

»Finland 2000» Population Forecast

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General

»Finland 2000»¹ is a population forecast which is based on the development prospects and localization tendencies of our industries and covers the entire country and its different statistical regions. The incentives for making this forecast were the needs of regional planning. In practice, regional planning necessitated the support of knowledge more thorough than previously available concerning our country's population development possibilities in the future. Before the preparation of this forecast, population forecasts covering the entire country were customarily based on fertility, mortality and migration factors. When the expected marked deviance between the development prospects of the different industries and on the other hand the changes in our country's regional structure were known, one could no longer depend on so-called demographic population forecasts, especially not for long-range predictions. It was absolutely necessary, considering the needs of regional planning, to formulate some sort of picture, in advance, of thirty years of development, because investments made in land use are long-ranged.

When examining the »Finland 2000» population forecast, one should bear in mind certain aspects which limit its probability. First of all there were considerable technical difficulties with

the preparation of the forecast because new methods for the work had to be developed as there was a lack of previous experience. A forecast drawn up in this manner is in many ways experimental by nature. Secondly, the statistics on hand limited the choice of what to base the forecast on. Here in Finland we do not have very manifold statistics available on the different parts of the country, on the so-called statistical regions, which in itself especially limits the discussion of regional questions. Third, it should be emphasized that this is by nature a so-called bystander's forecast. The forecast is based entirely on the prediction of expected developments without trying in any way to affect the course of events. The purpose was then not to obtain an endeavoured population estimate applicable as is as a basis for planning, but to map out the possibilities to which population development in Finland might lead in the long run.

The methods used in drawing up the forecast

The forecast was prepared by the Central Federation for Regional Planning, which is an organization founded and maintained by different regional planning associations as a coordinating organ. The practical side of the work was divided by founding two special work teams (an industry committee and a localization committee), of which the

¹ Suomi vuonna 2000. Ed. Kalevi Hakkarainen, Keuruu 1970.

first committee's task was to clarify the development prospects of different industries in terms of the entire country and to thereby arrive at labor input figures. The second committee's main task was to clarify questions concerning the geographical distribution of the various industries, so-called localization factors, so as to arrive at a foundation for determining the geographical distribution of the development of the different industries.

Several dozen experts from different fields participated in the preparation of the forecast. However, the scantiness of the available monetary appropriations considerably limited the functioning of the group during the entire project. Cooperation between the two committees did not, perhaps, become sufficiently close in practice, instead a certain detachedness was apparent.

The development of the entire country

The industry committee had to confirm right at the beginning that it was not possible to realistically determine the development prospects of Finland's national economy 30 years in advance. The possibilities for projection weaken substantially in the case of economic questions when the prediction time is lengthened. The committee tried to solve these problems by outlining development prospects with four different alternatives.

Without going further into the job of forecasting itself let us mention the development possibilities of Finland's national product examined in the forecast by using four different alternatives. In the slowest alternative economic growth remains at about two percent a year, and in the strongest, growth remains at the relatively high post-war level of 4.9 percent a year. As Finland's national product in 1968 was about 14 billion marks (at the 1954 monetary rate), the stronger-growth alternative ended up with the national product in the year 2000 being 68 billion marks,

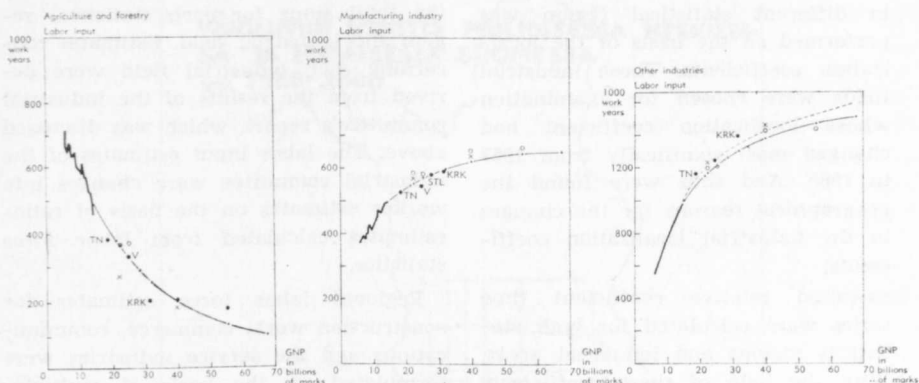
and in the slower-growth alternative the national product would be 32 billion marks.

According to the calculations of the committee it seems that balance between supply and demand of the labor force can best be maintained when economic growth develops within the above-mentioned extremes, so that the national product would, in the year 2000, be about 40—55 billion marks.

In the examination of the developments within the different industries the production and the productivity development estimates of sixteen different groups were defined and the development prospects of the labor input were thus arrived at.

