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EHES WORKING PAPERS IN ECONOMIC HISTORY | NO. 82

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JULY 2015

EHES Working Paper | No. 82 | July 2015

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Abstract

The classical view of Bulgaria's failed industrialization prior to the Second World War was established by Alexander Gerschenkron. According to his interpretation, an inherently backward small peasant agriculture and well-organized peasantry not only retarded growth in agriculture but obstructed any possible industrialization strategy. Following Hayami and Ruttan, we utilize the decomposition of farm labor productivity into land productivity, and land-to-man ratio to analyze the sources of growth in Bulgaria's agriculture 1887-1939. Our results show that Bulgaria's peasants did cross the threshold to modern growth during the Interwar period. Rich qualitative evidence supports the findings of our quantitative analysis that contrary to Gerschenkron's view and conventional wisdom, Bulgaria's peasants substantially contributed to the modernization of Bulgaria's economy and society. We interpret our results in light of modern development economics, and conclude that agriculture formed no impediment to Bulgaria's industrialization. The reasons that a 'large industrial spurt' did not occur in Bulgaria until 1945 are not to be found in the agricultural sector.

JEL classification: N53, N54, N13, N14, O13

Keywords: Bulgaria, agricultural productivity, peasant agriculture, industrialization

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1. Introduction

Before the Second World War Bulgaria was the epitome of a peasant nation. According to a recent estimate, four-fifths of the population depended on agriculture (Ivanov and Stanev, forthcoming: 11). Furthermore, the share of primary production in total GDP (in constant 1939 prices) stayed more or less stable at about 52 percent during the Interwar period.[1] Such an economic profile, strongly dominated by agriculture, makes Bulgaria a well-suited case study for addressing several critical economic, sociological, and political questions on the role of agriculture in development that still capture the attention of scholars on Southeast Europe. For example, why did the Balkans not industrialize before the 1950s? Should a poor peasantry not capable of development be blamed for that modernization failure? Moreover, did any anti-modern and anti-capitalist strictly community-based mentality, which was allegedly deeply rooted in tradition-bound peasant societies, obstruct successful economic modernization? And most important, was Southeast Europe hopelessly trapped in its backwardness that could only be overcome through radical social engineering implemented by the communist regimes?

The classical view on Bulgarian industrialization before the Second World War - that it was a failed 'great industrial spurt' - was established by Alexander Gerschenkron in his essay 'Some Aspects of Industrialization in Bulgaria, 1878–1939', published in 1962. In his view, the absence of structural change in Bulgarian industry - despite substantial growth rates - can mainly be attributed to a low productive, backward, inherently subsistence-oriented and market-hostile small peasant agriculture. In stark contrast to the British Industrial Revolution, Bulgarian small peasants were not expropriated. Thus, the necessary large home market for Bulgarian industry could not emerge. Bulgaria's industrial demand for urgently needed agricultural raw materials like cotton to reduce the amount of expensive imports could not satisfied, and the release of labor out of agriculture to build up an 'industrial reserve army' was delayed. These 'economic disabilities' of Bulgarian peasant agriculture were 'conjoined with its political abilities'. Being well-organized, the peasants were powerful enough to prevent the inevitable burdens that industrialization would put on them. More than anything else, modernization failed because of the political lobbyism of a 'pre-modern' class, which prevented the necessary flow of resources out of agriculture to accelerate capital formation in industry.

Bulgarian agriculture not only failed to modernize and thus prevent an industrial boom. It was also bogged down in deep structural crisis which, according to Gruev (2009: 54, 56), could explain both the 85 percent rural background of the communist guerillas during the war and the relatively easy consolidation of power by Bulgarian communists after 1944. Drawing on earlier works of Avramov (1998, 2001 and 2007) in a recent study on collectivization, Gruev (2009: 56) emphasized that on the eve of the Second World War, the "Bulgarian village was pregnant with problems which could easily give birth to communism".

Such strong statements underscore the importance of the level of modernization that Bulgarian agriculture achieved around 1940. The question is whether the primary sector was at least able to start the transition from extensive to intensive growth. Even this would have been a great achievement, bearing in mind the extremely adverse economic conditions of the Interwar period (Aldcroft 2006: 68–76; Feinstein et al. 1997; Aldcroft and Morwood 1995: 1–85). Strictly following Gerschenkronian arguments, the literature is dominated by pessimism and ready to accept only

[1] Unless otherwise specified, all data underlying the calculations is from sources noted in Ivanov (2012), as well as Ivanov and Tooze (2007).

marginal improvements in agriculture (Tomasevich 1955; Moore 1945; Lampe 1986: 49–104; Lampe and Jackson 1982: 329–519). Furthermore, most scholars continue to consider 'tradition-bound' peasants as being hostile to modernization, and responsible for the absent agricultural and industrial revolutions in Southeast Europe (Sundhausen 1989a: 219, 356; 1989b; Calic 1994: 68–74). This conventional wisdom has been challenged by only a few economists and historians. Zagorov et al. (1955), Berend (1985: 182–184) and more recently Ivanov and Tooze (2007: 693) refer to the significant increase in farm output per unit of land, (land productivity would be a better term) after the First World War, which in their opinion indicates a shift away from extensive growth (tables 1 and 2). These authors believe that by 1914 Bulgaria and Southeast Europe in general had reached the limits of extensive growth in agriculture because the expansion of cultivated land lost its original dynamics after the First World War. Even revisionists, though, are cautious, describing these changes as 'a transition to a higher stage of farming' or 'significant steps towards modern capitalist farming', but stopping short of calling it 'agricultural transformation' or 'modern growth'.

To date, both optimists and pessimists have ignored the radical change of paradigm in developing economics and subsequently in economic history, which has led to a rehabilitation of peasants as engines of economic modernization (Hayami 1998). According to the recent state of research, agricultural revolutions did not precede industrialization during the nineteenth century in Western and Central Europe, but rather occurred simultaneously to urbanization and industrialization. Moreover, it is now clear that urbanization and industrialization induced an agricultural revolution, and not vice versa.[2] Accelerating agricultural development was (and still is) a demand-driven process that needed, more than anything else, promising long-term sales prospects on food markets from a booming secondary sector. It is also now clear that the old development mantra which asserted that rural areas could and should be neglected in order to foster industrial growth has created gigantic development ruins.[3] However, a consensus has emerged in modern development economics that only a broad-based 'balanced growth' in all sectors leads to sustained economic modernization. Achieving the necessary high level of agricultural growth requires substantial resources to be channeled into farming. Moreover, effective agricultural transformation does not depend on a certain agricultural structure (Timmer 1998). Structural transformation from an agrarian to an industrial economy depends on two processes:

(1) In agriculture, extensive growth based on the augmentation of factor input has to develop into modern growth whose main source is improved productivity (increased total factor productivity).
(2) Industry must be able to absorb the emerging agricultural labor surplus. One of the most important findings of modern development economics is that the premature release of labor out of agriculture does not induce industrialization as once believed, but only leads to a rapid spread of rural poverty.

Adopting this revisionist paradigm and following Hayami and Ruttan's theory of induced innovation (1985: 117-129), in section two we make use of the decomposition of labor productivity into land productivity and land-man ratio to analyze whether Bulgarian peasant agriculture was able to start its transition from extensive to intensive growth. Drawing on extensive new data on

[2] For a critical discussion of the literature on Southeast Europe's failed agricultural revolution, see Kopsidis (2014: 74-82; 2012).
[3] This mantra goes back to Karl Marx, and even dominated non-Marxist Western development economics unchallenged until the 1960s.

Bulgarian GDP and agriculture from 1870–1945 (Ivanov 2012) we conduct a simple but still conclusive tentative analysis of the sources of Bulgarian agricultural growth.[4] This exercise will allow us to provide fresh and far more convincing evidence of whether Bulgarian peasants did cross the threshold to modern growth during the Interwar period and what the economic, social and political implications were. The third section offers further evidence which speaks in favor of a Bulgarian 'first green revolution.' In section four we discuss the scope for discretionary decision-making of Bulgarian governments and peasants under the extremely adverse conditions of the Interwar period. More importantly, we will examine to which extent they did utilize their given scope for action. Merely not exploiting their own potential could, under certain circumstances, constitute a self-inflicted (peasant) 'modernization failure', but not the non-existence of options. In this context we will consider in section five whether the decision of a series of Bulgarian Interwar governments to concentrate on agriculture was really a fundamental mistake as suggested by Gerschenkron and others, or rather was the only possible way to prevent a Malthusian catastrophe and maintain economic growth.

[4] Presently it is not possible to estimate a production function due to a lack of data on farm capital. Further research should aim to reconstruct the agricultural capital stock.

