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REAL URBAN WAGE IN AN AGRICULTURAL ECONOMY
WITHOUT LANDLESS FARMERS: SERBIA, 1862-1910

Boško Mijatović and Branko Milanović

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1. Introduction

During the past couple of decades an extensive work has been done on historical real wages. The objective was to assess living standards of the populations before national accounts became available. Since historical wage data are relatively abundant, it was thought that the best approach to study living standards of at least working population would be to collect wage data and contrast them to a basket of essential goods (whose prices as well would be collected). The idea was already present in Colin Clark's *Conditions of Economic Progress*. It was more precisely defined by Henry Phelps-Brown and Sheila Hopkins (1962) and named "housewife's shopping basket" and used by Braudel in *The Perspective of the World* (vol. 3 Civilization and Capitalism, p. 616) but has been expanded and developed in a number of papers by Robert Allen beginning with his 2001 article "The Great Divergence in European Wages and Prices from the Middle Ages to the First World War".² There and in the subsequent work Allen decided to look at wages for two types of laborers: a construction worker and an "ordinary" unskilled worker, and to use two baskets of goods: a "respectability basket" (the term having its origin in Adam Smith's statement about the goods that every self-respecting person, at a given time and place, would expect to be able consume) and a much more austere the "bare-bones" or subsistence basket. The "bare-bones" basket would ensure a mere survival and is based on nutritional norms. The baskets are "self-weighted": the weight of each good is given by the physical quantity of that good multiplied by its price. The baskets play the role of a (restricted) consumer price index.

Since it was assumed that the worker was the only member of the household working for a wage, Allen thought it useful, not only to compare the wage to a basket of

¹ Respectively, Center for Liberal and Democratic Studies (CLDS), Belgrade, and Graduate Center, City University of New York, New York. We are grateful to Luka Mrkobrada for contributing to the data collection work. We thank also the participants of a seminar held at CLDS in June 2018 where the first draft of the paper was presented. Corresponding author: bmilanovic@gc.cuny.edu.

² *Explorations in Economic History*, vol. 38, pp. 411–447.

goods, but to such baskets for all members of the household. Taking a rough approximation of a four-member household, and assuming that the needs of children (in terms of food and calories) are less than those of the adults, Allen contrasted the value of the wage to three adult baskets (whether “respectability” or “bare bones”) and added 5 percent of on top of that as an estimate of housing costs. The wage divided with the value of such basket was termed the “welfare ratio” with 1 (when using the “bare bones” basket) indicating that the wage earned by a worker was just sufficient to keep the family of four members at the level of physiological survival. All higher ratios, of course, provided more than that. This is the methodology that we follow in this paper, with some specific adjustments as explained in Section 4.³

Calculations following this approach have been conducted for a number of West European cities at first (Allen 2003), but were later expanded to the United States (Lindert and Williamson, 2011), and in several influential papers by Şevket Pamuk (Özmuçur and Pamuk, 2002; Pamuk 2006 and 2007) to the area controlled by the Ottoman Empire, including South-East Europe, today’s Turkey, and the Middle East. Due to the lack of data, the annual series are in many instances rather short, but even so they have allowed economic historians to establish the hypotheses regarding for example, the dating of the Little Divergence when the North European wages began to significantly diverge upward from Southern European and Ottoman wages.

More recently, the welfare ratios have also been estimated for China’s the Yangtze delta in the 19th century (Li and van Zanden, 2012; Allen, Bassino, Ma, Moll-Murata and van Zanden, 2011), the British-ruled India (Allen, 2007; Broadberry and Gupta, 2006), Mexico (Challu and Gomez-Galvariato 2015), the Dutch-controlled Java (de Zwart and Van Zanden, 2015), and pre-Meiji Japan (Bassino and Ma, 2005), and compared with contemporaneous wages in the most developed parts of Europe. This work has informed the discussion about the Great Divergence between Europe and Asia, its timing, and the reasons why the Industrial Revolution has taken place in Northern Europe and not in Eastern China. Thus the political and economic implications of a seemingly simple methodological approach, earlier glimpsed by a number of authors, have been and continue to be quite dramatic. They are often the only strictly empirical source that allows us to

³ The approach had its critics too, most notably Angus Maddison in *The contours...* pp. 317-319.

compare not only the welfare of workers' families in different parts of the world before such data become more available in the 20th century but to make arguments regarding the role of wages in stimulating or not economic development and the Industrial Revolution.⁴

2. Serbia in the early 1860s

This objective of this paper is to provide the first calculation of the welfare ratio for Serbia in the second part of the 19th century and the first decade of the 20th. It thus situates the relative development of the Serbian economy (and welfare of its people) vis-à-vis other European countries and Turkey in the same period. It is fortunate that fairly good and rather plentiful data sources to do so exist (but have not been used before). In addition, the Serbian case is interesting because of three structural features.

First, Serbia was during the period under study an overwhelmingly agricultural economy with a high population growth, but not necessarily with a diminishing arable land-to-labor ratio since the arable land increased at the same pace as population, or even faster.⁵ Despite high infant mortality, the average annual population growth rate between 1880 and 1910 was 1.7 percent.⁶ Between 80 and 90 percent of the labor force was employed in agriculture, the rest being divided between a very tiny manufacturing, handcrafts, some services (mainly commerce), and government administration (including the military).⁷ It was a relatively simple social structure where government officials represented the upper class.⁸ Even on the eve of the First World War, Serbia's exports consisted almost entirely of agricultural goods (livestock, cereals and fruits).

Second, Serbian farmers almost to a man (it was a male-dominated society) owned their own land, due to the extensive and egalitarian land reform that took place as the country gained independence from the Ottomans, and large Ottoman (Muslim) estates were taken over or bought and the land that was already tilled by (Christian) peasants became

⁴ As is apparent in the discussion between Robert Allen (2018, 2018a) on the one hand, and Jane Humphries and Jacob Weiskopf (2016) and Judy Stevenson (2017) on the other regarding the level of English real wages before and during the early stages of the Industrial Revolution.

⁵ For example, between 1900 and 1910, the cultivated land increased by 24 percent vs. 16 percent increase in population (data from the Statistical Yearbooks of the Kingdom of Serbia).

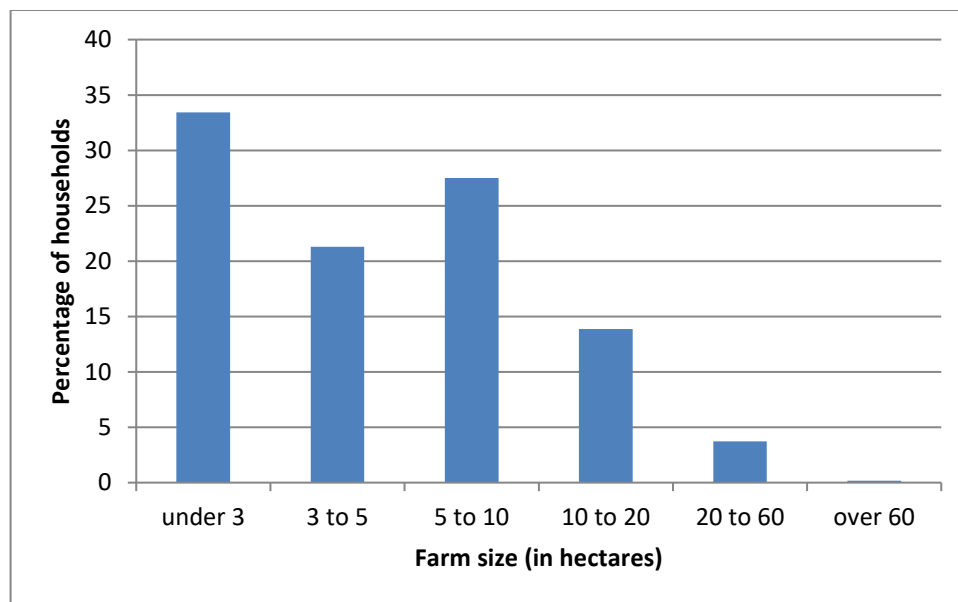
⁶ *Statistički Godišnjak Kraljevine Srbije* (Statistical Yearbook of the Kingdom of Serbia) 1910.

