Under the Stats of Fascism:
The Italian Population Projections of 1929-31*

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1. Introduction. On 26 May 1927, Benito Mussolini delivered his famous *Discorso dell'Ascensione* in which he assessed the health of the Italian nation and announced, as a curative measure, the demographic policy the Fascist regime would pursue over the next decade and a half[1]. In the speech Mussolini warns his listeners:

> Debbo poi corredare il mio discorso con molti dati di fatto ed altrettante cifre. Con questo, non voglio condividere l'opinione di coloro, i quali affermano che i numeri governano i popoli. No. I numeri non governano i popoli, ma specialmente nelle società moderne così numerose e così complesse, i numeri sono un elemento necessario per chiunque voglia governare seriamente una nazione.

Following a review of the state of public health and the measures the government has taken to combat malaria, alcoholism and other ills, he continues:

> Voi vedete da queste cifre che il quadro, pur senza essere tetro e tragico, merita una severa attenzione.
> Bisogna quindi vigilare seriamente sul destino della razza, bisogna curare la razza, a cominciare dalla maternità e dall'infanzia.

Mussolini then turns to quantitative demographic concerns:

> Qualche inintelligente dice: «Siamo in troppi». Gli intelligenti rispondono: «Siamo in pochi». (*Approvazione*).
> Affermo che, dato non fondamentale, ma pregiudiziale della potenza politica, e quindi economica e morale delle nazioni, è la loro potenza demografica.
> Parliamoci chiaro: che cosa sono quaranta milioni di italiani di fronte a novanta milioni di tedeschi e a duecento milioni di slavi? Volgiamoci a occidente: che cosa sono quaranta milioni di italiani di fronte a quaranta milioni di francesi, più i novanta milioni di abitanti delle colonie, o di fronte ai quarantasei milioni di inglesi, più i quattrocentocinquata milioni che stanno nelle colonie?
> Signori!
> L'Italia, per contare qualche cosa, deve affacciarsi sulla soglia della seconda metà di questo secolo con una popolazione non inferiore ai sessanta milioni di abitanti. (*Approvazione*).

* This paper began as a conference presentation for «Population forecasts in the 1920s and 1930s», held at the Max Planck Institute for Demographic Research (Rostock, Germany, 17-18 May 1999). Thanks to James Vaupel and the Institute for having me.

SIDeS, «Popolazione e Storia»,
1/2002, pp. 95-111.

Mussolini's apparent familiarity with the comparative population figures he rattles off may not have been unusual for a world leader in an era when the fear of population decline was on the rise (Teitelbaum, Winter 1985). On the other hand, the setting of a national population target – 60 million by 1950 – may have been unprecedented.

Nor did *il duce*'s penchant for demographic statistics, the facts and figures about which he had warned at the opening of his speech, extend only to these national figures. For he goes on to review population growth rates and crude birth rates for European nations (ranging form 17‰ for Sweden to 40‰ for Bulgaria) and for Italian regions. He identifies industrial urbanism as a destructive and sterilizing force and hits upon other themes that would come to characterize Fascist populationist rhetoric in subsequent years. The *discorso dell'Ascensione* in fact marked the beginning of a fascist obsession with demography; newspapers and periodicals were subsequently required to print lists of provincial birth rates and Mussolini himself continued to take exceptional interest in population issues. No-one engaged in the business of population projection in Italy at the time could help but be aware of *il duce*'s well-publicized statements and goals regarding the Italian population.

One year prior to the Ascension Day Speech, in 1926, Mussolini himself had engineered a thorough reform and revitalization of Italian statistics by creating the well-funded Central Statistics Institute for the Kingdom of Italy (Istat). That institute's first president was the 42-year-old Corrado Gini, who had already made a name for himself before the Great War and emerged in the interwar period as a leader in the fields of statistics, sociology, and demography, indeed one of Italy's leading social scientists of the period. Politically, Gini had made the migration from Nationalism to Fascism and in 1925 he both served on Mussolini's Committee of 18 to study parliamentary reform and added his signature to Giovanni Gentile's *Manifesto of Fascist Intellectuals*; his *The Scientific Basis of Fascism* came out in 1927. He seemed tailor-made for the job. Although Gini left Istat in 1932, he remained one of the regime's leading representatives at international scientific conferences until the fall of Fascism in 1943[2].

From the outset, Gini, with Mussolini's encouragement, determined that a major task of the institute would be to chart the demographic trends of the nation. The institute gathered together Italy's best demographers and statisticians and created a research office – initially led by the Tuscan demographer Livio Livi – specifically to this end.

As it turned out Livi left Istat in 1928, and it was Gini himself, aided by the young mathematician Bruno de Finetti, who set about forecasting the future population of Italy, apparently a job too important to be left in the hands of anyone else. Armed with new life tables based on the most recent census, that of 1921, Gini set about making an ambitious series of population forecasts in 1929, all taking that 1921 census as their starting point. As Henk de Gans has shown, this was just the time when the so-called cohort-component method of projection was being generally adopted, and Gini's central projection was of that sort. Moreover, Gini presented his projections at the 1931 Tokyo conference of the International Statistical

Institute where – again following de Gans – the cohort-component 'paradigm' emerged triumphant[3].

The main set of Gini's forecasts went through to 1961 and appeared in preliminary form beginning in 1930. They immediately came in for criticism as even the most 'pessimistic' (relative to the Mussolinian ideal of maximum fertility and minimum mortality) of the three forecasts would clearly overshoot the 1931 population (both as calculated by ISTAT using population registry data and subsequently measured in the census of that year). Gini and ISTAT cited methodological needs in defending the forecasts, but one has to wonder what effect Mussolini's Ascension Day remarks and the aggressively populationist attitude of the regime might have had on the scientific work of the institute[4]. Nonetheless, there clearly was a limit to this sort of statistical optimism, as Gini realized that Mussolini's announced target of 60 million by 1950 was an impossible one. Indeed only one of the projections achieved that level at all and not until 1961 – 10 years too late – while the projection considered most realistic only broke through the 50 million barrier by 1950, reaching 55.5 million in 1961.

