"The Economic Lag of Central and Eastern Europe: Evidence from the Late Nineteenth-Century Habsburg Empire"

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Introduction

The end of the cold war and the collapse of mark a major discontinuity in the economic history of the "lands between" Germany and Russia. Yet the recent events in Central and Eastern Europe have not left a completely blank slate upon which to write the future. Perhaps the most obvious legacy is the region's relative economic backwardness compared to Western Europe. Comparisons of international income levels are, of course, tricky, especially when they involve countries with sharply different economic systems and at different levels of development. Yet even if the available data have a substantial margin of error, they demonstrate the huge lag of the former East bloc economies within Europe.[1]

To what extent, however, is the current lag of Central and Eastern Europe a legacy of the communist period as opposed to the long-standing west to east gradient on the European continent? The question is not easily answered because prior to World War I the region lies in a "statistical dark age" compared to the much more heavily studied countries of Western Europe.[2] My paper helps to fill the statistical void by generating estimates of regional incomes within the Habsburg Empire for decade years between 1870 and 1910. These estimates replace preliminary results reported elsewhere.[3] Here I extend my early

work and aggregate the regional data to generate estimates of national income in the nineteenth century for the successor state territories of the Empire within their present-day boundaries. I combine these estimates with Maddison's data to provide some nineteenth-century perspective on the current situation in Central and Eastern Europe.[(4)]

The West-East Gradient in Europe and the Habsburg Empire

The argument that much of the current lag of the former East bloc economies lies in the Communist era certainly has some merit.[(5)] Yet even a rudimentary knowledge of European economic history demonstrates that the source of economic backwardness in Central and Eastern Europe lies deep in the past, not simply in the post-1945 cold war era. We can trace the origins at least back to the early modern period as proto-industrialization sprouted in rural areas of Western Europe and the "second serfdom" took hold in Eastern Europe.[(6)]

The Habsburg Empire held the middle ground on this European economic gradient. Straddling east and west, it fell somewhere in the mid-range being relatively backward compared to France and relatively advanced compared to Russia. In addition, containing a large chunk of today's Central and Eastern Europe, the sprawling Habsburg realm itself displayed a pronounced west to east economic gradient.[(7)] By the eighteenth century the Alpine lands and the Bohemian lands in the western portions of the Empire were more like the developing regions of western Europe, e.g., France and some of the German states, than the eastern, agrarian regions of the Habsburg lands, but the gap was probably small. In the early nineteenth century the slow transformation of the western territories in the Empire became irreversible. After mid-century, economic integration within the Habsburg lands fostered economic development in some of the eastern lands of Hungary. Thus, by the late nineteenth century the lands of Central and Eastern Europe under Habsburg rule formed a steep economic gradient in the heart of Europe running from the most advanced regions bordering on Germany to the more backward areas bordering on Russia and the Balkan states.

The quantitative evidence for this picture is growing, but remains relatively weak. The Hungarian economist Friedrich Fellner developed the first estimates of national income for the Empire and its two major subunits, which I refer to here as imperial Austria and imperial Hungary.[(8)] Estimates of income levels for earlier years and growth rates in the nineteenth century exist mainly for these two "halves" of the Empire. For imperial Austria, the pioneer was Gross who reworked Fellner's estimates for 1911-1913 and generated his own estimates of national income for earlier benchmark years: 1841, 1865, and 1880.[(9)] Others followed in his footsteps and derived sectoral estimates of production, sometimes on an annual basis.[(10)] Kausel combined the work of Sandgruber, Rudolph, and Gross to derive an annual estimate of GDP for the territory of imperial Austria back to 1830.[(11)]

For imperial Hungary, the pioneer was Katus who estimated Gross Material Product for the post-1867 era along Marxist lines for the agricultural, industrial, commercial, and

transportation sectors.[12] No one has reworked his data in line with modern national accounting procedures, but Komlos derived an index of industrial production that suggests a smaller rate of growth than the manufacturing series of Katus.[13]

Taken as a whole, this work has significantly challenged the received view of the Empire as "the sick man on the Danube."[14] Yet the sheer size of the sprawling realm and the substantial regional disparities within it mean that these data are not suitable for providing long-term perspective on the current lag of the former East bloc economies within Europe. Such a perspective requires data on regional incomes within the Empire prior to its collapse. Some data do exist, but they are quite fragmentary, except for the immediate pre-World War I years.

The dissolution of the Empire after World War I stimulated the first estimates of income levels in regions within the Empire's two quasi-states.[15] Fellner estimated pre-1914 income levels in the successor state units of imperial Hungary while Waizner estimated pre-War income levels in the successor state units of imperial Austria.[16] Kausel et. al revised the Fellner/Waizner numbers and later Kausel estimated GDP back to 1830 on the territory of present-day Austria.[17] Eckstein reworked Fellner's data according to modern standards of national income accounting and derived as estimate of pre-World War I income on the territory of post-1919 Hungary.[18] Ivo Vinski provided estimates of pre-World War I income (in dinars of 1953) on the territory of post-1919 Yugoslavia, much of which had been under Habsburg control.[19] No comparable estimates are available for Czechoslovakia. In their study of national income in interwar Czechoslovakia, Pryor et. al. link sectoral time series data back to 1913.[20] These permit a comparison of 1913 levels with interwar years, but do not permit direct comparison with estimates of pre-World War I income levels for other successor state units.

With the exception of Kausel's estimate for present-day Austria, we have no estimates of income growth before 1900 for successor state territories of the Empire. In his study of income growth on the European periphery, Maddison provides income estimates for the territories of present-day Austria, Czechoslovakia, and Hungary for the period 1870 and 1913.[21] But these rely on the existing estimates of Kausel and Katus and some "back-of-the-envelope" calculations based on assumptions about sectoral and regional growth rates in the former Empire.[22]

The Estimating Procedure

Beginning in the 1950s, the statistical base of nineteenth-century macroeconomic history expanded enormously under the influence of Simon Kuznets who pioneered the use of the national income accounting framework for analyzing long-term growth.[23] Despite the outpouring of data, the statistical record for nineteenth-century European economies is far from complete.

In response to the difficulty of using national income accounting techniques in settings where the underlying data are poor, both economic historians and development economists have employed short-cut methods to derive indirect estimates of national income and product. These methods rely on a wide range of socio-economic data that are readily available compared to what is required for standard national-income type estimates. Because these variables tend to be highly correlated with income, they serve as useful proxies for it. They can be combined into a single index that permits a ranking of national economies or regions within national economies with respect to levels and rates of economic growth.[24] The push for alternative kinds of data comes also from critics who do not believe that national income and product data provide adequate measures of development. They advocate instead indicators geared toward measuring a society's well-being--the quality of life enjoyed by its members or the extent to which basic needs are satisfied.[25]

Despite their widespread use, approaches using proxy measures remain controversial. A fundamental problem is that choosing indicators and weighting them in a single index can be quite arbitrary. Different indicators and different weights may lead to significantly different rankings among national economies or among regions within a national economy. After noting the deficiencies of the proxy method, Maddison argues strongly in favor of the Kuznetsian national-income approach as the most reliable means of filling in the gaps in our historical knowledge.[26]

In principle, of course, Maddison is correct. In practice, however, it is not always feasible to work within the Kuznetsian tradition. The required data may be either completely lacking or prohibitively costly to generate. This is especially true when operating at the regional level of a national economy. Only for the United States have there been systematic efforts to generate regional estimates of income and product before World War I within a national income accounting framework.[27] Not surprisingly it has taken a large number of American scholars a long time to squeeze out these data from existing source material.

All of this is relevant for the case at hand. Pushing back time-series data on the national incomes of the present-day economies of Central and Eastern Europe into the nineteenth century requires estimates of regional incomes in three late nineteenth-century empires, the Habsburg, the Russian, and the Ottoman. In the Habsburg case (and presumably the others as well) the normal problems of estimating regional incomes with national income accounting techniques are compounded because the successor state territories did not wholly conform to the regional units for which data were collected.

Thus, in the case of pre-1914 Central and Eastern Europe there seems to be no alternative to using some variant of the proxy approach. Here I adapt the approach employed by N.F.R. Crafts to estimate nineteenth-century income levels for countries with poor national income data.[28] Crafts began with the estimates by Kravis et.al. of real national product per capita in U.S. dollars for 1970, adjusted for purchasing power parity differences.[29] He projected the 1970 levels back in time at known rates of growth in real

per capita GNP for each country to get nineteenth-century levels of real GNP per capita in U.S. dollars of 1970.[30]

Crafts then collected data for several proxy variables that are available for some European countries with relatively good national income data and for other countries with relatively poor national income data. He estimated a regression equation from the data for the countries with good data in which real national product per capita was a function of the proxy variables--letters posted per capita, the share of the age group 15-64 in the total population, coal consumption per capita, and the infant mortality rate. The regression used pooled data for the ten countries and the decade benchmark years between 1850 and 1910. He then used the estimated equation with values of the independent variables for the countries with relatively poor national income data to estimate levels of real national product per capita for the benchmark years.