⁷ The share of the rural population in 1889 was estimated at 88 percent (see *Državopis* (State Statistics), vol. XI, 1889, p. XIX).

⁸ See Svetozar Marković, *Srbija na istoku* (Serbia in the East), Chapters VIII and IX.

their formal property. The agrarian reform or the redistribution of land began in 1833 and by the time our data start (1862), it was completed. Farms were very small.⁹ As Figure 1, based on the agrarian census of 1897, shows, 55 percent of households owned farms smaller than 5 hectares. The average farm size was just over 7 hectares, and large properties (other than municipal or state land) were practically non-existent. The census reports only 86 farms, out of 300,000, with more than 100 hectares. There were almost no landless peasants. The inalienable homestead, introduced in stages from 1837 to 1873, consisted of a building, three-and-half hectares of arable land, two oxen, five sheep or rams, and the essential agricultural implements. It could not be sold to pay off a private debt.¹⁰ It was a bulwark against rural poverty (but had other economic effects too which we discuss in Section 6). So hunger was rare.

Figure 1. Distribution of households according to farm size, 1897



Source: Data from the 1897 Agrarian Census reported in *Statistički Godišnjak* (the Statistical Yearbooks of the Kingdom of Serbia) for 1900.

Third, the period studied here is also characterized by the dissolution of the traditional multi-generational farmer households (*zadruga*) which were replaced by the more “modern” nuclear family landholdings. Since *zadrugas* typically produced most of the goods (food, wine, clothing) for own consumption and only infrequently engaged in exchange,

⁹ The small size was not necessarily a limitation on the efficiency of production as such because with the technology then available to the farmers, it is doubtful that they could have cultivated much larger plots.

¹⁰ Milorad Zebić, *La Serbie agricole et sa démocratie*, Librairie Berger-Levrault, Paris, 1917, p. 37.

their break-up also led to a greater marketization of production and to the emergence of the wage labor.¹¹

Under the classical Arthur Lewis (1954) modernization scenario, the bulk of urban labor is provided by landless farmers who migrate to cities: their wages are fixed at the level of the best rural alternative (which is close to subsistence) and are sticky upward. In the case of Serbia, however, wage labor owned land and, in some cases, was still engaged in multi-generational households providing *in natura* for most of their needs. This had significant implications for farmers' willingness to supply labor at an urban open market. Thus, as we shall argue in Section 5, the urban wage depended, among other factors, on whether the harvest was plentiful or not. Unlike in a landless setting, where the potential wage earner has practically no choice, here for the farmer the opportunity cost of taking an urban job is the amount of net income he could make working on his own land. And that amount was greater when harvests were good thus raising the real wage.¹²

It may be useful to explain briefly the political situation of Serbia at the beginning of the period we study here. Serbia became an autonomous principality (within the Ottoman Empire) with the right to collect own taxes in 1833, and a hereditary prince in 1838. This was about the same time as when Greece became fully independent (1830). Although Greece was externally "freer", the Serbian anti-Ottoman revolution was internally more radical in that it abolished all vestiges of feudal relations and undertook a very radical land reform.

After several decades of tumultuous internal developments that included a couple of Constitutions, the power struggle between a merchant oligarchy and state bureaucracy on the one hand, and the prince on the other, the additional struggle between two dynastic houses, the assassination of one (liberal) prince and the abdication of another, by 1862 when our series begin, the withdrawal of the last Ottoman forces that, according to the previous treaties, were allowed to remain in six fortified towns was complete. This was also the period

¹¹ The Serbian *zadruga* is similar to the better known Russian *obshchina* or *mir*. In both, several (in the Russian case, sometimes dozens) multi-generational peasant households held the land in common ownership. The land could not be alienated by individual members. They could of course leave *zadruga* but were then ostracized by the family, and could take with themselves only personal property. Note that *zadruga*'s common land ownership should be distinguished from the "commons" used mostly for pasture which, like in England prior to the enclosures, were open to all farmers living in the area. The Serbian terms are very clear on that: there was *zadruga* *zemlja* (*zadruga*-owned land) and *opštinska zemlja* ('association'- or 'municipality' owned land).

¹² Although it could be also argued that in a basically subsistence farming setting (as in Serbia), the opportunity wage could not be much different from the subsistence wage that a landless farmer would expect too.

of great European effervescence and unification movements, leading to the Italian and Romanian unifications in 1859-60, the ideas of pan-Hungarian and Southern Slav (Yugoslav) unifications, and to the German unification in 1870. The rest of historical developments will be, when relevant, discussed later. Here it may be useful just to mention that Serbia became recognized as an independent country by the Great Powers at the 1878 Congress of Berlin and that our period ends in 1910 on the eve of the Balkan Wars and the First World War. We thus cover almost half-century of eventful political developments in South-Eastern Europe, some of them with important worldwide implications.

3. The data

Regular statistical monitoring of economic and other phenomena started in Serbia in 1862, when the Ministry of Finance's economic department was ordered to begin collection and publication of regular statistics. Previously there were only censuses of cattle and livestock (the first such high-quality census being conducted in 1834) and statistics of foreign trade (since 1843, but published irregularly until 1863). The regular monitoring of prices and wages thus started in 1862. "The Principality of Serbia has begun astonishing early (unlike Greece or Romania) to make a connection to international standards of modern statistics," wrote Holm Sundhaussen,¹³ the author of an important book on Serbian statistics.¹⁴ And indeed, the state statistics provide most of the data that we use in this research

In a methodological note the Serbian statisticians defined the purpose of price monitoring thus: "The knowledge of average prices of agricultural products is important in many respects for the national economy, trade policy and business law".¹⁵ The precise method of data collection was prescribed: members of the local courts were ordered by the Announcement of June 27, 1862, No. 791 to record average prices of products and wages in their localities, since they are "the most capable" to do this, both in terms of "honesty and knowledge". The reported prices had to be based on the actual prices observed in the sale and purchase of goods (and not on estimates); they had to be related to goods of average

¹³ H. Sundhaussen, *Istorija Srbije od 19. do 21. Veka* (History of Serbia from the 19th to 21st century), Clio, Belgrade, 2009, p. 198.

¹⁴ *Historische Statistik Serbiens 1834-1914*, R. Oldenbourg Verlag, 1989.

¹⁵ *Državopis* (State Statistics), vol. I, 1863, Ministarstvo finansija (Ministry of Finance), p. 21.

quality, and to be recorded once a week when the market is at its peak; monthly prices were derived from the weekly.¹⁶ The Ministry of Finance then calculated average monthly and annual prices for Serbia as a whole as the unweighted average of reported local prices and wages.

In the beginning, in 1862, prices of forty eight products and three types of wages were recorded, while at the end of our period in 1910, there were 998 products and four types of wages. After the 1876-78 wars with Ottoman Empire, Serbia expanded territorially to the southeast and in 1880 the original list of 22 towns was enlarged by five more. The number of cities covered by statistics continued to increase reaching 42 in 1910.

