP per capita value, which is above the all-Russian average in 1913, and accepting 1850 \$<sub>GK1990</sub> as Lithuania's GDP per capita in 1938, this would result in 0.84% annual average growth for 1913–1938 and 1.5% for 1924–1938 period. This would mean that Lithuania's growth performance was the weakest among Baltic countries, except for Estonia during the post-recovery period according to the low-end estimate.

The 1850 \$<sub>GK1990</sub> GDP per capita for 1938 implies that the output per capita of Lithuania was only 45.7% of Latvia's economy and 49.5% of Estonia's size by Roses and Wolf (2010, 190) estimates. To recap (see end of second section above), this amounts to an inconsistency with Vaskela's own claim that Lithuania's output per capita was circa 66% of Latvia's and 67.4% of Estonia's GDP per capita (Vaskela 2014, 115–16). The estimate of Norkus (2165–2526 or a mean of 2345 \$<sub>GK1990</sub>) implies 57.9% of Latvia's and 62.1% of Estonia's economy, and is more closely in accord with the authoritative estimates of Roses and Wolf (2010, 190) and Vaskela's own claims. Accepting Norkus's figures for 1938, Lithuania emerges as second best in the growth rate ranking, although for the 1913–1938 period its advantage over Estonia is clearly expressed only using the lowest estimate for Estonia.

Due to the advanced state of research on Finland's economic history, we can accept Maddison (2010) and The Maddison Project (2013) data, reflecting the findings of this research. In Estonia's case, we have the choice between the pessimistic and optimistic pictures as with Latvia (Clark's vs. Roses and Wolf's estimates) and Lithuania's (Norkus vs. Vaskela) cases. Valge's account may be considered pessimistic, compared with the implications of Roses and Wolf's estimates. Although these researchers do not specify the recovery year for Estonia, they present their estimates of the average annual growth rates for the 1920–1929 (2.75%) and 1929–1938 (3.3%) periods. Valge's implicit estimate for 1920–1929 is even higher (5.3%), and that for 1929–1938 not much lower (2.6%).

Assuming Valge–Köörna's thesis about Estonia's output in 1913 (ca. 2100 \$<sub>GK1990</sub>), we may identify 1922 as recovery year of Estonia. In fact, Roses and Wolf's estimate of Estonia's GDP per capita (2311 \$<sub>GK1990</sub>) allows for the possibility that Estonia's economy already recovered in 1921 or even 1920. These claims are not credible, however, not only because they contradict Valge's estimate for 1920 (1364 \$<sub>GK1990</sub>) and 1923 (1811 \$<sub>GK1990</sub>).<sup>16</sup> Valge's estimates imply that the GDP per capita of Estonia increased by 29% during a single year (from 1923 to 1924). Although such rapid recovery growth is possible as a matter of principle, this statement contradicts other available evidence. Valge himself describes 1924 as a year of economic crisis (Valge 2006, 146–66). Statistical data about the industrial production of Estonia provide evidence of production contraction in textile, cement, and leather industries in 1923–1924, and no data about a significant increase in other areas of economic activity (Riigi statistika keskbüroo 1925, 10–17).

This evidence permits the claim that in 1922–1923, Estonia’s economy had already recovered to the prewar level. It is difficult, however, to believe that Estonia had managed this feat already in 1921, given Roses and Wolf (2010, 187) information that only five European economies (Netherlands, Norway, Greece, Spain, and Portugal) recovered before 1922. Assuming Valge–Köörna’s thesis about Estonia’s output in 1913, 1922 as the recovery year, and Roses and Wolf (2010, 190) estimates about Estonia’s output in 1922 and 1938, we find an optimistic picture of the Estonia’s growth performance: 2.37% annual average growth rate for the 1913–1938 and 3.11% for 1922–1938 periods.

