Austro-Hungarian agricultural development 1827-1877 *

John Komlos
Aurora College

The rate and pattern of Austro-Hungarian agricultural development in the first two thirds of the nineteenth century has not been a subject of controversy. The accepted thesis, that in response to the mid-century reforms, i.e., the emancipation of the peasantry [1] and the abolition of the trade barrier between Austria and Hungary, agricultural development could commence has, however, been found unacceptable. In spite of the reforms, the rate of growth of cereal production per capita did not increase after 1850. This suggests that the gains in efficiency could not have been substantial, prevailing opinion in the literature notwithstanding.[2] Rather, the timing of Austrian industrializa-

* Research was funded by the International Research and Exchanges Board to whom my gratitude is hereby extended. I am also indebted to Professors Arcadius Kahan and Donald McCloskey for their comments on an earlier version of this paper.

[1] See my forthcoming article on the emancipation of the Hungarian peasantry in IVÁN VÖLGYES (ed.), *The East European Peasantry* (New York: Pergamon Press, 1979), pp. 109-118.

[2] PÉTER HANÁK, "Economics, Society, and Sociopolitical Thought in Hungary during the Age of Capitalism," in *Austrian History Yearbook*, Vol. XI, 1975, p. 113. ERVIN PEMLÉNYI (ed.), *A History of Hungary* (Budapest: Corvina, 1973) p. 26. Oscar Jászi, *The Dissolution of the Habsburg Monarchy* (Chicago: The University of Chicago Press, 1929) p. 126. Karl Dinklage, "Die Landwirtschaftliche Entwicklung" in ADAM WANDRUSZKA

tion appears to have been the single most important determinant of the development of Hungary's, and Austria's, agricultural sector.

In order to assess the effects of the mid-century reforms on agricultural development in the Habsburg Monarchy, a comparison of the growth of production prior to and after 1850 is imperative. In the first period, production estimates exist for the major grains for 1789 and 1841. The cadaster of Joseph II in 1789 estimated average grain output in Hungary and Croatia (without Transylvania) at about 28 million hectolitres.[3] Schwartner's and Liechtenstern's estimates substantiate this figure, although they thought it was 10-15% too low.[4] Therefore, we might increase the 1789 estimate by 20% from 289 to 347 million kronen in order to compensate amply for a possible downward bias. By the 1840's the estimates accepted by contemporary statisticians such as Fényes and Bárándy[5] were on the order of 67 million hectolitres.[6] The growth of cereal production calculated in prices of 1913 was therefore 1.2% per annum prior to 1850, twice the rate hitherto suggested.[7] Taking into

---

and PETER URBANITSCH (ed.), *Die Habsburgermonarchie 1848-1918*, Vol. I, *Die Wirtschaftliche Entwicklung* edited by Alois Brusatti (Wien: Österreichischen Akademie der Wissenschaften, 1972), p. 403, 511 ff. Jerome Blum is practically alone in pointing to the significant advances in agriculture in Austria-Hungary in the Vormärz. Yet he asserts that robot labour was inefficient as " Free men working for hire are better workers than unfree men." JEROME BLUM, *Noble Landowners and Agriculture in Austria, 1815-1848, A Study in the Origins of the Peasant Emancipation of 1848* (Baltimore: The Johns Hopkins Press, 1948),. p. 244.

[3] GYULA BENDA, *Statisztikai adatok a magyar mezögazdaság történetéhez*, 1767-1867 (Budapest: Központi Statisztikai Hivatal, 1973), p. 119.

[4] JOSEPH LIECHTENSTERN, *Handbuch der neuesten Geographie des österreichischen Kaiserstaates* (Wien: Bauer, 1817-1818). Vol. III, p. 1259. Another report stated that the ten-year average was 31 million hektolitres, although during the excellent harvest of 1798 it reached 39 million. JÁNOS BELITZKY, *A Magyar gabonakivitel története* 1860-ig (Budapest, 1932), p. 47.

[5] BENDA, 1973, 121.

[6] *Tafeln zur Statistik der Österreichischen Monarchie*, 1841, Table 41.

[7] PÉTER HANÁK, MIKLÓS LACKO, GYÖRGY RÁNKI, " Gazdaság, társadalom, társadalmipolitikai Gondolkodás Magyarországon a kapitalizmus korában " *Történelmi Szemle*, 1969, No. 3-4, p. 286.

account the growth of population, this meant an annual per capita growth of 0.7%.

This is substantiated by an independent set of estimates for five counties [8] whose growth rate was 2.6%. These counties have some of the richest grain producing lands of Hungary and therefore their growth would probably have exceeded the average.

TABLE 1

GRAIN PRODUCTION IN FIVE HUNGARIAN COUNTRIES

(Millions of hektolitres)	1769	1844
Bàcs-Bodrog	0.31	3.70
Békés	0.19	1.00
Moson	0.27	0.64
Pest	0.27	2.81
Jàsz:Kun	0.27	0.88
	1.32	9.03

A comparison of the pre-1850 growth of 1.2% to the one achieved between 1850 and 1870, should be sufficient for the measurement of the reform's effects. One would not expect the effects to have been instantaneous. Yet, the apex of the production cycle after 1850 was achieved in the late 1860's and a slight decline was actually evident after 1870, at least until 1877. Therefore the growth rate calculated till 1870 yields the maximum rate of agricultural development within the quarter century after the reforms. This appears to be a sufficiently long period to expect the effects of the reforms to have been translated into the production process.

Problems of measurement arise, however, since the harvests of the early 1850's were too low [9] for comparative purposes due to adverse weather and to the disequilibrium in the labour market following the upheavals of 1848. The estimates for the 1840's can however be used as an "average" harvest for,

[8] BENDA, 1973, pp. 84, 125.