His method has two main advantages over others that work in the proxy tradition. First, it directly estimates national income in a single currency, which makes international comparisons of income levels and growth rates possible. Second, it relies on the regression analysis to determine the weight of the proxies in the final estimate rather than doing so arbitrarily.

Estimating Pre-1914 Incomes for the Habsburg Empire, its Regions, and its Successor States

Like Crafts, I use data for benchmark years between 1850 and 1910 for several European countries to generate an equation where national income per capita is a function of proxy variables. My estimate differs from Crafts in two respects. First, I rely on Maddison's population data and indexes of GDP to generate income per capita estimates for the nineteenth-century benchmark years. Second, I estimated a new equation using different proxy variables, since most of the proxies used by Crafts were not available for the regions of the Habsburg Empire.

Deriving the Crafts-Type Regression Equation. The first task was to generate data for the independent variable, i.e., GDP per capita for the twelve countries at seven nineteenth-century benchmark dates. As for cross-country comparisons, the GDP data must be converted into a common currency unit, e.g., the British pound or the U.S. dollar, if they are to be used in the regression. Rather than using exchange rates to convert the GDP into a single currency unit, I follow Crafts in starting with data from the International Comparison Project (ICP). The problems in using exchange rates to make the necessary conversions are well known.[31] Using exchange rates systematically understates the purchasing power of currencies in low income countries and in so doing overstates the dispersion of national per capita incomes.[32] In addition, in the short-run, exchange rates do not provide a useful guide to underlying purchasing power differences because they are heavily influenced by capital movements. The ICP solution, which is

now used by all major statistical offices like UNSO and Eurostat, is to use purchasing power parities (PPP) rather than exchange rates to convert GDP into a common currency unit, the U.S. dollar.[33] The effect of using PPP rather than exchange rates to convert GDP into U.S. dollars is, as expected, to narrow substantially differences in international income comparisons.[34]

To estimate GDP per capita for the nineteenth-century bench-mark years, Crafts projected back ICP estimates for 1970 at known rates of growth for 10 countries. Instead I rely on Maddison's data for 12 countries--Belgium, Denmark, Finland, France, Germany, Italy, Norway, Russia, Sweden, United Kingdom, Netherlands, and Switzerland--which are based on the more recent ICP-type estimates of Eurostat/OECD for 1980.[35] Also, I use Maddison's indexes of GDP to project back the 1980 levels for each country to the pre-1914 benchmark dates. Maddison has adjusted these indexes to eliminate the effects of boundary changes. Also, over the years he has periodically updated them as country specialists improve their long-term estimates of GDP.[36] Maddison notes that the GDP indexes are relatively less reliable as one moves back in time. For the pre-1914 period, they are relatively more reliable for the UK, France, Germany, Italy, and the Scandinavian countries than for Belgium, Netherlands, Switzerland, and Russia.[37]

To generate the nineteenth-century benchmark estimates of GDP per capita in 1980 international dollars, I deflated the 1980 level of GDP by the index of GDP for 1980 (where 1913=100) to arrive at 1913 GDP. I then deflated the 1913 level by the GDP index for the appropriate nineteenth-century bench-mark years and used Maddison's population figures, which are also adjusted to eliminate the impact of boundary changes, to arrive at the estimates of GDP per capita.[38]

The second task was to generate data for the independent variables. Here data availability was the primary criterion in selecting proxies. Data for the proxies had to be readily accessible both for the regions of Austria-Hungary and for the 12 European states in the late nineteenth-century. Five variables satisfied this condition. Only one--mailed items per capita--was used by Crafts. One of my variables--the share of the nonagricultural sectors in the total labor force--was available to him, but he chose not to use it. He was interested in relating patterns of per capita income to certain structural variables, such as industrialization. Here I am interested strictly in estimating per capita income, so I did not hesitate to use a structural variable that is closely associated with economic growth as measured by income per capita. Two of Crafts' variables--coal consumption per capita and the percent of the total population in the age bracket 15-64--were not available for the regions of Austria-Hungary.

The five variables make sense from a theoretical point of view. The volume of mail as measured by letters posted should be positively related to the volume of economic transactions, i.e., GNP. Mortality as measured by the death rate should be negatively related to income--falling as a higher standard of living brings improved nutrition and greater resistance to disease. The percentage of the labor force not in the agricultural sector should be positively correlated with income per capita because it provides a

measure of the structural change that accompanies economic growth. The level of real savings deposits in savings banks should be positively related to income per capita. On the one hand, savings grow as income rises; on the other hand, savings promotes capital formation, a major source of economic growth. The ratio of school enrollments to total population is a crude measure of human capital formation, which, as a major source of economic growth, should be positively related to income.

I relied on a variety of sources to obtain benchmark measures of the independent variables for the twelve European countries.[39] The data set is not without its problems. For example, the definitions and chronological coverage of some measures differ from country to country and, in contrast to Maddison's data, the measures reflect boundaries as of the benchmark year.[40] But these inconsistencies are relatively small in magnitude and their effects probably wash out in the regression estimates.

I converted the data into log form and estimated several equations with GDP per capita as a function of varying combinations of independent variables. The results are in Table 1. The "best" equation, in the sense that the coefficients were of the correct, i.e., expected sign, and statistically significant, contained three variables: the crude death rate, the share of the nonagricultural sectors in the labor force, and mailed items per capita. The other variables--the real value of savings deposits in savings banks and the school enrollment ratio-- did not perform as well. When entered into the equations they were either of the wrong sign (LSER in regression (4) and LSRV in equations 3, 5, and 6) or they were not statistically significant (true in all cases except LRSV in equation (5) where the coefficient is of the wrong sign).[41]

The equations fail the Durbin-Watson test, e.g., in equation (1) the Durbin-Watson statistic is .70825. This indicates the presence of autocorrelation among the error terms, which is not surprising considering the strong secular trends in all the variables. I did not correct for autocorrelation because my purpose is to derive an equation that "predicts" income per capita rather than one that "explains" differences in income per capita across the 12 European states.

Equation (1) represents a marked improvement over the one I used in initial efforts to estimate regional incomes in the Habsburg Empire.[42] That equation also used the death rate and letters per capita as proxy variables. As the third independent variable, however, I used the real value of deposits in savings banks per capita, which generated a coefficient that was of the correct (positive) sign, but not statistically significant. The third variable used here, the share of the labor force outside of agriculture, is not only statistically significant, but also the most important variable of the three.[43] For this reason, my estimates here must be considered more reliable than my earlier ones.

The Austro-Hungarian Data: I relied on official government statistics to generate measures of the independent variables for the Habsburg Empire, its 22 regions and its successor states. I provide a brief overview in Table 2.[44] Computing two proxies, the death rate and letters posted per capita, was relatively straightforward. By contrast, the

estimates of the share of nonagricultural sectors in the labor force were more problematic and require discussion here.

As is true for other nineteenth-century economies, labor force data for the Habsburg lands must be used with care, especially because most observers agree that the 1890 censuses in the two post-1867 quasi-states of the Empire were the first carried out according to modern standards. For regions in imperial Austria, I relied on the exhaustive reworking of the underlying data by Bolognese-Leuchtenmüller who attempts to reconcile the labor force data for the five census years beginning in 1869.[45] To provide a consistent data set, I reworked the regional data for imperial Hungary to conform to the definitions used by Bolognese-Leuchtenmüller for imperial Austria.[46]

The estimated shares of agriculture in the total labor force do indicate a tendency for agricultural labor to be significantly undercounted in both the 1880 and the 1869 censuses for Austria and Hungary.[47] For many regions, the shares show little change before 1890; for some the shares in 1880 and even 1869 were actually lower than in 1890. Using these figures in the regression equation to predict regional incomes would bias the results in favor of relatively high levels of regional income in 1870 and 1880 and relatively low growth rates from 1870 to 1910. The potential bias is particularly bothersome because the share of the labor force in agriculture is the most powerful variable in the estimating equation.

I tried two different methods to arrive at more plausible estimates for the share of the labor force in agriculture before 1890. In variant I, I fit a trend line to the data for 1890, 1900, and 1910 and used this trend to estimate the shares for 1880 and 1870. In variant II, I assume that the relative decline in agriculture as measured by the sector's share in the total labor force is modest at first and then accelerates over time. To project back the share of agriculture in the labor force before 1890, I used variant II because I find its underlying assumptions intuitively more appealing.[48] In addition, variant II yields lower estimates of levels in the earlier years, which biases the income estimates somewhat against rapid growth.

