ECONOMIC STRUCTURAL CHANGES AND RAILWAY CONSTRUCTION IN LATE 19TH CENTURY SOUTHERN ITALY

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The late 19th century was a period of great structural changes in Italy. In 1861, political unification was achieved. After unification, in term of economic development, the inequality between Northern and Southern has widened. In economic history, the regional inequality in Italy had been regarded as important. Much of the existing literature investigated the regional inequality problem by only dividing the Italy into the Northern and Southern part; however, this paper considers the regional inequality problem by further dividing the Southern Italy into two regions. In fact, there exist clear differences in each regions of the Southern Italy, especially between the Mediterranean coast and the Adriatic coast. The coast area along the Adriatic sea has tight relation with the Northern Italy because of the railway network, which brought economic growth to this area. Bari was such a city that benefited from the railways and it became the base of commercial circulation. From this case, we can see how economic growth caused the economic structural change.

1. Introduction

Underdevelopment in the European Integration is one of most interesting phenomenon for economic historians. Regarding this phenomenon, Southern Italy is the area that economic historians have studied, and structural backwardness has been pointed out as the main reason for Southern Italy’s underdevelopment. Many studies about colonized Asian countries have showed that the relation with the European developed countries strengthened underdevelopment of Asian countries. They have also made clear that the social and economical heterogeneity of European and Asian countries provoked economic integration between Europe and Asia and this economic integration accelerated the heterogeneity between Europe and Asia. Therefore, in order to know the nature of Southern Italy’s underdevelopment we will examine in this paper what influence had the construction of the railroad network between North and South Italy on the late 19th century Southern Italy economy.

In Italy, the economic inequality between North and South is a very important problem. This inequality is treated as what is called the “North South problem”, and many former researchers focused on gap between the two areas. Moreover, in the economic history, the North-South gap is believed to arise from the time when Italy was a Kingdom. Abundant research on this issue exists. In many cases, disparities are compared between the Northern advanced triangle area and the whole Southern Italy. According many studies, Southern Italy is merely regarded as a simple substance in this case. However, in the second half of the 19th century, the degree of development in Southern Italy was different for each area. We can see the development, especially in Bari which is a center city on Adriatic Sea coast. Bari had been developing from unification in concentration of population. Although this was pointed out by the previous work, we could not find any literature regarding this issue. This is because the issue has not been investigated yet from a statistical point of view.

In this paper, the analysis is conducted from the point of view of production and circula-
tion, paying attention to the local differences inside Southern Italy, especially the difference between East and West. In order to see the changes caused by the political unification of 1861, the following two points are considered. First, we reveal how the railroad had influenced the regional development of the Adriatic coast, and second, we focus on the relationship between Italy each area and Southern Italy cities.

2. Perceptions regarding the Southern Italy

In the history of the Italian economy, the widening gap after unification was considered a big problem. There are many kinds of perceptions for "Why did the South lagged behind?". Among them, the stagnation of productivity and industrial development in the Southern part has been pointed out. Regarding the industrialization and industrial development in the Southern part of Italy there are many studies. We summarize below previous studies in details. We believe that two perceptions are visible. One is the perception that "there is a problem with the Southern Italy." Gramsci(1975) said that by avoiding land reform in the period of unification, South made its economy stagnant. Instead Southern Italy became the market for industrial products and supplied agricultural products, while capital and labor went to the industrial Northern.1) The study that followed it2) found that, in the North, capital accumulation from tax revenues caused industrial development. Capital accumulation from agriculture was progressing in many areas that were linked by railways.

Another was the perception that "there is no force pulling the demand of the South to the North". Gerchenkron(1962) said that the Italian economy grew rapidly at the end of the 19th century.3) It has been said that, for 20 years after unification, steel-related industry had been protected and the growth of the industry remained low, machinery and other industries remained undeveloped. It is believed that the incentives to increase the supply amount of the South and the productivity did not work, because the consumer market in Northern was small in the 19th century. Thus, it is thought that the amount of circulation between the North and South was not so big.4)

The concept for such approaches in recent years can be seen from the distribution surface. While research from the supply side has been accumulated, the distribution process is said to be still unsolved. Focusing on the distribution across regions, Scran(1997) did the analysis of distribution of railways in the North. He called it North-South railway. Because there were different charging methods of cargo transportation between the railway companies, the North-South traffic was hindered.5)