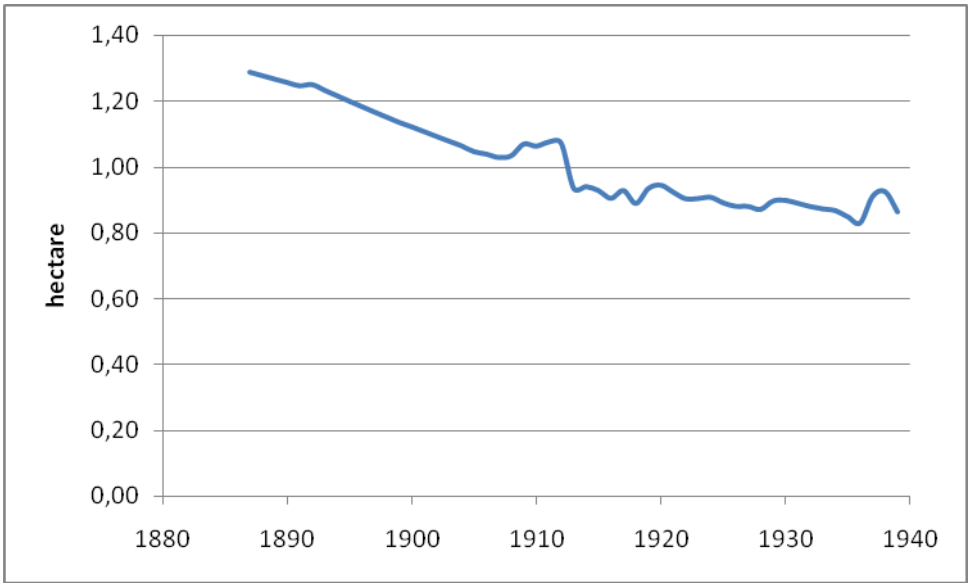
***Table 1*. Dynamics of agricultural growth in Bulgaria 1887-1939 (annual growth rates)**

	rural population	farm land	total farm output (1911-prices, Leva)[1)]	land productivity[2)]	farm labor productivity[3)]	land/ labor-ratio[4)]	rural home industry[5)]	rural home industry production per capita rural population[6)]
1887-1911	1.41	0.42	0.91	0.48	-0.51	-0.99	1.44	0.02
1912-1920	0.38	-0.66	-3.77	-3.11	-4.14	-1.03	-0.58	-0.96
1921-1939	1.22	1.01	3.50	2.49	2.28	-0.21	0.54	-0.68
1887-1939	*1.22*	*0.39*	*1.23*	*0.84*	*0.01*	*-0.83*	*0.53*	*-0.69*

Sources: Authors' own calculations; for the sources of data see Ivanov (2012) as well as Ivanov and Tooze (2007).

Notes: 1) total farm output contains total crop production and total livestock production and also includes apiculture and sericulture; 2) total farm output per hectare farm land (1911-prices, Leva); 3) total farm output per capita rural population (1911-prices, Leva); 4) total farm land divided by rural population; 5) total output of rural home industry (1911-prices, Leva); 6) total output of rural home industry per capita rural population (1911-prices, Leva).

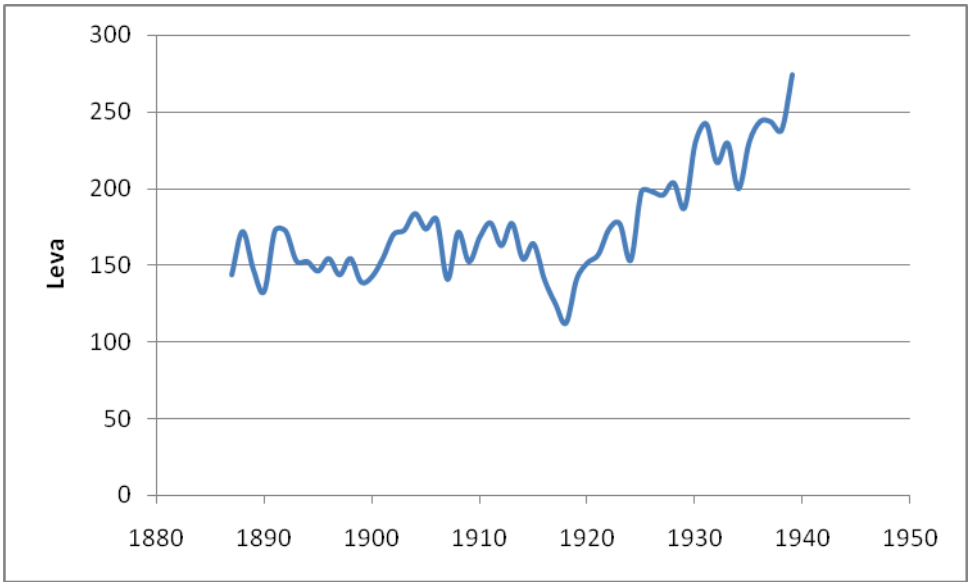
***Figure 1*. The land/labor-ratio in Bulgarian agriculture 1892-1939[1)]**



Sources: See table 1.

Notes: 1) The land/labor-ratio is defined as farm land divided by the rural population.

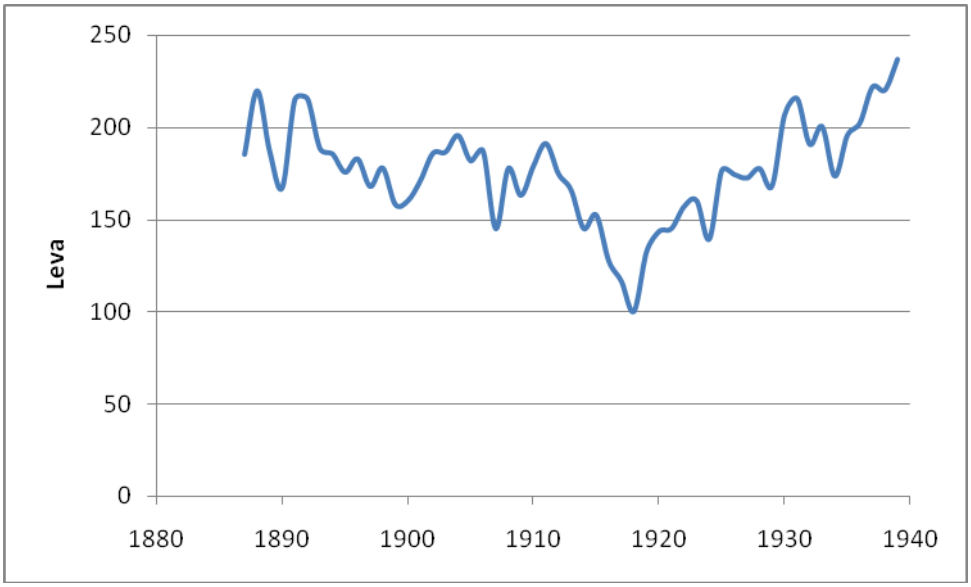
***Figure 2*.** **Bulgarian land productivity 1887-1939[1)]**



Sources: See table 1.

Notes: 1) Land productivity is defined as total farm output in 1911 prices (in Leva) divided by total farm land.

***Figure 3*.** **Farm labor productivity in Bulgaria 1892-1939[1)]**



Sources: See table 1.

Notes: 1) Farm labor productivity is defined by total farm output in 1911 prices (in Leva) divided by the rural population.

***Table 2*. Key indicators of Bulgarian agricultural development 1887-1939**

	rural population	farm land (hectare)	total farm output (1911-prices, Leva)[1)]	land productivity[2)]	farm labor productivity[3)]	land/ labor-ratio[4)]	rural home industry(1911-prices, Leva)[5)]	rural home industry production per capita rural population[6)]
1889/91	2,775,250	3,488,812	526,560,643	151	190	1.26	120,853,299	44
1904/06	3,412,849	3,584,444	641,653,369	179	188	1.05	149,829,700	44
1909/11	3,686,199	3,943,914	655,508,536	166	178	1.07	161,364,692	44
1921/23	4,042,907	3,681,453	622,970,054	169	154	0.91	163,345,702	40
1930/32	4,640,324	4,128,593	947,789,320	230	204	0.89	150,892,333	33
1937/39	4,926,446	4,435,168	1,114,935,142	252	226	0.90	168,477,667	34
				1889/91 = 100				
1889/91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
1904/06	1.23	1.03	1.22	1.19	0.99	0.84	1.24	1.01
1909/11	1.33	1.13	1.24	1.10	0.94	0.85	1.34	1.01
1921/23	1.46	1.06	1.18	1.12	0.81	0.72	1.35	0.93
1930/32	1.67	1.18	1.80	1.52	1.08	0.71	1.25	0.75
1937/39	1.78	1.27	2.12	1.67	1.19	0.72	1.39	0.79

Sources: See table 1.