By upper or optimistic estimates, the growth performance of Estonia, Latvia, and Lithuania in 1913–1938 was not weaker than Finland’s, while by minimal estimates, Finland’s mean annual growth rates were superior to Estonia and Lithuania. According to both lower and upper estimates, the GDP per capita of Estonia and Latvia in 1938 was significantly above the USSR value (2150 \$<sub>GK1990</sub> according to Maddison Project data), while in Lithuania it was below according to the lower estimate but above according to upper estimate. The mean annual growth rate of the Soviet Union in 1913–1938 was 1.69%, surpassing the Estonian and Lithuanian growth according to lower estimate. After its late recovery to the prewar level in 1930, the USSR experienced quite impressive growth in 1930–1938 (5.37%), exceeding that of all Baltic countries during the post-recovery period (according to both the lower and upper estimates). Occurring when Western economies struggled with the world economic crisis of 1929–1933 and enormously exaggerated, this brief period of accelerated growth was exploited in Soviet propaganda as ostensibly proving the superiority of the Soviet economic system.

The upper estimates of growth rates for the interwar Baltic countries are open for the counterfactual interpretation that Estonia, Latvia, and Lithuania would have become advanced economies similar to comparable countries in the region had their trajectory of economic development not been radically altered by their forced incorporation into the USSR politically and economically. Finland was considered an advanced economy by 1990 (Hjerpe 1989; Pesonen and Riihinen 2002). In the author’s opinion, taking into account differences in the levels of GDP per capita in 1938 and extrapolating post-recovery growth rates, one might be tempted to speculate that Latvia would have become an advanced economy first, followed by Finland and Estonia, with Lithuania achieving this feat the last, due to a significant lag behind its northern neighbors. When extrapolating from the lower estimates for Estonia and Lithuania, however, this optimistic counterfactual path of development seems less likely, particularly for Lithuania. All of this speculative discussion, however, presupposes the possibility of the Baltic states not being drawn into the catastrophe of World War II, which for geopolitical reasons is so improbable as to make such counterfactual economic modeling entirely moot.

The rather wide gap between the lower and upper end estimates, which may irritate many readers, can be closed only by further research, grounded in primary sources research following the Finnish example, where it took decades of sustained research supported by the Bank of Finland to produce retrospective national accounts in the framework of the standard for SNA (Hjerpe 1989). Meanwhile, we can update Clark’s famous ranking only through a quick fix, usually applied by social researchers in similar situations: using the means of the lower and upper estimates from Table 5. They are inserted for Estonia, Latvia, and Lithuania in the Table 6, which presents the update of Clark’s list for 1938.<sup>17</sup>

## Notes

1. This is a monetary measurement unit used in the Maddison-Project dataset.
2. GDP at PPP in constant international \$ is reputedly the most valid tool for cross-country and cross-time comparisons of the size of an economy and its growth. In the Maddison dataset, which is most broadly used for GDP at PPP historical data collection, the GDP figures are derived using formulas invented by Roy C. Geary and Salem H. Khamis, with 1990 as the benchmark year to recalculate nominal GDP (at current prices) into real GDP (at constant prices). To honor their contribution, the monetary measurement units used to express the result of such measurement are called Geary–Khamis 1990 international dollars ( $\$_{GK1990}$ ).
3. Clark's original list of 28 countries includes South Africa. With no reliable data about the total population of South Africa, the calculation of the national income for this country from Clark's data is not possible.
4. Regretfully, the authors did not answer our e-mail query.
5. Most probably, they used many Latvian interwar calculations for national income, which will be discussed in section three. They do not explain the reasons for their disagreement with Valge (2003).
6. For Finland, Dresdner Bank (1930) only provides an estimate for 1926 (447 RM).
7. The population estimate for Lithuania (in 1924 borders) in 1913 is 2553,000.
8. This estimate is higher than 2182  $\$_{GK1990}$  in the original Maddison (2010) dataset and its update (Maddison-Project 2013).
9. According to a recent estimate by Norkus (2018), the gap between Latvia and Lithuania is smaller. This estimate refers to 1924–1925. At this time the postwar recovery of Latvia, which suffered from the devastation of World War I much more than Lithuania, remained incomplete. Furthermore, Vaskela's estimates are at current prices, and the cross-country comparison of national incomes does not take into account differences in the purchasing power of national currencies.
10. In the same publication (Valge 2006, 173), the Estonian historian claims that in 1929 Estonia's GDP per capita was 160% of the 1920 level, which implies 1364  $\$_{GK1990}$  as Estonia's GDP per capita value for 1920.
11. The publications of this author bear his family name in at least four different spellings: Ceichners, Ceichner, Zeichner, and Ceihners. In the reference list, the author's name is rendered with the spelling as in the original publication.
12. Contributions to this valuable collective work focus on the Soviet and post-Soviet periods, accounting for 80% of the total (1000 pages). They are truly landmark contributions, while those about former periods introduce this groundbreaking study.
13. For Lithuania, Clark presents only the mean annual value for the 1924–1928 period, which was discussed above in the second section.
14. In the Dresdner Bank (1930) estimates, national income data are published in large inserted tables at the end of book with no pagination. Therefore, no page numbers can be provided for relevant references.
15. According to Skujeneeks ([1920] 1927, 206, 218).
16. Cf. Valge (2006, 173) and Valge (2003, 2726).
17. Referring to a later point in time, it contains the same countries. Except for the three Baltic countries, other GDP per capita values are from The Maddison Project (2013) database.