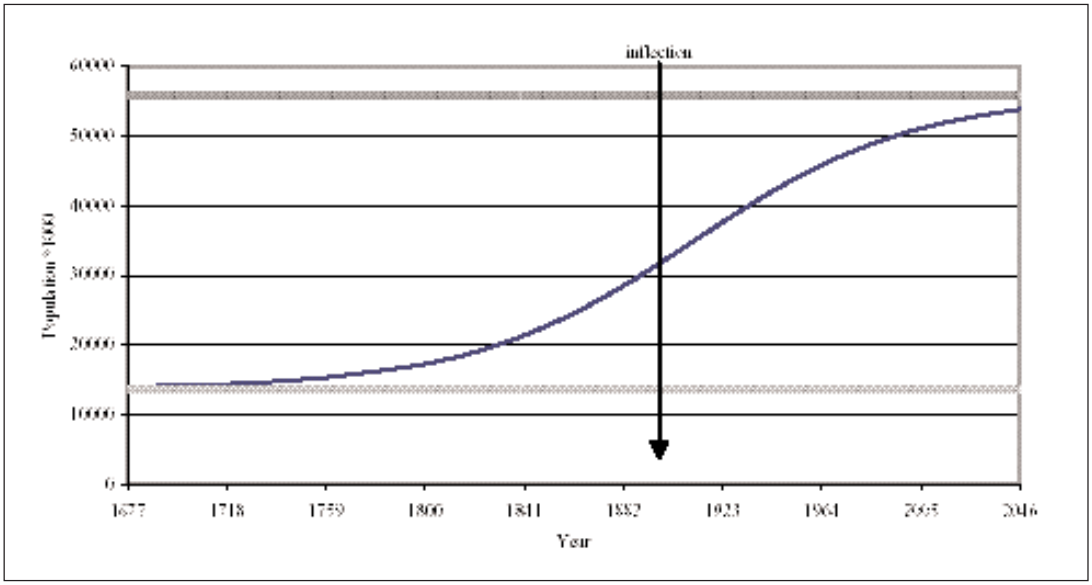
2. The Forecasts. In his fine study of population forecasting, de Gans argues that a Kuhnian paradigm shift took place in the 1920s as the traditional approach of extrapolating total population size according to various possible laws of population growth gave way to the modern approach of cohort-component forecasting (de Gans 1999, 11-16, 97-108). He further observes that «the participants in the debates could only opt for the position of either a supporter of or an opponent to one of the methods involved. There was no way in between» (de Gans 1999, 124). Yet for Gini apparently there was, as while he clearly opts for the modern cohort-component method in his projections, he also carries out most every other sort of forecast imaginable. Gini's thoroughness in this regard was typical of his tendency to demonstrate complete mastery of whatever problem was at hand.

In the published volume of forecasts that appeared in 1931, authored by Gini and de Finetti, the authors go through a number of preliminary statistical exercises employing more traditional projection techniques, extrapolating into the future both total population and birth and death totals.

The first of these projections is a logistic projection along the lines of those proposed by Adolphe Quételet and François-Pierre Verhulst in the early nineteenth century and revived by the American Raymond Pearl in the 1920s. Both Quételet and Pearl hypothesized that population might follow law-like behavior and its growth slow as total population reached a particular limit (Gini, de Finetti 1931, 53, 99-103). Following a discussion of the mathematical problems of logistic calculations (and in particular of limited versus unlimited logistics), Gini and de Finetti carry out several calculations. Using census totals from 1881, 1901, and 1921 and extrapolating forward and back they derive the logistic shown in Figure 1 (Gini, de Finetti 1931, 3-6)[5].

They also include calculations Pearl himself had carried out for Italy. Following a jab regarding Pearl's lack of documentation («based on what data we could not tell»), the Italians criticize his curve as overly pessimistic. By comparison to their own, it sets an upper asymptote of 49 million, almost 7 less than Gini and de

Fig. 1. *Logistic (Verhulst-Pearl) Projection*

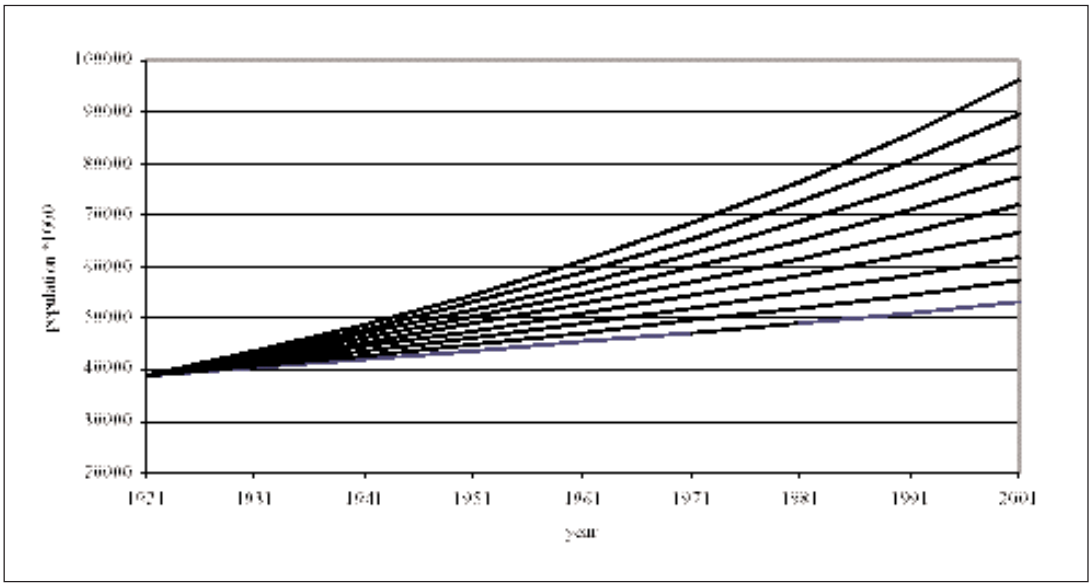


Source: Gini, de Finetti 1931, 6.

Finetti's (while Gini and de Finetti's asymptote is in turn still notably below Mussolini's goal of 60 million) (Gini, de Finetti 1931, 6-7).

The next projection is basically Malthusian and rests on the idea of constant exponential growth. Gini and de Finetti choose decennial growth rates ranging from 4-13% and carry out their projection through to 2001. Plotting their results yields the curves in Figure 2.