The Results. These data are readily available for imperial Austria, imperial Hungary, and their 22 regions, so estimating pre-1914 GDP per capita in 1980 US international dollars for them was straightforward. I simply inserted values of the independent variables into equation (1) of Table 1:

LYP = 5.1775 -.26779 LCDR +.60893 LNAGR +.14225 LLET

The resulting estimates appear for the Empire, its two quasi-states, and their 22 subregions appear in Table 2.

Estimating nineteenth-century incomes on the territory of the post-1919 Habsburg successor states is less straightforward. For imperial Austria, I estimated GDP per capita in the present-day boundaries of its successor state units as the weighted average of GDP per capita of their nineteenth-century regional components (see Table 2), with the 1910 share of population as weights. Where the present-day boundaries of a successor state cut through a nineteenth-century region, I used district-level population data for 1910 in generating the population weights. To do this I relied on a current atlas, which indicated the post-1945 boundaries of the successor states, and a map of imperial Austria with its 14 regions and their districts.[49] Where a district had to be divided among two or more present-day states, I made a rough "eye-ball" estimate of the share of population going to each state, which was possible because both maps contained details on rivers and towns. I list in the notes and sources of Table 3 the successor state territories of imperial Austria (present-day boundaries) in terms of its nineteenth-century regional units.[50]

The method works for imperial Austria because most of its nineteenth-century regions fell completely within a single present-day successor state. Also, where they do not, e.g., Galicia is split between present-day Poland and present day Ukraine, the income differences within the region were most likely quite small. This means that the GDP per capita level for the entire region is a reasonable proxy for any of its subregions.

By contrast the method is problematic in the case of imperial Hungary because none of its nineteenth century regions falls within the boundaries of a present-day successor state. More importantly, regional income differences <u>within</u> regions that are split between two or more successor states were likely to have been quite high, so assuming that income in each subregional component is the same as for the region as a whole is not justified.[51] I dealt with the problem by building up income estimates for the successor state units of imperial Hungary from county and city-level data. As in the case of imperial Austria, I used a current atlas and a map of imperial Hungary to arrive at a breakdown of the successor state units (current boundaries) into their nineteenth-century counties and cites. Two of the three variables, the share of agriculture in the labor force and the crude death rate, could be built up for the successor state units from county and city level data. The data on mailed items is not available on the county and city level, so here I had to assume that the value for each of a region's subunits was equal to the value for the region as a whole.[52]

To arrive at estimates of GDP per capita for the period 1870 to 1910 for the successor states, I combined the separate estimates for imperial Austria and imperial Hungary. The results appear in Table 3.

Comparison with Existing Estimates. My estimates can be compared with existing estimates of pre-World War national income for the Empire and its two quasi-states imperial Austria and imperial Hungary, and for the successor states in their present-day (pre-1989) boundaries. The existing data provide an indirect test of my approach because some of them were estimated within the Kuznets-type national income framework. At the

same time, the two sets of estimates show some important differences in levels and growth rates.

Table 4 compares my new estimates of GDP per capita in 1910 for Austria, Hungary, and Czechoslovakia with those of Maddison for 1913.[53] The two sets of estimates are almost identical for Czechoslovakia, while mine are somewhat lower for Austria and for Hungary (just under 5 percent). Considering the sharp differences in estimating procedures--Maddison's relying on a backward projection of 1980 ICP income levels with indexes of real GDP per capita and mine on the relationship between several proxy variables and GDP per capita for 12 European countries before World War I--the estimates are remarkably close.

Table 5 extends the comparison by including other successor state units on the eve of World War I. However, I report relative rather than absolute levels because my income data, like Maddison's, are in 1980 international dollars, while those based on the Fellner/Waizner estimates are in 1913 crowns, the monetary unit of the Habsburg Empire. The comparison shows that my results are nearer to the original estimates of Fellner and Waizner than to the adjusted estimates based on revisions by economists after 1945. The main difference between the original and revised estimates stems from the adjustment made by Kausel et. al. They argued from accident insurance and tax data that the original Fellner/Waizner estimates exaggerate the pre-World War I income gap between the Czech lands and Austria. Their adjustment implies that GDP per capita in the Czech lands was 18 percent less than the Austrian level rather than the 3 percent implicit in the original Fellner/Waizner estimates. According to my estimates, the Czech level was just under 10 percent below the Austrian, which accords with more qualitative kinds of evidence indicating that the Czech lands were one of the most highly industrialized regions of the Empire.[54]

The very rationale for my project, i.e., the lack of data on long-term growth rates and income levels in subregions of the Empire before World War I, means that we have few earlier benchmarks to use as a standard for judging my new estimates. Table 6 compares them with the available data. Only the estimates of Kausel for imperial Austria, Kausel for the present day territory of Austria, and Katus for imperial Hungary rely on a national income-type approach. Bairoch's figure for the Empire as a whole and Crafts estimates for imperial Austria and imperial Hungary utilize different variants of a proxy approach. Maddison arrives at estimates for imperial Hungary and the post-1919 territories of Czechoslovakia and Hungary by extending Kausel and Katus with simplified assumptions.

Compared to existing ones, my new estimates of rates of growth are close in the case of the higher income, western portions of the Empire, but they are significantly higher for the lower income, eastern regions of the Empire. My estimate for growth on the territory of present-day Austria is actually lower than Kausel's by 0.02 of a percentage point. For imperial Austria (which includes low-income regions in the east and south in addition to high-income Czech lands and most of present-day Austria), I estimated growth rates that are less than 0.20 of a percentage point higher than Kausel's and 0.02 of a percentage

point higher than Crafts's. By contrast, my estimate for imperial Hungary (which on balance had more lower income regions than did imperial Austria) is 0.80 of a percentage point higher than Maddison's and 0.30 of a percentage point higher than the estimates of Kausel and Crafts. The tendency for my results to be closer to existing estimates for the western lands of the Empire, but higher than existing estimates for the eastern lands is consistent with my relatively high estimate of growth in the Empire as a whole (1.63 percent) compared to Bairoch's (1.45 percent).

Is it possible that my estimates of relatively higher rates in imperial Hungary and in peripheral regions of imperial Austria do not reflect actual patterns of growth, but rather some underlying bias in the proxy variables? There is no a priori reason to think that the proxy variables exaggerate rates of growth in low income areas. For the share of agriculture in the labor force, the reverse may be true because the undercounting of agricultural was particularly acute in rural areas. Compared to the original data, my correction leads to a higher share of agriculture in the labor force for 1880 and 1870, a larger drop in the share between 1870 and 1910, and consequently a higher rate of growth in income than otherwise would be the case. But the correction does not systematically bias low-income (heavily agricultural) regions toward higher growth rates; the share of agriculture in the labor force tended to fall between 1870 and 1910 at a faster rate (usually over 20 percent) in the higher income regions, than in the lower income regions (usually less than 20 percent). All other things equal, this would have generated lower rates of growth in low-income regions.

Implications

My estimates begin filling the gap in our understanding of national income levels in Central and Eastern Europe before World War I. They provide some data for comparison with existing estimates, but mostly new data where none existed before, including estimates for some newly-created, post-cold war states: the Czech Republic, Slovakia, Slovenia, and Croatia. In combination with Maddison's data on GDP levels elsewhere in Europe, my results offer insights on several key issues concerning the relative backwardness of the region.

The data indicate clearly that the current lag of Central and Eastern Europe was already deeply entrenched in the nineteenth century. We do not know how rapidly the economies of Central and Eastern Europe grew in the decades before 1870, but we can say that they failed to keep pace with the economies of Western Europe. By that year, GDP per capita in the Habsburg Empire as a whole stood at a level less than one-third the UK (see Table 7), a gap that was surely not this large a century before.

Furthermore, regional disparities within the Empire mirrored the larger economic gradient in Europe; income levels were two to three times higher in the Empire's western lands than in its eastern lands. For example, on the territory of present-day Austria the level of GDP per capita was over 50 percent of the UK, while on the present-day territory

of Western Ukraine it was barely 20 percent of the UK (see Table 7). The regional disparities that plagued the Empire in its final years also became bones of contention in newly created multinational successor states after 1919. My data show, for example, the nineteenth-century origins of Slovakia's persistent lag behind the Czech lands and of Slovenia's lead as the wealthiest of the Yugoslavian republics. They provide the basis, therefore, for analyzing the long-term economic growth of the new states that formed after the collapse of Czechoslovakia and Yugoslavia.