Here we must keep in mind that these “cities” were mostly small towns or townships. The largest city in 1884 was Belgrade, with 35,500 inhabitants, and only two cities had more than 10,000 but fewer than 17,000 inhabitants. Two townships included in the list had less than thousand inhabitants, and the average size of the towns from this list was just 6,600.¹⁷ Since even in these "towns" a lot of the population was engaged in agriculture, it could be said that our sample consists mostly of semi-urban settlements, that is, a transitional type of settlement between the village and the real city.

When creating the statistical base for this paper, we faced for the period 1862-1880 the problem of converting prices and wages from the *kuruş* (or colloquially called Turkish grosch to distinguish it from the Austrian grosch) into dinars. The Turkish grosches were used for transactions and were thus reported in state statistics before the introduction of the dinar as the Serbian legal tender in 1879. At that time, the value of the dinar was fixed at 5 grosch (*kuruş*). After 1879, the statisticians recalculated the price and wage data for the earlier periods by dividing the grosch prices by 5, i.e., by using the official exchange rate. However, according to the silver content of the dinar and the grosch, one dinar was worth only 4.5 grosch.¹⁸ (The dinar was officially worth 4.5 grams of silver vs. one gram of silver for the grosch.)¹⁹ By using the 5-1 ratio, the Serbian authorities artificially reduced the value

¹⁶ *Državopis* (State Statistics), vol. I, 1863, Ministarstvo finansija (Ministry of Finance), p. 21.

¹⁷ *Državopis* (State Statistics), vol. XI, 1889, pp. 238-241.

¹⁸ Following the rules of the Latin Monetary Union, the value of a dinar was fixed at 4.5 grams of silver, the same as the French franc.

¹⁹ Ş. Pamuk, *A Monetary History of the Ottoman Empire*, Cambridge University Press, 2009, p. 191.

of the Turkish grosch in order to drive it out of circulation. So, we have two alternative dinar and grosch exchange rates: the official one of 5 to 1, and the silver one of 4.5 to 1. We have chosen to use the latter one because we consider it more realistic in strictly economic terms. We have thus recalculated all prices and wages expressed in grosch (for the period 1862-1880) into nominal dinars using the exchange rate of 4.5 to 1.

The next problem has to do with weights. Until 1884, the measure of weight used in Serbian statistics was the old measure *oka* equal to 1.282 kg. We have recalculated all quantities from *oka* into kilograms.

For 1862, we have only the data on prices and wages for the second half of the year, since the recording began in mid-year. Therefore, the entire calculation for 1862 is valid, strictly speaking, only for the second half of the year, although the difference is unlikely to be significant.

Since the paper uses the methodology introduced by Robert Allen, we tried, as far as possible, to use Allen-defined basket of products as a de facto price index with which to deflate the nominal wage. In other words, we took Allen's subsistence ("bare bones") and "respectability" baskets, and, with some corrections to be explained below, used it in our work.²⁰ The subsistence and respectability baskets include respectively nine and twelve products: bread, beans, meat, butter, soap, linen, candles, lamp oil, and fuel (for both), and cheese, eggs, beer for the respectability basket only. There are in addition two wage series which means that there are in total 14 prices per year.

The data on bread, beans, meat, butter, eggs and soap prices are taken directly from the national statistics.²¹

For meat, we take pork because it is the most used meat in Serbia.

Instead of the yellow cheese, which is in Allen's basket, we included the so-called white cheese, which was practically exclusively used in Serbia in the 19th century and whose

²⁰ Robert C. Allen, "The Great Divergence in European Wages and Prices from the Middle Ages to the First World War", *Explorations in Economic History*, October 2001.

²¹ We used the following official statistical sources: *Državopis* (State Statistics) volumes I-XIX, *Statistički godišnjak* (Statistical Yearbooks) 1893-1912 and *Statistika cena poljoprivrednih proizvoda 1890-1905* (Statistics of the Prices of Agricultural Products 1890-1905). All were published by the Ministry of Finance.

price is included in state statistics. Since its calorific content is about half of that of the yellow cheese, we almost doubled its amount (9.75 kg instead of 5).

Instead of beer, we included wine that was far more common in Serbia. We used the ratio of 1 liter of wine=2.67 liters of beer, as Allen suggested for countries where the use of wine was more common.²²

In the official statistical sources, there is no price series for candles and lamp oil, but there is a price series for animal fat (tallow). Since in Serbia candles and oil for lamps were mainly made of tallow, we calculated the prices of candles and lamp oil in the following manner: we used the reported price of animal fat and adjusted it by the observed ratio between the price of animal fat and the average of prices of candles or lamp oil found in other sources, mostly in newspapers.

We had similar difficulties with linen cloth. Serbian statistics monitored the price of flax in kilograms, which we converted, using expert estimates, into square meters (the unit in Allen's basket). We obtained the prices that are very close to those (few) reported prices in square meters available in the contemporary newspapers.

In the end, 5 million BTU of fuel in the respectability basket (or alternatively 2 million BTU in the subsistence basket) came from the energy value of charcoal and its prices from national statistics.

Table 1 shows the quantities of goods included in the respectability and subsistence baskets. The average cost of the respectability basket is more than twice that of the subsistence basket. Thus, as a rule of thumb, the welfare ratio calculated using the respectability basket would be about 45 percent of the welfare ratio obtained using the subsistence basket.

²² Robert C. Allen, "The Great Divergence in European Wages and Prices from the Middle Ages to the First World War", *Explorations in Economic History*, October 2001, p. 421.

Table 1. Annual quantities of goods included in respectability and subsistence baskets

Good (units)	Respectability basket	Subsistence basket
Bread (kg)	182	165
Beans (kg)	40	20
Pork (kg)	26	5
Butter (kg)	5.2	3
Cheese (kg)	9.75	--
Eggs (ten)	5.2	--
Wine (liters)	68.25	--
Soap (kg)	2.6	1.3
Linen (square m)	5	3
Candles (kg)	2.6	1.3
Tallow (liters)	2.6	1.3
Charcoal (kg)	170	68
<i>Average annual cost over the period 1862-1910 (nominal dinars)</i>	<i>123</i>	<i>55</i>

Note: Bare-bones subsistence basket from Allen, Murphy and Schneider (2012), Table 1, p. 873; respectability basket from Allen et al. (2011), Table 5.

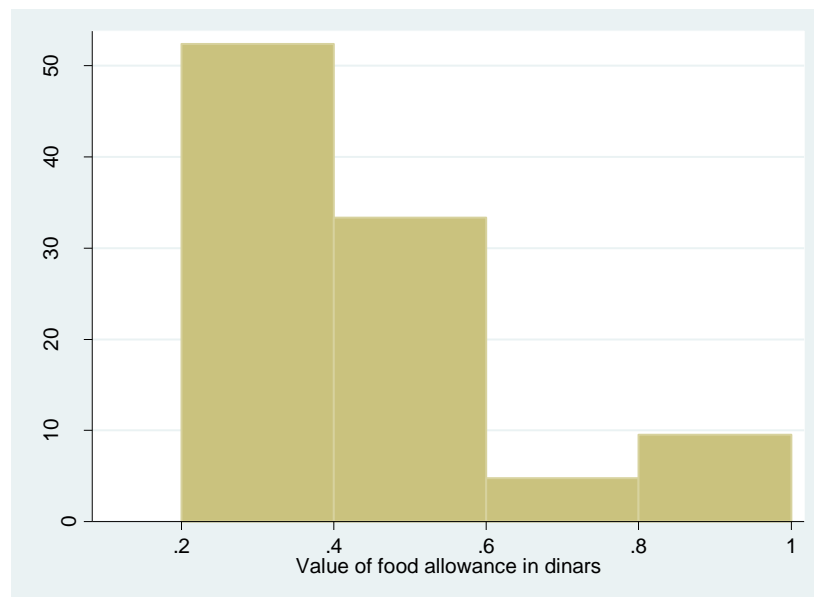
Regarding wages, we have two types of workers--ordinary or unskilled workers, and skilled construction workers or masons. These are the two common occupation and skill types used in similar calculations elsewhere both because of the availability of data, and because they are clearly differentiated categories frequently encountered at the time. Serbian statisticians' definitions are as follows: ordinary wages are earned by "ordinary wage-workers like diggers", while for skilled construction workers or masons it is said that they are "masters or apprentices who build themselves, not their helpers". We have taken both wage series from the national statistics. Annual data for the two baskets and two types of wages are provided in Annex 1.