Fig. 2. *Exponential projections (4-13% decennial growth)*



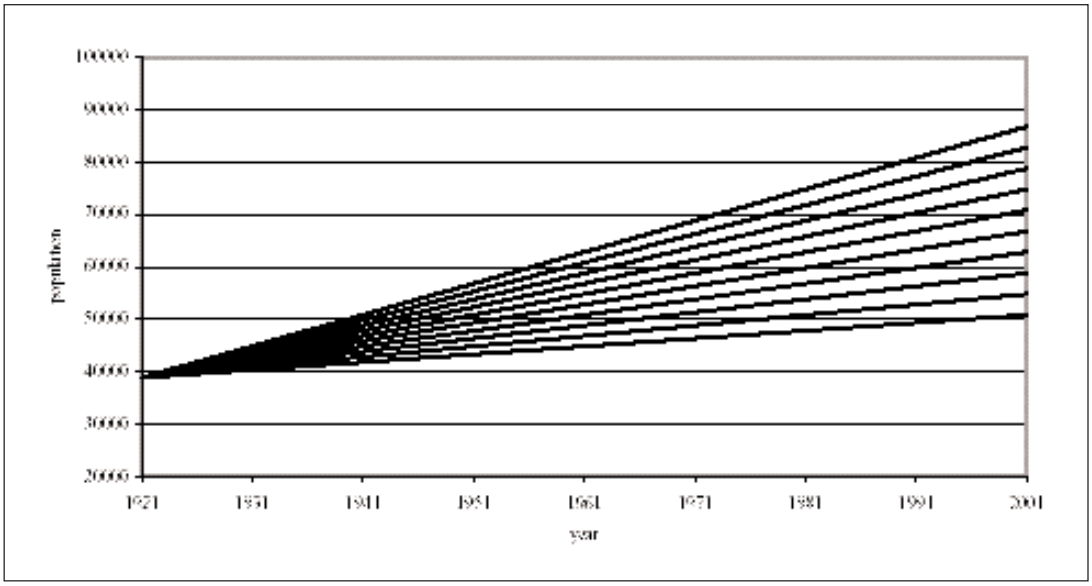
Source: Gini, de Finetti 1931, 8.

Alternatively, population might grow 'arithmetically'. Again one thinks of Malthus who set arithmetic growth as the upper limit for the means of subsistence, and so a rate inevitably exceeded (eventually) by geometric growth of the sort charted above. Leaving no stone unturned, Gini and de Finetti apply arithmetic increases (from 150,000 to 600,000 per year) to Italy's 1921 population and carry out the projection through to 2001 (see Figure 3). At the time, Italy's balance of births over deaths according to recent population registration figures was a bit over 400,000[6].

The third category of Gini and de Finetti's initial projections consists of exponential and arithmetic extrapolations of the total numbers of births and deaths. Using Italian data from 1908-14 and 1921-27, and so avoiding the disruptions of the Great War, they derive both exponential and arithmetic growth rates (or totals) for births and deaths to be projected through to 1981. They then combine these in the four possible ways (exponential births and deaths, exponential births and arithmetic deaths etc.) and further combine these results with three possible emigration scenarios (16 curves in all)[7]. Represented graphically, Gini's four arithmetic-geometric couplets combined with the declining migration scenario yield Figure 4 (Gini, de Finetti 1931, 20-23).

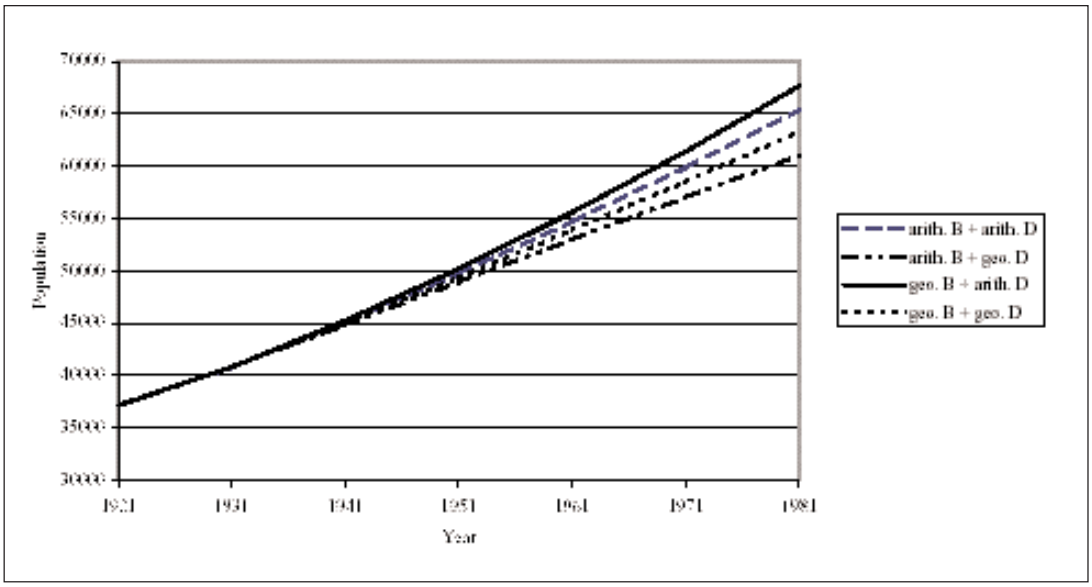
All of the preliminary projections envision continued demographic growth for Italy; and in all of them population crosses the 50 million mark sometime in the twentieth century (in many it crosses the 60 million one as well). It is interesting to note that none of the emigration hypotheses incorporate the possibility that Italian emigration might some day cease or even become negative (as it did in fact in the 1971-81 decade). These projections, in any case, were only a warm-up. Gini's ISTAT could of course carry out any sort of projection you might like, as demonstrated by the exercises reviewed above. But none of these projections is presented as more or

Fig. 3. *Arithmetic Projections (1.5-6 million decennnial growth)*



Source: Gini, de Finetti 1931, 10.

Fig. 4. *Arithmetic and Geometric Projections of Historic Birth and Death Levels Combined with a Declining Emigration Hypothesis*



Source: Gini, de Finetti 1931, 23.

less probable than the others, and more than once the authors suggest that their usefulness is limited to demonstrating how the Italian population might grow if growth should follow a particular exponential or arithmetic path, and nothing more. A more accurate picture could instead be derived from the centerpiece of the projection work, namely the «complete calculation by age group». In this latter case, hypotheses are evaluated and compared and Italian statistical thoroughness and expertise are presented as exceeding those of all other national competitors.

