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Can the economic growth of interwar Latvia be estimated by contemporary national accounts?

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ABSTRACT

The paper provides an examination of interwar Latvia's national accounts, checking their usability for estimating interwar economic growth performance. According to the authoritative account of Roses and Wolf [(2010). Aggregate growth, 1913–1950. In S. Broadberry, & K. H. O'Rourke (Eds.), *The Cambridge economic history of modern Europe*, vol 2. 1870 to the present (pp. 183–207). Cambridge UP.], based on indirect estimation methods, Latvia's GDPpc growth rate from 1929 to 1938 was the highest in Europe. However, according to Aizsilnieks [(1968). *Latvijas saimniecības vēsture, 1914–1945*. Daugava.] interwar national income estimates show that the Latvian economy stagnated in the 1930s. This paper's main findings are that applying historical price indices to the existing interwar output estimates supports the stagnation thesis. However, the national income estimates lack validity and reliability due to unpersistent or unknown methodology. Hence, changes in real output cannot be established without new calculations according to the contemporary System of National Accounts (SNA 2008) framework.

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1. Introduction

This paper aims to help to fill a gap in the economic historic knowledge of interwar Europe, i.e. information on the changes in total economic output of interwar Latvia. Generally, the Baltic countries remain largely ignored by researchers in modern European economic history despite their centennial history as independent states. Gross domestic product per capita (GDPpc) is the single most important indicator in economic growth history. However, even in the latest release of the Maddison Project Database (MPD) (2020), the series of the Baltic states' GDPs start in 1973 and become annual as late as 1980.

Among the Baltic states, Latvia stands out as the most neglected and controversial case. For interwar Lithuania, Klimantas and Zirgulis (2020) calculated GDP figures in the framework of SNA 2008 for 1937. As for Latvia, Roses and Wolf (2010, pp. 187–190) published GDPpc figures for 1922, 1929, and 1938 in the authoritative 'The Cambridge

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Economic History of Modern History'. Recently, these were disputed by Norkus and Markevičiūtė (2021), who published GDPpc estimates for all the three Baltic states for 1913, 1922, 1929 and 1938.

There is a significant disparity between the estimates of these researchers. According to Roses and Wolf (2010, p. 190), the Latvian GDPpc in 1990 Geary Khamis international Dollars (GK\$ 1990) was 1929 in 1922, 2798 in 1929, and 4048 in 1938. The alternative figures are 1847, 2347 and 2836, respectively (Norkus & Markevičiūtė, 2021, p. 603). The differences are most dramatic for 1938, with estimates by Roses & Wolf exceeding those of Norkus & Markevičiūtė with 43%. The estimates of Roses & Wolf imply 4.1% annual growth for 1929–1938 and 4.74% for 1922–1938. They make interwar Latvia appear to be the best economic growth performer in interwar Europe 1929–1938, with a possible exception for the USSR, whose real growth record during the two first 'five-year plans' remains heavily disputed. According to their picture, Latvia rose from position 18 in 1922–15 in 1929, and then to 10 in 1938. As a result, it ranked above Finland, Austria, and all Southern European countries, taking the position next to France and Sweden. According to Norkus and Markevičiūtė (2021), the annual growth was 2.72% for 1922–1938 and 2.13% for 1929–1938. In 1938, Latvia did lag behind Finland, Austria, and Ireland, enjoying parity with Italy as the richest Southern European country.

Both research teams applied indirect GDP estimation methods, and the disparity in their findings may be related to the difference in them. Roses and Wolf (2010) did not disclose their method in detail. Norkus and Markevičiūtė used the method applied by the researchers at the Groningen Growth and Development Centre (GGDC) to fix GDP value gaps for African countries in the 1950s and 1960s in the Maddison Project Database (MPD) MPD (Bolt et al., 2020). In this method, pioneered by Allen (2000), GDPpc values for countries with insufficient data are derived from the GDP data of the benchmark country and data on real wages and agricultural employment, using urban population data as a proxy. However, even reliable indirect estimates of GDP are only of limited use. While they may allow for cross-national comparisons of levels of living standards, they are not usable for the fine-grained analysis of productivity variation across industries and regions. Hence, the direct estimation method (involving the construction of production, income distribution or expenditure accounts) is preferable.

Our paper answers the following research question: can pioneering national accounts from the interwar time help to resolve the controversy of high or low Latvian growth in the period? The Estonian scholars Jaak Valge (2003) and Martin Klesment (2008) did estimate Estonia's real output growth 1923–1938 in this way. They derived cross-time comparable GDP values, using pioneering estimates of national income for Estonia of Juhan Janusson (1932; 1937) with a supplement of the service sector and recalculating them at constant prices with the help of historical price indices. For Lithuania, such an approach was applied by Gediminas Vaskela (2014) and Zenonas Norkus (2015).

Latvian expatriate historian Arnolds Aizsilnieks did similar work in his *opus magnum* the 'Economic History of Latvia, 1914-1945', still considered the most authoritative work on this period for this country (Aizsilnieks, 1968). He converted figures of the Latvian statistical office for 1934–1938 into constant prices of 1934, using a wholesale prices index (see Section 4). According to Aizsilnieks, real national income per capita for Latvia did not grow between 1934 and 1938, when total national income increased only negligibly (see Table 1).

Table 1. National income of Latvia in 1934–1938 at current and constant prices in national currency Ls according to Aizsilnieks.

	Total national income			National income per capita		
	Current prices, mil. Ls	Constant prices, 1934 mil. Ls	Index	Current prices, Ls	Constant prices, 1934 Ls	Index
1934	896.8	896.8	100	462.0	462.0	100
1935	896.1	855.1	95	459.0	438.0	95
1936	965.3	880.7	98	493.0	450.0	97
1937	1 149.2	844.4	94	585.0	430.0	93
1938	1 256.0	922.9	103	637.0	468.0	101

Source: Aizsilnieks (1968, p. 834).