[9] In 1851 the estimate of wheat output was 30%, of rye output 7% below the 1841 figures.

say, 1850. Its value, with Transylvania but without the Military Frontier, was 752 million kronen. At the end of this period, the 1867 and 1868 harvests were exceptional; in 1869 the yield was mediocre. While the 1870 harvest was good, the subsequent output was steadily below average until 1877. In order to compensate for the lack of data for the 1867 harvest and for the 1868 harvest of barley, oats, and corn, the post-1870 harvests might also be excluded. The average of wheat and rye harvests for 1868-1870 and for barley, oats and corn for 1869-70 should yield the maximum average cereal production two and a half decades removed from the reforms. This average is almost a billion kronen (Table 4). The growth rate achieved after 1850 was therefore 1.4% per annum, slightly higher than the earlier period. On a per capita basis however the growth was slightly lower (by 0.1%). This result contradicts the notion of an acceleration in the growth of cereal production after the emancipation of the peasantry and the creation of the customs union.

The Hungarian growth rates are supported by a similar calculation for the agricultural production in the Austrian provinces. Austrian cereal output grew at about the same pace before and after 1850. On a per capita basis the growth was negative in both periods. The result is not surprising given the shift into the industrial sector in Austria since the late 1820's. The average of the Austrian and the Hungarian growth rates indicates that cereal production per capita for the whole monarchy remained constant at least until 1878.

TABLE 2

GRAIN PRODUCTION IN HUNGARY AND CROATIA 1789-1841

	Million hektolitres		Million 1913 Kronen	
	1789	1841	1789	1841
wheat	4.6	14.3	71.5	222.9
rye	12.2	11.4	139.9	130.9
barley	3.0	13.5	26.9	119.2
oats	7.4	17.8	45.3	108.7
corn	0.7	9.6	5.8	83.8
Total:	27.9	66.6	289.3	665.5

TABLE 3

TRANSYLVANIA'S AND THE MILITARY FRONTIER'S GRAIN PRODUCTION 1841

	Transylvania		Military Frontier	
	Million hektolitres	Million 1913 Kronen	Million hektolitres	Million 1913 Kronen
wheat	1.84	28.8	0.30	4.6
rye	1.54	17.6	0.94	10.8
barley	.92	8.2	0.41	3.6
oats	2.15	13.1	0.61	3.7
corn	2.15	18.9	1.37	12.0
Total:	8.60	86.6	3.63	35.7

TABLE 4

HUNGARY'S GRAIN PRODUCTION 1868-1870

	Million hektolitres					Million 1913 Kronen
	Hungary and Transylvania				Croatia	Hungary Total
	1868	1869	1870	Average 1868-70	1868	
wheat	29.56	18.80	22.35	23.57	0.60	372.3
rye	23.40	17.22	24.11	21.58	0.68	248.8
barley		8.46	11.13	9.80	0.34	89.8
oats		11.00	12.78	11.89	0.64	76.4
corn		17.68	21.82	19.75	1.47	186.0
Total:		73.16	92.19	86.59	3.73	973.3

Source. Hivatalos Statisztikai Közlemények, Vol. V, No. 1, 1871, p. 292.

TABLE 5

CEREAL PRODUCTION IN AUSTRIA IN MILLIONS OF 1913 KRONEN

	1789 *a*)	1841	1869 *c*)
wheat	99.9	173.4	214.1
rye	258.4	309.0	347.6
barley	141.1	180.4	162.2
oats	189.2	237.3	237.6
corn	—	14.2	52.2
Total:	688.5	914.3	
		27.4*b*	
		941.7	1013.7

a) Without Tirol and Dalmatia.
b) Production of Tirol and Dalmatia.
Sources: 1789: *Versuch einer Darstellung der Oesterreichischen Monarchie in Statistischen Tafeln*, 1828, Table 2. 1841: *Tafeln zur Statistik der Österreichischen Monarchie*, 1841, Table 41. 1869: *Landwirtschaftliches Wochenblatt des k.k. Ackerbauministeriums*, 1870, pp. 154-155.
c) Unlike in Hungary the Austrian harvest of 1869 was average.

TABLE 6

GROWTH RATES OF AGRICULTURAL PRODUCTION IN HUNGARY AND AUSTRIA (Per Cent)

	Hungary			Austria			Monarchy		
	A	B	C	A	B	C	A	B	C
1789-1841	1.2	0.5	0.7	0.55	0.65	—0.1	0.93	0.6	0.3
1850-1868/70	1.4	0.8	0.6	0.40	0.80	—0.4	0.90	0.8	0.1
1868/70-1881/83	3.4	0.1	3.3	1.57	0.73	+0.8			
1881/83-1911/13	1.6	1.0	0.6	1.24	0.84	+0.4			

A: Annual growth of production.
B: Annual growth of population.
C: Annual growth of per capita production.

Sources: for Hungary after 1870: László Katus, "Economic Growth in Hungary During the Age of Dualism (1867-1913). A Quantitative Analysis: in E. Pemlényi (ed.), *Social-Economic Researches on the History of East-Central Europe*, (Budapest: Akadémiai Kiadó, 1970), p. 92 and Scott M. Eddie, "Agricultural Production and Output per Worker in Hungary, 1870-1913" in *Journal of Economic History*, Vol. XXVIII June 1968, p. 222. For Austria after 1870: Roman Sandgruber, *Österreichische Agrarstatistik 1750-1918* (Vienna: Verlag für Geschichte und Politik, 1978), p. 110. For population: Béla Kenéz, *Magyarország Népességi Statisztikája* (Budapest: Révai, 1906), p. 283.

Foreign trade did not play an important role in agricultural development in this period. As far as Hungary was concerned, however, her exports to Austria, more specifically to Vienna, determined the rate of growth of her cereal production. Without the Viennese market Hungarian per capita output would no doubt have stagnated. One might be convinced of this by noting that if cereal production was growing at 1.2% per annum and exports at 5.3% per annum prior to 1850, and given that 90% of output was consumed at home, the growth of home consumption (c) is given by: $1.2 = .9c + .1(5.3)$. This would yield a per capita annual growth of home consumption of .2% before, and similarly 0.1% after, 1850. Consequently, without the stimulus of Austrian demand Hungarian production would have been stagnating.