These cohort-component projections also began with the 1921 census, in particular the 1921 age distribution by sex; the life tables derived from that census data[8]; and estimates of age-specific fertility. Three hypotheses were employed:

A) mortality and fertility continue at 1921 levels (considered optimistic);

B) mortality unchanged, fertility declines (considered pessimistic);

C) mortality declines, fertility declines (considered most plausible).

The intention in each case was to apply annual mortality and fertility rates to *single*-year age groups for the 40 years of the projection, an exercise that would ultimately require 22,760 pre-computer calculations, once the rates had been determined[9].

The rates, however, were not so easily determined. To start with, fertility presented a special problem as the population registers did not gather information on births by age of mother. In order to resolve this dilemma, Gini chose to distribute the total counted 1921 legitimate and illegitimate births to married and unmarried women according to specific formulae[10]. These totals were then divided by total married and unmarried five-year age groups to get the initial rates. Along the way, Gini was able to calculate a 1921 marital fertility rate for Italy of 220‰, well above

the rates of other major West European countries (and of Australia, New Zealand, and Japan as well) (Gini, de Finetti 1931, 26-32).

For projection A, these age-specific fertility rates were then applied to all subsequent years. For B and C, instead, the1921 rates were divided by a series of coefficients which produced the observed 1921-28 decline in total births, and that trend was then extrapolated to 1948 (by which time the coefficient was 1.453 or -31%). After 1948, rates were taken to remain constant. No particular reason was given for choosing this lower limit, and indeed it seems optimistic; marital fertility in Germany in 1925, for example, was already 45% below the Italian figure calculated for 1921.

Mortality was taken as constant for the entire 40 years of projections A and B. The rates used were those obtained from the 1921 life table, a table also constructed by ISTAT[11]. For projection C, instead, mortality was projected to decline. These calculations, according to Gini, were the most difficult of the entire projection. Basically the 1911 and 1921 age-specific death rates (for ten-year age groups) were compared and extrapolated into the future. (A different approach was taken for ages 0-5 and a correction was made for male mortality ages 15-25 in order to compensate for the anomalous effects of the Great War). That extrapolation however – a difficult application of exponential-logarithmic decline – tended to excessively low limits in a short time, and so a lower limit was set to which the rates might tend. The limit chosen was the observed 1927 New Zealand age-specific mortality, considered very low. As carried out, that limit was in fact never reached, and the 1961 projected Italian mortality was still noticeably above that of New Zealand in 1927 (Gini, de Finetti 1931, 32-43). The summary results of the three projections can be found in Table 1.

They first appeared in this form in an April 1930 issue of ISTAT's demographic bulletin (ISTAT 16 April 1930) and were promptly criticized (the next month) by Livio Livi in *Economia,* the journal Livi edited in Florence. Livi pointed out first of all that the projections failed to take into account emigration, which had averaged 106,000 per annum over the period 1922-29, and, though much declined, was still a considerable 40,000 in 1929. Livi suggested that the relatively low 1929 figure be used for the projections which would then reduce 1961 totals by 1.4 million [sic]. Livi also criticized the choice to start the projection with the 1921 population. Based on the calculated population for 1929 (calculated by ISTAT), the 1931 pro-

Tab. 1. *Three hypothetical projections for Italy (*1000)*

Year	A	B	C
1921	38944	38944	38944
1931	44265	42893	43554
1941	50408	45956	47708
1951	56154	47979	51603
1961	62963	49711	55571

Source: Gini, de Finetti 1931, 46.

jections already probably over-estimated by between 700,000 and 2.1 million (the preferred projection C overshot by c. 1.2 million or about 3%). Livi proposed instead applying the 1921 age distribution and derived rates to the 1929 calculated population to get more probable results; a proposal that would have meant of course re-doing thousands of calculations (Livi 1930)[12].

It is worth noting that Livi and Gini were not on the best of terms at the time. Livi, as mentioned above, had been Gini's original choice to head Istat's research office and so might well have been in charge of these projections had it not been for the fact that following a heated argument between the two, Livi had resigned his post at Istat a couple of years before. Indeed a number of the original Istat recruits found it impossible to work with Gini (Ipsen 1996, 82).

Istat responded in August to Livi's criticisms in the person of Luigi Galvani, head of its Division of Mathematics and Cartography. Galvani was another of Gini's collaborators and with him had constructed the new Istat Italian life tables used for the Gini-de Finetti projections. In a short piece, published again in Livi's *Economia*, Galvani announced that the institute had always intended to take emigration into account and that those calculations had already been included in the paper Gini would present at the International Statistical Institute Conference to be held in Tokyo the following month (14-25 September 1930) (Galvani, Livi 1930). Gini calculated then that the 1921-61 emigration loss (including lost natural increase) would amount to 2.4 million. These revised (or additional) projections appeared in the 1 August issue of the institute's demographic bulletin (Istat 1 August 1930). Galvani went on to maintain that precise knowledge of age distribution was too important to allow much deviation from the 1921 census starting point. To 'project' that distribution eight or nine years beyond the census date as a basis for the forecasts, as Livi had suggested, would simply produce a projection based on a projection. One can imagine that Istat also preferred not to repeat the months of laborious calculations that went into the forecasts[13]. In editorial comments Livi included with Galvani's response, the former applauds the institute for including an emigration hypothesis, but reiterates his position regarding the starting point. The emigration adjustment had reduced the differences between the 1931 population according to the projections and that which one could get using Istat's own recorded population growth figures (through to say 1 January 1930), but unnecessary errors still remained. Projection C, according to Livi, now overshot the calculated/projected population of 1931 by only 60,000, while projection A did so by 934,000 and B instead came in 419,000 'below' calculation (Galvani and Livi 1930)[14]. As it turned out, the 1931 census revealed a population lower even than the low projection B (see Figure 5).