The problem with the published wage data is that they do not include food allowance as is explicitly stated in the official statistics. In Serbia, however, workers and masons usually received food from the employer so that they would not waste time going back and forth between work site and home. We addressed the problem in two ways. First, we added to the reported wage for each year the nominal value of the food component of the subsistence basket augmented for the wine from the respectability basket. Second, we looked at a large number of reports from villages, districts and counties (the three administrative tiers) regarding wages in their areas. These reports were published between 1870 and 1898 in the agricultural paper *Težak*.²³ Around nine-tenths of the reports state that wages include food (and often wine and brandy as well), while about one-tenth of the

²³ The information published in *Težak* was provided by agricultural experts, teachers, priests, farmers.

reports provide only wages without food and alcohol. This confirms that the wage recorded by statistics is usually not the entire wage, and that it should be increased by the value of food and drinks given by the employer. Fortunately, we also have a number of reports (twenty) which indicate wages with and without food. Most of the implicit food and drinks values range from 0.2 to 0.6 dinars per day, and one-half of them lie between 0.2 and 0.4 dinars (Figure 2). The average value of the food and drink allowance is 0.38 dinars per day.²⁴ We added this amount to the published wages. We decided to keep this nominal amount for all the years because the actual data on implicit food values are dispersed across the years, are very scarce (so anchoring the value in any one year and deflating/inflating to other years would produce very different results depending on the anchor year), and they do not seem to vary systematically with the year when they were reported.

Figure 2. The distribution of the value of food allowance reported in contemporary sources



Source: Data collected from the various issues of the agricultural magazine *Težak*.

This is the way we created our statistical database. In total we needed 686 prices for the entire database (49 years x 14 variables per year). We took 623 data points from the official statistics. The missing 63 data points were filled in as follows: 8 from the

²⁴ Note that this is a relatively large amount: the average daily value of the respectability basket is 0.35 dinars. However it is not unlikely that the cost (and quantity) of daily alcohol provided by the employer were substantial. Alcohol was often regarded as valuable and necessary as food.

contemporary newspapers and 55 through interpolation in the case of four products: eggs, soap, flax and coal for which the prices were not available in all the years.

4. Adjustments to Allen's methodology

Let us now move to the discussion of some of the features of the Serbian social structure that are relevant for the labor market, wages, population structure and consequently our methodological approach.

The economic life was characterized by the following traits:

(1) Local labor markets in the countryside and in the townships were very closely connected, i.e., the same people offered their services, usually in the square of the town, so wages for urban areas were only slightly higher than those in rural areas.

(2) The labor supply by the peasants fluctuated significantly and depended on the fertility of the current or even the previous year: if the previous year was fertile, the labor supply was lower because the peasants had enough food stocked and were less interested in additional wages.²⁵ Similarly when the current year was “good” so the return to working on own property was high, wages were tended to be higher: “the more fertile the year, the higher the wage, and the scarcer the year...the lower the wage. A few years ago, in a year of scarcity, one could hire a worker for 1-2 *oka* of flour [per day] or even for the food alone”.²⁶ There might have been, among at least a part of the peasantry, a backward-bending supply curve of labor, since our sources often mention peasants' unwillingness to take up jobs and shortages of workers even when wages were relatively high.²⁷

(3) Occasional local labor shortages were relieved by workers from other parts of the country or by migrants. They came either from the more mountainous areas of Serbia (Užice, Zlatibor mountain, Vlasinci, Trnci etc.) or from Austria-Hungary (mostly Serbs living

²⁵ "The high wage cost is the result of last year's abundance and this means that everybody, or at least a large majority, have enough food, and they do not have to work [for a wage] at the time when they have anyway most important work at home [on own farm]", *Težak*, 1 July 1883.

²⁶ *Težak*, 12 January 1884.

²⁷ For example, "The wage was very high at this time and it is difficult to find a worker regardless of how much you pay them", *Težak*, 1 July 1883.

there) or Bosnia (until 1878 under the Ottoman control and afterwards under Austro-Hungarian). This too contributed to reducing the wage gap between local labor markets.

(4) The total number of wage earners was relatively small since most of the workforce was occupied on its own farms. But, because of (1) and the possibility of choosing between work on own property and work as a wage-earner, it could be argued that recorded wages approximated well the marginal return from working on own farm.

Given these characteristics of the Serbian economy, and especially the fact that almost the entire rural population owned some land, the question can be raised as to the average number of days of work performed annually. The common assumption in the literature, based largely on the West European experience, is that people worked for 250 days a year. This number is, we believe, excessive for Serbia. There are frequent references in the contemporary magazines and newspapers on how little the villagers work and how many days are spent (“wasted”) in various holidays, celebrations of the saints and the like—a feature that was also common in pre-industrialized Western Europe (see de Vries 2008). Furthermore, the very character of agriculture contributes to the fact that the number of working days was limited: agricultural work is heavily seasonal and in the late autumn and winter under a temperate continental climate, there is hardly any work to do. The same applies to construction. This is, of course, different from Western Europe which was more industrialized and where work depended less on climatic conditions.

We did not however find claims by some authors that peasants were working only half-a-year or less credible.²⁸ It seems that the number given (“less than half-a-year”) is very approximate and is put forward for seemingly moralistic reasons intended to shame peasants or to stimulate them to work harder. Instead we rely on the results of the rural survey conducted between 1910 and 1912 by Mihailo Avramović, the founder of the Serbian agrarian cooperative movement.²⁹ According to the survey, 41 percent of the days go unused (either because of laziness, drinking³⁰ or ill health), 45 percent of days are spent farming on own land, and 14 percent of days are spent “outside the estate” or “at home”.

²⁸ For example, “we farmers do not spend even one-half of 365 days working”, *Težak*, 5 August 1890.

²⁹ *Naše seljačko gazdinstvo* (Our farm economy), 1928, p. 29.

³⁰ In 1869, an author writes: “In the summer at the peak of the seasonal field work, one can see in villages and even more so in towns, farmers who drink in inns or sleep the whole day, and at night they go hunting. Even when you offer them 20 grosch wage, they just make fun of you” (*Težak*, 10 May 1869).

We think that most of this last category represents work, either through wage-earning,³¹ or on own property but outside agriculture (e.g. artisanal work), and thus estimate that farmers were working for slightly more than half a year. We round off the number of working days at 200.³²

A final, and most important, adjustment to Allen's methodology refers to the number of family members whose needs are supposed to be covered by the wage earned by one member. As explained above, Allen assumes an average household size of 4, which on account of economies of scale in consumption and lower food needs of children, translates into 3 equivalent units. For Serbia in the 19th century, however, household size of 4 is unrealistically low. All information from Population Censuses indicates that the average household size was between 6 and 7.³³ We assume that the relevant number of family members that had to be maintained by a wage was 6. Using the implicit Allen's scale of 1 for the first household member, and 0.667 for each additional member, yields in the case of a six-member household, 4-1/3 equivalent units (adult baskets). For housing needs, we, like Allen, add 5% of the total basket cost, and obtain thus a total of 4.55 equivalent units.