While providing a more precise statistical picture of the region's relative backwardness, my data also confirm previous work that challenges the more pessimistic views on its economic performance in the last decades under Habsburg rule.[55] Table 7 shows that the Habsburg Empire grew more rapidly in the late-nineteenth century than most European economies including even Germany, so that by 1910 its GDP per capita stood at nearly 43 percent of the UK level. In addition, regional income disparities within the Empire began to close in the four pre-World War I decades. The convergence of regional disparities can be demonstrated formally with two kinds of evidence. Table 8 shows the coefficient of variation of GDP per capita for the 22 Habsburg regions and for the 11 present-day successor-state units of the Empire. Over the course of the late nineteenth century, the statistic declines, which means that as average income grew in the aggregate, the dispersion of regional incomes around the average became smaller.

My estimates of regional incomes in the Habsburg Empire show that both the "rich" lands and the "poor" lands "got richer" in the late nineteenth century (incomes grew in absolute terms), but the issue here concerns the relative performance of low-income and high-income regions. A look at the growth rates in Table 2 shows not only that lower-income imperial Hungary grew faster than higher-income imperial Austria between 1870 and 1910, but more generally that the low-income regions of the Empire grew faster than its high-income regions. The pattern holds even for the Habsburg borderlands, especially the eastern and southern portions of the sprawling realm, where, e.g., Croatia-Slavonia and Transylvania grew at rates of 1.84 percent and 1.92 percent respectively. These results confirm my earlier conclusions about the path of regional disparities in the Empire, which were based on far less systematic evidence.[56] But they run counter to both Lampe's interpretation of the existing data and my preliminary results from an earlier set of estimates.[57]

The narrowing of regional disparities can be shown more formally by estimating an equation for the Habsburg regions where the growth rate of GDP per capita (RY7010) from 1870 to 1910 is a function of the log of the initial (1870) level of GDP per capita (LLY70). A negative sign on the coefficient means that low-income regions began catching up, that is, they grew faster than high-income regions. A positive sign means that they grew slower, that is, they fell further behind. The estimated equations using data for the 22 regions (equation 1) and for the 11 present-day successor state units (equation 2) is as follows (the t statistics are in parentheses and SEE is the standard error of the estimate):

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(1)     RY7010 = .03164         -2.29932E-03 LLY70           r2=.147
        (4.027)                      (1.858)                 SEE=.00214
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(2)     RY7010 = .03027          -2.07335E-03 LLY70              r2=.121
        (2.587)                      (1.116)                     SEE=.00205
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The coefficient has a negative sign in both equations, which indicates a tendency toward catch-up by low-income regions; it is statistically significant at the .10 level in equation (1) but not in equation (2).

The relatively rapid growth of the Habsburg Empire and the convergence of regional disparities within it, together mean that after 1870 the region of Central and Eastern Europe must have been catching up with the rest of Europe. As was done for the regions with the Habsburg Empire, we can test this formally by estimating an equation using European-wide data where RY7010, the growth of GDP per capita from 1870 to 1910, is a function of LLY70, the log of the initial 1870 level of GDP per capita. For Europe as whole, equation (1) shows a tendency for catch-up by the low-income states. The negative sign of the coefficient, which is statistically significant at the .01 level, means that the lower a state's initial level of income, the higher its subsequent rate of economic growth.

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((1)    RY7010 =.04554  -4.7510E-03 LLY70        r2= .285
        (4.345)             (3.027)              SEE= .00364

(2)     RY7010 =.01403  -3.9603E-04 LLY70       +5.6944E-03 HABS   r2=.514
        (1.06)              (.209)                (3.217)
SEE=.00307
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Equation (2) shows that within the overall pattern of catch-up, the economies of Central and Eastern Europe tended to perform relatively well. The sign on the dummy variable HABS (where the dummy equals 1 for the states and successor state units of the Habsburg Empire and 0 for other states) is positive and statistically significant at the .01 level. This suggests a tendency for rates of growth in Central and Eastern European states from 1870 to 1910 to have been higher at any given level of GDP per capita in 1870.

By generating new data on nineteenth-century income levels in Central and Eastern Europe, my paper represents a starting point for assessing the role of the communist era in the region's relative economic backwardness. It suggests two new directions for future research. The most obvious is that the analysis must be pushed into the twentieth century. We can get some initial clues about the special legacy of communism by comparing my data for the nineteenth century with Maddison's for 1987. Here we must use the United States as the standard of comparison since by 1910 the American economy had overtaken the English as the world's richest. Table 9 shows that the rise of the United States to economic leadership before World War I coincided with a deterioration in the relative standing of almost all the European countries. This includes also the economies of Central and Eastern Europe (Russia, the lands of the Habsburg Empire, and most likely the independent Balkan states), which fell further behind the United States even as they began catching up to the United Kingdom. Between 1910 and 1987 relative income levels in Central and Eastern Europe improved somewhat. Yet after more than a century of

economic growth, the economic lag of the region behind the United States is about as wide as it was in 1870. The data do hint at a special legacy of communism in perpetuating this lag. Between 1910 and 1987, the rest of Europe appears to have closed the gap with the United States more quickly than the states of Central and Eastern Europe. Testing whether this differential experience is a legacy of communism or predates the cold war requires treating separately the interwar and the post-1945 years.

The other task is to expand the coverage of Central and Eastern Europe to include all the territories that fell under communist rule in the cold war era. I have focused here only on the successor states of the Habsburg Empire. For the post-1919 period, the necessary data for broader coverage are available. For the pre-1914 years, however, the non-Habsburg portions of Central and Eastern Europe remain in the same "statistical dark age" as those parts under Habsburg rule. My study provides pre-1914 data on the Habsburg portions of post-1919 Poland, Romania, and Yugoslavia. We know little, however, about pre-1914 income levels in the independent Balkan states, not to mention the Polish territories under Russian and German rule. Lampe and Jackson have provided rough estimates of income per capita for Romania, Bulgaria, and Serbia on the eve of World War I.[58] Hanson, however, argues from export data that the Lampe and Jackson estimates are much too low.[59] As with the Habsburg lands, it is unlikely that specialists will generate the income estimates needed to resolve the debate from standard national-income approaches. Palairet's recent study of industrial development in Bosnia-Hercegovina before 1914 suggests, however, that some version of my proxy approach can be usefully applied to the non-Habsburg portions of pre-1914 Central and Eastern Europe.[60]

Table 1
Regression Results: GDP per Capita as a Function of Proxy Variables
in 12 European States: 1850-1910

EQ	CON	LCDR	LNAGR	LMAIL	LSER	LRSV	N	R2	SEE
1	5.1775	-.26779	.60893	.14225	--	--	59	.8926	.11245
	(14.01)	(3.47)*	(7.47)	(7.34)*					
2	4.3394	--	.60070	.15779	.00782	--	49	.8810	.1139
	(12.04)*		(6.95)*	(6.81)*	(0.239)				
3	4.311	--	.59846	.17680	--	-.00392	54	.8594	.12773
	(12.31)*		(6.005)*	(5.842)*		(0.205)			
4	4.9337	-.18134	.61369	.14242	-.00460	--	49	.8922	.10966
	(11.10)*	(2.14)**	(7.36)*	(6.08)	(0.14)				
5	5.6153	-.40591	.58079	.17918	--	-.04483	54	.8914	.10904

	CON	LCDR	LNAGR	LMAIL	LSENR	LRSV	N	R2	SEE
	(13.38)*	(4.428)*	(6.819)*	(6.933)*		(2.388)**			
6	5.2920	-.30449	.58049	.18382	.00334	-.04482	46	.8949	.10613
	(9.23)*	(2.88)*	(6.49)*	(6.15)*	(0.09)	(2.154)**			

Notes:
CON = constant term
LCDR = log of the crude death rate
LNAGR = log of share of nonagricultural sectors in the total labor force
LMAIL = log of letters posted per capita
LSENR = log of school enrollment ratio
LRSV = log of real deposits in savings banks, 1980 U.S. dollars
N= number of cases
R2 = adjusted coefficient of determination
t-statistics in parentheses
SEE= standard error of the estimate
* Significant at the .01 level.
** Significant at the .05 level.
*** Significant at the .10 level.

Sources: For details see discussion in Sections I and II of Good, "Estimating Pre-1914 Incomes," including Tables A-1 and A-2. With a few exceptions, the variables were calculated from data in Mitchell, *European Historical Statistics* and Maddison, *Phases*. Most of the calculations were straightforward, e.g., mail per capita equals total mailed items divided by population. To estimate real deposits in savings banks, I deflated nominal savings were deflated by an appropriate price series for each country. I then converted these series into 1910 British pounds sterling at the prevailing exchange rates.