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1) Gramsci, Antonio (1975), Il Risorgimento, Roma
2) Sereni, E (1966), Capitalismo e mercato, Editori Riuniti, Roma
3) Alexander Gerschenkron (1962) 'Note on the rate of industrial growth in Italy 1881-1913' Cambridge London
4) Vera Zanini (1984), 'Ferrovie e integrazione' pp.1638-1643
3. The railroad construction

Recent research in economic history shows that railroad construction did not have such a big influence on macro economic growth until the 1880s. Since construction resources could not be supplied in Italy to construct railroads, industry had not developed in Southern Italy, and there was not sufficient traffic to be secured to the network of railroads. Moreover, as macro analysis progressed, demand in Northern Italy is said to have had little influence for circulation.

3.1 Railroad construction in the Southern Italy and Adriatic Sea coast

It is generally said that the Italian government aimed that the whole country have a network of railroads from immediately after unification, and the railroad construction in Southern Italy was the main symbol of unification of Italy. Figure 1 shows the development of railroad construction in Italy.

![Figure 1 Railway length in Italy](url)

**Figure 1** Railway length in Italy

Sources: Sommario di statistiche storiche italiane

Railway construction increased from 1861 to the end of the 19th century. A small-scale network of railroad was constructed in Southern Italy in 1861 or before. It centered on Naples areas only. In 1861, the total length was 184 km and occupied about 7% of the total network of railroads in the whole Italy. A railroad of 4022 km was built by 1886, and this formed about 35% of the total network of railroads in the whole Italy.

Table 1 shows the North-South traffic in 1877. This is not in money terms, but we can see that there was a lot of agricultural traffic from South to North.

The railroad construction in Southern Italy progressed quickly, because the Italian government wanted to make a whole country network of railroads. In addition, the government attached greater importance to making the railways the symbol of unification, rather than the economic effect by building infrastructure.\textsuperscript{7} However, there were many differences between North and South. For example, Northern Italy was an area where the political architecture was based on the city state from medieval times, and each economic relation had been also deep. On the other hand, in Southern Italy, Kingdom of Sicily had relations to Spain and France. The Kingdom of Sicily regarded blood relationship with overseas important. Thus, the economic relationship between Northern and Southern part of Italy was not so large before unification.

After unification, North-South railroad was built. However, in the field of economic history, the effect of the Southern Italy railroad construction is considered not to have been so large. This is because of two reasons. First, there was little supply of resources in Italy for railroad construction, and thus the backward linkage effect was thin. In addition, many railroad companies were mostly made of foreign capital. Second, it is believed that the railroad which connected North and South was not able to secure sufficient traffic. From the estimation of the economic growth of Italy,\textsuperscript{8} it is after the 1890s that the demand had expanded. Before 1890, the demand in the Northern part was not so large. However, we think that North-South railroad effect is not so little for the Southern economy, even if the demand of Northern Italy was small. This point is the topic of this paper, and we will discuss this later. Then, we will explain how railroad construction progressed on the Adriatic Sea coast. Although, since the beginning, it

\begin{table}[h]
\centering
\caption{North-South traffic in 1877 (tonnes)}
\begin{tabular}{lrr}
\hline
  & North to South & South to North \\
\hline
Grain and rice & 25,000 & Wine & 50,000 \\
Wood for construction & 11,500 & Cereals & 70,000 \\
Textiles & 7,300 & Wood & 50,000 \\
Films & 6,300 & Sleepers & 20,000 \\
Colonial goods & 4,400 & Dyestuffs & 12,500 \\
Metals & 4,200 & Fresh fruits and vegetables & 11,700 \\
Minerals & 4,000 & Rags & 10,000 \\
Various manufactures & 3,900 & Oil & 4,000 \\
Machines & 2,200 & & \\
Butter and cheese & 2,000 & & \\
\hline
Total & 70,800 & 228,200 & \\
\hline
\end{tabular}
\end{table}

Sources: A Schram (1997), p.138

\textsuperscript{7} Albert Schram (1997), op. cit

was decided to build a North-South railroad, there was an argument if it should be built on the Mediterranean coast or the Adriatic Sea coast. In the end, it was decided to be on the Adriatic Sea coast because of the ease of building.\textsuperscript{9} The North-South railroad was opened for traffic at the beginning of 1865. On other side, on the Mediterranean coast, a whole-line was opened to traffic in the 20th century. Firstly, the infrastructure effect of the North-South railroad was not regarded as important. However, we think that this early railroad construction affected the Adriatic Sea coast's economy, even if the first constructional purpose was different.