Agricultural production may in fact have stagnated in the Monarchy during the first two decades of the century according to contemporary observers.[10] Due to insufficient data this can-

[10] LIECHTENSTERN, 1817, Vol. I, p. 37.

not be confirmed beyond noting that the mean of a sample of 64 seed-to-yield ratio observations on various estates was, at 2.7, considerably below that of the 1790's.[11] Reports suggest, on the other hand, that after 1825 a new epoch began in Hungary's economic development.[12] The progress, particularly in grain and wool production, continued unabated into the 1830's and 1840's.[13] This is substantiated by the stagnation of Hungary's grain exports in the early 1820's [14] until Austrian demand for Hungarian grain shifted upward,

from	$P = 4.95 - .26Q$	$r^2 = .72$	
	(5.2) (−2.5)	D.W = 1.4	between 1819 and 1826
to	$P = 8.66 - .40Q$	$r^2 = .68$	
	(7.5) (−3.8)	D.W = .92	between 1827 and 1837

and became more elastic. This coincided exactly with the beginning of industrialization in Austria. The linkages are therefore complete: the beginning of Austrian industrialization increased the demand for labour causing Austrians to shift out of agriculture and into industry which in turn decreased home production of grain and increased the demand for Hungarian grain. [15] The increased demand spurred Hungarian producers to increase their production. Growth continued at a constant, though cyclical, rate for the subsequent half century.

---

[11] Zs. Kirilly, L. Makkai, I. N. Kiss, V. Zimányi, "Production et productivité agricoles en Hongrie à l'époque du féodalisme tardif" in *Nouvelles études historiques* (Budapest: Akadémiai Kiadó, 1965), p. 581 ff.

[12] F. Bajáky, *Handels- und Gewerbe Geographie von Ungarn* (Pressburg: Ignaz Schaiba, 1845), p. 69.

[13] Alexius Fényes, *Ungarn im Vormärz*, (Leipzig: F. L. Herbig, 1851), p. 66.

[14] Belitzky, 1932, p. 150.

[15] The high seed to yield ratios of the 1790's and the reports of good harvests of 1792, 1795, and 1798 also correlate with the Austrian industrial boom at the turn of the nineteenth century, as does the subsequent industrial depression with the stagnation of the agricultural sector. Martin Schwartner, *Statistik des Königreichs Ungern* (Pest: Matthias Tratner, 1798), p. 73.

The source of increased per capita output is not easily discernable. Statisticians in the first half of the nineteenth century did not believe that a significant increase had occurred in the quantity of land under the plough. The estimates of total plough land (including fallow) fluctuated around 10 million hectares [16] ($\pm$ 10%), in spite of the fact that production estimates were continually updated. It is also unlikely that the share of plough land devoted to cereal cultivation was increasing since sugar beets, potatoes, tobacco, wine, and feed crops were all increasing or holding their own. The sheep population did not decrease significantly until the 1870's. Thus improved methods, including a more rational use of the fallow, and growth of labour productivity probably account for most of the per capita increases in cereal production until the 1870's.

A variety of corroborating evidence supports the finding that the growth rates were not substantially different prior to and after 1850. The famines that occasionally still occurred in the countryside would be difficult to explain if the advances had been as rapid as hitherto contended. To be sure harvest failures are fortuitous events. Yet their consequences, the famines, are not entirely. A population can guard against famine by holding an inventory, but its ability to save grain is constrained by its income. Thus the continuance of famines in Hungary up to 1863 is another indication that the growth of income was not large enough to allow sufficient inventories to be held for emergencies. In 1852 famine hit the northern counties. In 1863 even the most productive lands of southern Hungary were hard hit by drought. Food was scarce. A survey of 70 villages in the County of Bács-Bodrog showed that in February of 1864 more than the 12,000 families had food supplies of less than one week, and the next harvest was still four months away.[17] This illustrates that

---

[16] GYULA BENDA, "Bárándy János statisztikai adatai a magyar mezögazdaságról" *Agrártörténelmi Szemle*, 1973, No. 1-2, p. 126.

[17] Hungarian National Archives, Budapest, D 216III.

despite advances throughout the century, the Hungarian agricultural sector was still susceptible to occasional subsistence crisis.

Evidence from the export sector lends further credence to our argument, even though scholars invariably refer to the 1850's as a decade of grain boom in Hungary.[18] This erroneous presumption is in turn used to indicate increased agricultural production even though fluctuations in trade are obviously much more pronounced than those of production. Be that as it may, no evidence exists of acceleration in the export sector either. On the contrary, both external and internal trade in grain failed to show a quantitative shift after 1850. To be sure this is not conclusive evidence with regard to gross output, since the non-marketed share of production could conceivably have accelerated nonetheless. Yet the expectation is that the market would have been expanding relative to gross output during this time rather than contracting. Thus even though the proposition that large export growth indicates large output growth would have been weak, its contrapositive is much stronger. The lack of increase in export growth does substantiate our previously stated thesis that the growth of production did not accelerate post 1850.

A hiatus exists in Hungarian trade statistics between 1851 and 1866, but estimates of it can be derived. First, we have constructed an index of Hungary's trade with the West based on statistics of railroad and water transportation. This index (Graph 1) shows a slight increase in the 1850's, rises suddenly in 1860 and 1861 as a consequence of the good harvest, declines, only to rise again 1864.[19] The index is a rough estimate but it does

---

[18] Pemlényi, 1973, p. 293, István Nagy, *A Mezögazdaság Magyarországon az Abszolutizmus Korában*, 1849-1867 (Budapest: Szerzö, 1944), p. 115. Henrik Ditz, *A Magyar Mazögazdaság* (Pest: Aigner Lajos, 1869), p. 99.

[19] *Hivatalos Statisztikai Közlemények*, Vol. I, No. 4; Vol. III, No. 1; Vol. IV, No. 3; Vol. V, N. III.