Region	1870	1880	1890	1900	1910	Growth Rate
Alpine Lands						
Lower Austria	$1382	$1496	$1704	$2086	$2290	1.34
Upper Austria	$716	$851	$1004	$1157	$1243	1.41
Salzburg	$789	$954	1151	1372	1535	1.70
Styria	$631	$737	857	1033	1201	1.62
Carinthia	$641	$764	834	1007	1267	

Table 2
Levels and Growth Rates of Income per Capita
in 22 Regions of the Habsburg Empire, 1870-1910
(in 1980 International Dollars)
GDP per Capita

Region 1870 1880 1890 1900 1910 Growth Rate

Alpine Lands

Lower Austria $1382 $1496 $1704 $2086 $2290 1.34

Upper Austria 716 851 1004 1157 1243 1.41

Salzburg 789 954 1151 1372 1535 1.70

Styria 631 737 857 1033 1201 1.62

Carinthia 641 764 834 1007 1267 1.64

Tyrol/Vorarlberg 668 764 918 1159 1433 1.95

Northern Karst/Littoral

Carniola 486 571 658 728 960 1.61

Littoral (inc.Trieste) 745 861 966 1134 1476 1.64

Dalmatia 348 389 443 493 622 1.40

Bohemian Lands

Bohemia 941 1050 1226 1494 1712 1.55

Moravia 787 927 1079 1262 1429 1.50

Silesia 860 1064 1218 1416 1646 1.58

Carpathian Lands

Galicia 392 440 534 618 707 1.52

Bukowina 413 469 538 678 741 1.54

Lower Western Hungary

Danube Right Bank 444 531 670 818 1008 2.07

Danube-Tisza 640 821 949 1248 1506 2.13

Upper Western Hungary

Danube Left Bank 505 576 721 848 1037 1.83

Tisza Right Bank 483 547 695 864 1034 1.98

Eastern Hungary

Tisza Left Bank 404 464 560 687 845 1.87

Tisza-Maros 411 492 590 725 884 1.92

Transylvania 369 448 526 621 816 1.92

Croatia-Slavonia 312 408 448 514 697 1.84

IMPERIAL AUSTRIA 759 854 978 1183 1347 1.48

IMPERIAL HUNGARY 450 549 657 806 1011 2.00

HABSBURG EMPIRE 642 734 858 1038 1218 1.63

*For each region the growth rate is a fitted trend of the five point estimates for all the benchmark years--1870, 1880, 1890, 1900, 1910.

Sources and Notes:

Estimated by using the regression coefficients from the Crafts-type equation (1) of Table 1 with values of the independent variables for imperial Austria, imperial Hungary, and their 22 regions. For details see text. The values of the proxy variables appear in Good, "Estimating Pre-1914 Incomes," Tables A-3 and A-4. They were estimated from data in a variety of sources, but mainly Bolognese-Leuchtenmüller, Berufsstruktur; USJ; MSE; SJÖM; and ÖSH. The sources and calculation methods are discussed extensively in Section III of Good, "Estimating Pre-1914 Incomes".

Table 3
Levels and Growth Rates of GDP per Capita in the
Successor State Territories of the Habsburg Empire, 1870-1910
(Present-day Boundaries; 1980 International Dollars)
GDP per Capita

Successor State/Unit 1870 1880 1890 1900 1910 Growth Rate

Austria $1045 $1161 $1334 $1623 $1813 1.44

Czechoslovakia 803 913 1077 1296 1491 1.59

Czech Republic 896 1018 1187 1429 1634 1.54

Slovakia 503 572 721 866 1030 1.85

Hungary 532 661 789 1022 1253 2.15

*Italy 694 797 934 1150 1448 1.84

*Poland 420 477 575 665 763 1.53

*Yugoslavia 432 510 587 695 885 1.74

Slovenia 584 683 785 913 1137 1.62

Croatia 377 446 506 595 786 1.76

*Serbia 444 528 626 764 923 1.83

*Ukraine 393 442 535 625 722 1.56

*Romania 382 480 558 650 827 1.85

*No asterisk indicates that the present-day territory of the successor state fell completely within the boundaries of the Habsburg Empire. The asterisk indicates the portion of the present-day territory of the successor state that fell within the boundaries of the Habsburg Empire.

**For all states/units the growth rate is a fitted trend of the five point estimates--1870, 1880, 1890, 1900, 1910.

Notes and Sources:

For details see text and Table A-5 of Good, "Estimating Pre-1914 Incomes," and the accompanying discussion in Section IV. Below I list the successor states/units according to the nineteenth-century regions. For a detailed breakdown of the regions by district (political districts for imperial Austria and counties for imperial Hungary) see the same source.

Austria: Lower Austria[1] , Upper Austria[2], Salzburg, portions of Carinthia[3], Vorarlberg, portions of Styria, portions of Tyrol, portions of the Danube Right Bank[4].

Czechoslovakia:

Czech Lands[1]--Bohemia, Moravia, portions of Silesia Slovakia--portions of Danube Right Bank, portions of Danube Left Bank, portions of Tisza Right Bank.

Hungary: portions of Danube Right Bank[4], portions of Danube Left Bank, portions of Tisza Right Bank, portions of Tisza Left Bank, portions of Tisza-Maros, portions of Danube-Tisza.

Yugoslavia:

Slovenia--Carniola, portions of Carinthia, portions of Styria, portions of Littoral (Görz u. Gradiska)

Croatia--portions of Littoral (Istrian districts), Dalmatia, portions of Danube Right Bank, portions of Croatia-Slavonia[5]

Serbia--portions of Danube Right Bank, portions of Tisza-Maros, portions of Croatia-Slavonia, portions of Danube-Tisza.

Romania: portions of Tisza Left Bank, portions of Tisza-Maros, Transylvania, portions of Bukowina, portions of Galicia.

Italy: portions of Tyrol, portions of Littoral (Triest, Görz u Gradiska)

Ukraine: portions of Tisza Right Bank, portions of Tisza Left Bank, portions of Bukowina, portions of Galicia.

Poland: portions of Silesia, portions of Galicia.

[1]Ignores the small corner of the Lower Austrian district of Mistelbach that was ceded to post-1919 Czechoslovakia.

[2]Ignores the small corner of the Upper Austrian district of Gmünd that was ceded to post-1919 Czechoslovakia.

[3]All of the province of Carinthia less one-third of the district of Villach, which is now in Slovenia.

[4]Portions of imperial Hungarian counties of Moson, Sopron, and Vas that were ceded to Austria in 1919.

[5]Fiume was an autonomous city before 1919. Here I include it in the Hungarian region, Croatia-Slavonia

Table 4
The 1913 Level of GDP per Capita in Austria,
Czechoslovakia, and Hungary (Pre-1989 Boundaries):
New Estimates vs. Maddison
(in 1980 international dollars)

	(1)	(2)
Country	Maddison	New Estimate
Austria	$1985	$1891
Czechoslovakia	1554	1563
Hungary	1402	1336

Sources:

Column (1): Maddison, "Measuring European Growth," Table 1a, p. 3

Column (2): Table 3 above. For each country, the 1910 level is projected forward at the

long-term rate of growth, 1870-1910.

Table 5
Relative Income Levels in the Successor States Territories
of the Habsburg Empire on the Eve of World War I:

New Estimates vs. Existing Estimates
(Austria=100.0)

	(1)	(2)	(3)	(4)
	Adjusted			
Successor	New	Fellner/	Fellner/	
State/Unit	Estimate	Waizner	Waizner	Maddison
	(1910)	(1911-13)	(1911-13)	(1913)
Austria	100.0	100.0	100.0	100.0
Czechoslovakia	82.2	86.8	72.7	78.3
Czech lands	90.1	97.1	82.3	NA
Slovakia	56.8	57.8	45.6	NA
Hungary	69.1	70.5	55.6	70.6
*Italy	79.7	70.8	57.8	NA
*Yugoslavia	48.8	56.9	45.2	NA
*Poland	42.1	40.2	32.3	NA
*Romania	45.6	49.7	39.6	NA
*Ukraine	39.8	NA	NA	NA

Imperial Austria and Hungary (Austria=100)

Austria	100.0	100.0	100.0	NA
Hungary	75.0	80.0	71.3	NA

*No asterisk indicates that the territory of the successor state fell completely within the boundaries of the Habsburg Empire. The asterisk indicates that portion of the territory

of the successor state which fell within the boundaries of the Habsburg Empire.

N.A.=either not available or not applicable.