Below, we briefly explain about the capital of railway construction. The construction capital of the Adriatic Sea coast railroad was not only based on the Italian government capital, but also on overseas capital. Most of it was provided by French companies.\textsuperscript{10} When the railroad company on the Adriatic Sea coast reorganized into Rete Adriatica by the Railways Act revision in 1886, overseas capital also invested in it. The management range became large, and Rete Adriatica covered the east half of the Italian peninsula. This network had taken in the Northern part route area was profitable, and it promoted the railroad construction of the Adriatic Sea coast greatly. After unification the market price of the corporate bond which was published for railroad construction fell. And because of the influence by collapse of the market price of the Italy government bond, the management of the company deteriorated.

Therefore, between 1861 and 1865, the Italian government divided the whole country into four areas, and one railroad company was established, at the time, in each area. Southern Italy had two railroad companies in it. One is the Southern Italy railroad company (Italiana delle Ferrovie Meridionali) on the Adriatic Sea coast. Another is the Romana railroad companies passing through the Mediterranean coast. The Southern Italy railroad company was taking charge of the route from Bologna to Otranto which was South of the Adriatic Sea coast, and the routes between Naples to Foggia and Bari to Taranto. On the other hand, the Romana railroad company also took charge on the route of the Mediterranean coast from Ligurian district to Naples.

3.2 Evaluation of the railway

There are many studies on the evaluation of the railroad construction in the second half of the 19th century. For example, Fenoaltea(1984) is considering the consequences that the railroad had on the industry.\textsuperscript{11} He measured the amount of consumption of industrial product in railroad construction, and the size of the influence of investment capital on transportation. Regarding the inter-industrial relationship of the railroad, especially, he made reference to the backward linkage. His analysis focuses on the transition of the production of railroad industry. He supposes that the inter-industrial relationship effect of the railroad was very small until the 1880s, and it became large in the 1890s when the steel industry and machine business developed completely in Italy.

On the other hand, Schram(1997) analyzed the effect, not only from a production side, but

\textsuperscript{9} It was thought that the Mediterranean coast had a hard base rock, and required time for expansion of a railroad.

\textsuperscript{10} Albert Schram (1997), op. cit

\textsuperscript{11} Fenoaltea Stefano (1984), 'Le costruzioni ferroviarie in Italia 1861-1913' Rivista di storia Economica, 1, pp.61-87.
a circulation side. He considered the influence of the railroad to the Southern Italy economy paying attention to the rail traffic between North and South. He is the one who analyzed the amount of rail traffic between North and South from the data of the House Report Document of 1881, from Northern part railroad company (Upper Italy Railway Company), and from published statistical materials. The contents of North-and-South transportation and the total amount, which were not clear, were clarified by him.

He compared the amount of traffic between North-South parts with the amount of import by railway, and measured the amount of rail traffic between Genoa and Venezia. Although North-South traffic is one-third of the traffic in the Northern part, he said that there was traffic which was equal to the amount of rail traffic-oriented of each country. Moreover, he also clarified the items of North-South transportation by weight. He said that transportation varied depending on the harvest time of agricultural products.

He also pointed out a problem of the rail traffic between North and South. Among railroad companies, the charging systems of the cargo was different, thus hindering North-South transportation. This was because transshipment of cargo was needed for a different charging system.

He suggested that it was a failure of the railroad policy of the country of those days, and if it was corrected, North-South transportation would probably became more active. However, in literature, Southern Italy was thought as an economic unit, and it was not mentioned what kind of structural change occurred inside of Southern Italy after unification.

4. Agricultural output and distribution channel maintenance

Also in old literature, reference has been made to the regional structure and the importance of circulation. However, although there is lots of research regarding production, there is no research regarding the North-South circulation.

Two reasons are considered to be greatly related to this. One is the point of not having been equipped fully with statistical materials in the 19th century, in order to grasp all the circulation structures. Therefore, it was difficult to follow the actual flow. Since the 19th century was before the “takeoff term”, it is considered that there was not much circulation between North and South. Here, we investigate about the agricultural-products production which was providing the staple goods of those days. We consider to the local differences in the Southern part by seeing the correlation of price, rail traffic, and agricultural price and production.