Notes: See table 1.

2. Bulgaria's 'first green revolution': A quantitative analysis

During the Interwar period the annual average growth rate of total farm output jumped from just 0.91 percent (1887-1911) to 3.50 percent (1921-39). This extraordinary growth did not flatten after the post-war reconstruction period came to an end in 1925/29 indicating that agriculture switched on a new more dynamic growth trajectory during the Interwar period despite the Great Depression.[5]

What really makes the difference between the Prewar and the Interwar-period is the development of the important land to labor ratio and of land productivity (tables 1 and 2, figures 1 and 2). As demonstrated below still the easy to calculate land to labor ratio provides important insights into the nature of technical change and thus of productivity in agriculture. In Bulgaria the land to labor ratio defined as farm land divided by the rural population more or less continuously decreased from 1.26 ha to 0.91 hectare between 1889/91 and 1921/23, but remained roughly constant afterwards (table 2 and figure 1).[6] Meanwhile, the growth dynamics of land productivity quintupled from 0.48 percent per year from 1887–1911, to 2.49 percent for 1921–39 (table 1 and figure 2).[7] Thus, despite further expansion of the agricultural area to marginal and less productive lands during the Interwar period, yields around 1937/39 were on average 52 percent higher than 1909/11. Concomitantly, the growth of agricultural population as the best available indicator for agricultural labor halved during the Interwar period, from 2.4 (1921–26) annually to 1.2 percent (1934–46).[8]

Despite promising signs of a Western European-style 'agricultural take-off', Bulgarian farm labor productivity stagnated from 1887-1939. It decreased not only during the war years but during peacetime as well c. 1890–1910. This productivity began to increase only after the First World War, though from an extremely low starting point. The poor initial level of 1890 was not again reached before the early 1930s. Over the entire period 1887–1939 farm labor productivity increased annually by a negligible 0.01 percent, which equated with stagnation (table 1, 2 and figure 3). This was quite the opposite of what happened in the European 'core' during its 'first green revolution', and speaks in favor of fundamental weaknesses outside agriculture which prevented a full-scale structural transformation. In the following we will look for the reasons that only a 'restricted first Bulgarian green revolution' took place during the Interwar period, which definitely did not proceed in the ideal-typical Western European manner characterized by boosting farm labor productivity.

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[5] During the war period of 1912–1918, total farm output had fallen to 58 percent of the prewar level in 1918. Only in 1925 was the 1911-prewar level of farm production again realized.

[6] Due to the fact that a continuous time series is only available for the rural population but not for the agricultural population, the former was used to calculate the land to labor ratio. However, the growth of the entire rural population developed nearly identically to the agricultural population, and the shares in total population of both indicators are almost identical.

[7] Land productivity passed prewar levels in 1925. Even afterwards, land productivity increased annually, at 2.05 percent (1926–39), four times faster than before the First World War.

[8] Calculations using occupational census data taken from Ivanov and Stanev (fourthcoming). Growth rates of the agricultural population fell from 2.01 (1921-26) to 0.78 percent (1934-39). Even if rural Bulgaria was indeed a 'peasant economy', it has to be considered that peasants gained parts of their income from non-agricultural activities. Based on peasant household data from 1940/41 Ivanov and Stanov estimated that Bulgarian peasants on average devoted 8.8 per cent of their working time to off-farm occupations in the secondary and tertiary sector (Ivanov and Stanev: 9-10). However, most of the non-agricultural activities were either on-farm activities mainly for household consumption or took place within the framework of the rural economy. In 1890, for example, rural home production equaled around 16 per cent of the primary sector's total income (excluding mining but including all industrial on-farm activities). This share did not fall below 9 percent until the eve of the Second World War (table 4). Contemporary Bulgarian experts correctly defined peasant farms as "Workers' family farms" (Berberoff 1935: 48).

Contrary to what Ivanov and Tooze (2007) insist, the fact that land productivity and intensity of land use increased – even dramatically – does not necessarily mean that Bulgarian agriculture began to switch from extensive to intensive or modern growth.[9] According to standard growth theory and all available evidence, land productivity can increase without technical change, even within the limits of extensive growth only due to increased use of labor or capital per unit of land.[10] For the Bulgarian case it is important that within the limits of a pre-industrial or pre-modern agriculture, which does not use scientific-based industrial inputs, rising labor and capital intensity have the potential to significantly boost yields without any technical change. Consequently, a shift from pre-modern to modern agricultural growth only took place during the Interwar period when technical change (perhaps total factor productivity or TFP-growth would be a better term) can be identified as a newly-emerging substantial source of farm output growth. Thus, the pivotal question concerning Bulgarian agricultural development during the Interwar period is this: Did Bulgarian agriculture only experience a switch from a more land- and labor-based to a more labor- and capital-based extensive growth pattern without technical change, or did a structural break take place, thereby allowing peasants to escape the narrow constraints of Ricardian and Malthusian economics because technical change was a new source of growth?

Labor and land productivity play a key role for discussing the character of Bulgarian agricultural growth from 1887–1939. During the first half of the period (1887–1911) rising agricultural labor input (rural population) and labor intensity defined as labor input per unit of farm land were indeed connected with decreasing farm labor productivity (table 1, figure 3).[11] This clearly points to diminishing returns of Ricardian extensive growth and the lack of technical change. After the First World War, however, this picture changed dramatically when Bulgarian agriculture started to leave the narrow boundaries of the Ricardian-Malthusian pre-modern economics. Farm labor productivity strongly increased despite rising farm labor input and an accelerated expansion of the agricultural area on marginal lands. Annual labor productivity growth rates changed from -0.51 percent before the First World War to 2.28 percent during the Interwar period. Thus, during the Interwar period, farm labor productivity stopped falling further, though the factor input in agriculture continued to rise. In a purely Ricardian world without technical change threatened by unchecked diminishing returns, rising input use would have led to falling labor productivity. In fact, the positive development of farm labor productivity during the Interwar period offers the potential for substantial technical change after the First World War. Aside from TFP, the second great unknown is

[9] Following Ricardo, extensive growth in agriculture can be achieved in two ways. The first way is to extend the cultivated area to increase farm output (the *extensive margin*), and the second is to increase labor and capital per unit of land (the *intensive margin*). In a Ricardian world without technical change both ways of intensified factor use are connected to diminishing returns. Extensive growth exists when total farm output increases but average output per worker or per land unit decreases with expanding factor input due to the fact that the additional output produced by every additional input unit becomes smaller (diminishing returns). Extensive growth is problematic because factor input increases faster than output. Consequently, output per capita or real incomes fall with rising total production. This kind of growth is called 'immiserizing growth' and threatens mainly very low developed economies without sufficient technical change in agriculture.

[10] According to the concept of partial factor productivity or the law of diminishing returns, which first was discovered by the French physiocrat Anne Robert Jaques Turgot (1727-81), only increasing the use of one input (in our case labor or capital) and setting all other inputs as constant will lead to rising output. However, output growth diminishes with every additional input unit. Turgot observed this relationship in agriculture. Increasing labor per land unit led to higher output up to a certain point but in any case the absolute increase in output diminishes with every additional labor unit. Turgot's law is one of the very few economic axioms which have held over time.

[11] That labor intensity increased is indicated by the rapidly falling land to labor ratio between 1887-1911. The agricultural labor force rose faster than farm land during this period.

the development of capital intensity in Bulgarian farming. Increased labor productivity could also be a result of rising capital intensity without any gains in TFP.

At the moment, sectoral agricultural production functions used to estimate the dynamics of total factor productivity (TFP-growth)) are not available. In order to examine the two time periods 1892–1911 and 1921–1939 and determine whether technical change or expanding capital intensity caused the rise in Bulgarian agricultural labor productivity, we can resort to Hayami and Ruttan's decomposition of labor productivity (output/labor) into (a) land productivity (output/land) and (b) land-man ratio (land/labor):

$$\frac{Output}{Labor} = \frac{Output}{Land} * \frac{Land}{Labor}$$

Decomposing labor productivity allows the following two questions to be answered:

1) Did any technical change occur in Bulgarian agriculture during the Interwar period?
2) If yes, which kind of technical change dominated? Was it biological or mechanical technical change?

Determining whether TFP growth existed in Bulgarian agriculture is still a step forward at the present stage. Moreover, tentatively analyzing the character of the prevailing technical change in light of modern development economics – and determining whether it was biological or mechanical – contributes to clarifying the role of Bulgarian peasants in the economic modernization of the country during the Interwar period.