As referred to in Galvani's response, Gini was on his way to Tokyo to present his projections at the International Statistical Institute Conference there (Gini 1931, 110-114; de Gans 1999, 104-111). In that conference's session on «The tendency of population given present-day birth and death rates», Gini's projections for Italy were accompanied by others for Denmark, Ukraine, and the United States, all of which would eventually come in for Ginian criticism. At that session, though, the major item of debate was whether statistics institutes should be involved in the pro-

jections game at all. Some feared that this sort of speculative 'arithmetic gymnastics' might well lead policymakers and public opinion astray. As a champion of projection, Gini countered that:

> Ces calculs, ont démontré l'inexistence du danger de la surpopulation, qui faisait le cauchemar des statisticiens fixant leur attention sur l'excédent des naissances sur les décès; ils ont démontré bien plus que, si les conditions actuelles de la fécondité et de la mortalité par âge ne se modifient pas sensiblement, nous sommes à la veille d'un arrêt dans l'accroissement de la population pour presque tous les pays de l'Europe occidentale, septentrionale et centrale. La possibilité, qui s'en suit, de la diminution de la race blanche n'est pas la conclusion indifférente d'une gymnastique arithmétique, mais un des plus grands et des plus graves résultats des travaux de la statistique moderne (Gini 1931, 113).

Back in Italy after the conference, Gini together with de Finetti put the finishing touches on the complete projections, which appeared with calculations, explanations, technical appendices, tables, and the alternative preliminary projections described above in ISTAT's *Annali di Statistica* the following year (Gini, de Finetti 1931). The volume was preceded by a *presentazione* authored by Gini and addressed to Mussolini. In it Gini expands on his reflections relative to the Tokyo conference debate and suggests an ideological context into which the Italian projection, and other European ones as well for that matter, might be placed:

> ECCELLENZA,
> Tracciando, nel discorso inaugurale che ho avuto l'onore di pronunciare il 14 luglio 1926 alla presenza di V. E., il programma di lavoro dell'Istituto Centrale di Statistica, segnalavo come le popolazioni di razza bianca, o almeno una buona parte di esse, si trovassero ad una svolta decisiva della loro storia e, tra i compiti più importanti dell'Ufficio studi […] indicavo quello di precisare le tendenze dello sviluppo demografico del nostro paese, sia in sè stesse, sia a confronto delle tendenze degli Stati stranieri. Richiamavo, in tale occasione, la circostanza che parecchie nazioni europei, dopo il meraviglioso sviluppo della poplazione presentato nel secolo scorso, apparivano ormai avviate ad una situazione demografica più o meno nettamente stazionaria. Tale situazione – avvertivo – risulta per ora mascherata da una transitoria composizione della popolazione per età, frutto del dinamismo passato, la quale, facendo sì che abbondino le classi di età centrali, più prolifiche e più vitali, tende a fare apparire alta la natalità e bassa la mortalità complessiva della popolazione. La realtà è però destinata a manifestarsi in tutta la sua portata in un prossimo futuro, quando tali classi saranno invecchiate e il loro posto verrà preso dalle generazioni, sempre più esigue, che le hanno seguite (Gini, de Finetti 1931, v).

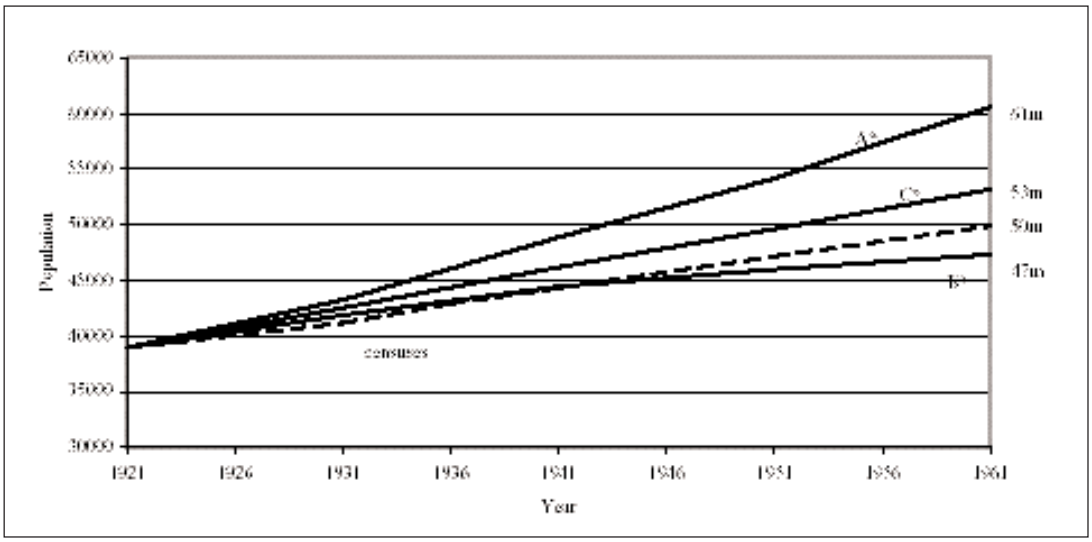
The projections then evidently served a dual purpose, both to demonstrate the statistical prowess of the (Fascist) Italians and to compare Italy's demographic vitality to that of other white-race nations. The relevant context was, as already pointed out, Fascism's recently-inaugurated populationist policy, and one can discern another trope of the regime at work here. Fascism, both as movement and regime, constantly emphasized the dual values of youth and virility. Clearly, the projections

would serve to further demonstrate that Italy was indeed a younger and more virile nation than the traditional European great powers.

Gini goes on to announce that the descendants of the present-day (by which he means 1921) population of Italy will in 1961 likely number 55 to 60 million while the resident population of Italy at that future date should fall between 50 and 55 million. These figures correspond more or less to projection C, with and then without emigrants. The first population is a curious one since it arbitrarily distinguishes between pre and post-1921 emigrants. That distinction is made necessary by the nature of the projection. In order to incorporate the emigration hypothesis, a different approach was taken from that of the non-emigration projection. Rather than determine an age distribution for emigration, subtract that from each year's age groups and apply the mortality and fertility indices to the results, a simpler path was chosen. Post-1921 emigrants were considered as a separate population characterized by a single age distribution (with multi rather than single-year age groups) and a single (and simpler) mortality and fertility behavior. That emigrant population (2.374 million by 1961) was then subtracted from the A, B, and C projections to obtain A*, B*, and C* (see Figure 5).