The implication is that the ‘Ulmanis era’ in Latvia was one of economic stagnation.¹ Latvian authors are deeply divided on the question of Latvia’s economic growth during ‘Ulmanis era’. Stranga (2017) defends the stagnation thesis. Krastiņš (2001 (1996)), Seleckis (2000), and recently also Karnups (2021) are subscribing to the thesis that ‘Ulmanis era’ was a time of rapid growth. This assumption received powerful support from Roses and Wolf (2010), but much lesser from Norkus and Markevičiūtē (2021). Importantly, even if the Latvian economy during ‘Ulmanis era’ did not grow, the precise meaning of the ‘stagnation thesis’ is not clear without the knowledge of the preceding growth record. In the 1930s, the Latvian economy was hit by the worldwide economic crisis, and its recovery started in 1933–1934 (Aizsilnieks, 1968). Was then the entire second decade of interwar independence lost in terms of economic growth? Did one see a period of contraction (1930–1932), followed by partial recovery (1933–1934), and then protracted stagnation (1934–1938)? How large were the crises-related contractions? How much below or above was Latvia’s real output in 1938 compared to that of 1929–1930?

Can these questions be answered by simply extending Aizsilnieks series backwards, encompassing the complete interwar period with available national income estimates at current prices? Our paper aims to answer this question by a critical examination of the interwar Latvian work on national accounting. Differently from our times, no internationally accepted standards² for the calculation of value-added existed at that time. Thus, interwar estimates are not strictly comparable without an examination of the conceptual assumptions and procedures used in their calculations. Subsequent adjustments of the estimates for relevant differences have to be taken, and are they sufficiently uniform to allow for cross-time comparison?

After presenting the list of available estimates of national income at current prices for interwar Latvia produced at its time in Section 2, we discuss the estimates of the national income of Latvia for 1925, 1929–1930, and 1932 by Alfred Ceichners³ in Sections 3–4 and continue with those of Latvia’s statistical office for 1933–1938 in Section 5, partially used by Aizsilnieks.⁴ We answer our research question on comparability of these estimates in Section 6. Here we also discuss another cross-time comparability issue, related to difference of contemporary (GDP) and interwar measures of total output.

2. Interwar Latvian estimates of national income

Besides contributing to the assessment of interwar Latvia’s economic growth performance, our survey of pioneering Latvian efforts of national accounting helps to fill a

vexing lacuna in the history of economic knowledge. In 1958 Paul Studenski published the magisterial book 'The Income of Nations. Theory, Measurement, and Analysis: Past and Present' with an explicit aim of covering all contributions of the calculation of national income in all countries of the world since the pioneering works of Petty in the seventeenth century until his own time. This book remains a standard account of the rise of historical national accounting until now. According to Studenski (1958, p. 151), Latvia belonged to the first ten pioneer countries where national statistical offices published estimates of total output. In Latvia, this happened in 1936 (Valsts statistiskā pārvalde, 1936b, pp. 266–267), next after Australia (1886), Canada (1925), Soviet Russia (1925), Germany (1929), Netherlands (1931), New Zealand (1931), and the United States (1934).

In the concluding third part of his book, Studenski provides a survey of the rise of national accounting on a country basis, with separate chapters or sections on 77 countries. However, there are no sections on the origins of national accounting in Latvia and other interwar Baltic countries, despite Studenski (1958, p. 156) displays the knowledge of the work of Alfred Ceichners from Latvia, including him in his synoptic list of pioneers in national accounting. The most credible explanation is that the omission occurred because the Baltic countries had lost their sovereignty at the time of the publication. Despite the U.S. and most of their allies never recognized their annexation, the changes in the world's political map after WWII may have seemed irreversible by the late 1950s. After this assumption was refuted by the restoration of the Baltic states in 1990–1991, Studenski's blunder should be rectified, no matter how much interwar national income calculations are usable for estimating Latvia's economic growth.

Appendix 1 provides the summary of estimates of total output, produced in independent interwar Latvia or by expatriate scholars. This summary is based on the paper by Kālniņš and Pinke (2012). We expand their tabular summary by Ceichners estimate for 1927, his dissertation (Ceichners, 1931b), our archival findings, but omit some secondary sources. All estimates for the period before 1933 are produced by a single scholar Alfreds Ceichners (1899–1987). He graduated from the Division of Economics at the Latvian University, where he authored two dissertations. Ceichners was employed as a referent at the Ministry of Finances of Latvia and as a newspaper journalist between 1935 and 1939. There is no information that he ever held a permanent or full-time academic position. In 1944, he emigrated to the U.S, where he died (Norkus, 2018, pp. 243–244).

Ceichners (1927, 1931a) published his estimates in interwar Latvia's leading economics magazine 'Economists'. The actual time reference of the estimate for 1929 is 1929–1930. This ambiguity is related to the state budgeting practice of starting April 1 and ending March 31.⁵ Since nine months belong to the first year, 1929, we consider these data as representative of that year. Ceichners followed this convention in his estimation of Latvia's national income in 1932 (Ceichners, 1933a; 1933b). However, in the earlier publications, he assumed that his estimates would be closer to reality if they were based on primary data for two or more years to neutralize the impact of the annual fluctuations of volumes and prices. With agriculture making the greatest contribution, both total levels of prices and output were still heavily dependent on weather conditions.

Hence, to calculate the output of this sector, he used mean price and output values for several years. He extended this practice to other sectors, providing the mean value of national income for two years (1929 and 1930). The same ambiguity about time reference

is characteristic of his estimate of national income for 1925, where the output of agriculture was based on mean values for 1923–1925. He also published a national income estimate for 1927 (Zeichner, 1931). However, this publication provides only summary figures without a description of primary data and procedures. His next in-detail estimate was on the national income of Latvia in 1932 (Ceichners 1933a; Zeichner 1931). It also provides retrospective updates of the estimates for 1929–1930. Ceichners last contribution on national income is his article ‘National wealth’, published in the encyclopaedic handbook ‘Latviešu konversācijas vārdnīca’ (Ceichners 1934–1935). Here he provides national income figures for 1929–1930 and 1932. They differ from those in Ceichners’ earlier publications. In our discussion of his contribution, we attempt to find reasons for these changes.