We believe that this modification gives a more realistic insight into what a subsistence wage in Serbia in the latter part of the 19th century was supposed to cover. Of course, when we compare the Serbian real wage with that for other countries, the assumption of greater household size pushes Serbian real wages down. More generally, the issue of household size reflects the problem of how to do valid comparisons between very different economies. It highlights the need to distinguish what might have been relevant subsistence baskets between countries and periods. It is closer in spirit (although not in methodology) to Allen's more recent (2017) reworking of the subsistence basket to include more adequately country-specific climatic and nutritional requirements.

³¹ This is confirmed by Avramović when he lists "personal earnings" which must include wages among the income of farms. *Naše seljačko gazdinstvo*, 1928, p. 35.

³² This is the number considered by Karl Gunnar Persson and Paul Sharp to be very low, yet quite common for the European pre-industrial societies, see Persson and Sharp, *An Economic History of Europe: Knowledge, Institutions and Growth, 600 to the Present*, Cambridge University Press, 2015, p. 75.

³³ See also Aleksandra Vuletić: "Koliko duša živi u jednoj kući? Broj članova seoskog domaćinstva u Srbiji 1834-1910" ("How many people live in a house? Number of village household members in Serbia 1834-1910"), *Srpske studije*, No 3, 2012.

To summarize, our departures from the “standard” model are threefold: (1) inclusion of in-kind benefits into the money wage, (2) lower number of working days, and (3) greater household size. The last two adjustment depress the welfare ratio, the first one increases it.

5. The results

As just explained, in our base-case scenario we use for both the construction worker and ordinary worker the assumption of 200 working days per year, six household members, and we add to the reported money wage the estimated value of the daily food allowance provided by the employer. The latter is (at first) made equal to the value of the food component of the subsistence basket *plus* the value of wine taken from the respectability basket. The results are shown in Figure 3. We can draw several conclusions.

Two different periods can be observed in the evolution of the real wages of both skilled and unskilled labor. The first period lasting until the end-1880s in which both show an upward trend, and the second period of decline noticeable especially for the wages of ordinary workers. The real wages ended in 1910 for the unskilled worker at the same level as in the 1860s, but at a significantly higher level for the construction worker. The upward and then downward movement differs from the two usual estimates of the dynamics of the Serbian economy over the same period: several authors believe that Serbia experienced moderate growth,³⁴ while Michael Palairret argues that real per capita income declined throughout.³⁵

The ordinary worker's wage was, except for approximately the decade of the 1880s (a period, as discussed below, of strong foreign borrowing and "modernization"), always around the subsistence level. This means that unskilled worker's wage was just sufficient to cover the elementary needs of himself and his (large) family. The improvement which begins in the early 1870s was relatively short-lived and by the end of the century the welfare ratio dropped back to around 1. It stayed at that level until 1910 when our data end. Thus the welfare ratio of an ordinary worker does not show any sustained improvement over half-century.

It is useful to check how dependent are our conclusions regarding the wage level and its evolution on the assumptions made in the base-case scenario. Table 2 shows the welfare ratios in the first ten years of the period (1862-71) and in the last ten years (1901-1910) when

³⁴ R. Lampe and M. R. Jackson, *Balkan Economic History, 1550-1950, From Imperial Borderlands to Developing Nations*, Indiana University Press, 1982.

³⁵ Michael Palairret, *The Balkan economies c. 1800-1914; Evolution without development*, Cambridge University Press 1997; Şevket Pamuk, "Economic Growth in Southeastern Europe and Eastern Mediterranean, 1820-1914", *Economic Alternatives*, 2016, No. 3.

the number of working days and the value of food received in kind vary. The absolute level of the welfare ratio obviously changes in function of the number of days worked, and this shift-change leaves the relative ratios between the end-period and the beginning-period wages the same. When we price the food and wine components from the baskets, the end-period wage is practically the same as in the beginning. When we use the same nominal amount for the in-kind wage, the real wage at the end is some 9 percent lower than in the beginning—reflecting, as mentioned, probably a real wage bias in favor of the early years. Our base-case scenario (column 2) yields relatively low, although not the lowest, absolute wage level compared to the other scenarios. Under the most optimistic scenario when the workyear is assumed to be 250 days and the value of the food allowance is relatively high, the end-point welfare ratio is 1.56 (see column 6) rather than 1.16 as in the base-case.

Table 2. Unskilled worker’s subsistence welfare ratio under different assumptions

	1	2	3	4	5	6
Value of food received in kind	Food components of the subsistence basket <i>plus</i> wine from the respectability basket			Based on documentary evidence (food and drinks=0.38 dinar)		
Annual number of days of work	180	200	250	180	200	250
Average welfare ratio 1862-71	1.045	1.161	1.452	1.231	1.367	1.709
Average welfare ratio 1901-1910	1.040	1.155	1.444	1.122	1.247	1.558
Improvement	-1%	-1%	-1%	-9%	-9%	-9%

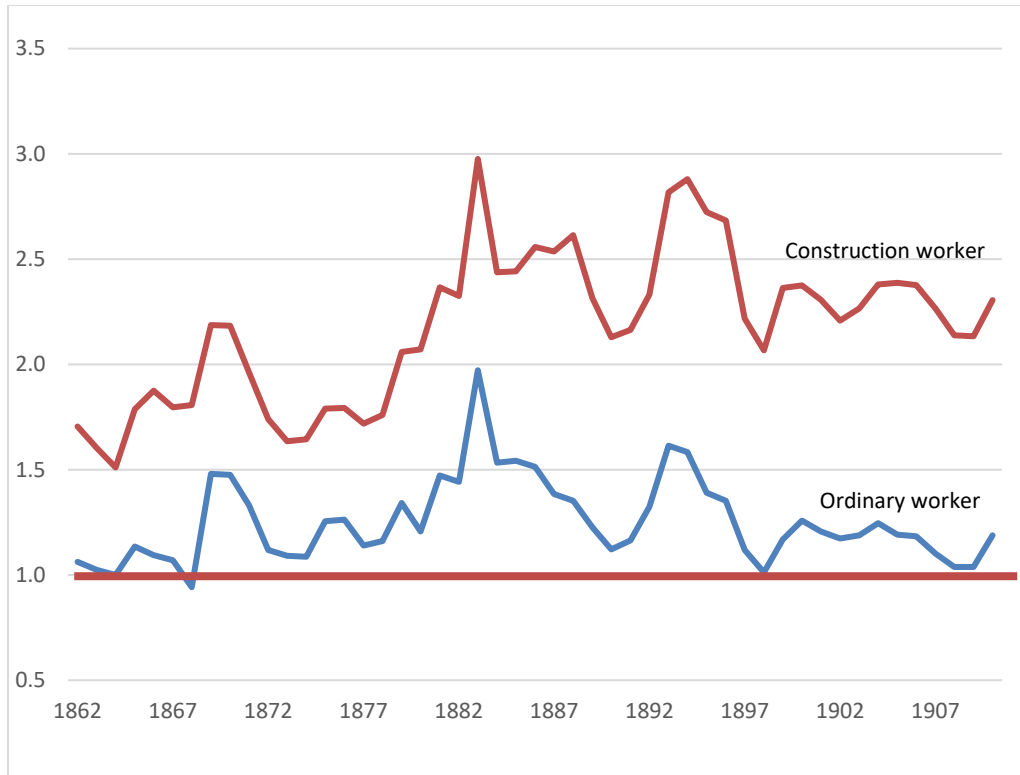
Although the construction worker’s welfare ratio moves partly in tandem with that of the ordinary worker, it does shows some gradual improvement. At the end of the period in the base-case scenario, construction worker’s welfare ratio is 2.28 while in the beginning of the period it was 2.15 (see Figure 3). Consequently, the skill premium of the construction worker over an ordinary worker increased from around 50 percent in the beginning to 100 percent at the end (see Figure 4). From around 1890, the construction worker welfare ratio—and thus his real wage—became twice as high as that of an ordinary worker. It was the level at which it remained for the next twenty years.