Gini's rhetorical choices in presenting these two populations in his *presentazione* suggest a particular reading of the two types of projection. He describes population C not as the most likely projected population in the absence of emigration, but instead as the total descendants of 1921 Italy (more or less the population of Italy at the moment of the Fascist seizure of power in October 1922). The implicit suggestion, entirely in keeping with Fascist emigration policy at the time, is that emigrants from Fascist Italy (those permitted to go in spite of emigration restrictions) would consider themselves as representatives of the Fascist state abroad and so maintain their Italian-ness in a way that the masses of pre-war emigrants, many of whom had lost or rejected their Italian identity and in some cases even language,

Fig. 5. *Cohort-Component Projections with Emigration Hypothesis (+census totals)*



Gini, de Finetti 1931, 61; Istat 1968.

had not[15]. In keeping with the larger Fascist vision of a reinvigorated Italy, Gini in fact refers to the 55-60 million figure (within which falls projection C) as «an index of the vitality of the Italian nation» (as compared, for example, to stagnant Britain) (Gini, de Finetti 1931, ix).

Characteristically, Gini closes his introductory remarks on a cautionary note and warns that the relatively high-fertility Latin and Slav states may simply not be as far advanced as the rest of Europe on the road to demographic decline. A vision of this sort was entirely consistent with Gini's own theoretical ideas about population as he believed that, barring outside intervention, populations naturally passed through cyclical periods of expansion and contraction (Ipsen 1996, 221-228). By 1931, however, Gini's ideas about the inevitable decline of populations seem to have been modified by the force of Fascist policy initiative, and he observes that those (like himself) who recognize the possibility of a future decline of Italian vitality can better appreciate Mussolini's recently-initiated population policy. What is never entirely clear about Gini's attitude regarding the population policy, however, is the degree to which either conviction or instead opportunism motivated the qualification of his original more fatalistic demographic vision.

3. International comparisons. The 1931 volume of projections ends with comparisons to projections for a number of other countries (France, Great Britain, Germany, USA, Denmark, and Ukraine). Here it would seem lay another major purpose of the enterprise: «for it is from that comparison, rather than from the absolute values of the results, that we can draw conclusions about the future demographic strength of the Nation» (Gini, de Finetti 1931, 116).

These projections all come from the period 1924-30. All it would seem are inferior in quality to the Italian one, and most are, not surprisingly, criticized for being overly simple. The French projection (by Alfred Sauvy) and the Ukrainian one (by Michel Ptoukha), for example, simply apply unchanging birth and death rates to the whole period of the projection (like the admittedly unrealistic Italian projection A). Those for Great Britain (A.L. Bowley) and Denmark (Adolph Jensen) instead employ a combination of fixed death rates and a fixed annual number of births. In these latter cases, the fertility rate does indeed decline (given that population continues to increase), but «the decline obtained by this method, chosen solely to simplify the calculations, is entirely artificial; it has no meaning nor any relation with the age distribution of the population» (Gini, de Finetti 1931, 117). The German (Statistisches Reichsamt) and US (P.K. Whelpton) projections instead incorporate a hypothetical fertility decline, and the US one a mortality decline as well. Other than the Italian, only the Danish and US projections incorporate a migration hypothesis.

With some (presumably minor) adjustments and interpolations, Gini and de Finetti produce the following comparative table based on these various projections (*1000, the figures for Italy are from projection C*, i.e. with emigration adjustment) (Gini, de Finetti 1931, 119).

The most interesting comparison, according to the authors, however, is achieved by setting Italy's population always equal to an index of 1000 (Gini, de Finetti 1931, 120):

In their words, this table «clearly shows how Italy's situation will improve

Tab. 2. *A comparison of national projections*

year	Italy	France	GB	Germany	USA	Denmark	Ukraine
1921	38944	38909	42766	62000	108021	3256	27000
1931	42541	39540	45281	64750	125605	3539	31641
1941	46192	39360	47282	67438	139587	3745	36969
1951	49633	38445	48277	67365	152725	3877	42123
1961	53197	37600	48568	65398	163549	3967	47127

Source: Gini, de Finetti 1931, 119.

Tab. 3. *National projections indexed to Italian projection*

year	Italy	France	GB	Germany	USA	Denmark	Ukraine
1921	1000	999	1098	1592	2774	84	693
1931	1000	929	1064	1522	2953	83	744
1941	1000	852	1024	1460	3022	81	800
1951	1000	775	973	1357	3077	78	848
1961	1000	707	913	1229	3074	75	886

Source: Gini, de Finetti 1931, 120.

markedly relative to all the other European great powers». And they conclude on a note similar to that on which Gini started, namely observing Italy's relative advantage but warning against excessive optimism:

> Nel complesso, queste prospettive potrebbero sembrare abbastanza sodisfacenti, e più ancora lo potrebbero sembrare notando che nella previsione della popolazione italiana si è tenuto conto della tendenza della natalità a diminuire mentre i calcoli degli altri paesi, come si è detto, o non ne tengono conto per nulla, o non lo fanno in modo adeguato. Bisogna dire tuttavia che anche la nostra situazione non consente esagerati ottimismi. I popoli che hanno già raggiunto un grado di natalità bassissimo, ma stazionario, possono forse almeno contare che esso non peggiori di molto; noi, che siamo ancora in una positzione leggermente privilegiata, e che potremmo approfittarne per migliorare, come mostrano questi calcoli, la nostra posizione nel mondo, dobbiamo difenderci attivamente e risolutamente dalla possibilità di un crollo che ci porti al pauroso livello già raggiunto da altri popoli (Gini, de Finetti 1931, 121).

4. Conclusion. Why did the Italians decide to carry out population projections in 1929-30? A first explanation relates to available data. The 1921 census was carried out in a difficult post-war environment. The statistics institute at the time (actually a 'directory' in the process of being passed from ministry to ministry) had limited means and was – or so it was hoped – on the verge of reorganization. As a result, the census data was not published until the end of 1926, a few months after the creation of Istat. With the census in hand, the institute could (and did) proceed to construct life tables and begin work on a projection. Still, the availability of life tables cannot tell the whole story. Good sets of tables, for example, had been pub-

lished in 1917 and 1919 (DIRSTAT 1917; Bagni 1919). At those earlier dates, however, projections tended to be of the sort Gini and de Finetti rehearse in the opening chapter of their volume (and so not dependant upon life tables). By 1929, instead, the cohort-component method had just come into its own scientifically (de Gans 1999, 8-11), and one can imagine that the ambitious Gini determined that Italy's new and well-funded statistics institute was not going to be a latecomer to that particular statistical fashion.