After 1934 Ceichners remained among the most prolific interwar Latvian economists, producing three books (Ceichners, 1937; 1939; 1943). However, he did not publish new total output estimates, probably because this work was taken over by the national statistical office. In 1936, it published estimates of Latvia’s national income for 1935, including its breakdown into 11 sectors (Valsts statistiskā pārvalde, 1936b, pp. 266–267). The same publication provides semi-official national income estimates for 1933 and 1934, but with a shallower sectoral breakdown, i.e. primary sector, manufacturing, and trade.

After 1936, the national statistical office continued with the production of annual output but did not publish them. Karlis Zīverts (1940) provided data on Latvia’s national income in the contribution to the last volume of ‘Latviešu konversācijas vārdnīca’. He served from 1929 to 1936 at the Latvian statistical office, and from 1937 to 1944, he taught statistics and economic geography at the Latvian university (Kālņiņš & Pinke, 2012, p. 125). He did not collaborate on the production of estimates for 1936–1938. However, he surely had access to unpublished estimates from his former employer. These estimates are the primary source of the Latvian national income figures in the statistical handbook published under the Nazi occupation (Reichskommissar für das Ostland, 1942). This publication provides national income time series for 1933–1938, but only with shallow and somewhat idiosyncratic breakdowns by industry.

Relevant parts of the national statistical office were lost during foreign occupations 1940–1990. Thus, at the Latvian State Historical Archive, we were only able to find national income by sector tables for 1936–1938, with 11 industries.⁶ Thus, they are more fine-grained than those for the Nazi time publication and in line with the publication of the Latvian statistical office for 1933–1935 (Valsts statistiskā pārvalde, 1936b). These findings are presented in Section 5. However, we start with a discussion of Ceichner’s results for 1925 and 1929–1930 (Section 3), and 1932 (Section 4), summarized in the Appendix 2.

3. The size and the composition of Latvia’s national income in 1925 and in 1929–1930

Ceichners probably selected 1925 for his first estimates because a population census took place in that year, although many pieces of his primary data refer to earlier years. This estimate was produced combining production (or ‘objective’ according to Ceichners’ own terminology) and income (‘subjective’) methods. Key sources for the second method were income tax statistics data. However, in interwar Latvia, only a small part of the

population, mainly urban, was liable for income and social security taxes. In 1925, out of 1 123 392 employed persons, only 114 514 (10.2%) paid income tax (Ceichners, 1927, p. 431). Nearly all of them belonged to the urban population.

Ceichners estimates of the output of the primary sector reflect production statistics data. Using the 1923 Latvian agricultural census data, Ceichners was able to provide a rich and differentiated picture of the output of Latvia's agriculture. However, in the early 1920s, the Latvian statistical office still did not provide sufficient information for the application of a production method to manufacturing. He had to use bold assumptions to fill in gaps. Assessing the contribution of public services, he used an expenditure method, drawing on the data of expenditure of the central government and local municipalities for the remuneration of their employees.

A major fault of his estimates is unclarity about the standards and definitions, which upon his estimates rest. Analyzing agricultural production, he subtracted intermediate consumption of gross output of crops and fixed capital consumption. Drawing upon data from the Latvian agricultural census of 1923, Ceichners determined that the machinery and tools used in Latvian agriculture had a value of 70 mil. Ls. Assuming 10% annual depreciation, he determined that the annual wear and tear allowance was 7 mil. Ls. His agriculture estimates look like net national income (NNI) measurements. Indeed, Ceichner's explicit definition of national income refers to NNI: 'national income is the value of newly produced wealth in a state, subtracting the cost of this production, amortization of means of production and value of some monetary services' (Ceichners, 1931a, 587). However, even for agriculture, he did not attempt to measure fixed capital consumption in husbandry, and he completely bypassed the issue of depreciation of fixed capital, estimating the output of industry and services. Thus, for these sectors, his estimates refer to gross national income (GNI). Another defect is Ceichners' omission to subtract total output transfers to foreign owners and add transfers to Latvian owners of the assets abroad (see also Section 6).

Anticipating the contemporary SNA approach, Ceichners considered all branches of government as productive and estimated their contribution simply by adding up the budget expenditure on salaries (74.32 mil. Ls). To this figure, Ceichners added the expenditure of local municipalities for salaries for public servants, teachers, blue-collar workers and other municipal employees (20 mil. Ls). To quantify the value of services in private services, he calculated the total of wages of some 29 000 home servants and attendants (26 mil. Ls) and thereafter added the earnings of free professions (8 mil. Ls).

The total monetary value of services provided by public employees, servants, and attendants in the private sector and those of the free professions amounted to 128 mil. Ls, while the total contribution of the service sector was 216 mil. Ls: less than that for the primary sector (523 mil. Ls), but larger than the output of manufacturing (172.0 mil. Ls). The sum of the contributions of the three major sectors gives 911 mil. Ls as total national income. Ceichners' final figure of the national income per capita (500 Ls) is not very precise. More precise calculations, based on the number of Latvia's population in 1925 according to the 10.02.1925 census (1 844 805), would give 494 Ls (Valsts statistiskā pārvalde, 1925b, p. 10).

Ceichners' national income estimates for 1929–1930 are substantially larger (1 118 Ls mil. Ls total, 625 Ls per capita) (Ceichners, 1931a; 1931b). It is of central importance for our research question, whether a difference of 25% for national income per capita or 22.7%

for total output reflects the growth of the Latvian economy during the 4–5 years leading up to the Great Depression in the 1930s, which hit Latvia by the Autumn 1930. Or rather it should be attributed to changes in methodology or availability of new data. The contribution of inflation cannot be excluded too, because due to a failure of crops in 1928, there was an explosion in prices in 1929. Retail food prices rose by 12.6% between 1928 and 1929 alone, before a contraction of 34.2% until 1931 (Valsts statistiskā pārvalde, 1934, p. 198). Obviously, Ceichners decision to calculate the mean value for national income for 1929 and 1930 instead of annual values for 1929 or 1930 was an attempt to neutralize the impact of price shocks.