The same lack of real wage growth among unskilled labor and increase in the skilled wage between 1860s and 1910s is reported for Istanbul by Özmucur and Pamuk (2002, Table 1, p. 301 and Figure 1, p. 306). While the unskilled wage shows some fluctuations, its

decennial 1900-10 level was lower than in 1850-59. The wage of skilled workers however displayed a constant increase.

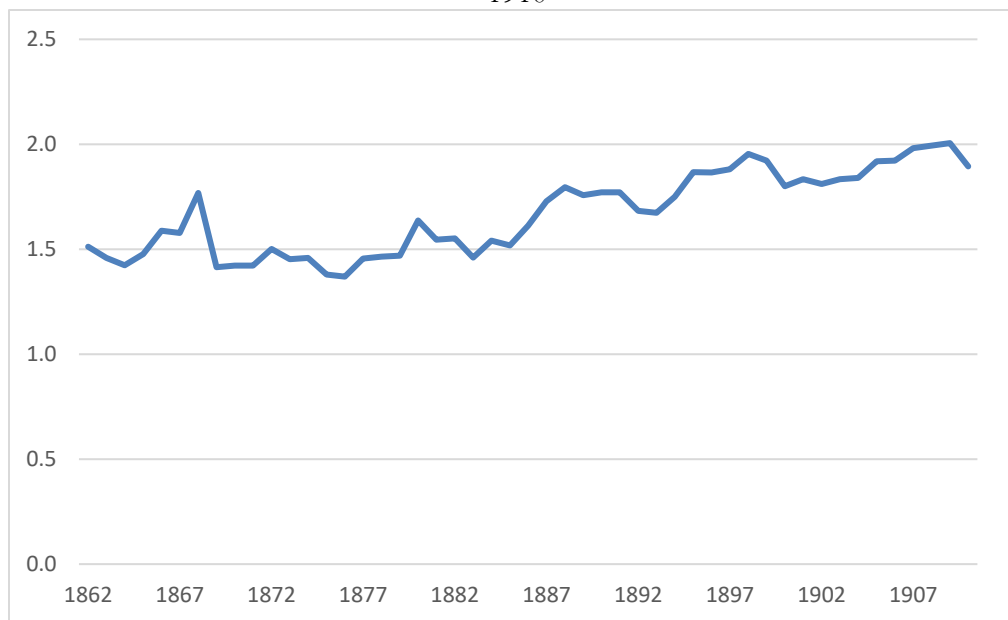
Why did wages of construction workers rise compared to unskilled workers? We believe that it was related to significant increases in construction activities throughout the second half of the 19th century, the growth of cities, new state offices and military buildings, and infrastructural investments, including the construction of the first railroad in Serbia (started in 1881 and completed in 1884). On the other hand, the stagnation of unskilled wages can be related to slow improvements in agriculture: if marginal net income in agriculture had risen, that would have put an upward pressure on urban wages to rise as well.

Figure 3. Subsistence welfare ratio, urban Serbia 1862-1910



Note: Under the assumptions of 200 working days per year, household size of 6, and daily food and wine allowance provided by the employer.

Figure 4. The skill premium (construction worker vs. unskilled worker), urban Serbia 1862-1910



Note: the vertical axis shows the ratio of construction worker's wage to the wage of an ordinary worker.

6. How to explain the stagnant the real wage

We explain the real wage movements with both conjunctural or short-term factors, and structural or long-term features of the Serbian economy.

a. Short-term factors

The first, albeit modest, spurt of real wages from the mid-1860s to 1870 coincides with the reign of Prince Mihailo Obrenović, an enlightened monarch oriented toward the modernization of the country. On the economic plane, the basic positive measure of his government was the creation of The Directorate of Funds (*Uprava fondova*, in Serbian) in 1862. The Directorate of Funds was a credit organizations with a very large initial capital of around 17 million dinars, which was 1½ times the state budget in that year. It was also seen as a social institution that had to help peasants in financial difficulties and not solely as a bank. The Directorate's loans mostly went to large peasants and traders.³⁶ This encouraged economic activity, increased exports (by 123 percent from 1861-1870, due mostly to the Hungarian demand for corn and wheat) and probably raised wages.³⁷

A significant fall in real wages (6 percent for skilled, 3 percent for unskilled) occurred in 1873 as a result of the collapse of the Vienna Stock Exchange and the “contagion” effect of the Austrian-Hungarian economic crisis on Serbia. Trade credits dried out; the largest bank in Serbia (The First Serbian Bank) collapsed and the Directorate's credit potential was reduced due to many non-performing loans.³⁸

In the following years, real wages stagnated due to the Serbian-Turkish wars of 1876-1878 which slowed down economic activity and brought difficulties in the countryside due to the military's requisitions of food from peasants. In 1881, wages experienced significant growth (16 percent for skilled, 21 percent for unskilled) thanks to the recovery after the wars and the restoration of the ruined lands in the southern regions.

³⁶ Djordje Pavlović, Predlog za uređenje težačkog kredita u Srbiji, *Težak*, 30.5.1870.

³⁷ John Komlos, *The Habsburg Monarchy as a Customs Union*, 1983, pp. 75-78.

³⁸ John R. Lampe, Marvin R. Jackson: *Balkan Economic History, 1550-1950: From Imperial Borderlands to Developing Nations*, 1982, p. 131.

In 1881 began a relatively short period (lasting until 1888) of considerable foreign borrowing by Serbia. The aim was to jump-start the process of “modernization”.³⁹ This brought in a lot of foreign money into the country and allowed for the highest wage level recorded during the entire 1862-1910 period. At that time were built the first railroads in Serbia (among them the most important Belgrade-Niš, completed in 1884), the state paid back debts to peasants and traders incurred during the wars of 1876-1878, made significant military purchases for the war with Bulgaria in 1885, and reduced the budget deficit.⁴⁰

Around 1888, net foreign borrowing stopped as Serbia experienced difficulties with debt servicing and the ability to sustain consumption above domestic production ceased. High wages from the previous years were not sustainable. Serbia had to limit herself to own resources, and the period of long-term decline in real wages, i.e., return to the levels from previous decades, began.

At the same time, the fiscal pressure significantly increased in order to repay foreign loans. Thus the budget revenues almost doubled in ten years, passing from 22.9 million dinars in 1880 to 44.9 million in 1890.⁴¹ In real terms, the increase was even greater as our data from both respectability and subsistence baskets show a mild price deflation. Tax per person and tax revenues as a share of GDP (even if we do not yet have the data for the latter) almost certainly increased. An additional unfavorable factor for agricultural incomes and real wages was the appearance during the 1880s of cheap American wheat in the European markets. Serbian wheat now had to compete with American, leading to a stagnation of total exports, as well as to the worsening terms of trade.

The next local peak of real wages was in 1893-1894. It was the product of the rise in nominal wages and the fall in the price level for the bare-bones index. The reason for the growth of nominal wages is probably an abundance of money that the National Bank issued

³⁹ Former Finance Minister Vladimir Jovanović described the plan as follows: "Since Serbia is not rich in capital, it was thought that the loans made from foreign capital will virtually “rain millions of gold coins over the population”, multiply its production resources, increase revenues, and improve tax and financial strength [of the economy]. In that hope, a number of foreign loans for Serbia have been raised ", V. Jovanović, *Selected papers*, 2011, p. 469.