Notes and Sources (Table 5)

The boundary definitions for the states and units differ slightly for the four estimates. The estimates of column (1) and column (4) are for post-1945 (but pre-1989) boundaries; the estimates of column (2) and column (3) are for the post-1919 boundaries of the interwar period. The data are comparable, however, because the boundary changes between the two periods were rather small.

Column (1): Income relatives for 1910 estimated from Table 3 above.

Column (2): For details of the estimate see Good, "Estimating Pre-1914 Incomes," Section V and Table A-6. I derived the income relatives after combining the national income figures in the pioneering studies of Fellner, "Volkseinkommen," Fellner, "Successions-Staaten," and Waizner, "Alt-Österreichs."

Column (3): For details of the estimate see Good, "Estimating Pre-1914 Incomes," Section V and Table A-7. I derived the income relatives after accounting for subsequent revisions of the Fellner/Waizner estimates. First, I use Kausel's estimate for total GDP in pre-1919 Austria for the years 1911-1913 in his "Volkseinkommen 1830 bis 1913," Table 1, p. 693. Second, the distribution of GDP among the successor state units of imperial Austria reflects the adjustment to Waizner's data made by Kausel et. al. "Österreichs Volkseinkommen." Third, I applied Fellner's successor state unit shares in pre-1919 Hungarian national income to a revised total GDP based on the estimate of NDP and gross capital formation for Trianon Hungary in Eckstein, "Capital Formation in Hungary".

Column (4): Income relatives for 1913 derived from Maddison, "Measuring European Economic Growth," Table 1a, p. 83. Maddison has projected back the 1980 levels of GDP in international dollars with GDP indices for the years from 1913 through the interwar period developed by country specialists. For Austria: Kausel et.al. (Österreichs Volkseinkommen"; for Czechoslovakia: Pryor et.al. "Czechoslovak Aggregate Production" and for Hungary:

Eckstein, "Capital Formation in Hungary."

Table 6
The Growth of GDP per Capita in Territories of the
Habsburg Empire in the Late Nineteenth Century:
New Estimates vs. Existing Estimates

Annual

Territory Time Period Growth Rate

Imperial Austria

1. Good (1978) 1873/75-1911-13 1.80

2. Kausel (1979) 1870-1913 1.32

3. Crafts (1983) 1870-1910 1.46

4. Good (1991) 1870-1910 1.58

5. **New Estimate** 1870-1910 1.48

Imperial Hungary

6. Maddison (1990) 1870-1913 1.20

7. Crafts (1983) 1870-1910 1.70

8. Good (1991) 1870-1910 1.39

9. Katus (1870) 1867-1913 1.70

10. **New Estimate** 1870-1910 2.00

Habsburg Empire

11. Bairoch (1975) 1870-1913 1.45

12. Good (1991) 1870-1910 1.50

13. **New Estimate** 1870-1910 1.63

Austria[1]

14. Kausel (1979) 1870-1913 1.46

15. **New Estimate** 1870-1910 1.44

Czechoslovakia[1]

16. Maddison (1990) 1870-1913 1.40

17. **New Estimate** 1870-1910 1.59

Hungary[1]

18. Maddison (1990) 1870-1913 1.20

19. **New Estimate** 1870-1910 2.15

[1]Present-day (pre-1989) boundaries.

Notes and Sources

Line 1: From Good, "Great Depression," p. 293.

Line 2: From Kausel, "Volkseinkommen, 1830 bis 1913," Table 6, p. 701

Line 3: Estimated from Crafts, "New Estimates," Table 5, p. 394 as the average of his five decade point estimates.

Line 4: From Good, "Austria-Hungary," Table 11.3, p. 230.

Line 5: Table 2 above.

Line 6: From Maddison, "Measuring European Growth," Table A1, pp. 107-108. Maddison's estimates rely on Katus, "Economic Growth in Hungary," p. 108 for the growth of agriculture, transportation and trade; Komlos, Customs Union, pp. 291-93 for the growth of industry, and assumes that housing and other services grew parallel to population.

Line 7: See line (3) above.

Line 8: See line (4) above.

Line 9: From Katus, "Economic Growth in Hungary," Table 48, p. 112. The figure is for Gross Domestic Material Product only, i.e., for agriculture, industry, transportation and trade, but not for services.

Line 10: See Table 2 above.

Line 11: Bairoch, "Europe's Gross National Product," Table 6.

Line 12: See line (4) above.

Line 13: Table 2 above.

Line 14: From Kausel, "Volkseinkommen, 1830 bis 1913," Table 6, p. 701.

Line 15: Table 3 above.

Line 16: From Maddison, "Measuring European Growth," Table A-1, p. 107. Maddison assumes that Czechoslovakia's growth rate fell midway between Kausel's estimates for imperial Austria (line 2) and present-day Austria (line 14).

Line 17: Table 3 above.

Line 18: Maddison in "Measuring European Growth," Table A-1, p. 107 assumes that the growth rate on the territory of present-day Hungary equaled the growth rate of imperial Hungary.

Line 19: See Table 3 above.

Table 7

Indices of GDP per Capita in Europe: 1870-1910
(Present-day, Post 1989 Boundaries)
(UK=100)

Country	1870	1880	1890	1900	1910	Growth Rate 1870-1910

Northwest

UNITED KINGDOM 100.0 100.0 100.0 100.0 100.0 1.00

Belgium 77.2 81.1 79.0 76.8 81.5 1.03

Netherlands 78.2 80.2 77.8 76.8 78.1 0.90

France 57.7 60.8 57.0 60.7 61.0 1.09

Germany 47.8 47.6 50.4 55.8 61.2 1.63

Switzerland 64.9 -- 65.7 64.9 72.9 1.18

Northern

Denmark 60.7 60.7 61.2 65.3 78.1 1.55

Finland 35.1 32.7 34.0 36.7 40.8 1.40

Norway 45.2 46.0 44.8 43.6 49.5 1.11

Sweden 48.2 49.1 48.3 52.9 60.0 1.49

Mediterranean

Italy 45.9 44.4 40.5 38.6 50.0 1.00

Portugal 35.3 -- -- -- 27.6 0.30

Spain 42.8 -- -- -- -- 1.37

Central and Eastern Europe

Imperial Austria 38.1 39.3 39.2 42.4 47.0 1.48

Imperial Hungary 22.6 25.3 26.3 28.9 35.3 2.00

Habsburg Empire 32.2 33.8 34.4 37.2 42.5 1.63

Austria 52.4 53.4 53.5 58.1 63.2 1.44

Czechoslovakia 40.3 42.0 43.2 46.4 52.2 1.59

Czech Republic 45.0 46.9 47.6 51.1 57.0 1.54

Slovakia 25.2 26.3 28.9 31.0 35.9 1.85

Hungary 26.7 30.4 31.7 36.6 43.7 2.15

*Italy 34.8 36.7 37.5 41.2 50.5 1.84

*Poland 21.1 22.0 23.0 23.8 26.6 1.53

*Yugoslavia 21.7 23.5 23.6 24.9 30.9 1.74

Slovenia 29.3 31.4 31.5 32.7 39.6 1.62

Croatia 18.9 20.5 20.3 21.3 27.4 1.76

*Serbia 22.3 24.3 25.1 27.3 32.2 1.83

*Ukraine 19.7 20.4 21.5 22.4 25.2 1.56

*Romania 19.2 22.1 22.4 23.3 28.8 1.85

Russia 34.0 -- -- 28.5 32.2 0.72

*No asterisk indicates that the present-day territory of the successor state fell completely within the boundaries of the Habsburg Empire. The asterisk indicates the portion of the present-day territory of the successor state that fell within the boundaries of the Habsburg Empire.

*For all states/units the growth rate is a fitted trend of the five point estimates--1870, 1880, 1890, 1900, 1910.

Sources:

The Habsburg Empire and its successor state territories: Calculated from data in Tables 2 and 3.

Remaining Countries: Calculated from Table A-1, column (5) in Good, "Estimating Pre-1914 Incomes."

Table 8

Regional Dispersion of GDP per Capita
in the Habsburg Empire, 1870-1910
Coefficient of Variation

Successor States/Units

Date	22 Regions	Pre-1989[1]	Post-1989[2]
1870	.413	.457	.480
1880	.392	.475	.497
1890	.379	.449	.469
1900	.388	.432	.448
1910	.349	.389	.397

Notes and Sources:

For each year, I calculated the c.v. as the standard deviation of GDP per Capita for the relevant regional units divided by the mean GDP per Capita of the relevant regional units. Data are from Tables 2 and 3.

[1] The successor states or units in their post-1945, but pre-1989 boundaries: Austria, Czechoslovakia, Hungary, Yugoslavia, Poland, Italy, Ukraine, and Romania.