However, Ceichners was basically interested in the level of Latvia's national income in 1929–1930 more than its economic growth 1925–1930. He wanted to gauge the extent of the contraction of Latvia's output during the crisis. Thus, in later papers on Latvia's national income in 1932, he repeatedly came back to the estimates for 1929–1930, making adjustments (Ceichners, 1933a; 1933b), but never revised the estimate for 1925 Appendix 2 provides the summary of the original estimates for 1929–1930 together with that for the national income of 1925. Because of changes in the classification of economic activities, some activities are reclassified.

The most important observation from the comparison of 1925 and 1929–1930 is that the nominal contribution of agriculture as a leading sector of the Latvian economy remained nearly unchanged during the last five pre-crisis years, despite price increases (488 mil. Ls in 1925 and 482 mil. Ls in 1929–1930). This is taking into account damages inflicted on Latvia's agriculture by bad harvests in 1928. The immense increase in the net value of crops from 100 to 147.2 mil. Ls have nothing to do with the increase in real output. The latter is an outcome of the decision to add the value of manure to the final value of crop production (in Ceichners, 1933a; 1933b), instead of considering it as part of the output of animal husbandry, as was done in the estimate for 1925 (in Ceichners, 1927).

Differently from agriculture, manufacturing displays a major increase in the value of output from 172 to 241 mil. Ls. However, this is only in part related to the increase in real output. Establishing the estimate for 1929–1930, Ceichners tried to account for the contribution of small industries like the cottage industry and crafts. In fact, it turned out to be very considerable (76 mil. Ls). This represents the total output of enterprises that employed less than 5 workers or did not use any engines. Importantly, in the late 1920s, the quality of Latvian industrial statistics did improve a lot. The Latvian statistical office started to publish official estimates of the net value of enterprises above the threshold of 5 workers employed or engine used. Hence, Ceichners applied ready-made data instead of using intricately guestimates. Thus, Ceichners' (1927) estimate of output in 1925 at 172 mil. Ls was most probably overrated, accepting that in 1927–1929 its mean annual contribution was 165 mil. Ls.

A further reason for the considerable 'increase' of the Latvian national income 1925–1930 is the inclusion of the financial activities into the calculations, which were absent in the account for 1925. Another source of the significant 'increase' of Latvian national income 1925–1930 is the difference in the estimates of the contribution of trade, which is 61 mil. Ls for 1925 and 140 mil. Ls for 1929–1930. It is not possible that value-added of trade could more than double in only five years without other sectors displaying comparable progress. More probably, Ceichners figures for 1925 were severely

underestimates. Some evidence in favour of this hypothesis is his summary of national income estimates for 1927 (Zeichner, 1931), where the total contribution of trade is estimated to 120 mil. Ls.

The most creative and forward-looking feature in Ceichners' work is his treatment of real estate. This sector is missing in the 1925 accounts. In the accounts for 1929–1930, its contribution was estimated to 69 mil. Ls. Most innovatively, these figures include not only 25 mil. Ls 'net profit' of urban real estate, but also 15 mil. Ls of imputed rent to real estate owners in cities and 29 mil. Ls in rural areas, for value creation of own properties.

The overall conclusion is that Ceichners' national income figures for 1925 and 1929–1930 are not comparable due to different definitions and standards of calculation procedures.

4. Ceichners' national income estimates for 1932 and revisions for 1929–1930

The situation is different with Ceihners' figures for 1929–1930 and 1932, since his main concern for his 1932 estimates was to find the extent of the decrease in real national income (see Appendix 3). The Great Depression 1929–1933 made national accounting be transformed from a subject for economists with a special interest to a compulsory task for national statistical offices. In this transmutation, the work of Simon Kuznets in 1931–1934 on U.S. national income for the period 1929–1932 was imperative, culminating in the publishing of the first official U.S. national accounts in 1934 (Studenski, 1958, pp. 149–150, 455–456). One reason was being able to map the depth of the crisis as a necessity for conducting Keynesian economic policy.

Ceichners' (1933a; 1933b) work is a modest Baltic equivalent to Kuznets's pathbreaking achievement. However, Ceichners' attempt to measure the crisis-related contraction of real output remained incomplete since only the contribution of agriculture and fisheries were measured in both current and constant prices. He concluded that Latvian agriculture stepped up by 7.5% 1929–1932, from 493 to 530 mil. Ls in 1929 prices, although its nominal value (286 mil. Ls) was only 58% of the 1929 level (see Appendix 3). The huge decline in prices for crops and animal products did not discourage Latvian farmers from increasing their output. Quite the contrary, they were forced to produce more to pay interest on bank loans, which remained unchanged in nominal, but increased in terms of real value during the deflation. The inelasticity of demand for farm products made their income fall as prices fell more than output increased.

Ceichners was unable to estimate changes in real output for other industries. In all these industries, the output at current prices is contracted. However, there were two deviant cases: the communication industry, i.e. post, telegraph, telephone, and radio-telephone, which contributed with 10 mil. Ls in 1932 compared to 8.2 mil. Ls in 1929–1930. The real estate nominal contribution remained unchanged (40 mil. Ls). In other industries and sub-industries outputs at current prices were considerably lower in 1932 than in 1929. Manufacturing contracted by 36% and trade by 33%.

According to Ceichners judgment, these changes reflected both a decline in prices and real output. He based this judgment on contraction in employment, contributions to health insurance funds and increase in unemployment. In 1932, the number of employed

in enterprises with more than five employees or using motorized engines made up 76% of the 1930 level. The number of contributors to health insurance funds in 1932 was 13% less than in the previous year (Ceichners, 1931a). According to his final synoptic judgment, real national income of Latvia in 1932 was 10% (Ceichners, 1933a, p. 561) or 'at most 10–12%' (Ceichners, 1933b, p. 139) lower than in 1929–1930, despite nominal national income in 1932 (754 mil. Ls) was only 65.5% of its level before the crisis (1 151 mil. Ls).