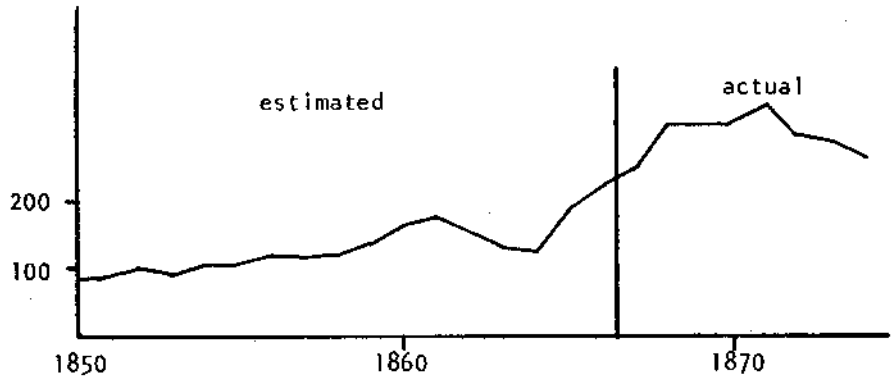

Figure 1 - Hungary's Exports in 1868 Prices, 1850-1874 (millions of florins)

correlate well with the harvest fluctuations. Instead of a boom only in 1858/59 did exports exceed the levels of the 1840's. [20]

Second, we have constructed an index based on the exports of grain and flour from the Monarchy. During the period when trade statistics are available for both Hungary and the whole Monarchy, that is, between 1831 and 1850 and again between 1867 and 1875, the correlation between the two variables is .975. This indicates that Hungary's exports of grain and flour (X) fluctuated as the Monarchy's exports (Y). Regressing X on Y yields the following relationship:

$$X = 1.17Y + 26.91 \qquad D.W. = 2.1$$
$$(13.5) \quad (2.6) \qquad r^2 = .95$$

This equation was used to determine Hungary's exports of grain and flour between 1851 and 1866. The result, plotted in Graph 3, shows a pattern we would expect from the knowledge of harvests, and correlates well with the above export index deri-

[20] Grain exports did not exceed the levels of the 1840's until 1860 according to EUGEN BONTOUX, *Ungarn und die Ernährung Europas* (Wien: 1868), Second Edition, p. 15.

ved from transportation statistics ($r^2 = .91$). It, too, shows no exceptional export behaviour in the 1850's while the cycles of the 1860's appear to be a continuation of the pattern evident in the 1830's and 1840's (Graph 3).

The data extant for the internal movement of grain between 1851 and 1866 supports the above indices. These shipments (Graph 2) reflect internal movements of grain on water and from 1861 on the two major railway lines of Hungary. Although they are likely to contain some double counting, they nonetheless confirm that only the early 1860's and then the late 1860's were exceptional for Hungarian grain production.

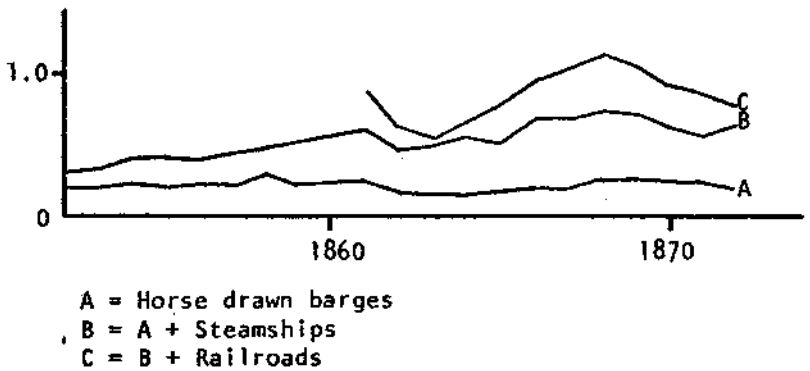

Figure 2 - Internal Shipments of Grain in Hungary, 1850-1872 (millions of tons)

Sources: Budapester Handels- und Gewerbekammer, *Beiträge zur Geschichte der Preise Ungarischer Landesproducte im neunzehnten Jahrundert etc.* (Budapest, 1873), pp. 261, 277, 281, 282. Donau-Dampfschiffahrt-Gesellschaft, *Geschäfts Bericht der Betriebs-Direction und Rechnungs- Abschluss für das Jahr.*

The analysis of extant trade statistics [21] is in agreement with the above results. The growth of exports cannot be measured peak to peak, but the averages in the two periods have to be compared. Grain exports fluctuated much more in the 1860's

[21] Hungarian trade statistics exist for 1831-1850 and 1867-1875.

