

Chapter 2

Troubles on Statistical Lies

Gerhard Scheuerer

Introduction

On various occasions, Sir Winston Churchill is credited with the conclusion: “I believe statistical data only that I have faked by myself”. This quotation cannot be detected; but in Churchill’s memoirs we find following statement: “In wartime’, I said, ‘truth is so precious that she should always be attended by a bodyguard of lies’”¹. For this reason, Churchill accepts statistical lies in case of event of war, but it must be substantiated that Churchill assessed statistical data by saying: “you must look at the facts because they look at you”². On the other hand, above credited conclusion complies rather with Joseph Goebbels, the German Nazi minister for public enlightenment and propaganda, behaviour patterns to insinuate the English war reporting to propagate lies³. Nevertheless there is agreement that statistical data can be misused consciously or unconsciously. This essay focuses on statistical data and their usage by political decisions. At first duties and responsibilities of governmental policies are described shortly, and afterwards mysteries of statistics language considered. In the end it is demonstrated that statistical data are based on a statistical model. The outcome is that producer of statistical data and researchers have the obligation to inform users and public explicitly about statistical modelling and not only exclusively about the results.

¹ Churchill (1976), p. 245.

² Czarnomsky (1956), p. 132; Commons, May, 1925.

³ Bake (2011), p. 63.

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Statistical Background of Political Decisions

Amongst other things, political decisions are taken on statistical data. We distinguish:

- Governmental statistics
In many countries, governmental investigations must be mandated by law. Concerted statistics of the European Union (EU) prevail in German governmental statistic system and are surveyed directly on the basis of EU Regulations. Only a small part of European statistics has to be mandated by EU Directives. Governmental statistics are capable of being fully influenced by government, parliament and public administration. However, there is more difficult enforcing national beliefs in case of EU statistics due to the competition of national interests of member states.
- Private statistics
 - a. Data collection commissioned by government, parliament and public administration.
 - b. Data collection by supranational and international institutions.
Both (a) and (b) are capable of being influenced to a certain extent by governments, parliaments, and public administrations.
 - c. Data collection self-contained by chambers, associations, lobbyists as well as private institutions.
They are mostly restricted in the face of possibilities to influence methods and results by government, parliament and public administration.

The incomplete enumeration above shows that public sector institutions have facilities to influence methods and output of statistical data on miscellaneous social levels.

Duties and Responsibilities of Governmental Policy

Already in the eighteenth century, the US American Declaration of Independence locates that one of the duties of the government is “for all men ... pursuit of happiness”⁴. Concerning the term happiness, we find unequal, partial conflicting approaches in different sciences. We will focus on determinants of happiness that are recently described in summary by Bruno S. Frey:

Economic determinants:

⁴ Adopted by Congress on July 4, 1776.

- Higher income clearly produces more happiness but at a strongly decreasing marginal rate.
- The unemployed are much less happy than are those having a job.
- The self-employed are happier than those working as employees despite the fact that they tend to work longer hours, carry more risk and often earn less.
- Giving and voluntary work raise the happiness of those engaging in these activities.

Social determinants:

- Religious persons are happier than those not believing in God or on a higher power and not attending religious ceremonies.
- Family.
- Personal relationships in the form of having friends and entertaining many social contacts raise happiness.

Political determinants:

- People are happier in democratic polities; they value the political participation possibilities in a constitutionally guaranteed process above and beyond outcomes (they reap procedural utility).
- The more decentralized the political decisions, i.e. the closer they are to the citizens, the happier people are.
- “Good government” contributes to happiness.

Psychological effects:

- Human beings evaluate their own happiness level relative to other persons. They compare themselves to reference groups endogenously chosen. In particular, when individuals experience higher income, they compare themselves to other persons whose income also might have risen.
- People adapt to new circumstances. In the extreme, this leads to the “Easterlin paradox” suggesting that economic growth does not raise happiness as people continually and fully adjust their expectations upwards.”⁵

Richard Layard et al. as well as politicians conclude that governments should use the results from happiness research to “maximize happiness”⁶. Economists quantify national wealth mostly in the national accounts, either measured on its determinants or on its distribution.