4.1 Agricultural production

During the unification, most of production in Italy was agricultural, and it is often said that Italy was “the pure and simple agricultural country”. According to old GDP estimation, the industrial sector was 18.4%, while the agricultural sector occupied 46.1% of GDP in 1861.13

Table2 shows the main exports of Italy in 1866. As it can be seen from Table2, in the Italian

12) Albert Schrau (1997), op. cit
exports, raw silk and schappe accounted for 40%. Then, agricultural products accounted for approximately 34%. We found that the export of agricultural products was very important at that time. In the agricultural output of Italy of those days, the local production of wheat and a market crops was the main product for export.

Figure 2 and 3 show the output of cereals and olive oil. Wheat and olive oil were made in the Adriatic Sea area, along the shore and in the Mediterranean area along the shore. Cereal production was done on the plains (Northern Naples, Basilicata state, and the State of Apulia).

Regarding olives, the production was done in a specific areas, like the oasis, which were numerous in the Southern part. In the Southern part of those days, there was not enough irrigation infrastructure, and malaria was raging in the lowlands portion.

### Table 2: Main exports in Italy, 1886

<table>
<thead>
<tr>
<th>Exports</th>
<th>Volume (tons)</th>
<th>Value (million lire)</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw silk and schappe</td>
<td>6,412</td>
<td>303</td>
<td>39.90%</td>
</tr>
<tr>
<td>Wine</td>
<td>2,566,790</td>
<td>88</td>
<td>11.60%</td>
</tr>
<tr>
<td>Olive oil</td>
<td>64,801</td>
<td>78</td>
<td>10.30%</td>
</tr>
<tr>
<td>Chemical products</td>
<td>38</td>
<td>5</td>
<td>5.00%</td>
</tr>
<tr>
<td>Raw hides</td>
<td>18,155</td>
<td>35</td>
<td>4.70%</td>
</tr>
<tr>
<td>Eggs</td>
<td>23,403</td>
<td>29</td>
<td>3.90%</td>
</tr>
<tr>
<td>Fruit and vegetables</td>
<td>49,310</td>
<td>27</td>
<td>3.50%</td>
</tr>
<tr>
<td>Raw hemp</td>
<td>33,125</td>
<td>27</td>
<td>3.50%</td>
</tr>
<tr>
<td>Sulphur</td>
<td>300,881</td>
<td>25</td>
<td>3.30%</td>
</tr>
<tr>
<td>Citrus fruit</td>
<td>124,879</td>
<td>25</td>
<td>3.30%</td>
</tr>
<tr>
<td>Rice</td>
<td>7,013</td>
<td>24</td>
<td>3.20%</td>
</tr>
<tr>
<td>Silk products</td>
<td></td>
<td>17</td>
<td>2.20%</td>
</tr>
<tr>
<td>Marbles</td>
<td>108,200</td>
<td>17</td>
<td>2.20%</td>
</tr>
<tr>
<td>Metallic minerals</td>
<td>295,783</td>
<td>10</td>
<td>1.30%</td>
</tr>
<tr>
<td>Hats</td>
<td>3,991</td>
<td>7</td>
<td>0.90%</td>
</tr>
<tr>
<td>Cheese</td>
<td>3,901</td>
<td>7</td>
<td>0.90%</td>
</tr>
<tr>
<td>Pasta</td>
<td>41,679</td>
<td>2</td>
<td>0.30%</td>
</tr>
<tr>
<td>Flour</td>
<td>5,327</td>
<td>2</td>
<td>0.20%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>758</td>
<td>100.00%</td>
</tr>
<tr>
<td>Total exports</td>
<td></td>
<td>1,028</td>
<td></td>
</tr>
</tbody>
</table>

Source: Vera(2003), pp.118-119
4.2 Agricultural price correlation of area

In this subsection, we discuss the geographic pricing correlation of the agricultural price of Italy’s each area, based on Apulia and Campania district. These are data for the monthly wheat price from 1862 to 1876. Figure 4 shows the change of the correlation coefficient based on Southern Italy Catanzaro. Figure 5 shows the output of cereals in Italy from 1861 to 1885. By looking at Figure 4, we can see that variation in the correlation coefficient is large through the whole period. However, the tendency of correlation absence or negative correlation is seen for 1866 and 1871. The war with Austria occurred in 1866, and the influence of the war may be a factor.
Figure 4  Regional correlation of wheat price (three-year moving average)
Source: Annuaro Statistico, 1878

Figure 5  Output of cereal in Italy
Source: Annuaro Statistico, 1887-1888
In Figure 6, the monthly price of the 1st class wheat in the whole country in 1887 is used. Figure 6 graphs the change of the wheat prices of each place. Milano, Padova, and Genova make the central part, Napoli, Bari, and Catanzaro make the Southern part area, and Panna, Firenze, and Roma make the Northern part.