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## References

- Aldcroft, D. K. 2006. *Europe's Third World: The European periphery in the interwar years*. Aldershot: Ashgate.
- Bairoch, P. 1976. "Europe's gross national product 1800–1975." *Journal of European Economic History* 5 (2): 273–340.
- Bolt, J., and J.L. van Zanden. 2014. "The Maddison Project: collaborative research on historical national accounts." *Economic History Review* 67 (3): 627–651.
- Ceichners, A. 1933. "Die Veränderungen im Volkseinkommen Lettlands in den Krisenjahre 1931–1933." *Letlands Ökonomist* 1933: 125–140.
- Ceihners, A. 1927. "Tautas manta un tautas ienākums." *Ekonomists* 8:305–313. 9: 345–52; 10: 389–94; 11: 425–32.
- Clark, C. [1940] 1951. *The conditions of economic progress*. 2nd ed. London: Macmillan.
- Clark, C. 1938. "Internationaler Vergleich der Volkseinkommen." *Weltwirtschaftliches Archiv* 47: 51–76.
- Coyle, D. 2014. *GDP: A brief but affectionate history*. Princeton: Princeton University Press.
- Dresdner Bank. 1930. *The economic forces of the world*. 3rd revised ed Berlin: Dresdner Bank.
- Fioramonti, L. 2013. *Gross domestic problem: The politics behind the world's most powerful number*. London: Zed Books.
- Gaučas, P. 1978. "Gyventojų skaičius Lietuvoje 1923–1939 metais." *Lietuvos TSR aukštųjų mokyklų mokslo darbai: Geografija ir geologija* 14: 61–70.
- Gerring, J. 2012. *Social science methodology: A unified framework*. 2nd ed. Cambridge: Cambridge University Press.
- Gibbons, J. 1939. *Keepers of the Baltic gates*. London: Hale.
- Gosudarstvenyi komitet SSSR po statistike. 1987. *Narodnoe khozyaistvo SSSR za 70 let. Yubileinyi statisticheski ezhegodnik*. Moscow: Finansy i statistika.
- Graham Jr., M. W. 1927. *New governments of eastern Europe*. New York: Holt.
- Hidden, J., and P. Salmon. 1991. *The baltic nations and Europe: Estonia, Latvia, and Lithuania in the twentieth century*. London: Longman.
- Hjerppe, R. 1989. *The Finnish economy 1860–1985: Growth and structural change*. Helsinki: Government Printing Center.
- Horm, A. 1940. *Eesti elatusstandard*. Tartu: Akadeemia.
- Janusson, J. 1932. *Eesti majanduslik areng*. Tallinn: Põllumajanduslik Konjunkturbüro.
- Janusson, J. 1937. "Eesti majanduse arengu perspektiive." *Konjunktur* 3/4: 134–144.
- Jēkabsons, Ē. 2003. *Lietuvieši Latvijā*. Rīga: Elpa.
- Kahk, J., and E. Tarvel. 1997. *An economic history of the Baltic countries*. Stockholm: Acta Universitatis Stockholmiensis.
- Kaser, M., and E. Radice. 1985. *The economic history of eastern Europe 1919–1975, Vol. 1: Economic structure and performance between two wars*. Clarendon Press:Oxford.
- Kirby, D. 1995. *The Baltic world, 1772–1993: Europe's northern periphery in an age of change*. London: Longman.
- Klesment, M. 2008. "Eesti majandusarengu dünaamikanäitajaid sõdadevahelisel perioodil." *Tuna* 1: 25–37.