Importantly, gauging the extent of the crisis-related contraction of Latvia's economy, Ceichners did not use his original estimate for 1929–1930 (in Ceichners, 1931a; 1931b). His problem was that he lacked data to produce reliable 1932 figures. Thus, he revised his estimates for 1929–1930, omitting sub-industries he lacked data for 1932. Hence, the 1933 estimate for 1929–1930 (see Appendix 3) can be considered as a simplified edition of its original 1931 version. This is revealed in the lower 1933 levels of his figures, i.e. 1151 in comparison to 1188 mil. Ls. At the same time, the 1933 estimate for agriculture for 1929–1930, 493 mil. Ls, is even slightly larger than that for 1931, of 482 mil. Ls. This can be attributed to the different methods of the estimation of the output of meat. While the 1931 estimate is based on counting value-added, the 1933 estimate proceeds from the expenditure side. Hence, the new estimates for 1929–1930 contain less sectoral and sub-sectoral fine grain in comparison with original ones.

Differences between the estimates for manufacturing and crafts for 1929–1930 in the 1931 and 1933 publications, i.e. 241 mil. Ls in 1931 and 270 mil. Ls 1933, have other reasons. Their time reference differs, since the 1933 estimate refers to 1930 and not the 1927–1929 value. The change in time reference can be explained by Ceichners' concern to gauge the full level of the crisis impact. For this aim, the peak output year before the crisis provides the best benchmark. According to statistical data, Latvian manufacturing continued its growth in 1930. Thus, the 1927–1929 mean annual value was replaced with 1930 data.

However, despite slightly higher estimates for the output of agriculture and industry, the revised 1933 estimate of total national income for 1929–1930 is lower than the original one, because imputed rents were not included in real estate activities. Forestry was also down-sized in 1929–1930 by replacing the imputed market value for forestries with net profits plus salaries of employees. More importantly, earnings of free professions and personal services were omitted from the 1933 estimations of the national income in 1932 and 1929–1930 for the sake of better comparability.

In his final estimate of national income for 1929–1930 (Ceichners, 1934–1935) Ceichners reintroduced omissions from the 1933 estimate (see Appendix 3). This applies to free professions and domestic services (32 mil. Ls). He also restored the original 1931 estimate (69 mil. Ls) of the output of the real estate activities, including imputed rents. The reduced 1933 estimates for forestry of 1929–1930 remained unchanged, when agriculture increased from 493 to 500 mil. Ls. The estimate for manufacturing of 1930 (270 mil. Ls) was slightly reduced to 260 mil. Ls. The last factor is the upward correction of the original estimate of 1188 mil. Ls (increased to 1224 mil. Ls) was the increased estimate of total government expenditures from 93 mil. to 103 mil. Ls.

Finally, Ceichners' last contribution to national accounting (Ceichners 1934–1935) also contains new estimates for 1932 (see Appendix 3). Like those for 1929–1930, they are revised upwards, increasing from 744 to 754 to 817 mil. Ls. Hence, the difference in output at current prices between 1932 and 1929–1930 remained stable like in the original

estimates of Ceichners (1933a; 1933b). The estimate of total net output of agriculture stepped up from 286 to 300 mil. Ls, when that for manufacturing is cut down from 180 to 173 mil. Ls, and financial services from 27 to 18 mil. Ls. However, the new total national income figure for 1932 expanded due to the inclusion of free professions (7 mil. Ls) and domestic servants (24 mil. Ls). These were omitted in the accounts published in 1933 because of a lack of data. Another reason is the upgrading of real estate activities from 40 to 69 mil. Ls due to inclusion of imputed rent for real estate from the property for own use.

5. Latvian semi-official national accounts for 1933–1938. How much did interwar Latvia grow?

In 1936, the Latvian statistical office published its first official estimates of national income, encompassing the years 1933–1935 (Valsts statistiskā pārvalde, 1936b). No methodological information was provided. This work continued in the next years, producing estimates for 1936–1938. However, for unknown reasons, they were never published by the statistical office, which would have given them official status. Therefore, we designate them as ‘semi-official’. Some summary estimates were published in the press and in handbooks. Estimates for 1936–1938 were published in the last volume of ‘Latviešu konversācijas vārdnīca’, printed just before its termination by the Soviet occupants (Zīverts, 1940).

The relevant parts of the archives of the national statistical office did not survive. We do not know why it discontinued publication of the national income estimates, but the lack of standardized methodology may be an important reason for considerable differences among simultaneous national income figures. In available publications, summary estimates are provided in abridged form only. Valsts statistiskā pārvalde (1936b) published the estimates for 11 main industries as of 1935. As for 1933–1934 and 1936–1938 some of these industries are merged, especially into the residual ‘other’. Hence, Table 2 presents the first complete publication of national income by the Latvian national statistical office for 1933–1938, based on its unabridged 11 industry classification. It is based on findings of our research in the surviving parts of the archive of the Latvian national statistical office.

There are huge differences between different publications of the national statistical office data. According to pioneering semi-official estimates, Latvia’s national income in 1935 was 980 mil. Ls (Valsts statistiskā pārvalde, 1936b, pp. 266–267). According to our archival source, it was 896.1 mil. Ls. The difference is basically explained by the larger initial estimates of manufacturing and crafts (239.0 mil. Ls), and trade (128.1 mil. Ls) compared to our source, i.e. 183.6 and 104.9 mil. Ls correspondingly. The series suggests that a full data set was not accomplished before 1939 or 1940. In consequence, we would strongly argue that the figures for 1933–1935 in Table 2 contain the final version of the estimates and should preferably be used. The coincidence of the figures in our source for 1935 and those in the statistical handbook published under German occupation (Reichskommissar für das Ostland, 1942) provide further support for this argument.⁷

Table 2 suggests very rapid growth, with Latvia’s total output increasing by 46.5% in 1933–1938. However, the real reason for the apparent surge of Latvia’s total output during the last independence years was the devaluation of Lats by 40% on September 28, 1936 (Karnups, 2012). The standard procedure to establish the change in real output is to deflate with price indices. The Latvian statistical office published a wholesale

Table 2. National income of Latvia 1933–1938 in mil. Ls according to Latvia's national statistical office.