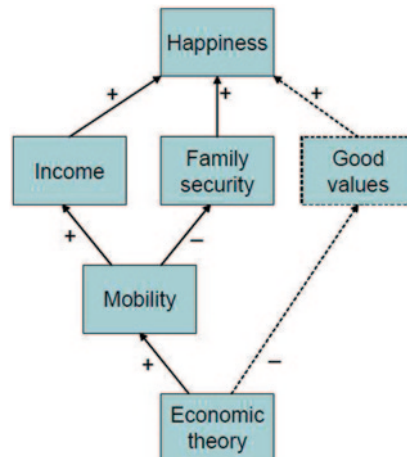
⁵ Frey (2011), p. 4/5; for earlier basic scientific findings for example Frey and Stutzer (2002) and Frey (2008).

⁶ Frey (2011), p. 5.

Layard summarises the main policy points relating to the question “what would make a happier society”:

1. Self-defeating work should be discouraged by suitable taxation.
2. Producers matter as much as consumers. They should be incentivated more by professional norms and not by ever more financial incentives.
3. We should not promote the search for status, and we should limit dysfunctional advertising.
4. Income should be redistributed towards where it makes most difference.
5. Secure work should be promoted by welfare-to-work and reasonable employment protection. Secure pensions may require a state earnings-related scheme.
6. Security at home and in the community will be reduced if there is too much geographical mobility.
7. Mental health should receive much higher priority.
8. We should actively promote participatory democracy.”⁷

Layard points out the “limited power of economics to resolve policy issues on its own”⁸ in pertaining to mutual influence of political arrangements and describes positive and negative effects on happiness as shown in graphic below (Source: Layard (2003), p. 11):



⁷ Layard (2003), p 10/11.

⁸ Layard (2003), p 11; Layard 2011.

Statistical Data

In daily life, establishment and people hear and read many statistics. Each of us senses more or less that statistical data inflate information about real facts, sensationalise real facts, confuse about real facts and oversimplify information about real facts. There may be more in the statistical information than meets the eye, and there may be a good deal less. The saying crosses mind “Statistics are like bikinis. What they reveal is suggestive, but what they conceal is vital”⁹. There are legal requirements like objectivity and neutrality of official statistics in different countries. For example in Germany, the federal statistic law constitutes “...principle of neutrality, objectivity, and scientific independence. (The federal statistic) collects data by using scientific findings...”¹⁰. In the following, considerations will be constituted at misuse of statistical methods and misuse of statistical depiction. They are statistical lies if such mistakes are made purposely and/or wilfully.

In the following, some selected instances of applied and methodical characteristics on statistics will be described.

Mysterious Language of Statistics

Statisticians and researchers normally speak about the circumstances they have studied in a scientific tongue. For instance, the German Federal Statistical Office operates an information centre in Berlin. This so-called i-Point advises notably on handling of statistical data of the Federal Government, embassies, federal agencies, associations and sciences. In addition, a press office instructs the media. Despite those bids for correct working with statistical data, the complexity of statistical terms is sometimes not understandable for users of statistic data. Statisticians and researchers still inform the public in a scientific language with specific mysterious words as weighting, representative sample, stratification, unstratified sample and in exceptional cases something about sampling error or bias, validity, reliability, average, weighted mean, moving average etc.

Peculiarities of Statistics

First objective of descriptive statistic is “to make a diagnosis of the real percentage of population, economy and society”¹¹. Even though this statement has been written related to economic statistics, the declaration is valid for all statistic domains.

⁹ Aaron Levenstein (quoted from Bundeszentrale für politische Bildung (2011)).

¹⁰ BStatG (2007), § 1, sentences 2 and 3.

¹¹ Blind (1966), p. 3.

Census

For actual reason, we will start our considerations with the current German census 2011. Recent German censuses proceeded 1980 in East Germany (former German Democratic Republic) and 1987 in West Germany (Federal Republic of Germany). Germany is the single member state of EU that did not organise recommended decennial censuses in the years around 1990 and 2000. The West German 1987 census was accompanied by substantial protests to fear misuse of accumulated private data. German census 2011 constitutes a paradigm change from former classical enumerator procedure to register procedure, bringing together different private information recorded in existing administrative registers, and it is complemented by a 10% sample of the population¹². Some Germans suspect governmental hunger of sensitive personal data and frontier-crossing exploring their privacy¹³. In Germany, several federal laws and federal state laws refer to census results, for example the number of permanent residents for horizontal fiscal transfers and vertical equalisation arrangement. Therefore, accuracy of census results has legal meaning. West German census 1987 has organised descriptive control of number of permanent residents *inter alia*. All in all, an underenumeration of 0.1% of population in Germany had been detected in the census (raised 54,000 persons). This gross bias is composed by overenumeration of 0.58% (raised 314,000 persons) and underenumeration of 0.68% (raised 368,000 persons)¹⁴. The relative high net biases indicate inaccurate population figures of small townships. We can assume the smaller the township the more incorrect the number of inhabitants as enumerated by census. The above depicted results of descriptive control “provide... starting points for an assessment of dimension of possible over-enumeration and under-enumeration as well as variability of responses”¹⁵. Still today, statistic and research making use of actual results of census 1987 and afterwards extrapolation, though results of descriptive controls are published for different effects on bias of characteristic of the population¹⁶. We have to wait to what extent the paradigm change of German census 2011 will influence biases and statistic errors. Enacted report on quality of performance and results remains to be seen in 2013.