Nor were life tables all that was needed for a cohort-component projection; age-specific birth rates were also required. Italy still lacked these, and, as we have seen, Gini had to employ a difficult approximation in their place, surely introducing a degree of error. The Italian decision becomes still more curious when we consider that by late 1929 the next Italian census was already scheduled for April 1931, only one-and-a-half years away. Surely that census, conducted by ISTAT and not the old (pre-Fascist) under-funded statistics directory, would provide better data (and faster) than the 1921 census had; and by that time the planned reform of population registration should also provide data on ages of mothers at birth. Patience would have saved Gini from the sort of criticisms launched by Livi. But patience was not one of Gini's virtues.

Another contributing factor may have been the planned Tokyo conference of the International Statistical Institute. According to de Gans, the ISI only decided in December 1929 to include a session on projection (de Gans 1999, 104), while the Galvani piece cited above suggests that the ISTAT calculations were already underway in August of that year[16]. Just the same, it may be that the topic had been floated in an informal way at some other forum, perhaps the 1929 conference in Warsaw. The prospect of an international venue at which to display Italian and Ginian prowess in population forecasting at just the moment when other nations and demographers were carrying out similar (though inferior) forecasts seems to have proved irresistible.

Projection must have appealed to Gini on a number of other counts as well. It required a lot of painstaking and careful calculation, both with regard to the tricky variations in the age-specific birth and death rates and also in the large number of calculations required by the three 40-year projections (plus emigration hypothesis); and so the exercise provided a showplace for Gini's hardworking and capable team. In all, it was an heroic effort, perhaps too heroic. In a remarkable example of statistical *bravado*, Gini and de Finetti seem to choose the most laborious and mathematically sophisticated (or complicated) solution possible at every step along the way (save for incorporation of the emigration hypothesis). Certainly one cannot help but be impressed by the effort, but did all that labor and sophistication produce a more accurate picture? Perhaps. But the business of projections is necessarily approximate, and the authors seem to be so taken with their statistical method that they initially overlook a factor as significant as emigration (a sloppy and imprecise phenomenon that they would not have been the first or last demographers to prefer ignoring). Indeed their commitment to this elaborate and seemingly *exact* approach really means that they end up preferring mathematical formality to achieving a more or less probable projection. For as Livi and others pointed out,

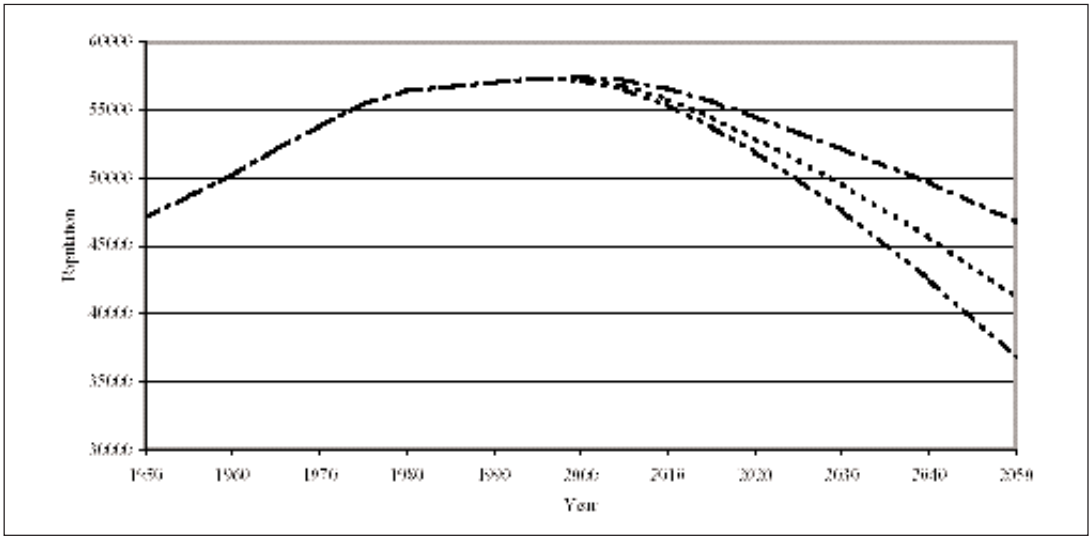
the projection, tied as it was to a 1921 starting point, already differed from the present-day observed population by the time of the projection's definitive publication in 1931.

There were, of course, also political considerations that help to explain the apparent urgency of the project. This paper opens with citations from Mussolini's 1927 *discorso dell'Ascensione*, and it is easy to imagine that *il duce*'s interest in Italian demography might well have been a primary inspiration behind the projections[17]. Those projections followed on the heels of Mussolini's declaration of a pronatalist and populationist demographic policy, and Mussolini may have been preoccupied by statistics like no other political leader before him. The projection then was also a political act coming at a crucial political moment. It demonstrated to the world Italy's relative youth and virility, its demographic advantage relative to France, Britain, and Germany. The examples of rapidly-growing Slavic and US populations instead posed a double threat and source of concern. Evidently Mussolini's policy had come just in time to arrest a process of demographic decline (first as a result of emigration and then lower fertility) that had already begun. Only time would reveal the ultimate futility of that policy.

The projection itself reveals these political concerns, both in Gini's accompanying rhetoric and in the method itself. For while it is mathematical and statistically rigorous, perhaps unmatched for its day, the initial inclination to ignore emigration and the insistence on a starting point eight years in the past insured neater calculations but also over-estimation. The forecasts then are an example of statistical work responding to political needs, not by means of the falsification of data (surely unimaginable in the case of Gini) but by the subtler means of defensible choices and hypotheses that tend toward the desired outcome. Nor does the explicit discussion of the purpose of the projections leave any doubt as to what that outcome was: confirmation of Italy's relative demographic vigor as compared to the other European Great Powers.

It may be fitting, if unfair, to close with a look at how Gini and de Finetti's projections compare to subsequent population growth. Unfair because in 1931 they could not possibly have foreseen the demographic impact of the Second World War, the territorial losses Italy would suffer, nor the post-war baby boomlet. As it turned out, and as Figure 5 shows, it was probably during the war that the Italian population did in fact come to exceed the 'pessimistic' B* projection (with emigration) and by 1961 the Italian population was only 6% below the 'most likely' C*. Pushing still further in time one comes up against the final irony of this story. According to the ISTAT estimate for 1 January 2000 the total Italian population, which is currently growing at a snail's pace, was 57,679,895. So the demographic goal Mussolini set for 1950 has still not been reached a half century later. Indeed, according to recent UN estimates, the fears of Gini and Mussolini are soon to be realized as those more recent projections show Italian population never reaching 60 million and instead declining back down to pre-World War Two levels by the middle of the twenty-first century (see Figure 6).