		1933	1934	1935	1936	1937	1938
1	Agriculture	358.3	365.5	340.7	358.8	462.9	492.6
2	Fisheries	3.4	3.4	3.2	3.7	4.6	5.2
3	Forestry	21.7	21.9	21.2	28.5	35.0	35.1
4	Industry and crafts	152.3	170.4	183.6	194.1	231.2	257.4
5	Trade	91.8	97.4	104.9	121.4	148.6	164.4
6	Credit and insurance	20.2	21.5	22.7	26.7	31.8	35.7
7	Communication and transport	48.3	51.7	54.1	58.9	68.5	69.3
8	Urban real estate	41.3	47.4	47.0	48.9	49.9	50.3
9	Salaries in public sector	98.9	96.5	97.0	101.5	107.8	120.7
10	Free professions	11.3	11.0	11.2	11.7	11.9	13.2
11	Domestic services	10.1	10.1	10.5	11.1	11.3	12.1
Total		857.6	896.8	896.1	965.3	1163.5	1256.0

Source: Pārskati (1308), p. 16.

price index for Riga from 1928 to 1939. For 1922–1927, there are only two separate indices for export and import goods, and for 1920–1921 only wholesale price indices for particular goods in Riga. In addition, there is a retail food price index. These indices were published in the Latvian statistical annuals. Table 3 provides a summary of them.

Assuming the comparability of Ceichners' estimates for 1925, 1929–1930, and 1932 and of those of the Latvian statistical office for 1933–1938, we can present a picture of Latvian national income at constant 1938 prices (Table 4). For current prices in 1925, 1929–1930, and 1932 we use Ceichners final figures (in Ceichners, 1927, pp. 1934–1935). For 1933–1938, we use Latvian statistical office figures provided in Table 2. Since the wholesale price index is missing for 1925, we use the mean of export and import price indices as a substitute. Deflating national income in 1929–1930 into fixed 1938 prices, we use an unweighted arithmetic mean for the 1929 and 1930 indices.

The use of the Riga wholesale prices index as a deflator suggests the picture of a 'double-dip' economic crisis during the last years of independence, with the Latvian economy slightly contracting 1935–1937 after recovery in 1933–1934. Using the food

Table 3. Wholesale, export, import and food retail prices indexes for Latvia 1913–1940.

	1913	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929
Wholesale prices in Riga index	100	na	na	na	na	na	na	na	Na	129	120
Export goods price index	100	na	na	144.0	160.6	190.6	18.8	158.7	179.9	na	na
Import goods price index	100	na	na	128.5	123.3	121.9	125.1	120.9	120.3	na	na
Food retail prices index	100	138.8	127.7	109.1	115.1	126	139	134	135	147	165
	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940
Wholesale prices in Riga index	102	85	85	84	83	87	91	113	113	118	na
Export goods price index	Na	na	na	na	na	na	na	na	na	na	na
Import goods price index	Na	na	na	na	na	na	na	na	na	na	na
	141	100	76	78	76	71	75	90	99	100	na

Sources: Valsts statistiskā pārvalde (1924, p. 382; 1925a, p. 454; 1926, p. 558; 1927, p. 1927, 419; 1928, pp. 432–433; 1929, pp. 398–199, 412; 1930, pp. 390–391, 415; 1931, p. 425; 1932, pp. 364–365, 394; 1933, p. 196; 1934, p. 198; 1935, p. 197, 202; 1936a, 211; 1937, p. 250; 1938, p. 241; 1939, p. 211, 219); Latvijas PSR Tautsaimniecības statistikas pārvalde (1940, pp. 190–191). Na = Not available.

Table 4. Latvian national income 1925–1938 in current and constant 1938 mill Ls.

	1925	1929– 1930	1932	1933	1934	1935	1936	1937	1938
Total national income at current prices, mil. Ls	911.0	1224.0	817	857.6	896.8	896.1	965.3	1163.5	1256.0
Total national income at 1938 prices, using wholesale prices index as deflator, mil. Ls	659.6	1197.1	1086.1	1157.8	1219.6	1164.9	1197.0	1163.5	1256.0
Index (1938 = 100)	52.5	95.3	86.5	92.2	97.1	92.7	95.3	92.6	100.0
Total national income at 1938 prices, using food retail price index as deflator, mil. Ls	648.3	871.5	1062.0	1089.2	1165.8	1245.6	1274.2	1279.8	1256.0
Index (1938 = 100)	51.6	69.4	84.6	86.7	92.8	99.2	101.4	101.9	100.0

Sources: Ceichners (1927; 1934–1935); Pārskati (1308), 11, 18987.

retail price index, the dip after the recovery disappears, but the stagnation since 1935 remains, including the last year, 1938. What about the impact of the Great Depression on the Latvian economy? Using the wholesale price index as a deflator, the results concur with Ceichners judgment that there was a contraction of 10–12% in the real economy during the crisis. However, using a retail prices index deflator, one might conclude there was no contraction at all. Instead, using this deflator, we should make a puzzling conclusion that between 1929–1930 and 1932 there was significant growth in Latvia's economy. This can be interpreted only as an indication of the lesser validity and reliability of the food retail price index in comparison with the wholesale price index.

Using both tools, one exaggerates Latvia's growth from 1925 to 1930, suggesting that total output doubled during 4–5 years. This time, the indications of both indices concur. However, for this exaggeration, the (in)comparability of the national income estimates for 1925 and 1929–1930 rather than the unreliability of indices has to be blamed. While Ceichners did his best to assure comparability of his estimates for 1929–1930 and 1932, he never returned to his pioneering estimate for 1925. Thus, it remains incomparable with figures for later years.

6. Concluding discussion

There is another handicap of using interwar national income estimates for the assessment of Latvia's economic growth. In our times, standard measures used for this aim are total GDP and GDPpc. However, GDP was still uninvented at this time. GDP is the total market value of all finished goods and services produced within a country. National income is the total income received by the country from its residents and businesses, regardless of whether they are located in the country or abroad, with the income of foreign residents subtracted (United Nations, 2009a).