As a whole it can be noted that, as expected, industrial structure of the country is undergoing a substantial change. In 1964 544 000 work years were completed in farming and forestry. In the year 2000 the labor input of farming and forestry would be, according to the fastest-growth alternative, only about 100 000 and even in the slowest-growth alternative it would only be about 275 000 work years. The average yearly drop in the labor force would, according to the former alternative, be about 4.5 percent a year and in the latter alternative about 1.9 percent a year. The processing industries, manufacturing and construction work whose total input in 1964 was 679 000 work years would, according to the forecast, increase the labor input relatively little, that is to 818 000—848 000 man years by the year 2000. The greatest increase would take place in the metal industry and in the sphere of electric, gas and plumbing works. On the other hand, the labor input of construction activity would remain at about its present level. Opportunities for work would grow relatively fastest in the service industry, commerce, communications and personal and community services. In 1964 the labor input in these industries was about 708 000 work years. According to the extreme alternatives there would be 1 311 000 work years in the year 2000 according to the fastest-

Figure 1. The structure of production as a function of the national product (in 1 000 millions of marks).



growth model and 1 078 000 work years according to the slowest-growth alternative. Labor input would increase most strongly in the area of public and private services and commerce (Figure 1).

Regional development

The possibilities for dividing the entire country's development into information based on each statistical region was limited by the statistical material available. Sufficient basic statistical material needed in the statistical region treatment was available only on the number of workers in the different industries. The usage of worker amounts, in itself, as the basic starting point limited this examination.

As for agriculture the estimate for future regional development was based on the estimate for the development of self-sufficiency in the supply and demand of domestic farm products and the future regional development of acreage and demand for work. Four alternative

models concerning these questions were drawn up. People working in forestry were calculated to be distributed in the future among the different statistical regions entirely in relation to the growth of the forests.

Factors concerning the localization of industry were examined in as many ways as possible, because industry has, understandably, a central position in the process of economic growth. Projects completed in order to obtain a statistical-region-based distribution estimate of the industrial labor force are the following:

- A graphical examination of the historical development both industrial field- and statistical region-wise and in addition, calculations of the corresponding growth coefficient for the years 1957—1965,
- a calculation for each industrial field for the years 1957 and 1965 of the so-called distribution coefficient (localization coefficient), which shows numerically the tendency of different industrial fields to distribute themselves evenly or unevenly, and also

the trend of changes in distribution tendencies,

- an examination of changes that have taken place in the position of industry in different statistical region was performed on the basis of the localization coefficients. Those industrial fields were chosen for examination whose localization coefficient had changed most significantly from 1957 to 1965. And thus were found the geographical reasons for the changes in the industrial localization coefficients,
 - so-called relative coefficient time series were calculated for both statistical regions and industrial areas. With the help of these coefficients the relative development in different statistical regions of the various industrial fields was clarified in relation to the entire country,
 - to clarify the distribution of domestic industrial markets, area-based profitability coefficients were calculated. These coefficients measured the profitability of each area as a site for market-gear industry,
 - area-based export facility coefficients were calculated. These coefficients were found on the basis of transport distances to ports. In the calculation sea transportation was also taken into account. Finland was divided into four zones on the basis of the facility coefficients and the manner in which different types of industries were distributed in these zones was made clear. This part of the report is limited to trade with the West,
 - an attempt was made to define the importance for each industrial field of locating in an area advantageous to foreign trade,
 - special facility coefficients were calculated for the wood processing industry, which showed how the industry is located in relation to transportation and raw material factors.
- Estimates of the structure of the industrial labor force were made for each area on the basis of the above-mentioned relative coefficient time series. As the

purpose was to predict the actual number of workers, mere relative coefficients were not sufficient for this purpose, instead it was necessary to predict the total sums for each statistical region and industrial field. Estimates concerning each industrial field were derived from the results of the industrial committee's report, which was discussed above. The labor input estimates of the industrial committee were changes into worker estimates on the basis of ratio-estimates calculated from labor force statistics.

Regional labor force estimates for construction work, commerce, communications and the service industries were formulated on the basis of multiple-factor models. The explanatory variables chosen were population and industrial worker amounts, land areas, profitability coefficients (a quantity showing marketing potential) degree of population density and distances from national centers.