Fig. 6. *UN Population Estimates and Projections (High, Medium, and Low) for Italy*



Source: United Nations 1998, 240-1.

[1] On Fascist population policy, see Ipsen 1996. For the Ascension Day Speech, see Mussolini 1951-63, 360-390.

[2] Gini (1884-1965) had served during and after World War I as an adviser to the Italian government and then the League of Nations on the problem of natural resources. In addition to heading ISTAT from 1926 to 1932, he also founded and chaired the Faculty of Statistical, Demographic and Actuarial Sciences at the University of Rome in 1936. He founded and edited both «Metron» (1920-), a statistical journal, and «Genus» (1934-), a journal of population studies. His most notable (if largely forgotten) demographic work was a cyclical theory of population. He was also an active sociologist and statistician. In the latter field he is remembered for the Gini coefficient. On Gini, see Castellano 1965; Ipsen 1996; Ipsen 2002; Salvemini 1968. For a recent work that includes biographical information and analyzes Gini's political ideas, see Prévost 2001.

[3] See de Gans 1999, esp. 3-29, 66-108. For a 1927 Italian discussion of population forecasting, see Vinci 1939.

[4] For a discussion of the politicization of demography and statistics under Italian Fascism, see Ipsen 1996, 78-87, 195-252.

[5] Gini and de Finetti's results, however, are all provided in tables. I have constructed Figure 1 and subsequent curves from that tabular data.

[6] These figures can be derived, for example, from Gini and de Finetti 1931, 20.

[7] The emigration scenarios were: 150,000 net emigrants per year (the average for 1902-11, described as a «highly unfavorable period»); 40,000 per year (the figure for 1928-29); and a level which decreases according to the following schedule (for ten-year totals):

1931-41	500,000
1941-51	400,000
1951-61	300,000
1961-71	250,000
1971-81	200,000

[8] ISTAT published the complete results of the 1921 census in December 1926. The life tables instead did not appear till 1931.

[9] The age-specific fertility rates were, not surprisingly, only applied to women aged 15-50, 35 one-year age groups, while mortality rates were applied separately to men and women for the age groups from 0-1 to 95 and over; because projections A and B used the same mortality hypothesis, the mortality calculations for those already alive in 1921 did not have to be repeated (4,480 calculations). The 'calculations' in my 22,760 figure refer to the multiplication of a one-year age group by a fertility or mortality rate. In addition, the 35 groups of births had to be summed to get the 0-year age group for each year in each projection.

[10] These were the formulae of Tait for legiti-

mate fertility and G.H. Knibbs for illegitimate fertility. Knibbs was an Australian; about Tait I have found several mentions of this particular distribution but no other biographical or bibliographical references.

[11] These life tables were themselves, like the projections, only published in 1931, though they must have been ready a couple of years earlier as they were used in the projections which were underway in 1929 (Gini, Galvani 1931).

[12] Livi's 1.4 million figure cited above may refer only to the 1929-61 period (since 40 years at 40,000=1.6m), though given that Livi claims to have also taken into account the lost natural increase of the emigrants it may instead be a typographical error. He likely meant 2.4 million, the figure Gini subsequently comes up with (see below).

[13] Galvani concedes as much in relation to the non-inclusion of an August 1929 correction made to the census regarding errors discovered for the town of Pola; the calculations by that time had already begun (Galvani, Livi 1930).

[14] Livi here also responds to Galvani's explanation of the 1921 starting figure which was actually greater than the 1921 census figure (a problem referred to by Livi in May but which I have left out of the above discussion). The reason for that adjustment, accepted as reasonable by Livi, was the presumed undercounting of children aged 0-2.

[15] On Fascist emigration policy, see Ipsen 1996, 51-65.

[16] See note 13 above.

[17] Though my perusal of Gini and Mussolini's correspondence, or what remains of it, in the Istat files kept at the Archivio Centrale dello Stato in Rome (see references in Ipsen 1996) revealed no reference to the projections. If Gini's private papers survive somewhere – and a number of people have asked me about these – I am not aware of it.

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Riassunto

Sotto la statistica del fascismo: le previsioni demografiche del 1929-31

Questo saggio esamina le previsioni demografiche della popolazione italiana fatte da Corrado Gini e Bruno de Finetti negli anni 1929-31. Esse erano, per l'epoca, metodologicamente complesse e ben mostrano le considerevoli capacità di ricerca dei due autori. Nonostante il rigore matematico che le caratterizza, le previsioni furono criticate da altri demografi dell'epoca, principalmente da Livio Livi, per il fatto che presero come punto di partenza il problematico censimento del 1921 e considerarono un'ipotesi poco realistica per l'incremento demografico fra il 1921 ed il 1929. L'analisi dei meccanismi previsivi proposti, vista alla luce del dibattito che essi ispirarono e alla descrizione del contesto politico in cui si svilupparono, aiuta a spiegare le motivazioni che furono alla base delle previsioni. Esse risposero soprattutto ad una necessità politica, in quanto l'allora Capo del Governo Benito Mussolini chiedeva informazioni demografiche aggiornate per meglio giustificare e perseguire la politica demografica fascista di recente introduzione; il duce, infatti, aveva annunciato nel 1927 un obiettivo, in termini numerici, poco realistico per la popolazione italiana.

Summary

Under the Stats of Fascism: The Italian Population Projections of 1929-31

This paper explores the state-of-the-art projections for the Italian population carried out by Corrado Gini and Bruno de Finetti in 1929-31. Those projections were highly sophisticated and well displayed the considerable abilities of Gini and de Finetti. Yet while they were mathematically rigorous and detailed they inspired the criticism of other Italian demographers of the day, in particular Livio Livi, because of their reliance on the problematic 1921 census and unrealistic hypotheses regarding 1921-29 growth. Exploration of the projection, ensuing debate, and political context help to explain this situation. Gini's projection responded to political necessity insofar as Mussolini demanded up-to-date demographic information in order to better enunciate his recently-launched population policy; *il duce* had in fact already set his own (unrealistic) goal for Italy's population. In addition, Gini's commitment to a display of mathematical sophistication would seem to have ruled out an approach that would have been both simpler and closer to the actual demographic situation.