We observe that the price in Bari resembles the tendency of the overall price fluctuation. However, between the Northern part cities and Bari, there is a difference about declining time of price. This may be due to the difference between a mass consumption place and a producing district. The actually harvested wheat circulates from August. So, in a mass consumption place, there may be a stock of wheat which was harvested last year. Therefore, before new wheat circulates, the spot price of the old wheat may begin to fall. In addition, the influence of the speculative transactions in the market of those days is also considered.

Source: Annuaro Statistico, 1887-1888
Figure 7 shows the regional correlation of the wheat price of difference between other cities and Bari and between other cities and Naples. All marks in Figure 7 represents the difference between the correlation of the wheat price. Here, we compare the correlation coefficient between Bari and one place with the correlation coefficient between Napoli and one place. Circle sign shows that the correlation coefficient of Bari is higher by 1.5 than that of Napoli. Square sign shows that the correlation coefficient of Napoli is higher by 1.5 than that of Bari. Triangle sign shows that there is not so much correlation coefficient gap between Bari and Napoli. Based on this figure, we consider that there is a strong connection between the Northern part major cities and Bari.

14) We measure the correlation of wheat price of each area from Figure 6.
5. East-West comparison in rail traffic

The total amount of transportation of the Romane railroad company and each Southern part railroad company is shown below in Figures 8 and 9. These figures show the passenger traffic of each railroad companies, and the cargo volume. Although the Adriatic Sea side has a little share, it turns out that the total volume of both banks is changing by the same grade. Moreover, Southern (South of Bologna) traffic is about 60% of the Northern part total.

![Figure 8](image1.png)  
Figure 8  The number of passengers (000s)  
Source: Annuaro Statistico, 1887-1888

![Figure 9](image2.png)  
Figure 9  Traffic carges (thousand tonn)  
Source: Annuaro Statistico, 1887-1888
Figure 10 shows that traffic output of Italian railway companies. Moreover, in Rete Romane, although the route to Genoa was opened in 1874, it turns out that the increasing rate is going up in passengers, and cargo volume was increasing from 1878.

However, when we see the output in 1867, both are showing big deviations. Looking at Figure 10, Meridionale line’s output is decreasing. In this period the production of agriculture decrease due to bad harvest of olive and cereals. In the Adriatic railway, there is the possibility of agricultural products being greater than that of the Mediterranean railway.

Regarding rail transport, East and West of Southern Italy were compared so far. Although, there was the possibility that there was a difference of the impact of agricultural products for each year, the growth rate of transport volume in the East and West was very similar. However, while there are some large cities like Napoli, the capital city of Roma on the Mediterranean coast, and medium sized cities on the coast of the Adriatic such as Bari are only slightly present. We inferred from this that, on the Adriatic coast, the external demand was greater than the internal demand. Therefore, this point suggests that a more detailed analysis is needed.

6. Conclusion

There were differences between each region in Southern Italy, and there was a clear difference between the side of the Mediterranean and the Adriatic Sea. In this paper, we looked at the Southern Italy from the point of growth of rail transport and the correlations of wheat price. In addition, we supposed that the Adriatic region had a stronger relationship with North-
Moreover, by seeing the production volume, the Adriatic local agriculture had grown with the external relationship. The difference between the systems, such as land system, has been said to cause the structural lag in Southern Italy. However, we do not consider that economic growth was hindered by the structural delay of Southern Italy, such as the difference in the institutional structure of land. Indeed, more research is needed on the structure of agriculture to make sure whether economic growth and the expansion of production volume promoted the change of old structure. Some studies have also been pointed out these issues. However, the structural changes have led to the formation of the base of commercial circulation. For example, after unification we can see the rapid growth of cities such as Bari.

Industrialization was not only about economic development. Regarding this point, we think that the binding of the North and South Italy by railways at the end of the 19th century brought economic growth in Southern Italy.

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