Biological technical change (BTC) aims to increase the crop output per unit of land and to advance the yield of animal products per unit of breeding stock (Hayami and Ruttan 1985: 79). Both processes contribute to pushing up agricultural net product per unit of land. Improving agricultural implements and machinery represents mechanical technical change (MTC).[12] Indeed, biological (and in modern agriculture, chemical) technology which improves the efficiency of biological processes is more fundamental to productivity growth in agriculture than mechanization. This was especially true not only in the 'periphery' but in most parts of Europe prior to the Second World War.

Still, these few remarks reveal that multiple paths of technological development existed and still exist in agriculture, depending on the factor endowment or relative factor costs of an economy. Technical change aims at facilitating "the substitution of relatively abundant (hence cheap) factors for relatively scarce (hence expensive) factors in the economy" (Hayami and Ruttan 1985: 73). Technical change that considers the relative factor costs and which makes full use of the factors abundantly available represents the most effective way of releasing the constraints on agricultural growth. Consequently, in a densely populated developing economy like Bulgaria before the Second World War where land and capital were scarce (expensive) but labor was abundant (cheap), the development and diffusion of land-saving and labor-using farm technologies were most appropriate to accelerate agricultural growth and concomitantly the best strategy to spread the gains of growth widely into peasant society. Biological technical change (BTC) represented a 'land saving' and labor using technical change in the sense that it facilitated the substitution of abundant labor for relatively scarce land to increase farm output. Simply put, in Interwar period-Bulgaria, BTC enabled the country to increase farm production despite a tightening land constraint. Less land was needed to achieve the same increase in output because of technical change.

[12] On the basic concepts of technical change in agriculture, see Hayami and Ruttan (1985: 73–90).

Even under the conditions of pre-modern agriculture which made no or very little use of scientific-based industrial inputs like fertilizers, pesticides and machines, in Interwar period-Bulgaria there existed a broad scope for biological technical change. New seeds and breeds, an "increased recycling of soil fertility by more labor-intensive crop systems", biological means to protect plants from pests and diseases, as well as improved land and water management offered the potential for substantial technical change in pre-industrial farming (Hayami and Ruttan 1985: 75-79). Such improvements based on BTC were the most important source of agricultural productivity growth in industrializing European economies during the 18th and 19th centuries. These improvements were favorable to peasants because BTC-progress was not connected with economies of scale, but often produced diseconomies of scale. In other words, to realize the full potential of BTC, no changes in a small scale agricultural structure and no radical reorganization of existing agricultural systems were needed (Hayami and Ruttan 1985: 79). This was especially true for Europe's 'first green revolutions.' From this perspective Bulgaria's small scale agricultural structure formed no obstacle for productivity growth.

To interpret the decomposition of labor productivity according to Hayami and Ruttan it is important to know that any kind of BTC is connected with rising land productivity (output/land). However, land productivity can also increase because of rising factor intensity, defined as more labor and/or capital inputs per unit land. It is the development of the land to labor-ratio which allows us to differentiate between technical change and rising factor intensity as sources of growth. A combination of rising land productivity with a constant land to labor ratio would indicate biological technical change as a source of growth, whereas a decreasing land to labor ratio as a result of rising labor intensity would speak in favor of expanding factor inputs being a main source of growth. The former combination of land productivity and land to labor ratio would represent modern growth, whereas the latter indicates extensive growth.

What does all this mean for Bulgarian agricultural development prior to the Second World War? As shown in tables 2 and 3, as well as in figures 1 and 2, Bulgarian land productivity growth accelerated dramatically after the First World War, whereas the distinctive negative trend of the land to labor ratio nearly faded out, but persisted on a more or less constant level. This strongly indicates that BTC emerged as a substantial source of growth only after the First World War, whereas agricultural growth was purely extensive until the First World War. Obviously mechanical technical change (MTC) did not occur in Bulgaria's agriculture from 1887-1939, keeping in mind that MTC in any case pushes up the land to labor-ratio "because higher output per worker through mechanization usually requires that the worker cultivate a larger land area" (Hayami and Ruttan 1985: 75). Bearing in mind that rising capital intensity had a very similar effect on the land to labor ratio, the lack of any sustained positive trend in the land to labor ratio speaks against rising capital intensity being a source of agricultural growth. This could only have changed at the end of the 1930s.[13]

[13] That any positive long term trend in the land to labor ratio was absent means that technical change in Bulgarian peasant agriculture included relative factor costs in the most effective way according to growth theory.

***Table 3*. The decomposition of Bulgarian farm labor productivity 1887-1939**

	Labor productivity	Land productivity	land/labor-ratio
	Annual growth rates		
1887-1911	-0.51	0.48	-0.99
1921-1939	2.28	2.49	-0.21
1887-1904	-0.70	0.46	-1.16
1905-1911	0.65	0.05	0.59
1912-1920	-4.14	-3.11	-1.03
1921-1929	2.22	2.74	-0.52
1930-1933	-2.16	-1.16	-1.00
1934-1939	5.73	4.79	0.94

Sources: See table 1.

Table 3 presents the decomposition of Bulgarian farm labor productivity for distinct periods. Comparing 1887–1911 to 1921–1939 suggests that the First World War separated two different periods of Bulgarian agricultural growth. Until 1914, the primary sector was driven by Ricardian-Malthusian dynamics as demonstrated by the diminishing returns of labor. Even if some tiny technical change existed, as revealed by the sluggishly growing land productivity it was too weak to offset the productivity-reducing impact of diminishing returns of labor connected with the strong demographic expansion of rural Bulgaria (table 3). After the First World War, biological-technical change pushed land productivity to new levels hitherto unknown. Moreover, for the first time, labor productivity growth became positive.

Dividing the time span of 1887–1939 into six sub-periods offers deeper insights into the sources of Bulgarian agricultural growth (table 3). Indeed, after a long phase of falling peasant incomes as suggested by decreasing farm labor productivity, the grain export-driven agricultural boom starting around 1900 stopped the negative trend in productivity.[14] For the first time, farm land increased faster than the rural population and the improved land to labor ratio slightly encouraged labor productivity. However, the strong expansion of farm land (with annual growth rates of more than 2 percent) led to stagnating yields 1905–11. The Ricardian law of diminishing returns was doubtless still fully effective. However, the picture changed radically following the First World War. During the 1920s, for the first time both land and labor productivity developed at outstanding rates. The main driver of rising labor productivity was the big push in land productivity. A further drop in the land to labor ratio clearly speaks in favor of strong biological technical change at new dimensions hitherto unknown in Bulgaria, whereas mechanical technical change was absent.

The severe crash of international food markets during the Great Depression hit Bulgaria's export-oriented agriculture sector very hard. Nevertheless, parts of the population seemed to flow back into farming, as demonstrated by the accelerated fall of the land to labor ratio between 1930-

[14] Whereas the share of exported grain in total grain output came to 17.6 percent for 1897–99 it climbed to 34.5, 27.5 and 24.8 percent for 1903–04, 1905–06, and 1907–09 (own calculations, data from Weiß-Bartenstein 1918: 221).

33.[15] Agricultural incomes decreased dramatically during this period, as indicated by the fall in farm labor productivity. This motivated Bulgarian governments to support the ongoing 'first green revolution' of increasingly export-oriented, market-sensitive peasants more effectively than ever before. In fact, after 1933 several very different developments coincided which consolidated agriculture.[16] First, the state intensely intervened in the farming sector to stabilize farm incomes. Namely, the introduction of state-controlled foreign trade and especially the trade agreements with Nazi-Germany secured Bulgarian food exports. The demographic transition towards significantly lower birth rates, which Bulgarian peasants had managed without urbanization faster than any other European country, slowly started to bear fruit. The impact on agricultural productivity of both developments was impressive. During the second half of the 1930s, growth rates of land productivity increased and the land to labor-ratio finally even started to rise. The combination of biological technical change being stronger than ever before, and the beginning of mechanical technical change supported by rising capital intensity boosted labor productivity to outstanding annual rates of almost six percent 1934–39. That MTC and rising capital intensity could have had an increasing impact on agricultural growth during the second half of the 1930s is indicated by an increasing land to labor-ratio and rich evidence in the contemporary Bulgarian literature on agriculture presented in the following section.

To sum up, in replicating Hayami and Ruttan's exercise of decomposing labor productivity we showed that the sources of agricultural growth significantly changed during the Interwar period. That Bulgarian peasants crossed the threshold to modern growth in agriculture not only coincided with, but seemed to be strongly connected to, peasants' successful escape from the Malthusian trap. Still, during the 1920s accelerated technical change seems to have played a significant role in quickly accomplishing post-war reconstruction growth. After a short interruption during the Great Depression, the dynamics of agricultural productivity growth further accelerated, which not only continued but reinforced the positive trends of the 1920s.

3. Bulgarian 'first green revolution': A qualitative analysis

In the previous section we reconstructed Bulgarian agricultural growth from 1887–1939 using simple but very robust and meaningful indicators. In the following section the emerging quantitative picture of a successful Bulgarian 'first green revolution' during the Interwar period is supported by a rich body of qualitative evidence.