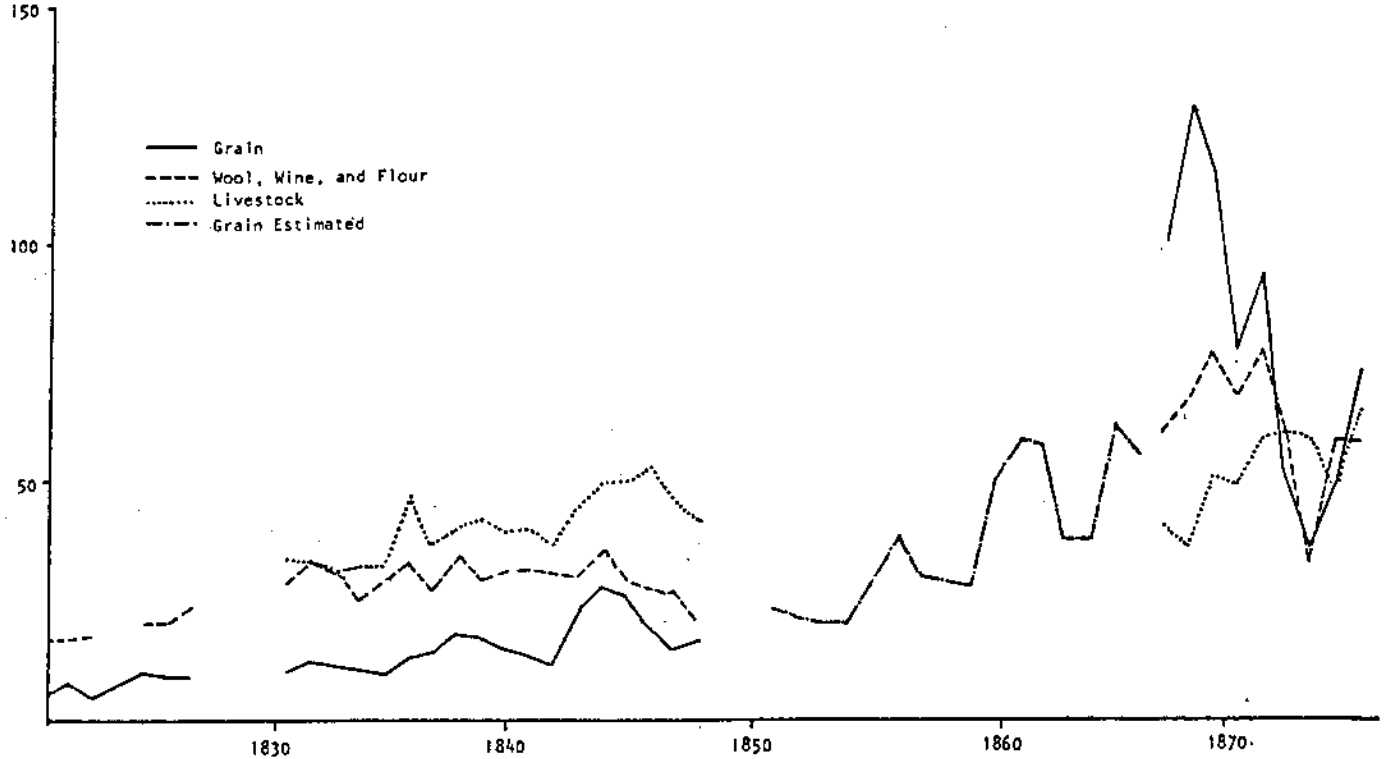

Figure 3 - Hungarian Agricultural Exports, 1821-1875 in 1868 prices (million florins)

than in the 1840's [22] because with improved transportation the surpluses of a good harvest might be expedited over a shorter time period after the spread of railroads than before. While the growth of grain exports from Hungary between 1833 and 1843 was 5.3%, in the subsequent decades, up to the eight-year average centring on 1871, the growth rate was only slightly, one might contend insignificantly, higher at 5.9%. At the same time the growth of exports of flour, wool, wine, and livestock decreased enough to cause the total exports of agricultural products, amounting to approximately 81% of all exports in 1845, to remain the same in the two periods.

TABLE 7

HUNGARY'S AGRICULTURAL EXPORTS IN 1868 PRICES

	Grain	% Growth	Agricultural *a)* products	% Growth	Total	% Growth
1831/35	10.2		60.2		70.4	
1839/47	17.1	5.3	74.8	2.2	91.9	2.7
1867/75	79.9	5.9	114.1	1.5	194.0	2.7

a) Wool, flour, wine, livestock.

Source: *Ausweise über den Handel von Oesterreich*, 1831-1847. *Hivatalos Statisztikai Közlemények*, 1867-1875.

TABLE 8

HUNGARIAN GRAIN AND FLOUR EXPORTS IN 1913 PRICES

Cycle	Trade Cycle	Million Kronen
1	1831-1834	21.0
2	1835-1841	27.7
3	1842-1847	40.7
4	1853-1858	56.8
5	1859-1863	100.6
6	1864-1873	186.6

[22] While in the 1830's the value of exports at the peak of the trade cycle was 1.8 times the value of exports at the nadir, in the 1840's it was 2.5, in the 1860's the ratio was 3.7.

TABLE 9

RATE OF GROWTH OF EXPORTS IN TABLE 10

Between Trade Cycles	% per Annum
1 and 2	5.2
2 and 3	6.1
3 and 4	3.1
3 and 5	5.6
3 and 6	6.6

An alternative way of calculating the growth of grain and flour trade in the 1850's and 1860's is to make use of the export estimates for 1851-1866 (Table 8). The advantages of this method are: 1) averages over the trade cycles can be calculated (otherwise a part of the 1864-1873 cycle is missing); 2) exports of the early 1860's can also be compared to the exports of the 1840's (otherwise only the late 1860's can be compared). This calculation yields similar results to the one obtained in Table 7 by using the actual values only: the rate of growth of exports did not change significantly in the 1850's and 1860's.

Table 9 shows that the growth attained in the 1840's exceeded the growth rate of the early 1860's, and was only slightly below the rate of the late 1860's, early 1870's. Consequently, the estimated export statistics substantiate our previous result: the grain trade does not appear to have accelerated post-1850.

Admittedly, grain exports started from a low level. In the early 1830's only about 50,000 metric tons of wheat were exported, compared to about three times that amount in the mid 1840's. This level was probably not surpassed until 1860. By 1867, however, wheat exports reached as much as 750,000 metric tons. (Yet occasionally exports could still fall back to the levels of the 1840's, as in 1873.) To be sure, at the onset of growth higher rates are easier to attain than subsequently. The import of our finding is not only that the two growth rates were approximately equal, but that in fact the so-called " baby

growth " could occur under the pre-reform regime, contrary to expectation.