Interwar Latvia's residents hardly invested abroad, and there were no noticeable remittances from abroad (Aizsilnieks, 1968). However, there were significant investments of foreign capital in Latvia, and there was considerable private and public foreign debt. In 1935, Latvia's residents received modestly 0.2 mil. Ls of interest from foreign debtors and for capital invested abroad but paid 4.5 mil. Ls (Valsts statistiskā pārvalde, 1936b, p. 273). There is no data on remittances from Latvia's residents employed abroad. However, Latvia was dependent on seasonal agricultural workers from Lithuania and

Poland, who jointly with few other foreign employees in Latvia's economy transferred 3.1 mill. Ls. to their native countries. Hence, Latvia's gross national income (GNI) in 1935 was at least 7.4 mil. Ls less than its GDP, which still remains uncertain.

The difference between the values of the two measures was not too large to prevent the usage of both measures as roughly equivalent, at least for growth measurement. A graver obstacle for the use of interwar national income estimates as a basis for this aim is limited comparability between the estimates themselves. This applies even to estimates of national income for the period 1933–1938, produced by the Latvian national office. The lack of established standards and uniform rules is most tellingly betrayed by large differences between estimates for identical years (see Section 5). This was the main reason why the Latvian statistical office did not continue the publication of its national income estimates, although it continued the calculations for internal use. The publication would have to involve retrospective revision of already published estimates at the risk of discrediting the whole enterprise. Thus, the resumption of publication was most probably postponed until they had found a consensus on methodological issues and standards.

Therefore, even a partial agreement on estimates of Latvia's real national income in 1933–1938 does not provide definitive proof of economic stagnation during 'Ulmanis era'. Without the knowledge in detail of the methodology of the national statistical office, it is impossible to extend its national income series backwards, using the calculations of Ceichners for 1925, 1929–1930, and 1932. First of all, this applies to his estimate for 1925, which is definitely not comparable with his own later estimates for 1929–1930. It seems that Ceichners was conscious of this predicament himself since he never used his figure for 1925 for cross-time comparisons.

Ceichner's estimates for 1929–1930 and 1932, which were produced to estimate the crisis-related contraction of Latvia's economy, are partial exceptions. However, Ceichners succeeded to achieve this aim for agriculture only. For the total economy, his figures do not provide us with meaningful results about the changes in its real size. Based on the last estimates of the national statistical office for 1933–1934 (see Table 2), estimates of Ceichners for 1929–1930 and 1932 (see Appendix 3), and using Riga wholesale prices as deflator (see Table 3), we should claim that Latvia's real economy in 1934 did surpass the pre-crisis level. This claim is not supported by diverse and rich data published in the Monthly Bulletin (*Mēneša bijetens*) of the Latvian statistical office, which only validates the claim that in 1933–1934 the business cycle in Latvia started to improve. Applying food retail prices as deflator to the same figures, one should conclude there was no economic contraction and claim that in 1932 Latvia's output exceed the pre-crisis level by 22%. Both these operations are neither valid nor reliable.

All considered, Latvia's interwar national accounts do not allow us to repeat the success story of Valge (2003) and Klesment (2008), who were able to construct cross-time comparable real output series widely received and cited for Estonia in 1923–1938. The main reason for their success was that they could rest on the work of a single scholar (Janusson, 1932; 1937). Even if his methodology was outdated from contemporary view, as Janusson believed that the bulk of service sector is 'economically unproductive', his national income calculation rules were consistent and stable. Hence, they allowed both for backwards extension of his time series and for expansion by missing sectors.

However, the attempt to estimate the economic growth of interwar Lithuania in the 'Estonian way' ('recycling' interwar estimates) by Lithuanian scholars like Vaskela (1998)

and Norkus (2015) was not successful. They measured Lithuania's economic growth in 1924–1938 by applying a retail price index to deflate Lithuania's national income in 1924 by Albinas Rimka (1926) and that for 1938 (Reichskommissar für das Ostland, 1942, p. 120), which was produced by the Lithuanian national statistical office in 1941–1942 at the request of Nazi occupation administration. Rimka described his methods in detail (see Norkus, 2018), but the documentation from the Lithuanian statistical office did not survive. Assuming comparability of both estimates, Vaskela and Norkus did arrive at the conclusion that total national income of Lithuania increased by 94% from 1924 to 1938, when the annual growth was 4.8%.

According to later research by Klimantas (2020), Klimantas and Zirgulis (2020), and Norkus and Markevičiūtė (2021), these figures strongly exaggerate interwar Lithuania's growth, and thus, the comparability assumption is wrong. Alternative estimates of Klimantas and Zirgulis (2020) deserve greater credibility because they are derived from the benchmark estimate of Lithuania's GDP in 1937 and physical output indices for particular sectors. The benchmark GDP value is calculated using the contemporary SNA 2008 framework and the 21 sector ISIC, Rev. 4 economy model (United Nations, 2009a, 2009b). We believe that this latest 'Lithuanian way' of arriving at reliable estimates of interwar Latvia's growth is more promising than the 'Estonian way'. The application of these rich primary historical statistical data of interwar Latvia is the task of further research.

Notes

1. As Prime Minister in 1918–1921, Karlis Ulmanis was one of the founders of independent Latvia and was one of its most prominent politicians during the parliamentary democracy period in 1920–1934. Appointed as Prime Minister again, he staged on 15.05.1934 a coup, establishing a personal dictatorship, where society and economy were organized into a variety of corporate statisms mimicking Mussolini's Italy. However, there was no ruling party or rubber-stamp parliament. The alleged inability of parliamentary democracy to lead Latvia out of the economic crisis was an important argument to legitimate its abolition.
2. See e.g. United Nations (2009a; 2009b).
3. The references Ceichners, Ceichner, Zeichner, and Ceihners refer to the same person because he authored his publications under his family name with at least four different spellings.
4. For unclear reason, he omitted estimates for 1933.
5. However, the Latvian government decided to switch to the calendar year budgeting since 1 January 1941. The transition budget for 21 months (April 1939–December 1940) was not implemented because of the Soviet occupation from June 1940.
6. Pārskati (1308), p. 16.
7. This source does not cover 1933–1934 and merges many sectors for 1935–1938. Summary figures in our source (1163.5 mil. Ls) and Reichskommissar für das Ostland 1942 (1149.2 Ls) differ for 1937 only.