As already stressed in the quantitative analysis, the structural changes in Bulgarian farming during the Interwar period were dominated by improvements representing land-saving biological technical change: construction of manure-heaps, changes in the rotation systems and introduction of green manure like clover and alfalfa, better cultivation practices such as deeper tillage and well-timed sowing, irrigation and land reclamation, introduction of improved seeds and breeds, pesticides, veterinary and agronomical assistance, transformation to intensive cash crops and partly to dairy stockbreeding and poultry. Expectedly, industrial inputs and chemical technology played a negligible role until the Second World War. This certainly did not stem from any perceived 'peasant traditionalism' or ignorance. Given the abundance of cheap rural labor and the price spread between fertilizers and farm output, the decision that Bulgarian farmers and experts made against the widespread application of industrial inputs was fully justified only for purely economic reasons.

[15] Even if mass dismissals did not occur in Bulgarian industry during the Great Depression, agriculture very likely was the only effective social buffer for many people facing severe wage cuts.

[16] More on this in the next section.

According to contemporary estimates for example, during the late 1920s fertilizers were 1.5 to 2.2 times more expensive in Bulgaria than in Germany (Левенсон 1928). As a result of those price distortions, their application in a decare (0.1 hectare) with wheat would result in a 52.60 Levs loss for Bulgarian peasants compared with 242 Levs profit for the German farmers. Tests carried out in experimental stations showed an average 25 percent increase (about 50 kg) in cereals output per decare of land when using mineral fertilizers (Дучевски 1930; Левенсон 1939; Странски 1921, Бонев 1931). This, however, was far from enough to cover the additional costs of fertilizing. Only intensive crops like tobacco, alfalfa, or fruits and vegetables could be marketed at prices that made the application of fertilizers reasonable.[17] The heavily protected, domestic production of fertilizers offered no option for reducing costs.

High fertilizer prices led the Ministry of Agriculture and Public Properties (MAPP) to place its hopes in the proper preservation of manure and in the introduction of green manure practices. In doing so, Bulgaria successfully copied the 1871–1914 German strategy of pushing up yields, mainly by increased application of organic manure (Grant 2009). Experts estimated the country's total needs as being 27–30 million tons of organic manure, while the actual output stood at 12–15 million tons. However, no more than 5 to 6 million tons could be properly preserved (Егоров 1936; Дучевски 1930). Keeping manure-heaps in each village was proposed as an alternative solution. Due to active campaigning by the MAPP as well as the growing awareness among peasants between 1928 and 1935, nearly 11,000 such dunghills were formed throughout the countryside. It should be noted that there were about 5,500 villages and hamlets, with roughly 2 manure heaps per settlement. With the Recovery and Sustenance of the Productive Forces of Arable Land Act (1941) municipal economic committees were entrusted to draft plans for manure heap construction, as well as for the most rational use of manure. The Bulgarian Agricultural and Co-operative Bank granted interest-free credits for dunghills (Долински 1941; Мончев и Попмихайлов 1943). Green manuring contributed far more to improving the nutrient supply of crops. According to official statistics, area under clover, alfalfa and other 'green manure' crops increased from 21,900 hectares in 1912 to 43,400 in 1934, and to 147,100 in 1943. This practice not only enriched the soil but also contributed to the drastic reduction of fallows, from 24.4 in 1921 to just 10 percent in 1943.

Frequent draughts threaten Bulgarian agriculture even today. In the late 1930s it became clear that under the given conditions, better cultivation practices, improved seeds and fertilization were far more applicable to fighting difficulties linked to droughts than were expensive irrigation projects. Several years of testing with various practices and seeds in the Knezha experimental station proved that the specially selected draught-resistant No. 16 wheat variety had 12.6 percent higher yields, even in very dry years. Shallow plowing at the end of the summer and in the early spring had the same impact as well as deeper autumn tillage, timely sowing, the application of enough manure or fertilizers (Радомиров 1935; Радомиров 1937a; Радомиров 1937b; Павлов 1938).

Given its gigantic costs, irrigation was hardly an option for boosting biological technical change in Bulgarian agriculture. Rough calculations in the late 1930s estimated that no less than 2–3 billion levs were needed to irrigate the main farmlands. Consequently, at the onset of the Second World War water was supplied to less than 1 percent of the total cultivated land (Ведров 1939: 106–107). Without giving up completely on irrigation initiatives (a special act in that respect was passed in 1940) the MAPP concurred with the experts' opinion and instead directed its policy towards disseminating the best cultivation practices, as well as towards the selection and distribution of

[17] During the 1930s the growing area under cash crops pushed up fertilizer imports. The import of chemical fertilizers increased uninterruptedly from 51.3 tons in 1932 to 180 tons in 1936, and 3,144 tons in 1939.

improved seeds. Several regulations in that respect were enacted in 1936 and 1937. The organization and control over seeds was entrusted to a specially created state agency with local branches at the rural level. This organization was tasked with distributing improved seeds at low prices among peasants (Деянова 1938: 292–293). In 1939 the parliament forbade the use of non-standardized seeds. Further, all seeds were to be cleaned and disinfected by the selection stations (Ботев 1940: 7). The Agricultural Bank was responsible for supplying farmers with improved fodder and sugar beet seeds, and with potato seedlings. It also continued its old practice of importing copper sulphate and pesticides and distributing them among co-operatives.

As in developing nations' green revolutions after the Second World War, public agricultural research institutions in Bulgaria played a crucial role in shaping and disseminating biological technical change according to the country's factor endowment. Bulgaria was fast in knitting a dense network of such auxiliary institutions for Research & Development and for knowledge dissemination. During the mid-1930s, five principal experimental stations in Sofia, Ruse, Sadovo, Chirpan and Knezha, seven specialized stations - two on fruit cultivation and one each on tobacco growing, viniculture, sericulture, horticulture and poultry farming - as well as eight test field and many study farms and zoo technical centers were operating in the country. The Plant Protection Institute and the Drought Institute assisted in this work (Земеделските 1935: 237–252). Research targeted increasing peasant incomes and improving living conditions in rural areas (Ангелова 2008). Public agricultural extension made special efforts to reorganize agriculture by introducing new and more profitable crops and branches of stockbreeding, which enabled a fuller use of rural surplus labor (League of Nations 1940: 33-35). Experimental stations' success in testing different fertilizers, selecting seeds, plants, and cuttings of superior quality or developing best cultivation practices has already been pointed out. Despite criticism about its overly decentralized structure and not always well-considered locations (Странски 1936-37: 210–211), the agricultural Research & Development stations substantially contributed to solving many of the main problems that Bulgarian farming was confronted with on the eve of the Second World War.

Agricultural research was one of the key elements in the government's strategy to modernize the primary sector. After the Great Depression, Bulgarian decision makers became more and more convinced that each measure taken by the MAPP should first be tested and studied carefully before implementation. Yanev framed it in a straightforward manner: "it is only versatile research that should determine the correctness of our [agricultural] policy" (Янев 1941: 197). Agricultural R&D was perceived as a necessary first step that would enable state institutions to gain a realistic view of peasant agriculture and its potential. In a second phase, this knowledge was used to design an effective reform program adjusted to the needs of the primary sector.

4. The Bulgarian agriculture centered development strategy

The Interwar period marked a dramatic shift in the priorities of the Bulgarian political elite. Though Stamboliiski and his Bulgarian Agrarian National Union (BANU) had been brutally removed from power in 1923, the priority for industry in Bulgarian economic policy was overturned once and for all. The public administration and all Interwar cabinets, regardless of their political affiliation, now focused their attention on agriculture. Most of Stamboliiski's agricultural legislation survived his assassination and was modified and even extended by subsequent governments. This cross-party consensus was widely acknowledged by contemporary experts. In his "Program for Bulgarian Land" the former minister of agriculture Grigor Vassilev (Василев 1932: 27) insists that "in general, all Bulgarian parties, with the sole exception of the communists, share similar economic stands when

agriculture is in question. All of them are for small and medium sized private property, for easy accessible and cheap credit, against usury, in favor of the co-operative movement".

Despite the growing interventionism both in Bulgaria and in the world during the Great Depression, the state preferred to stimulate agricultural modernization through the market. Instead of direct subsidies, with the sole exception of some cereals, the government resorted to a system of stimuli to advance agricultural exports. Driven both by political and commercial considerations in the late 1930s, the state helped the primary sector align itself with the world market through export subsidies, dissemination of information about foreign markets, development of quality standards and control. This type of growth policy differed substantially from heavy protectionism and the inward-oriented import substitution that was at the core of Bulgarian industrial policy. The new growth strategy based on agriculture aimed at promoting export instead of substituting imports. Consequently, contemporaries referred to that strategic choice in economic policy as "moderate interventionism" and "mild" pro-market protectionism (Чакалов 1936: 33–34).