After examining the pattern of Hungary's trade we turn to the history of prices to further substantiate our thesis. The increases in grain prices in the 1850's is often used as an indicator of the growth of demand, and the subsequent acceleration in the growth of production of cereal. However, the price increases, if any, could also have been brought about by decreases in supply which obviously would not be conducive to growth. No one has yet suggested that the high agricultural prices of 1846/47 signaled a boom of grain production. Why should the high prices of 1854-56, following a number of bad harvests, and coinciding with the mediocre harvests of 1854 and 1855, be a sign of a boom? On the contrary, the high prices merely confirm reports that the harvests were unfavourable in these years. The shortages of grain are evinced by the unusually high deficit in the grain trade of the monarchy between 1850 and 1855. The largest deficit was in 1854 coinciding with the apex of the price cycle.[23]

At any rate, the 1850's was a decade of world-wide inflation. Price increases were pronounced in Austria because the state financed its budget to a large extent by issuing paper money. In the absence of a price index in Austria the relative price of grain might be calculated by using the quantity of paper money in circulation. As Graph 4 and Table 10 show that the real price of wheat increased only during the critical years of 1854 and 1855. The trend of prices therefore also substantiates our findings: production would not have been influenced by changes of relative prices in Hungary.

Breaking up of pasture land and the concomitant decrease of the sheep population in the 1850's is often asserted to be a

[23] Reports to the Staathalterei warned of dangers to public order in consequence of the short supply of cereal. Hungarian National Archives, D 46 1855-10104.

symptom of the increase in grain cultivation. The number of sheep in Hungary prior to 1850 was estimated on the basis of wool exports. Exports were assumed to comprise 50% of the total wool production, an assumption which allows a wide margin of error. The ratio may have been reasonable when Schwartner first applied it in 1809, but thereafter exports surely grew faster than home consumption. Therefore, by the 1840's, exports had to comprise more than half of total wool output. Hence the estimate of 18 million sheep [24] in Hungary based on the above assumption must be considered only as an upper bound, well above reality.

Therefore, the 1840 estimate cannot be compared to the first complete census held in Hungary in 1851. The result of 10.7 million sheep was believed to have been 8-15% too low due to the reluctance of the population to have their wealth registered. Thus the 1851 count can be increased by 11% on that account, and another 30% [25] in order to compensate for the absence of lambs from the survey. The inaccuracy of the 1851 census stems also from the fact that its execution extended over a long period of time. The 1857 census was more reliable since the count was made according to the sheep population in existence on 31 October 1857. The results of these and subsequent censuses cannot be compared to the estimates for the 1840's, but can be compared to one another.

Table 11 shows that the sheep population remained constant until after 1870. If the sheep population had decreased as a consequence of the extension of grain culture by 1851 one would expect the reduction to have continued in the 1850's and 1860's. It seems implausible that the number of sheep would have been decimated by 1851 and then would have remained

---

[24] Benda, 1973, pp. 97, 193, 133.

[25] G. N. Schnabel, *Statistik der landwirtschaftliche Industrie Böhmens* (Prag: J. G. Calve, 1846), p. 151.

constant until after 1870. The sheep population may still have decreased slightly by 1851, but did not decrease due to the extension of grain culture.

Contemporaries pointed to a decrease of the sheep population "around 1845," [26] basing their judgement probably on wool exports. Compared to average wool exports between 1839 and 1845, Hungary's exports declined by 12% in 1845-1847. The decrease in the number of sheep shears imported into Hungary after 1845 suggests that the decline in exports was not accompanied by an increase in the home consumption of wool.

TABLE 10

INDEXES OF WHEAT PRICES, WAGES, AND PAPER MONEY IN CIRCULATION

	Wheat	Wages	Money
1840	100	100	100
1848	127	n.a.	133
1849	127	115	190
1850	124	196	233
1851	118	210	237
1852	144	200	204
1853	167	210	197
1854	275	230	230
1855	262	290	226
1856	206	256	228
1857	141	236	230
1858	133	240	221
1859	153	230	279
1860	188	220	284
1861	218	245	281
1862	188	250	255
1863	189	235	237

Sources: Wheat: *Beiträge zur Geschichte der Preise*. Wages: Blum, 1847, p. 188 and *Tafeln zur Statistik*. Money: *Statistische Tabellen zur Währungsfrage der Österreichisch-ungarischen Monarchie*, (Wein: Finanzministerium, 1892), pp. 123, 152, 162.

[26] KÁROLY GALGOCZI, *Magyarország-, A Szerb vajdaság Temesi Bánság Mezögazdasági statisticája* (Pest: 1855), p. 341.