⁴⁰ Boško Mijatović, *Državne finansije Srbije 1876-1895* (Serbia's State Finances, 1876-1895), forthcoming.

⁴¹ Boško Mijatović, *Državne finansije Srbije 1876-1895* (Serbia's State Finances, 1876-1895), forthcoming.

in previous years, which caused a record high gold premium in a monetary system that was based on silver.⁴²

What might have exacerbated negative trends in the following years was the restrictive monetary policy of the National Bank of Serbia (NBS) from 1893 to 1908. Its purpose was to reduce the *agio*, the gold premium in a monetary system that was based on silver. The restrictive monetary policy came as a result of the legal obligation of the NBS first to reduce the money supply, and then not to issue money over the prescribed limits, even when necessary for economic activity, and especially for export finance.

An important episode, with an impact on real wages, was the multi-year trade war (the so-called “pig war”) between Austria-Hungary and Serbia. The war began in 1905 when Austria-Hungary introduced special sanitary controls whose objective was to reduce Serbian exports and exert a political pressure on the new Serbian government that was seen by Vienna as pro-Russian. The result was an 80 percent decrease in Serbia's exports to Austria-Hungary, a country that was then by far the largest foreign trade partner of Serbia. In fact, no less than 89.8 percent of total Serbian exports in 1905 went to Austria-Hungary.⁴³ Serbia tried, and mostly managed, to re-orient its exports to the markets of other countries, such as Germany, Belgium and France. At the same time, faster growth of the industry began through a policy of import substitution, driven by the increase in customs duties on Austro-Hungarian industrial goods which until then were dominant in the Serbian market.

b. Structural features

In addition to the short- to medium-term factors, there are three long-term features that have affected the movement of wages over the entire period: (a) very modest human capital, (b) lack of credit, and (c) unclear property rights.

Low human capital is a long-lasting feature of the Serbian population of the nineteenth century. Liberated from under the Ottoman rule only in the 1830s, the Serbian population was largely illiterate (the literacy rate in 1830 was less than 5%).⁴⁴ It was occupied

⁴² The cost of the respectability basket went up, driven probably by the monetary expansion, but not the cost of the subsistence basket.

⁴³ *Statistički godišnjak Kraljevine Srbije za 1907 i 1908 (Statistical Yearbook of Kingdom of Serbia for 1907 and 1908)*, vol. XII, 1913, p. 506.

⁴⁴ See Momčilo Ilić, *Pismenost u Srbiji u 19. veku (Literacy in Serbia in the 19th century)*, Belgrade, 2003, pp. 63-80.

mostly with cattle and livestock raising. Numerous immigrants from the mountainous Dinaric area of Montenegro, and Bosnia and Herzegovina were not any better off nor more educated. The first schools gradually appeared, but with few pupils and often unqualified teachers. In 1858, only 17,000 pupils were trained, who would hardly have been able to write and do elementary calculations at the end of the studies. Expert knowledge, primarily regarding agriculture, was hardly existent. Throughout the 19th century, livestock breeding was done through primitive extensive grazing, no manure system, and using antiquated and low-productivity breeds. Thus, pigs, the main export item, were simply raised in the forests and sold in the Austro-Hungarian market in a slim state, to be fed and fattened only after sale.

Farming was not more advanced: maintenance of soil's fertility (crop rotation, fertilizing, fallowing or the three-field system) was applied slowly or not at all, while better tools (iron plough instead of wooden) also entered into use very slowly. Most peasants used agricultural technology inherited from their grandfathers, although their grandfathers were not masters of agricultural crafts, but rather former cattle farmers.

Such backward agriculture advanced very slowly, pained to increase output and to provide rising population with enough food and in addition to generate export surpluses (the sole export item for Serbia). But some improvements did occur. Knowledge of agricultural techniques spread as literacy grew. Literacy reached the overall rate of 21 percent in 1900, while in the rural areas it was 15 percent. For men/boys older than 6, however, rural literacy was 33 percent. In addition, the state set up various institutions for improving agricultural techniques: secondary schools for the education of agricultural experts (two farming schools, one cattle breeding, one vineyard-orchard school); established an experimental farm in Topčider, near Belgrade; set up a cattle-breeding institute, created eight agricultural centers, fifty-five fruit and vineyard nurseries etc. All of this offered to the peasants more productive livestock breeds and types of crops and fruits. It introduced them to new techniques which enabled some modernization of agriculture. Thus in the advanced Posavina country (28,000 inhabitants) there were in 1911 twenty-nine steam thrashers.⁴⁵ The daily newspaper *Pravda* reported in August 1914 (the First World War had already started):

⁴⁵ *Težak*, 15 February 1912. Purchase of steam thrashers was generally done on credit, financed by the producers.

“All over the country, the thrashers are working all day, from 4 am to 7 pm. It is expected that by September the harvest would be completed”.

The second long-term feature was the lack of rural credit. During the nineteenth century, the Serbian state undertook numerous measures to protect peasants from the risks brought about by capitalist economy. The goal was to preserve the small peasant estate and to create a society of "free" peasantry. The goal was socio-political, but the costs were economic.⁴⁶

There were three government measures that completely cut off peasantry from the regular financial markets. They were the ban on the sale of a part of one's property (the homestead) to pay off debts to private individuals, banks or the state; the statutory limitation of the interest rate to 12 percent per annum;⁴⁷ and the inability of the rural population to borrow by issuing promissory notes. Lack of credit hindered technological modernization (land improvement, purchase of new tools, quality improvement of cattle, use of more fertile and better quality plantings, etc.). The fourth measure (prohibition of alienation of farms under 3.5 hectares) was also supposed to protect small holdings. Taken together these policies prevented the emergence of larger and more efficient farms although they also ensured that landlessness remained a marginal phenomenon.⁴⁸

Compared with the West European experience of a century or century-and-half earlier, it seems clear that these policies prevented a faster capitalistic development of both agriculture and industry as well as faster urbanization.⁴⁹ But many politicians and commentators remained strongly attached to the idea of an agricultural non-capitalist economy. The idea found support among the right-wing patriarchal politicians, among nationalist and left-wing parties that thought of *zadrugas* and peasant free-holdings as being a

⁴⁶ Boško Mijatović, “Zaštita seljaka od finansijskih rizika u nekadašnjoj Srbiji” (“Protection of peasants from financial risks in Serbia”), *Glas SANU*, Odeljenje društvenih nauka, vol. 27, 1995.

⁴⁷ As a consequence, loans at usurious rates of up to 100 percent per year were not rare (see Marie-Janine Čalić, *Socijalna istorija Srbije 1815-1941* (The Social History of Serbia, 1815-1941), Clio, Belgrade, 2004, p. 71).

⁴⁸ Unable to sell the land they owned or to borrow against it, peasants did not want to leave it either. So they remained there, tied to a piece of land, in words of one contemporary (cited in Čalić, 2004, p. 41) “neither able to live nor to die”. On the other hand, some economic historians (Vučo, 1955) estimate that the homestead law prevented the pauperization of between 10 to 15 percent of peasants.