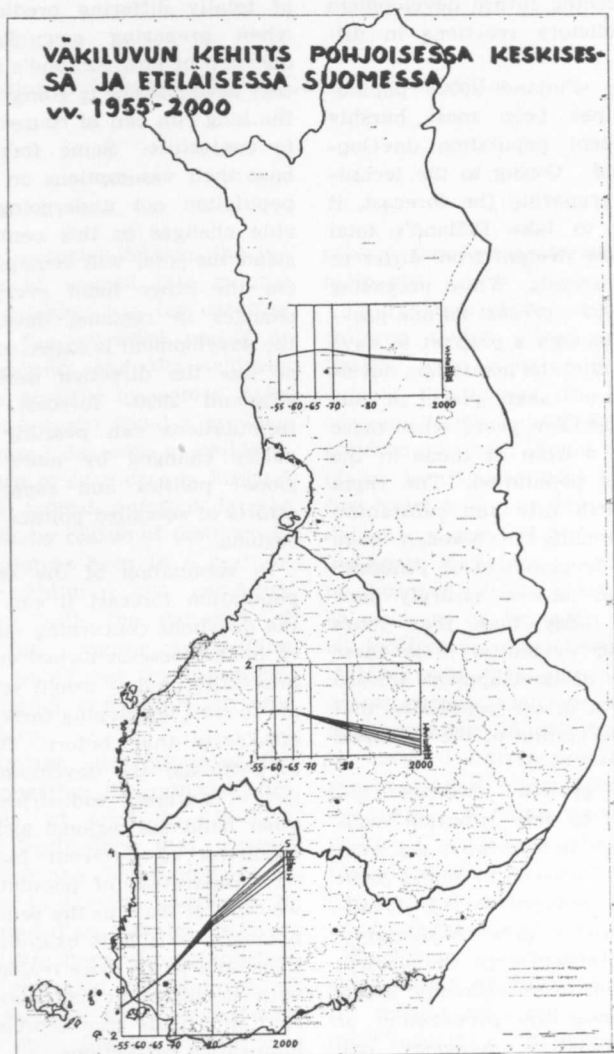
On the basis of the completed reports the population distribution in the three main areas of the nation should change so that Northern Finland would lose about 100 000 inhabitants, Central Finland would lose about 300 000 with Southern Finland gaining over one million inhabitants by the year 2000.

The results of the forecast were published as mathematical calculations in the form of five different alternatives for the future population development of the different statistical regions by industrial fields in the year 1980 and 2000 (Figure 2).

Conclusions

The actual preparation of »Finland 2000» took place in the years 1967—1969, although the results were not widely published until 1970. Already while the work was under progress, it was evident that part of the basic material was out-of-date. Despite this it was deemed expedient to complete the forecast, because the aging of in-

Figure 2. The development of the population in Northern, Central and Southern Finland in the years 1955—2000.



formation is, in any case, always a known fact.

The publication of the forecast brought about quite a bit of general discussion, especially in the Finnish press. The newspapers handled the results of the forecast in two ways. Some just acknowledged the results, other took a stand on the acceptability of the development shown in the forecast. Newspapers especially in Finland's so-

called developing areas, i.e. in the northern parts of the country, emphasized the harmfulness of the development predicted by the forecast. And indeed, the results of the forecast did show that the future population development would decline quite substantially in these areas.

This kind of discussion was much needed in Finland, and discussion concerning the development of regional politics in our country should still be

continued because the state has not yet laid out definite regional goals for development. This is also one reason why forecasts concerning future development receive contradictory reactions in different areas.

In fact, the »Finland 2000» population forecast has been most harshly treated by recent population development in Finland. Owing to the techniques used in preparing the forecast, it was necessary to take Finland's total population figure straight from different demographic forecasts. While preparing the »Finland 2000» forecast no one proved to be good enough a prophet to have been able to predict the population development that has taken place in our country in the past few years, when there has even been a drop at times in the entire country's population. The rapid drop in the birth rate and substantial emigration especially to Sweden have put the future development of Finland's total population at an entirely new starting point today than four years ago. And quite evidently, it is these possible trends of development toward a smaller growth in the population that are weakening the results of the »Finland 2000» forecast.

The earlier growth tendency has now stopped. If the situation continues to develop in this way, the total population figure used in »Finland 2000» will have to be reduced by 0.5—1 million, in other words quite considerably. By now the retardation in the growth rate has been felt in all economic areas.

When discussing the preparation of long-range population forecasts one

should keep in mind that a few years' deviation in population development should not immediately lead to the use of totally differing prediction methods when preparing new forecasts. The question of how Finland's entire population development is going to continue in the long run can of course be submitted to conjecture. Some forecasters today base their assumptions on our country's population not undergoing any noticeable changes in this century, that instead the total will remain »stationary». On the other hand everyone predicts changes in regional development, and the development is expected to take more or less the direction described in the »Finland 2000» forecast. Even these formulations can possibly be at least partly changed by more efficient regional politics and especially by the efforts of so-called politics of developing regions.

In summation of the »Finland 2000» population forecast it can be said that the questions concerning methods handled in the forecast turned out to be quite interesting and it would seem appropriate to start developing these models more efficiently than before. By connecting in particular the development possibilities of different industries and on the other hand the regional localization prerequisites of different industries with the preparation of population forecasts we will, at least in the sense of regional planning, be able to examine these questions on a much more realistic basis than with demographic population forecasts. And this holds true especially for very long-range predictions.