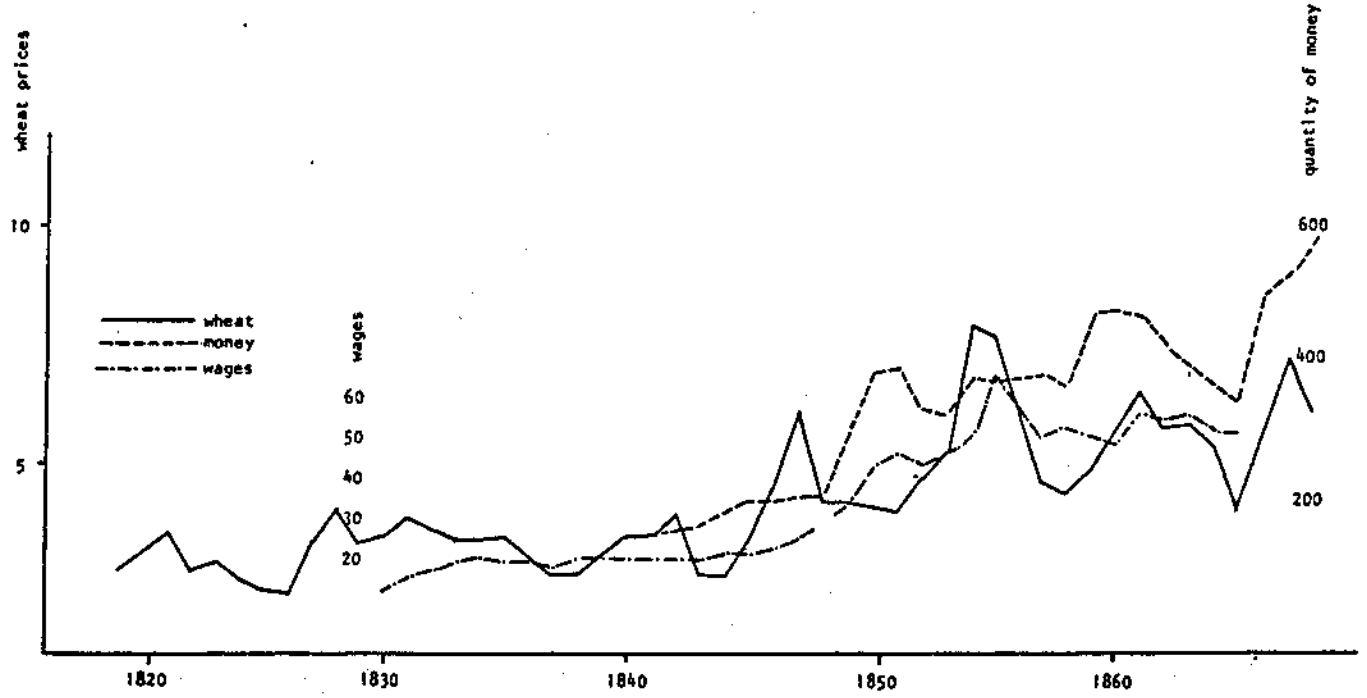

Figure 4 - Wheat Prices (Florin/n.ö. Metzen), Wages (Kreuzern C.M.), and Paper Money in Circulation in Austria-Hungary, 1819-1868 (millions florins)

TABLE 11

SHEEP AND LAMB POPULATION IN HUNGARY IN MILLIONS

	Sheep	Sheep and Lamb
1851	10.7	15.4
1857	11.3	14.7
1870		15.1
1880/84		10.5
1895		8.1
1911		8.5

The slight decline in the sheep population after 1845, was due to the adverse weather conditions and the bad harvests of the mid 1840's followed by significant losses during the revolution. [27] The fact that the decline did not continue in the 1850's suggests that grain production did not expand at the expense of animal husbandry.

We have tested the validity of our production estimates by comparisons with Hungary's trade pattern, with evidence on prices and the sheep population. The Monarchy's foreign trade position in the 1850's is the final substantiation of our thesis. The Monarchy's external grain trade was far less important than the interregional trade between Austria and Hungary. The availability of official statistics in the 1850's and 1860's makes it imperative nonetheless that we compare the indices we constructed above with the Monarchy's trade. The pattern that emerges supports our previous contentions. The Monarchy's balance of trade in grain and flour was negative in the early 1850's (Table 12) and did not exceed the levels of the 1840's until 1856-1859.

---

[27] GAZDASÁGI LAPOK, 1853, p. 642. *Jahres Bericht der Pest-Ofner Handels- und Gewerbekammer* (Pest: Landerer und Heckenast, 1851), pOp. 36, 37. The lack of feed also caused a 15% reduction of sheep in Bohemia according to G. N. SCHNABEL, *Tafeln Zur Statistik von Böhmen* (Prag: J. G. Calve, 1848). Table 26.

TABLE 12

THE MONARCHY'S BALANCE OF TRADE IN GRAIN AND FLOUR - MILLIONS OF 1913 KRONEN

1831-1838	2.6
1839-1846	7.0
1850-1855	—28.5
1856-1859	14.5

In fact, instead of having to explain the hitherto supposed boom of the 1850's one has to explain the large deficits of the Monarchy in the early 1850's. Surely, neither the revolution nor the emancipation of the peasantry could have caused dislocations of such large proportion. One would expect that the disequilibrium in the agricultural labour market might temporarily cause a reduction of output on the demesne. At the same time, the increased wealth of the peasantry (having been the recipient of a large wealth transfer) would induce them to consume a larger share of their own production. Hence the combined effect in the short run might be to reduce somewhat the marketed share of output. The weather conditions in the early 1850's were unfavourable; 1852 was dry, 1853 was wet.[28] 1850, 1854, 1855 also had below average harvests. 1851, 1856, 1857, and 1858 were the only years of the decade in which the harvest was characterized as good.[29] Yet the major shift in trade patterns occurred at the periphery of the Monarchy, cut off from other grain producing areas and therefore more dependent on foreign grain. In the early 1850's Galicia, Bukovina, Tirol and Italy accounted for a disproportionate share of the deficit. Consequently, the weather conditions offer only a partial explanation of the trade imbalance in the first half of this decade.

Galicia and Bukovina were exporters of wheat and importers of corn and rye in the 1840's. Their trade with the rest of

[28] DITZ, 1969, p. 29.

[29] *Beiträge zur Geschichte der Preise etc.*, 1873, p. LIV.

the Monarchy in grain was small. In the 1850's these provinces had to supplement their production by large purchases from abroad because the area was hard hit by failures of the potato crop since 1846.[30] In 1851 60-90% of the crop was destroyed and production decreased to about 0.2 million hectolitres. Not only was the potato grown for human consumption and for fodder but for the production of alcohol as well. Its importation was impracticable since the contiguous areas were also hard hit and the cost of transportation was relatively high. Corn was a good substitute for the potato and could be transported more cheaply. Therefore, imports of corn from Bessarabia and Moldavia increased considerably in the early 1850's.[31]

Contributing to Galicia's increased grain imports were the facts that Krakow was included in the customs area since 1847, and Prussian grain could enter the Monarchy duty free since 1854.[32] In 1854/55 this privilege was extended to grain entering from Russian Poland through Szczakowa, intended to relieve the shortages in the Krakow area. In 1855, during the Crimean War, Austrian troop concentrations in Galicia further exacerbated the temporary dependence on foreign grain.