Since 1935 the Ministry of Economy, later reorganized into the Ministry of Trade, Industry and Labor, was granted the right to introduce compulsory control over the quality and the packing of Bulgarian export commodities that were mainly of agricultural origin. Special regulations were enacted by the ministry for the export of cattle, eggs, grapes, fruits, vegetables, etc. (Чакалов 1936: 41–42). There was a consensus among contemporary experts that "structural changes" within the most dynamic sub-sectors of agriculture which took place during the second half of 1930s were due mainly to the "export trade that has opened the foreign markets for Bulgarian fruits" (Янчулев 1936: 294). Through export promotion, the state indirectly but decisively strengthened the ongoing trend of declining self-subsistence for small farms. Agricultural policy supported the adaptation of peasant agriculture to the high requirements of the world market, and public authorities built up the necessary infrastructure so that export became profitable for peasants. Indeed, the growing peasant orientation towards export was the driving force of the agricultural transformation.

In a period of collapsing international food markets and rapidly growing agricultural protectionism in Western Europe after the First World War, export-oriented agricultural development could only proceed in Bulgaria because of Germany's expansionist foreign policy. Even though this policy dates back to the Weimar Republic, it was especially war-preparing Nazi Germany that (ab)used trade policy to enlarge and consolidate its sphere of influence in Southeast Europe. Given the canonical view of Bulgaria as a victim of Nazi 'informal imperialism', it is worth emphasizing that Hitler in fact secured the necessary Bulgarian export outlets via a sophisticated system of heavily state regulated foreign trade. After several unsuccessful attempts to secure alternative trade agreements with France and Britain, Germany stepped in as the only major market open to Bulgaria. Crucially, Berlin was ready to exchange fertilizer and farm machinery for imports of tobacco, fruit and vegetables (Tooze and Ivanov 2010).

Two essential aims guided Bulgarian agricultural policy during and after the Great Depression: securing social peace and, to a lesser extent, promoting agricultural modernization. These objectives were partly conflicting, but as the post-Second World War experience of less developed countries has demonstrated, modernization could not be achieved without a minimum of social peace. Bulgarian agricultural policy aimed at stabilizing farm prices and thus the dramatically falling peasant incomes which, even before the crisis, were dangerously close to subsistence levels. The Bulgarian marketing board *Harnoiznos* subsidized mainly grain production for social reasons. Indeed, this artificially perpetuated the traditional crop mix, which was not adjusted to the changing international food markets and the grain overproduction crisis. Thus, the achievements of the second half of the 1930s should not be ascribed as much to the emerging 'moderate' interventionism, but to

other factors of far more fundamental nature within the peasant society which were supported by the export-oriented parts of government policy.

First of all, the impressive economic flexibility and adaptability of Bulgarian peasants has to be mentioned (Левенсон 1939: 7; Моралиев 1936: 415). Fundamental changes in the crop mix were not initiated by the state. On the contrary, driven by political and social considerations through *Harnoiznos*, the government actually slowed down the process. In the early 1920s, in pursuit of a new cash crop in reaction to falling wheat prices, Bulgarian farms shifted rapidly into tobacco, a crop particularly suited to the soils and climate of some of the poorest areas of the southern fringe of the country. After the collapse of global tobacco prices in the late 1920s, a new phase of diversification began, thus diverting the crop mix towards industrial crops, grapes, fruits and vegetables. This latter move was fully in line with the trend towards land-saving, labor-intensive farming. Undeniably, the changing crop mix was the main manifestation of the ongoing process of agricultural transformation (П., Евг. 1937: 343; Тошев 1937: 148–149; Моллов 1935, 523).

In Italy and Spain the export-oriented intensification of Mediterranean farming took place beginning in the late 19th century. A similar strategy in Bulgaria after the First World War brought the same results: rising yields per hectare but only a modest improvement of per capita incomes (Federico 2005). That Bulgarian agriculture followed the 'Mediterranean path' of agricultural intensification during the Interwar period meant that its 'first agricultural revolution' proceeded quite differently from those in Western and Central Europe, which focused on livestock farming. Indeed, the share of livestock production in total farm output almost halved in Bulgaria during the Interwar period from 54.3 to 28.8 per cent (table 4). Furthermore, the chosen crop-based intensification strategy reflected Bulgarian industrialization. Market-oriented Mediterranean cash crop production rested not just on fruits, vegetables, and wine, but also on a wide range of industrial plants, namely tobacco, cotton, oil-seeds, sugar-beet, etc. (Tomasevich 1955, 495, 611; Lampe and Jackson 1982, table 11.11). Between 1921 and 1939, the share of commercial intensive crops in total farm production doubled from 14.4 to 29.2 percent (table 4).

Gerschenkron (1962: 215) blamed Bulgarian agriculture for not producing sufficient raw materials for Bulgaria's rising textile industry. However, our data tells a different story. Until 1914 raw wool production increased by 1.2 percent per year to supply not only peasant households but the woolen industry, the biggest sector of Bulgarian modern manufacturing. After the First World War, cotton gradually replaced wool processing as the leading industry; Bulgarian peasants reacted immediately. Between 1921 and 1939, cotton fiber production increased annually by 23 percent, while the raw wool output started to fall (table 4). This is certainly not the economic behavior of backward peasants ignoring market opportunities. On the contrary, the dynamics of industrial growth and industry's demand for raw materials determined the output of industrial plants and not vice versa, as Gerschenkron has suggested. Peasants sensitively reacted to the demand for industrial raw materials provided that it was profitable for them.

***Table 4*. The intensification of Bulgarian agriculture 1887-1939[1)]**

	livestock production	total crop production	intensive crop production	wheat production	cotton fiber production[2)]	wool production	rural home industry production divided by total sector income (percent)[3)]
	as share of total farm production (percentage)						
1887/89	39.3	60.7	14.8	24.9	--	2.7	15.5
1909/11	46.6	53.4	12.5	21.6	0.1	2.8	16.7
1921/23	54.3	45.7	14.4	16.0	0.1	3.0	18.0
1930/32	32.5	67.5	20.5	22.3	0.2	1.7	10.0
1937/39	28.8	71.2	29.2	24.4	1.5	1.6	9.3
	Annual growth rates						
1887-1911	1.88	0.13	0.63	-0.50	2.72	1,18	1.44
1921-1939	0.26	5.74	6.87	5.91	22.85	-0,37	0.54
1887-1939	0.73	1.52	2.48	0.67	11.34	0,45	0.53

Sources: See table 1.

Notes: 1) Farm production is measured as net value added in constant 1911 prices. Intensive crop production contains all industrial plants (tobacco, sugar beet, sugar broom, sunflower, colza, sesame, anise, fennel, mint, peanuts, soy beans, opium, poppy, hops, cotton seeds, cotton fiber, hemp seeds, hemp fiber, flax seeds, flax fiber), all vegetables (cabbage, onions, peppers, tomatoes, other vegetables), all fruits (including grapes, wine, melons, as well as attar of roses); 2) annual growth rates of cotton fiber production 1887-1911 only refers to the period 1903-1911; 3)Total sector income contains income from farming, forestry, hunting, fishing, rural home industry, implicit rents from rural dwellings, and of wage labor in agriculture (Ivanov 2012). Besides farming, the second-most important sectoral and on-farm-activity was rural home industry, mainly producing textiles for self-consumption.

The second fundamental factor that assisted agricultural transformation was the outstanding flexibility of the peasant demographic behavior. From the mid-19th century onwards, population growth accelerated dramatically, reaching its peak in the early 1920s at just over 2 percent per annum. Prior to 1914 it was this explosive population growth that consumed any GDP growth, thus reducing per capita income growth to almost zero. The population boom was due to both an increase in fertility and a decline in mortality. However, there remains a large measure of uncertainty over the ultimate causes of the fertility explosion. The most plausible interpretation is that social constraints on marriage and fertility were loosened as hundreds of thousands of new hectares were opened up for settlement by young peasant families during the second half of the 19th century, especially after 1878 (Palairet 1997; Ivanov and Tooze 2007).