[2] The successor states or units in their current (1993) boundaries: Austria, Czech Republic, Slovakia, Hungary, Slovenia, Croatia, Serbia, Poland, Italy, Ukraine, and Romania.

Table 9

Indices of GDP per Capita in Europe
and the United States, 1870, 1910, 1987
(Present-day, Post-1989 Boundaries)
(US=100)

Country	1870	1910	1987
UNITED STATES	100.0	100.0	100.0

Northwest

United Kingdom	113.4	80.6	69.3
Belgium	87.5	65.7	64.8
Netherlands	88.9	62.9	67.5
France	65.4	49.2	70.6
Germany	54.1	49.3	73.4
Switzerland	73.6	58.7	76.4

Northern

Denmark	65.4	63.0	64.8
Finland	39.8	32.9	70.2
Norway	51.2	39.9	64.3
Sweden	54.5	48.4	77.6

Mediterranean

Italy	52.1	40.3	66.7
Portugal	40.0	22.2	42.6

Spain 48.5 41.4 47.3

Central and Eastern

*Austria 59.4 51.0 64.4

*Czechoslovakia 45.7 42.0 46.0

*Hungary 30.2 35.2 44.3

*Poland 23.9 21.4 30.1

*Yugoslavia 24.6 24.9 30.2

*Romania 21.7 23.3 28.8

Bulgaria -- 20.5 32.9

Russia (Soviet Union) 38.6 26.2 44.0

Notes and Sources

*For 1870 and 1910, the indexes are computed from Table 3 above. For Romania

and Poland in 1870 and 1910 and for Yugoslavia in 1870 the data are for the

Habsburg portions of the present day states. For 1987 (and for Yugoslavia in 1910),

I use Maddison's data "Measuring Economic Growth," Table 1a, p. 83.

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1. Data on GDP per capita in 1989 from The Economist, p. 15 show that the East bloc economies fall in the lower half of a ranking of 23 European countries. The richest among them, Czechoslovakia, ranks 13th with an income level that is only 67 percent of the UK, which in 1989 stood exactly at the median of the 23 countries.

2. The term refers to Paul David's characterization of American economic history before 1840. See David, "New Light."

3. Good, "Austria-Hungary," Table 11.3, p. 230.

4. These data are from the next phase of my project, which analyzes the relative performance of Central and Eastern Europe in three periods: 1870-1910, 1910-1950 and 1950-1989. My estimates of regional incomes also have important implications for Habsburg history itself, which I begin to address in Good, "Ökonomische Ungleichheit."

5. Austria, the only Central European country outside the East bloc during the cold war, provides perhaps the best evidence for the notion that the source of the current gap between Western Europe and the former East bloc states lies in the post-World War II era. Austria was among the worst performers in Central Europe in the interwar period, but participated so completely in the post-1945 Western European economic miracle that it forged well ahead of its neighbors to the east.

6. For an overview of protoindustrialization in Western Europe see Kriedtke, Medick, and Schlumbohm, Industrialization; for Eastern Europe see the discussion and works cited in Millward, "Economic Organization under Serfdom."

7. The following relies on my Economic Rise, especially chapters 2 and 5.

8. These two entities emerged as quasi-states within the Habsburg Empire after the Compromise of 1867 that created them. They exercised some policy autonomy in economic and social affairs within the overall framework of the imperial customs and monetary union. Historians of the post-1867 era commonly refer to them as Austria and Hungary, but I add the term imperial to distinguish clearly between these pre-World War I quasi-states and their radically smaller, post-1919 successors of the same name. Because the widely-used (but also unofficial) terms Cisleithania (imperial Austria) and Transleithania (imperial Hungary) are not widely known to scholars outside the field, I have chosen not to use them.

9. Gross, "Industrialization."

10. See Sandgruber, <u>Agrarstatistik</u> and Komlos, <u>Customs Union</u> for agriculture, Rudolph, <u>Banking and Industrialization</u>, Rudolph, "Pattern of Industrial Growth," and Komlos, <u>Customs Union</u> for industry.

11. Kausel, "Österreichs Volkseinkommen."

12. Katus, "Economic Growth in Hungary."

13. Komlos, <u>Customs Union</u>.

14. The term is from the title of the book by Hanisch, <u>Der Kranke Mann</u>. The pessimistic view is most forcefully expressed by Jaszi, <u>Dissolution</u>, especially pp. 191-92, 209-210, 212, and was resurrected by Gerschenkron in his last major work <u>Spurt that Failed</u>, especially p. 54.

15. In referring to these subregions, I use the official nineteenth-century terminology where appropriate. When I refer to the territory of the states (or fragments of states) that were formed from the Empire after 1919, I use the present-day designations, including where appropriate the successor states to Czechoslovakia and former Yugoslavia. The present-day states whose territory was completely within the Habsburg Empire are Austria, Hungary, the Czech Republic, Slovakia, Slovenia, and Croatia. The present-day states that consist in part of former Habsburg territory are Italy, Serbia, Poland, Romania, and Ukraine. I use these names when referring to the entire present-day state and indicate clearly when I am referring to their Habsburg fragments.

16. Fellner, "Successions-Staaten" and Waizner, "Alt-Österreichs."

17. Kausel et. al., "Volkseinkommen 1913-1963" and Kausel, "Volkseinkommen 1830 bis 1913."

18. Eckstein, "Capital Formation in Hungary."

19. Vinski, "National Product and Fixed Assets."

20. Pryor et. al., "Czechoslovak Aggregate Production."

21. Maddison, "Measuring European Growth."

22. See notes and sources, lines 16 and 18 in Table 6.

23. Kuznets, <u>Income and Wealth</u> and Kuznets, <u>Modern Economic Growth</u>. The approach measures productive capacity and its utilization from the production side--as the sum of value added in sectors, e.g., agriculture, industry, and services--from the spending side--

as the sum of final expenditures, e.g., consumption, investment, and government spending--or from the income side--the sum of wages, profits, and interest.

24. For developing economies in the post-1945 era, see Beckerman and Bacon, "International Comparisons" and McGranahan, et. al., Socio-Economic Development. Bairoch, "Europe's Gross National Product," has estimates for nineteenth-century European economies, which rely on the same approach. For example, calorie consumption serves as a proxy for agricultural output and such variables as cotton consumption and coal consumption serve as proxies for industrial output. But the details of his estimates, especially for the pre-1890 period are not clearly spelled out nor well documented. John R. Hanson II, "Third World Incomes" has also tested the adequacy of pre-1914 estimates of Third World incomes with proxy data.

25. Morris, Quality of Life Index. Although not critical of the national-income type approach, Federico and Toniolo, "Italy" also adopt Morris's approach to estimate regional incomes in pre-1914 Italy.

26. See Maddison, "Measuring European Growth," p. 105.

27. The evidence for the U.S. is summarized in Easterlin, "Regional Income Trends." For Italy see the work of Esposto, "Institutions and Regional Disparities."

28. Crafts, "Gross National Product."

29. Kravis et. al., "One Hundred Countries."

30. For the pre-World War I era, Crafts relies on national income data for the various countries (see his articles for sources); for the period 1910-1970 he uses Bairoch's growth rates.

31. For a useful summary see Kravis, "International Comparison Project"; for more detail see Kravis, Heston, and Summers, "One Hundred Countries," and Summers and Heston, "A New Set of International Comparisons."

32. See Kravis, "International Comparison Project," pp. 12-14. Exchange rates understate purchasing power in low income countries because they reflect the purchasing power of tradeable goods only. There are two possible mechanisms at work. First, the productivity gap between rich and poor countries is smaller in nontradeable goods, especially services, than in tradeable goods, which implies that nontradeable goods are relatively cheaper in low income countries. Since the prices of tradeable goods are more in line with world prices, the relatively lower price of nontradeable goods means a lower level for aggregate GDP. Second, in low income countries labor is relatively abundant and the service sector, which accounts for a large share of non-tradeables, is labor intensive. Because the tendencies toward price equalization are relatively weak with respect to nontradeables, they will be relatively cheap in low income countries, which implies an overall lower price level.

33. For a brief description of the approach, see Kravis, "International Comparison Project," 6-9. In the aggregate, the ratio of real GDP in two countries equals the ratio of their nominal GDPs divided by the ratio of their price levels, i.e., the purchasing power parity. The ICP method divides GDP into categories for which expenditure data and price comparisons can be made. Prices are gathered for the items in each expenditure category and the price relatives are aggregated at the category level. In aggregating across categories, the quantities of goods in each country's GDP were valued at a single set of prices--a weighted average of the dollar price paid across countries, i.e., in international dollars.