- Köörna, A. 1961. *Suure Sotsialistliku Oktoobrivlutsiooni majanduslikud eeldused Eestis*. Tallinn: Eesti Riiklik Kirjastus.
- Krastiņš, O. 2001. *Latvijas saimniecības vēsturiskā pieredze: 1918.–1940.* 2nd revised ed. Riga: Latvijas Valsts agrārās ekonomikas institūts.
- Krikščiūnas, J. 1938. "Lietuvos žemės ūkis 1918–1938 m." In *Lietuva, 1918–1938: Leidinys 20 metų Lietuvos nepriklausomybės sukakčiai paminėti*, edited by V. Kemėžys, 111–138. Kaunas: Spaudos fondas.
- Krūmiņš, G. 2017. *Latvijas tautsaimniecības vēsture*. Riga: Jumava.
- Maddison, A. 2004. "Quantifying and interpreting world development: Macromasurement before and after Colin Clark." *Australian Economic History Review* 44 (1): 1–34. doi:10.1111/aehr.2004.44.issue-1.
- Maddison, A. 2010. "Statistics on World Population, GDP and Per Capita GDP, 1–2008 AD." Accessed 22 October 2017. [http://www.ggdc.net/maddison/Historical\\_Statistics/horizontal-file\\_02-2010.xls](http://www.ggdc.net/maddison/Historical_Statistics/horizontal-file_02-2010.xls).
- Mertelsmann, O. 2006. *Der stalinistische Umbau in Estland: Von der Markt- zur Kommandowirtschaft*. Hamburg: Kovač.
- Mertelsmann, O. 2012. *Die Sowjetisierung Estlands und seiner Gesellschaft*. Hamburg: Kovač.
- Meškauskas, K., V. Puronas, M. Meškauskienė, and J. Jurginis. 1976. *Lietuvos pramonė ikisocialistiniu laikotarpiu*. Vilnius: Mintis.
- Meškauskienė, M. 1963. *Ekonominė Lietuvos padėtis Pirmojo pasaulinio karo išvakarėse (1900–1913 m.)*. Vilnius: Valstybinė politinės ir mokslinės literatūros leidykla.
- Netesin, Y. N. 1980. *Promyshlennyi kapital Latvii (1860–1917 gg.): K izucheniju sotsial'no-ekonomicheskikh predposylok Velikoi Oktjabr'skoi Socialisticheskoj Revoliutsii*. Riga: Zinatne.
- Norkus, Z. 2014. *Du nepriklausomybės dvidešimtmečiai: Kapitalizmas, klasės ir demokratija Pirmojoje ir Antrojoje Lietuvos Respublikoje lyginamosios istorinės sociologijos požiūriu*. Vilnius: Aukso žuvis.
- Norkus, Z. 2015. "Kas turėjo greičiausiai? Baltijos šalių ūkio augimo 1913–1938 m. palyginimas." *Politologija* 3 (79): 3–54. doi:10.15388/Polit.2015.3.8428.
- Norkus, Z. 2016. "A comparison of the economic growth of the Baltic states between the two World Wars." *World Political Science* 12 (1): 1–23. doi:10.1515/wps-2015-0013.
- Norkus, Z. 2018. "First calculations of the total output of Latvia and Lithuania in the 1920s: A comparison." *Journal of Baltic Studies* 49 (2): 241–261. doi:10.1080/01629778.2016.1266503.
- Reichskommissar für das Ostland.. 1942. *Strukturbericht über das Ostland*. Vol. 1: *Ostland in Zahlen*. Riga: Buchdruckerei Riga.
- Pesonen, P., and O. Riihinen. 2002. *Dynamic Finland: The political system and welfare state*. Helsinki: Finnish Literature Society.
- Philipsen, D. 2015. *The little big number: How GDP came to rule the world and what to do about it*. Princeton: Princeton University Press.
- Polson Newman, E. W. 1930. *Britain and the Baltic*. London: Methuen.
- Prikulis, J., ed. 2012. *Padomju Savienības nodarītie zaudējumi Baltijā: Rīgā, 2011. gada 17.–18. jūnijs: Starptautiskās konferences materiāli*. Riga: Latvijas Okupācijas izpētes biedrība.
- Riigi Statistika Keskbiro. 1925. *Eesti: Statistiline Album*. Vol. 2: *Majandus*. Tallinn: Riigi statistika keskbüroo.
- Rimka, A. 1926. "Tautos pelnas ir metodai jam surasti." *Lietuvos ūkis* 3 (42): 70–74. 4 (43): 105–110; 5 (44):141–46.
- Reichskommissar für das Ostland, 1942. *Strukturbericht über das Ostland*. Vol. 1: *Ostland in Zahlen*. Riga: Buchdruckerei Riga.
- Roses, J. R., and N. Wolf. 2010. "Aggregate growth, 1913–1950." In *The Cambridge economic history of modern Europe* Vol. 2: *1870 to the present*, edited by S. Broadberry, and K. H. O'Rourke, 183–207. Cambridge: Cambridge University Press.
- Šapoka, A., ed. [1936] 1989. *Lietuvos istorija*. Vilnius: Mokslas.
- Satkauskas, R. 2003. "A bill for the occupants or an issue to negotiate: The claims of reparations for Soviet occupation." *Baltic Yearbook of International Law* 3: 77–96. doi:10.1163/221158903X00054.
- Seleckis, V. 2000. *Latvija 10 gados – Toreiz un tagad*. Riiga: Vērmanparks.
- Skujeneeks, M. [1920] 1927. *Latvija: Zeme un eedzivotaji*. 3rd revised ed. Riga: A. Gulbis.
- Terleckas, V. 2011. *Bankininkystė Lietuvoje, 1795–1915*. Vilnius: Lietuvos bankas.
- The Maddison Project, 2013 version. Accessed 22 October 2017. <http://www.ggdc.net/maddison/Maddison-Project/home.htm>
- Truska, L. 1961. "Emigracija iš Lietuvos 1868–1914 metais." *Lietuvos TSR MA darbai, Serija A* 1 (10): 71–85.
- Turnock, D. 1997. *The east European economy in context: Communism and transition*. New York: Routledge.
- Vaitekūnas, S. 2006. *Lietuvos gyventojai: Per du tūkstantmečius*. Vilnius: Mokslo ir enciklopedijų leidybos institutas.