With a crude birth rate of 2 percent per annum there was a real danger that population growth would not just keep per capita income at zero, but it would outstrip the agricultural growth rate, thus further impoverishing Bulgarian peasants. During the mid-1920s Bulgaria was genuinely in danger of tipping over the Malthusian cliff, with population growth outrunning the economy's capacity to sustain it. But as the economic-demographic equilibrium was endangered, peasant behavior changed radically within a few years. Beginning in the mid-1920s, Bulgaria experienced the most rapid decline of birth rates ever recorded. It was peasant Bulgaria which accomplished this astonishing achievement without industrialization and urbanization or support by any public demographic policy to restrain the demographic expansion. By the mid-1930s the rate of population growth had halved and continued to fall precipitately into the Second World War (Ботев 1989). The reasons behind the outstanding flexibility of the peasant demographic behavior have not yet been studied systematically. However, the strong Bulgarian efforts in primary education – as part of the 19th century national awakening – and especially the revolutionary successes in female education very likely played a crucial role for explaining peasants' capacity to prevent a Malthusian catastrophe, even under the conditions of strictly restricted emigration after the First World War.[18]

All in all it seems that during the Interwar period the conscious decision of peasants to restrain fertility, combined with strongly accelerated land productivity growth and peasants' rising market orientation were the driving forces behind the first-ever productivity-based Bulgarian agricultural expansion. Emerging state interventionism in agriculture only supported this development – very effectively despite some shortcomings – but it did not cause them. It is obvious that without the high levels of both primary education for the peasants and the high degree of participation in what Fukuyama (1995) calls "intermediate structures of sociability" like cooperatives, Agrarian Party local clubs, education clubs (*chitalishta*) etc., the state policy would have had a negligible impact.

Well before its liberation in 1878, Bulgarian society had reached a "national consensus" on the importance of mass education. Schools traditionally received approx. 2-2.5% of GDP and the Ministry of Education enjoyed a privileged status among the ministries. By the 1930s, Bulgarian society began to reap the benefits of several decades of sustained investment in mass literacy. Primary education enrollment between 1920 and 1940 significantly increased from 812,000 to 1,007,000. By 1900 general literacy was 18.4 percent. Thirty five years later, 55 percent of the population was literate, while the 1946 census recorded almost total literacy for both sexes (91.7 for

[18] According to modern experience in less developed countries, female literacy is widely seen as pivotal for advancing in economic modernization.

male and 91.8 for female). Good inroads have also been made in secondary schooling, which increased by a factor of two during the Interwar years (Mishkova 1994).

More importantly, between the wars specialized agricultural education and vocational training attracted the attention of both the state authorities and private institutions like the Rockefeller Foundation. In the late 1930s, four secondary agricultural schools, 13 schools of practical agriculture and rural domestic economy, a Higher Institute of Rural Domestic Economy and a Faculty of Agriculture and Forestry at the Sofia University were operating in different regions of the country to foster capacity building in agriculture and disseminate agronomical knowledge at the grass-roots level (League of Nations 1940, Table 5).

Table 5. **Practical education in agriculture at the eve of the Second World War**

	Number of schools	*Number of alumni*
Secondary agricultural schools	3	2,500
Practical agricultural schools	8	2,500
Professional schools for young girls	10	1,700
Winter agricultural schools	24	n/a
Supplementary agricultural schools	165	14,000
Agricultural and Forestry Faculty	1	430
Total*	211	21,130

Sources: Ангелов, 1937: 111-115.

Note: Not all schools operated simultaneously.

According to the Bulgarian country report presented at the Rural Life conference, organized in 1939 by the League of Nations, the purpose of all those schools and institutions was "namely to impart the necessary knowledge and skills for productive work in farming and rural domestic economy, and thus help to increase agricultural production and improve village life" (League of Nations 1940: 32). During the late 1930s, several thousand young boys and girls were graduating on an annual basis from those special schools. Furthermore, in each of the seven administrative regions of Bulgaria, the MAPP had its district rural economy office and a local agricultural institute embracing the work done both by the local agricultural experts and that of the staff of agricultural colleges.

Bulgarian Interwar rural society demonstrated a high propensity to self-organization (intermediate sociability structures) and sustained communitarian life in the countryside – co-operatives, Agrarian Party grass-root structures, *chitalishta* etc. Revising the results of several decades of development programmes in the Third World, Hayami and Ruttan (1985: 88) underscore the importance of well-developed co-operative networks for the successful implementation of development projects. Contemporary experts also emphasized the crucial value of Bulgarian coops for increasing rural savings and funneling them into land improvement and even into industrial projects. Warriner (1939: 163, 166–167) provided ample evidence of how, through co-operation and moderate state intervention, villages could supply capital for investment in manufacturing. The *Vâtcha* hydro-electric power station and its adjacent irrigation system, or the canning and packing factories that mushroomed in the Bulgarian countryside during the late 1930s were opened thanks to entrepreneurial co-operatives.

To conclude this section, a capable primary schooling system and flourishing 'third sector' institutions of an active rural civic society strongly supported the modernization of Bulgaria's peasant agriculture during the Interwar period (Иванов 2008). Co-operatives and the agrarian movement

were vivid manifestations of the high levels of 'interpersonal general trust' (Fukuyama 1995) present in Bulgarian villages. It was this propensity to 'spontaneous sociability' that powered many of the positive developments in Bulgarian society and its economy in the 1930s, at least regarding agricultural transformation, accelerated land productivity growth, as well as economic and demographic flexibility. The Bulgarian 'authoritative bottom-up approach' of agricultural modernization was carried out by (at best) semi-democratic governments which nevertheless had a deep understanding that only a development strategy based on the potential of the peasants and which spread the gains of growth widely into peasant society could prevent a social catastrophe and absolute rural impoverishment.

5. Conclusion

Summarizing the experience of many modernization programs in less developed countries, Hayami and Ruttan (1985: 421) defined two necessary conditions which have to be simultaneously met in order to escape the Ricardian-Malthusian 'misery' of low and declining rural incomes caused by population growth:

(1) The development and the diffusion of land-saving and labor-using farm technologies in close cooperation between peasants, public research and agricultural policy.
(2) Rapid employment growth in the non-agricultural sectors.

During the Interwar period Bulgaria met the first precondition in an exemplary way, even compared to modern green revolutions of the Post-Second World War period, whose experiences Hayami and Ruttan summarize as follows:

> "In the agriculture of developing countries, in which land is becoming increasingly scarce and expensive relative to labor as population pressure increases against land resources, the development of biological and chemical technologies is the most efficient way to promote agricultural growth. Technological progress of this type tends to make small-scale operations relatively more efficient. It thereby induces an agrarian structure characterized by a unimodal distribution of small family farms rather than a bimodal distribution consisting of large commercial farmers and large numbers of landless or near-landless laborers. Moreover, because such technological progress tends to be generally biased, or at least neutral, toward labor use, it helps counteract the effect of population pressure on land rent and wages. … It is clear that a necessary condition for escape from the Ricardian trap is land-saving and labor-using technical change. But even if such technology is developed, its contribution to growth and equity will be small if it does not achieve rapid diffusion" (1985: 358-59).

However, Bulgaria failed to meet the second precondition to achieve a full-scale 'first agrarian revolution.' To achieve the necessarily swift labor transfer from the primary to the secondary sector, two conditions are mandatory: (1) a vibrant secondary sector which had still reached a certain extent before industrialization, and (2) a rapidly growing manufacturing sector during industrialization. Only if a still reasonably large manufacturing sector accelerates significantly during industrialization growth can a sufficient portion of the expanding rural population be pulled into the nonagricultural labor force, and thereby exert a swift, positive impact on labor productivity and incomes in agriculture. Declining population growth is no effective solution for the low productivity and incomes

in agriculture in the short term due to the fact that any reduction in demographic expansion requires at least a generation to exert a significant impact on employment and rural poverty.[19]

Indeed, the Bulgarian problem was not sluggish agricultural growth acting like a brake on the growth of the entire economy as once thought. But the tiny modern manufacturing sector should not be blamed either. Bulgarian Interwar annual growth rates of large scale industry were by all means respectable, with estimates varying between 3.6 (Ivanov 2012 re-deflating Chakalov 1946 figures) and 7.8 percent (Беров и Димитров 1990: 130, 138, 141). Moreover, strong voices in the literature insist that by the late 1930s "Bulgaria, Romania and Yugoslavia, crossed the threshold of industrialization" (Teichova 1985: 239; Lampe and Jackson 1982: 576–577). However, even if modern manufacturing developed dynamically during the 1920s and 1930s, it was simply too small to absorb a large fraction of the rural labor surplus.[20]

A Western European '19th century full-scale first green revolution' characterized by simultaneously increasing land and farm labor productivity clearly outpacing the low levels of traditional farming was simply impossible to achieve for Interwar period Bulgaria, even though a dynamic peasant agriculture highly responsive to economic incentives still existed. Looking only at land productivity and the causes behind its dynamic yield growth, Bulgaria's agriculture clearly entered into the stage of modern growth during the Interwar period. However, in stark contrast to industrializing Western Europe's 'first green revolutions' before the First World War in Interwar-Bulgaria, the impact of biological technical change obviously did not induce an increase in farm labor productivity strong enough to clearly outstrip the low levels of labor productivity in traditional farming. Farm labor productivity at the end of the 1930s was not very different from the level at the end of the 1880s (figure 3). But the reason for farm labor productivity's long-term stagnation was not a lack of dynamism in Bulgaria's peasant agriculture. Instead, during the Interwar period there was literally no place to go for the growing rural population; Bulgarian Industry could not absorb the rural labor surplus, and emigration was not possible.