The pattern of trade of the Italian provinces is difficult to delineate because of the frequent frontier changes. Between 1853 and 1857 Parma and Modena were included in the customs union.[33] These areas were rich in cereals,[34] but having some deficit areas, they also imported grain via the sea. Citizens of these principalities who owned land outside of the customs area could import their own produce duty free, but the movement of grain was recorded in the customs registers as usual. This

---

30 " Darstellung der Landwirtschaft und Montan Industrie des Herzogthums Bukowina mit vorzüglicher Rücksichtname auf die Jahre 1851 und 1852," *Mittheilungen aus dem Gebiet der Statistik*, Vol. III, No. 1, 1854, p. 34. It was first detected in 1842.

31 *Darstellung... Bukovina*, 1854, pp. 26, 33.

32 *Ausweise über den Handel von Österreich*, 1852, p. A-246.

33 *Ibid.*, 1851-1860, p. 473.

34 *Ibid.*, 1853, p. A-5.

privilege was especially important in Venice where in 1854 one third of the Monarchy's imports of rye and corn was brought in under this classification.[35] Between 1853 and 1855 grain exports from Lombardy, Venice, Modena and Parma were prohibited, adding to the diversion of trade.[36] Finally, Modena and Parma left the union in 1857 and Lombardy in 1859. These constantly changing boundaries caused the pronounced changes in the Italian trade patterns of this period.

The third grain deficit area of the Monarchy, Tirol and Vorarlberg had enjoyed the privilege of importing grain at half

TABLE 13

THE HABSBURG MONARCHY'S TRADE WITH THE WORLD BY PROVINCES-THOUSANDS OF TONS

	Tirol	Austria	Czech	Italy	Galicia	Hungary	Total
				Wheat Imports			
1840/47	9.2	0.6	1.7	2.5	1.8	0.8	16.5
1850/51	14.7	5.2	1.2	8.7	8.3	3.8	41.8
1852/55	11.2	4.4	3.6	9.4	33.2	15.1	77.1
1856/58	15.7	1.5	3.9	0.6	8.6	3.0	33.5
				Corn and Rye Imports			
1840/47	3.2	4.0	2.4	18.5	10.3	6.7	45.0
1850/51	8.1	4.1	2.1	23.6	20.2	12.1	70.2
1852/55	3.1	14.5	9.6	40.8	53.3	28.0	149.1
1856/58	3.8	7.5	7.0	10.5	21.3	8.0	58.5
				Wheat Exports			
1840/47		2.2	5.8	6.9	5.9	10.2	31.1
1850/51		0.5	3.5	7.2	0.1	1.5	12.7
1852/55		1.6	3.8	3.0	0.2	2.7	11.3
1856/58		3.5	8.4	34.5	2.3	12.8	61.5
				Corn and Rye Exports			
1840/47		2.7	12.4	9.9	0.9	7.1	33.0
1850/51		0.2	18.7	6.1	—	1.1	26.0
1852/55		2.4	28.2	4.0	0.4	4.1	39.3
1856/58		3.5	43.1	9.7	3.0	11.5	70.8

Source: Ausweise über den Handel von Österreich, 1840-1858. Estimated on the basis of borders crossed and data on transshipments whenever provided.

[35] *Ibid.*, 1854, p. 4.
[36] *Ibid.*, 1851-1860, p. 473.

TABLE 14

NET EXPORTS OF GRAIN FROM THE HABSBURG MONARCHY. THOUSANDS OF METRIC TONS

	Rye		Wheat	
	A	B	A	B
1840/47	— 12.0	+ 9.1	+ 14.6	+ 14.1
1850/51	— 44.2	+ 2.7	— 29.1	— 3.7
1852/55	—109.8	— 17.4	— 65.8	— 15.0
1856/58	+ 12.3	+ 35.6	+ 28.0	+ 16.0

A: The Whole Monarchy; B: The Austrian, Czech and Hungarian provinces only.

the duty prior to 1850. In 1852 this grain deficit area was enlarged by the inclusion of Liechtenstein in the customs union. When in 1854 the import of grain was allowed duty free from the Zollverein, it was primarily this area that benefited and took advantage of the free trade.

Thus, we have found that the unusually large grain deficits of the Monarchy in the early 1850's were due to a number of fortuitous events: the enlargement of the customs union to include Krakow, Liechtenstein, Parma and, Modena, the concentration of troops in grain deficit areas such as Transylvania and Galicia, and the failure of the potato crop in Galicia and Bukovina. Subtracting the quantities destined for these peripheral areas one finds that (Table 14) the fluctuations of the Monarchy's trade in the 1850's were not as pronounced as the raw data suggest. To be sure, the adverse weather and the dislocations of the revolution's aftermath, contributed to the deficits as well. By 1856/58 the pattern returned to normal without any signs of a boom.

Thus, the Monarchy's external trade provides further corroborating evidence to our previous conclusion that agricultural production did not accelerate after the mid-century reforms. In the Austrian half of the Monarchy, per capita production was actually declining. In Hungary, the per capita growth rate was found to be about equal before and after 1850. Hence, the eco-

nomic importance of the reforms is seriously questioned: they do not appear to have been a sufficient or necessary condition for a rapid transformation of the countryside. The implication is that the gains in efficiency due to the emancipation of the peasantry and the enlargement of the customs area were not of the order of magnitude to induce an acceleration in production in the 1850's and 1860's.

Rather, we have shown that the increased demand for Hungarian grain in Austria, caused by the beginning of industrialization in the 1820's, coincided with the inception of modernization of Hungary's agriculture. The growth of this sector was contingent on exports to Vienna, which in turn depended on the pace of industrialization in Austria. Though primarily macroeconomic data were considered, evidence at the manorial level also points to an increasingly market oriented agriculture and an increase in the rate of growth after the mid 1820's.[37] The mid-century reforms had significant ramifications in the field of law and in the social structure but they did not inaugurate a regime of agricultural development in Hungary or in Austria that differed significantly from the one in the pre-reform era.

---

[37] GYÖRGY SZABAD, *A tatai és Gesztesi Eszterházy-Uradalom Áttérése a Robotrendszerröl a Tökés Gazdálkodásra*, (Budapest: Akadémiai Kiadó, 1957), p. 5.