- Valge, J. 2003. "Uue majanduse lätteil: Eesti sisemajanduse kogutoodang aastatel 1923–1938." *Akadeemia* 10–12:2202–2228. 11: 2443–487; 12: 2712–735.
- Valge, J. 2006. *Breaking away from Russia: Financial stabilization in Estonia 1918–1924*. Stockholm: Acta Universitatis Stockholmiensis.
- Valge, J. 2008. "Eesti aeg ja iseseisvuse taastanud Eesti." *Tuna. Ajalookultuuri ajakiri* 1: 17–24.
- Valsts statistiskā pārvalde. 1936. *Finanču un kredita statistika*. Rīga: S.n..
- Vaskela, G. 1998. Žemės reforma Lietuvoje 1919–1940 m.: analizuojant Rytų ir Vidurio Europos agrarinės raidos XX a. III–IV dešimtmečiais tendencijas. Vilnius: LII leidykla.
- Vaskela, G. 2007. "Darbo užmokestis ir darbininkų bei tarnautojų šeimų gyvenimo lygis Lietuvoje, Latvijoje ir Estijoje 1938–1940 metais." *Lituanistika* 4 (72): 19–35.
- Vaskela, G. 2014. *Tautiniai aspektai Lietuvos ūkio politikoje 1919–1940 metais*. Vilnius: Lietuvos istorijos instituto leidykla.
- World Bank 2017. "World Development Indicators." Washington, DC: World Bank. Accessed 22 October 2017. <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators#>
- Zeichner, A. 1931. "Balance of payments, national revenue and national wealth in the Baltic States." *The Latvian Economist*. Rīga, 69–93.
- Zile, L., ed. 2001. *Latvija divos laikposmos: 1918–1928 un 1991–2001*. Rīga: LV fonds.