Trapped as they were in the villages, young rural generations were obviously displeased with the situation. With higher levels of education than their parents, young Bulgarian peasants were indeed not less critical of the political elite but certainly far less militant and ready to compromise. By adopting pro-agricultural policies and avoiding direct involvement on the Eastern Front during the Second World War, the political establishment managed to keep the latent rural discontent at bay.

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[19] In the words of Hayami and Ruttan: „One of the necessary conditions for escape from the Ricardian trap of poverty and stagnation is the development and diffusion of land-saving and labor-using technologies. A second necessary condition is rapid growth of employment in the non-agricultural sectors. When nonagricultural employment expands rapidly enough to pull workers into the nonagricultural labor force, it exerts an immediate impact on labor productivity and income in agriculture. This result is in contrast to a decline in the rate of population growth, which requires almost a generation to exert a significant impact on employment" (1985: 421).

[20] In Southeast Europe during the Interwar period, the bulk of new entrants into the labor force had to be absorbed in agriculture, where the majority of new employment opportunities emerged; industry only took a fraction (Teichova 1985: 237–38). According to contemporary estimates in the Balkan countries, as late as 1937 "no more than one-third of the annual average increase in manpower could be taken by industry and mining" (Hauner 1985: 89). According to most recent estimations of Ivanov and Stanev (forthcoming: 9) on Bulgaria's sectoral employment structure from 1888-2001, in 1934 only 9.1 per cent of the active population was occupied in the secondary sector, which included not just modern manufacturing but handicraft production as well, whereas the primary sector counted for 80.5 per cent and the tertiary for 10.4 percent. Moreover, this was almost the same occupational structure as in 1887. In fact, no structural transformation from an agrarian to an industrial economy did occur in Bulgaria 1887-1939. According to Ivanov and Stanev, the active population increased by 732,365 persons between 1920 and 1934. Of this, Bulgarian agriculture absorbed 82.1 percent.

After the mid-1920s, young peasant generations forewent the revolts that their parents and grandparents had attempted (in 1899, 1918 and 1923). At about the same time, the agrarian movement gradually abandoned its radical anti-urban rhetoric and started to collaborate with 'bourgeois' politicians. In the early 1930s, when BANU returned to power in a coalition with three other 'urban' parties, it was widely acknowledged that its representatives in the cabinet were "self-restrained and earnest". This was very different from the first BANU government of Stamboliiski, whose agrarian ministers behaved "lofty and arrogant with other classes and the intelligentsia" (Кацаров 1994: 431). This indeed rules out accusations from Gerschenkron and others that agricultural modernization was protracted by the political lobbyism of a 'pre-modern' class. Radicalism was isolated in small pockets of (almost)-landless peasants with no prospects for finding alternative employment in industry. Communists understandably took advantage of this for recruiting its guerilla detachments. However, to say that in the 1930s and 1940s the Bulgarian village was "pregnant with communism" (Avramov 1998, 2001, 2007 and to some extent Gruev 2009) is to confuse traditional Russophilia and fashionable-at-the-time authoritarianism with a peasant support of Bolshevik-style land collectivization.

Given the adverse conditions of the interwar period, it was still a remarkable achievement that the emerging biological technical change managed to offset the depressing impact of diminishing returns on agricultural growth and productivity. During the Interwar period, productivity-reducing diminishing returns were inevitably connected to the ongoing dynamic rural population growth and unchecked expansion of farm land on marginal lands. Hence, reestablishing peasant productivity after the First World War and stabilizing peasant incomes on a low level was a significant achievement. Only biological technical change enabled Bulgarian peasants to escape the Malthusian trap, which considered in isolation represented a secular breakthrough to modernity. This peasant achievement is to be assessed all the more positively because peasant society – once rather depreciatory labeled as the 'traditional sector' – had to manage agricultural modernization and the demographic transition with only modest support from the tiny urban-industrial sector.

The old view of development from Marxism to Liberalism saw the destruction of the peasant economy and society as inescapable 'social costs' of industrialization.[21] In developing economics and economic history, this view was a dogma that was not called into question until the 1960s and 1970s. Going back to Karl Marx and the English classical economists, creating a large industrial reserve army of expropriated peasants was seen as a mandatory precondition of industrialization, not only to advance capital formation via low wages but also to encourage mass demand, thereby forming a domestic market. This canonical view was later challenged, even for 18th century Great Britain. As R. C. Allen concluded in his seminal study on agricultural development from 1450 to 1850 in the English South Midlands, the rise of large estates during the 18th century at the expense of small farms did not accelerate economic growth because "the basic problem was that the agricultural revolution… preceded the region's industrial revolution by at least a century. Instead of contributing to the growth of manufacturing, the premature release of labor from agriculture caused nothing but poverty" (1992: 262).[22] Furthermore, even if boosting agricultural productivity was essential for

[21] After the Second World War this view had a deep impact on the newly emerging discipline development economics as exemplarily demonstrated by Mogens Boserup (1972).

[22] Indeed, one of the main problems of modern developing countries is not to create a sufficient large labor surplus for industry but to prevent an uncontrolled rural migration completely overcharging the absorption capacity of modern industry and urban areas. Under the conditions of strong rural population growth and a tiny industrial sector, like in Bulgaria before the Second World War, economic policy should try to improve the absorption capacity of agriculture and develop the entire rural economy (Lipton 1977; Johnston and Kilby 1975;

successful industrialization, the role of agriculture in industrialization has been downsized in recent research, particularly but not only for Great Britain (Allen, 2004; O'Brian 1985; Crafts 1985: 32, 133-34). During the 19th century in many industrializing countries agriculture did not provide a large home market for manufactures. Instead, exports and urban demand absorbed the bulk of the industrial output. Agricultural savings formed only a minor source of non-agricultural investments. Thus, Geschenkron's accusation that Bulgarian agriculture precluded industrialization because its demand for consumer goods, modern farm tools and machinery was too low is simply misleading. In any case, the Bulgarian domestic market was too small to provide the sufficient demand which made industrialization worthwhile. Industrialization in Bulgaria depended on export markets, which did not exist during the crisis-ridden Interwar period characterized by globally rising protectionism and a collapsing world trade system.

As a 'development traditionalist', Gerschenkron rejected Bulgaria's agricultural-centered development strategy as a fundamental mistake because it excluded Bulgaria's industrialization and thus the transition to modern growth. Bearing in mind that Bulgaria was a small economy, not rich in natural resources and confronting highly-protected Western export markets for its potential industrial products, it is clear that Gerschenkron's program for a state-led enforced industrialization based on a massive diversion of resources out of agriculture – in fact an imitation of the Soviet-style industrialization, only without Bolshevik terror – would have resulted in a disaster (Kopsidis and Ivanov, forthcoming).[23] It seems to make more sense to closer analyze developments within the tiny urban-industrial sector, or within the world economy to explain Bulgaria's failed industrialization instead of pointing the finger at Bulgarian peasants. Realizing productivity growth was definitely no problem for Bulgarian peasant agriculture subject to the conditions of appropriate circumstances outside agriculture. In our opinion, there is no reason to complain about a self-inflicted Bulgarian 'modernization failure' during the Interwar period.

That biological technical change would develop into an important source of agricultural growth was by no means a given after the First World War. This only happened thanks to Bulgarian peasants who consciously decided to switch to intensive commercial cash crops. Their efforts were successfully seconded by the decision of domestic political elites to concentrate scarce resources on the development of peasant agriculture and to support the export-oriented peasant approach to economic modernization, which had already emerged without any government intervention. Political considerations tailored to prevent a social catastrophe and maintain economic growth played a vital role in building this Interwar cross-party consensus. Now we know that this was a visionary policy. Development economics needed four more decades to learn that in a developing nation where peasants form the overwhelming majority of the population, concentrating on agriculture and creating market access for the masses of agricultural producers is the most effective strategy during the early stages of development. This strategy does not exclude industrialization, but rather than speeding up capital formation in the manufacturing sector, it avoids extreme rural impoverishment due to the reckless allocation of resources away from agriculture.

Mellor 1966). One important element of such a development strategy which acknowledges that sustainable growth demanded the simultaneous advance of all economic sectors and that peasants are no obstacle to modern growth is to promote a market oriented intensification of agriculture to stabilize if not increase rural incomes.

[23] Indeed, the only country that managed to industrialize during the Interwar period was the inward-oriented Soviet Union, albeit at unbelievably high human costs.

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