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Appendices

Appendix 1. Estimates of total national income for Latvia 1925–1938 in millions Lats in current prices.

Year	Ceichners (1927)	Zeichner (1931)	Ceichners (1931a)	Ceichners (1931b) dissertation	Ceichners (1933a)	Ceichners (1934–1935)	Valsts statistiskā pārvalde (1936)	Latvian statistical office, archival data	Ziverts (1940)	Reichskommissar für das Ostland (1942)
1925	911.0									
1926										
1927		960.0								
1928										
1929			1188.0	1188.0	1151.0	1224.0				
1930										
1931										
1932					744.0	817.0				
1933							895.7	857.6		857.6
1934							961.0	896.8		896.8
1935							980.9	896.1		896.1
1936								965.3	965.3	965.3
1937								1163.5	1163.5	1149.2
1938								1256.0	1256.0	1256.0

Sources: see column headings and reference list.

Appendix 2. Alfreds Ceichners' 1927 estimate of Latvia's national income in 1925 and 1931 estimate of national income 1929-1930. The designations of main economy sectors typed in capital letters, those of sub-sectors in small letters.

Industries	1925		1929-1930	
	National income (mil. Ls)	National income (%)	National income (mil. Ls)	National income (%)
AGRICULTURE	488.0	53.6	482.0	40.6
Crop production	100.0	11.0	147.0	12.4
Animal husbandry	334.0	36.7	318.5	26.8
Beekeeping	3.0	0.3	3.5	0.3
Horticulture	18.3	2.0	13.0	1.1
FORESTRY	31.0	3.4	34.0	2.9
FISHERY	4.0	0.4	4.0	0.3
MANUFACTURING AND CRAFTS	172.0	19.0	241.0	20.3
Big industry	172.0	19.0	165.0	13.9
Small industry and crafts	Na	Na	76.0	6.4
TRADE AND TRANSPORT	88.0	9.6	200.0	16.8
Trade	68.0	7.5	140.0	11.8
Transport	20.0	2.1	60.0	5.0
CREDIT/BANKING	Na	Na	33.0	2.8
REAL ESTATE	Na	Na	69.0	5.8
GOVERNMENT	94.32	10.4	93.0	7.8
OTHER	34.0	3.7	32.0	2.7
Personal services	26.0	2.9	26.0	2.2
Free professions	8.0	0.8	6.0	0.5
Total	911.0	100.0	1188.0	100.0
Per capita	500 Ls	Na	625 Ls	Na

Sources: Ceichners (1927, 1931a, 1931b). Na = Not available.

Appendix 3. Alfreds Ceichners' 1931, 1933 and 1934–1935 estimates of Latvia's national income at current prices in 1929–1930 and 1932. The designations of main economy sectors typed in capital letters, those of sub-sectors in small letters.

Industries	1929–1930				1932		
	Ceichners (1931a, 1931b) (mil. Ls)	Ceichners (1933a, 1933b) (mil. Ls)	Ceichners (1934–1935) (mil. Ls)	Ceichners (1934–1935) (%)	Ceichners (1933a, 1933b) (mil. Ls)	Ceichners (1934–1935) (mil. Ls)	Ceichners (1934–1935) (%)
AGRICULTURE	482.0	493.0	500.0	40.8	286.0	300.0	36.7
Crop production	147.0	141.0	141.0	11.5	118.0	118.0	14.4
Milk	180.0	189.0	201.0	16.4	98.0	119.0	14.5
Meat	102.4	164.0	153.0	12.5	70.0	73.0	8.9
Poultry	26.0	Na	Na	Na	Na	Na	Na
Beekeeping	3.5	Na	Na	Na	Na	Na	Na
Horticulture	13.0	Na	Na	Na	Na	Na	Na
FORESTRY	34.0	18.0	18.0	1.5	7.0	5.8	0.9
FISHERY	4.0	3.4	3.4	0.3	1.6	1.6	0.2
MANUFACTURING AND CRAFTS	241.0	270.0	260.0	21.3	180.0	173.0	21.2
Big industry	165.0	160.0	150.0	12.3	107.0	103.0	12.6
Small industry and crafts	76.0	110.0	110.0	9.0	73.0	70.0	8.6
TRADE	140.0	140.0	110.0	8.9	93.0	93.0	11.4
TRANSPORT AND COMMUNICATIONS	60.0	47.0	55.0	4.5	30.7	36.0	4.4
CREDIT/BANKING	32.6	37.0	37.0	3.0	27.0	18.0	2.2
REAL ESTATE	69.0	40.0	69.0	5.7	40.0	69.0	8.4
GOVERNMENT	93.0	103.0	103.0	8.4	89.0	89.0	10.1
OTHER	32.0	Na	39.0	3.2	Na	31.0	3.8
Personal services	26.0	Na	32.0	2.6	Na	24.0	2.9
Free professions	6.0	Na	7.0	0.6	Na	7.0	0.9
Total	1188.0	1151.0	1224.0	100.0	744-754.0	817.0	100.0
Per capita	625 Ls	606 Ls	644 Ls	Na	390 Ls	426 Ls	Na

Sources: Ceichners (1931a; 1931b; 1933a; 1933b; 1934–1935). The estimate of 1932 national income in the publication in Latvian (Ceichners, 1933a) is lower (744 mil. Ls) in comparison with 754 mil. Ls in the publication in German (Ceichners, 1933b). The difference is explained by the contribution of industry (170 mil. Ls according to publication in Latvian and 180 mil. Ls according to publication in German). The second estimate seems to be based on more encompassing data. Na = Not available.