34. ICP IV data for 1980 Kravis, "International Comparison Project," pp. 9-10) shows that using PPP rather than exchange rates raises Portugal's GDP per capita from 22 percent to 34 percent of the U.S. level, while it lowers Norway's GDP per capita from 123 percent to 99 percent of the U.S. level. Also, the coefficient of variation of GDP per capita for 49 countries falls from 1.08 to .84.

35. Maddison, Dynamic Forces contains updated estimates based on ICP data for 1985, but unlike Maddison, "Measuring European Growth" does not include estimates for the countries of Eastern Europe and the Mediterranean (Portugal, Spain, and Greece). Because I am interested in long-term comparisons of my estimates with these parts of the European "periphery", I have relied on the ICP 1980 data in Maddison, "Measuring European Growth," which contains a detailed discussion of sources in his notes to Table A-2.

36. For a full discussion of the sources underlying the GDP indices for each country see Maddison, Dynamic Forces, pp. 201-205; 220-221 and Maddison, "Measuring European Growth," Table A-1. Maddison acknowledges the problems in using these GDP indices. The implicit growth rates depend on how the sub-components of GDP are weighted, e.g., with the prices of an earlier year or the prices of a later year. Differences among countries in weighting schemes means that comparisons of growth rates over time and of levels at a point in time are difficult. He argues, however, that weighting systems are updated from time to time and that each national series is composed of differently weighted sub-periods that are linked together. See Maddison, The World Economy, p. 196 and Maddison, "Measuring European Growth," pp. 96-97.

37. Maddison, "Measuring European Growth," pp. 101 and 104.

38. These results appear in Good, "Estimating Pre-1914 Incomes," Table A-1.

39. For an overview, see notes and sources, Table 1; for details see Good, "Estimating Pre-1914 Incomes."

40. This presents only a minor problem in four cases. The data for France includes Savoy and Nice from 1870 and excludes Alsace-Lorraine from 1880; the data for Italy includes Venetia-Lombardy from 1870; the data for Denmark excludes Schleswig, Holstein, and Lauenberg from 1870. The German data are adjusted accordingly.

41. I also tried the rate of infant mortality instead of the crude death rate, which yielded roughly the same results, i.e., the coefficient was of the correct sign and statistically significant. I used the crude death rate, however, because data for imperial Hungary are available only for child mortality, i.e. deaths of infants only under five years old. For details, see Good, "Estimating Pre-1914 Incomes."

42. See Good, "Austria-Hungary," Table 11.3, p. 230.

43. Its coefficient has the largest value, which, in this log-form estimate, indicates that it has the largest impact in the equation.

44. For details see Good, "Estimating Pre-1914 Incomes".

45. Bolognese-Leuchtenmüller, Berufsstruktur.

46. I discuss some of the main issues here, but provide details in Good "Estimating Pre-1914 Incomes". Some problems arise because of the way dayworkers were handled in different censuses. In the censuses for 1890, 1900, and 1910, they were assigned where possible to the sector in which they worked, so agriculture includes only those working in that sector. This was true also for 1869, but the counting was less systematic. Day workers working in more than one sector were placed in a separate category, which Bolognese-Leuchtenmüller includes in the agricultural sector on the assumption that most of their work was done there. In the 1880 census in contrast to the others, all day workers were placed in a separate category. Here Bolognese-Leuchtenmüller includes them all in agriculture. Although this alone would overstate the relative size of the sector, it may simply compensate for the likely undercounting of agriculture in the 1880 census. Bolognese-Leuchtenmüller, Berufsstruktur, pp. 105, 106, 123)

As in the case of dayworkers variation from census to census caused here to adjust these data, too. In 1880 many family members who helped in family business were assigned to the inactive, not the economically active population, which probably explains why the total labor force fell between 1869 and 1880 and then rose again between 1880 and 1890. Beginning in 1890 family members were identified as "helping" if they explicitly so indicated on the census forms. In 1900 and 1910 these workers were assigned as a subgroup in the four major labor force categories depending on where the head of household was assigned. The data for 1890, 1900, and 1910 are comparable, however, because most Mithelfenden were in agriculture (96 percent in 1900 and 1910). For 1890 the separate Mithelfenden category was included in the agricultural sector. See pp. 112, 123-124, and 135-136.

Domestic servants are not assigned by sector, but appear as a separate group. Those actually working in an agricultural setting are not assigned there, but they are part of the total labor force. The impact on the share of agriculture in the total labor force is small, however, because less than 1 percent of domestic servants worked in an agricultural setting. Bolognese-Leuchtenmüller, p. 120, 134-135.

47. See Table A-4, original data and discussion in Section III of

Good, "Estimating Pre-1914 Incomes."

48. For details see Section III and Table A-4 in Good, "Estimating Pre-1914 Incomes." Using data for the 22 regions of the Habsburg Empire for 1890, 1900, and 1910, I estimated an equation, RATEt = a-bAGRICt, where RATEt= the <u>rate of change</u> in the share at time t and AGRICt= the <u>level</u> of the share at time t, with the following results (t-statistics in parentheses):

RATE= .24766 -.26670 AGRIC

(12.97) (9.232)

R2=.670 significant at .001 level

I then used the equation to extrapolate backwards from 1890 the shares in agriculture for 1880 and 1870 in each of the twenty-two regions.

49. See <u>National Geographic</u> and the map in Brusatti, <u>wirtschaftliche Entwicklung</u> following p. 230.

50. For a finer breakdown of the successor states according to their pre-1919 political districts and counties, see Good, "Estimating Pre-1914 Incomes," Table A-5.

51. Perhaps the most serious case is the Danube-Tisza region, the highest income region of imperial Hungary. The region must have had significant regional disparities, with the counties in the south at a much lower level than the counties of the north around Budapest. These counties of Danube-Tisza accounted for almost half the Habsburg population that went to Yugoslavia as the Vojvodina. To the extent that these low-income, southern counties enter the calculation for the Habsburg portions of present-day Serbia at the average for the Danube-Tisza region, the estimate for Habsburg Serbia is too high. To the extent that the high-income northern counties enter the calculation for present-day Hungary at the average for the region, the estimate for present-day Hungary is too low. Without correcting for this, my data imply a level of GDP per capita in the portion of imperial Hungary going to Yugoslavia equal to 85 percent of the imperial Austrian level in 1910. With the correction (data from Tables 2 and 3), the level falls to 69 percent, which is consistent with data in Palairet "Industrial Achievement", Table 3, p. 151. Using the same equation as Crafts and 1910 data, Palairet estimates a level of GDP per capita on the territory of pre-1919, <u>independent</u> Serbia that is 58 percent of the imperial Austrian level as estimated by Crafts.

52. Where this was obviously not the case, e.g., in the Danube-Tisza region, I made an adjustment. At each decade year, I assumed that the letters per capita in the portion of the Danube-Tisza that passed to Yugoslavia after 1919 was equal to that of the lower income neighboring region of Tisza-Maros. Using the census year population as weights and the

letters per capita for Danube-Tisza as a whole, I then computed the implicit level of letters per capita of the portion of Danube-Tisza that became part of post-1919 Hungary.

53. I projected forward my estimates for 1910 at the average rates of growth for the three successor states between 1900 and 1910. We know that the level in 1913 was higher than 1910 because the economic boom that began in 1904 and was interrupted in 1909 resumed in 1910. See Rudolph, Industrialization, p. 33).

54. See Rudolph, Banking and Industrialization, 39-65.

55. For a survey of both the pessimistic and revisionist views see Good, Economic Rise, pp. 1-10.

56. Good, Economic Rise, pp. 148-156.

57. In his "Redefining Balkan Backwardness, p. 193, Lampe argues that "the experience of the southern and eastern Habsburg periphery suggests that these borderlands did not share fully in the monarchy's fairly impressive economic growth and integration between 1815-1914." Lampe's view is supported by my preliminary estimates reported in Good, "Austria-Hungary", Table 11.3, p. 230, which show that between 1870 and 1910 the low-income regions grew, but more slowly than the high-income regions. As I argue above, however, I view my latest results as superior to the preliminary ones because of significant improvements in the equation used to generate the estimates. Thus, Lampe's conclusion is probably true for the first half of the period, but my results indicate that it does not hold for the second half.

58. Lampe and Jackson, Balkan Economic History, pp. 160-165.

59. Hanson, "European Periphery," pp. 91-96.

60. See footnotes 52 and 53 above which discuss Palairet's attempt to use Crafts' equation from his 1983 study to arrive at plausible estimates of per capita income in Serbia and Bosnia-Hercegovina. See his "Habsburg Industrial Achievement, p. 150-151.