⁴⁹ In 1910, the urbanization rate in Serbia was 13.2 percent. In Europe, only Russia and Finland were less urbanized (Marie Janine Čalić, 2004, p. 183).

distinct Slavic, Orthodox and more “humane” organization of production, and even among early anarchists and Marxists who saw the communal forms of ownership as capable of providing a shortcut to socialism.⁵⁰

The third long-term feature is the inadequacy of the cadastral system. The old Ottoman system based on simple issuance of title deeds remained unchanged although it was increasingly obsolete and unreliable. The boundaries of properties were not precisely determined and this led to innumerable court disputes. Peasants often illegally seized state or municipal land, striving afterwards to legalize such seizures. But their ownership rights remained for long controversial and farms, even when larger than 3.5 hectares, were taken out of circulation: they could neither be sold nor bought nor could money be borrowed using them as collateral.⁵¹

The lending for agriculture by the Directorate of Funds dried out because the borrowers did not repay many loans, leading a Minister of the Economy to state that the Directorate was “in a sad state” because its “capital that is being loaned out ...is paid back only with difficulty and in a disorderly fashion”. Using the legal system to force repayments or seize the assets was out of the question because of the number of non-performing loans: “who the hell will sell almost half of Serbia to get repaid?”⁵² Private banks did not lend to agriculture, considering this business too risky because of the inalienable homestead, and inadequate ownership documentation and unclear property rights.

Handicrafts were not better off. They were long protected by guild-like regulations that curbed competition and deprived them of technical innovations. They also faced strong foreign competition after the liberalization of imports in the early 1880s. Until the customs war with Austria-Hungary, industry, with a few exceptions, almost did not exist in Serbia due

⁵⁰ Svetozar Marković, one of the earliest and most influential Serbian socialists, held this view, shared by the way, as regards Russia, by some Russian Marxists and indeed discussed by Marx in his famous 1881 letter to Vera Zasulich.

⁵¹ “Only a minority in the countryside...has title deeds for their possessions, and even then they are often incorrect and unreliable. Disputes over land are multiplying from year to year, and no one can stand in the way of enclosures of municipal meadows. Moreover, the state property is taken up abruptly, and it has in some ways created a state of lawlessness in the whole country”, *Težak*, 26 June 1894, p. 225.

⁵² Vladan Djordjević, “Moje ministrowanje“ (My ministry), *Otadžbina*, vol. 24, 1890, p. 547.

to the lack of technical knowledge, shortage of capital, small urban demand and poor performance of the judiciary.⁵³

When we look at the evolution of real wages in the light of structural features of the Serbian economy, it appears that only modernization efforts, accompanied by foreign borrowings, had a positive impact on their growth. But such policies were short-lived: they failed to provide, despite what their proponents argued, for a sustained development, and when foreign loans had to be repaid, growth came to an end. This is the feature of the Serbian, and during some seventy years of Yugoslavia's existence, of the Yugoslav economy that seems to have survived all political and economic systems and territorial realignments.

⁵³ Holm Sundhausen: *Istorija Srbije od 19. do 21. veka* (History of Serbia from the 19th to 21st century), 2008, pp. 203-205.

7. Comparison with other countries and conclusions

In his book *Srbija na Istoku* (Serbia in the East), published in 1872, Svetozar Marković wrote the following: “Earnings of a *zadruga* farmer before the Serbian revolution [in the early 1800s] and probably today as well hardly exceed the earnings of an average worker in Europe. I do not take here the money value of earnings but the quantity of essential goods that each of them can buy with his labor. And today’s Serbian peasant, if he does not live worse, for sure does not live better than the working people in the West” (p. 32).⁵⁴

We can now, almost 150 years after Marković speculated, answer that question empirically. All data in Table 3 except for Serbia come from Allen et al. (2011), a study that compares European and Asian real wages. Allen et al. find not only that North European wages were higher than Chinese or Japanese wages around 1860-70 but that in the next half-century they tended to increase at a greater rate. This is especially clear in the case of Leipzig (and presumably German) real wages that recorded the highest rate of growth. For China, Allen et al. conclude (p. 27) that “The standard of living in China remained low and on a par with the regions of Europe untouched by the Industrial Revolution”. This is exactly what we find. Serbian unskilled real wage which around 1860-70 was very low but not worse than the equivalent wages in Milan and Kyoto/Tokyo (and using a four-member household assumption actually higher) remained at that low level in the next fifty years while the real wages in Milan and Kyoto/Tokyo doubled. Like the Chinese real wage, Serbian unskilled real wage registered no growth. Therefore, the gap between Northern Europe as well as Southern Europe (represented by Milan here) and Serbia (and perhaps the rest of South-East Europe) widened considerably. So if Marković has not been widely off the mark in his assessment of Serbia’s working people position vis-à-vis at least some European countries in the early 19th century, he was too optimistic in his assessment of the situation in 1860-1870. Serbia’s economic backwardness (compared to industrializing nations), which will deepen in the ensuing decades, was already advanced.

⁵⁴ Note here Marković’s idea of using a basket of “essential goods” to compare wages internationally.

Table 3. Unskilled worker's subsistence-based welfare ratio

	1860-1870	1900-1910	Average decennial increase (in percent)
London	4.7	8	11
Oxford	4.3	6	7
Amsterdam	2.7	6	17
Leipzig	2.4	6.2	21
Milan	1	2.1	16
Kyoto/Tokyo	1	2	15
Beijing	1	1	0
Urban Serbia (average household size=6)	1.2	1.2	0
Urban Serbia (average household size=4)	1.7	1.7	0

Source: urban Serbia, see the text; other cities from Allen, Basino, Ma, Moll-Murata and Van Zanden, "Wages, prices, and living standards in China, 1738–1925: in comparison with Europe, Japan, and India", *Economic History Review*, vol. 61, S1, 2011, Tables 5 and 6.

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Annex 1. Respectability and subsistence baskets, and wages, 1862-1910 (in nominal dinars)

Year	Respectability basket (in dinars, per annum)	Subsistence basket (in dinars, per annum)	Wage of an ordinary (unskilled) worker (in dinars, per day)	Wage of a skilled construction worker (in dinars, per day)
1862	104	52	1.06	1.70
1863	95	47	1.02	1.60
1864	107	50	1.00	1.51
1865	100	45	1.13	1.79
1866	96	47	1.09	1.87
1867	107	54	1.07	1.80
1868	111	55	0.94	1.81
1869	100	48	1.48	2.19
1870	107	51	1.48	2.18
1871	113	58	1.33	1.96
1872	126	66	1.12	1.74
1873	137	67	1.09	1.63
1874	131	64	1.09	1.64
1875	123	57	1.26	1.79
1876	111	55	1.26	1.79
1877	126	61	1.14	1.72
1878	128	61	1.16	1.76
1879	102	52	1.34	2.06
1880	114	60	1.21	2.07
1881	109	56	1.47	2.37
1882	117	58	1.44	2.33
1883	107	49	1.97	2.98
1884	132	61	1.53	2.44
1885	109	50	1.54	2.44
1886	106	51	1.51	2.56
1887	106	49	1.38	2.54
1888	100	46	1.35	2.61
1889	104	48	1.23	2.31
1890	110	51	1.12	2.13
1891	129	58	1.16	2.16
1892	125	54	1.32	2.33
1893	122	47	1.61	2.82
1894	132	47	1.58	2.88
1895	129	47	1.39	2.72
1896	114	45	1.35	2.68
1897	127	56	1.12	2.22
1898	143	60	1.01	2.07
1899	132	52	1.17	2.36
1900	130	50	1.26	2.38

1901	138	52	1.21	2.31
1902	144	55	1.17	2.21
1903	146	55	1.19	2.27
1904	149	53	1.25	2.38
1905	151	54	1.19	2.39
1906	146	57	1.18	2.38
1907	152	62	1.10	2.27
1908	158	68	1.04	2.14
1909	170	72	1.04	2.13
1910	166	70	1.19	2.31