¹² Bierau (2001).

¹³ The Wall Street Journal (2011).

¹⁴ Statistisches Bundesamt (1992), p. 193.

¹⁵ Statistisches Bundesamt (1992), p. 212.

¹⁶ Scheuerer (2010), pp. 40–54.

Income Statistics

Comparing data of different income statistics, there must be careful checking, especially of (1) the platform of analyses: wage earners, pensioners, persons, household and enterprises as well as (2) the point of definition (gross/net) and the time definition (weekly, daily, with or without special payment, single payment). For example, social statistics are mainly analysed by deciles and/or quintiles¹⁷. Fiscal income statistic can only be based on income tax law. For example in Germany: income tax starts from taxable income. Along general lines, at first operating revenues are determined and thereof subtracted tax amounts, income related expenses and special expenses; the latter comprise mainly financial precautions for illness and retirement provisions. Based on taxable income determined in this way, income tax rate is applied. Therefore, fiscal income statistic is only able to demonstrate objects, which are contained in income tax law and declared in income tax procedures.

Income statistics loom large in national accounts. They are assessed in macroeconomics. The system is based on United Nations System of National Account (SNA). Generally speaking, European System of Account complies with SNA. Drafted in general lines, available income is composed of: (1) self-employment income (2) income from dependent work (3) income from investment of capital (4) income from property and (5) income from social benefits. Paid direct taxes, social security payments as well as paid interests for consumer credits and mortgage loans boil down the available income¹⁸. “Net income is deduced from available income as follows, by: (1) assumed income for own used residential property (2) investment income from insurance contracts (3) consumed benefits from finance services (4) rebates from private health insurance companies for medical payments and (5) allowance payments from public employers”¹⁹.

The short characterisation above of both selected income statistics shows different methodological concepts of statistical calculation of income. This must be borne in mind when interpreting statistical income data. National Accounts apply in calculating data of many different statistics on income, and therefore, they are an arithmetical product. “In case of interviews (of individuals), there exists a standard problem: single members of households don’t fill out questionnaires ... This happens frequently in households with over or below average income”²⁰. In general we can say: persons with low income trend announcing higher income than they get really, persons with higher income trend announcing lower income than they get really or refuse information.

¹⁷ Statistik Austria (2004), p. 3.

¹⁸ Klose and Schwarz (2006), p. 1297.

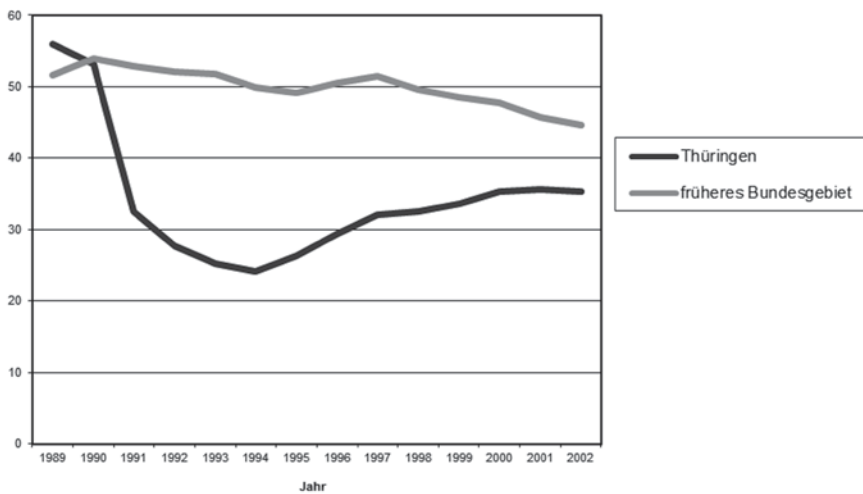
¹⁹ Klose and Schwarz (2006), p. 1297.

²⁰ DIW Berlin (2011), p. 2. DIW has developed a procedure reducing those errors.

Graphs

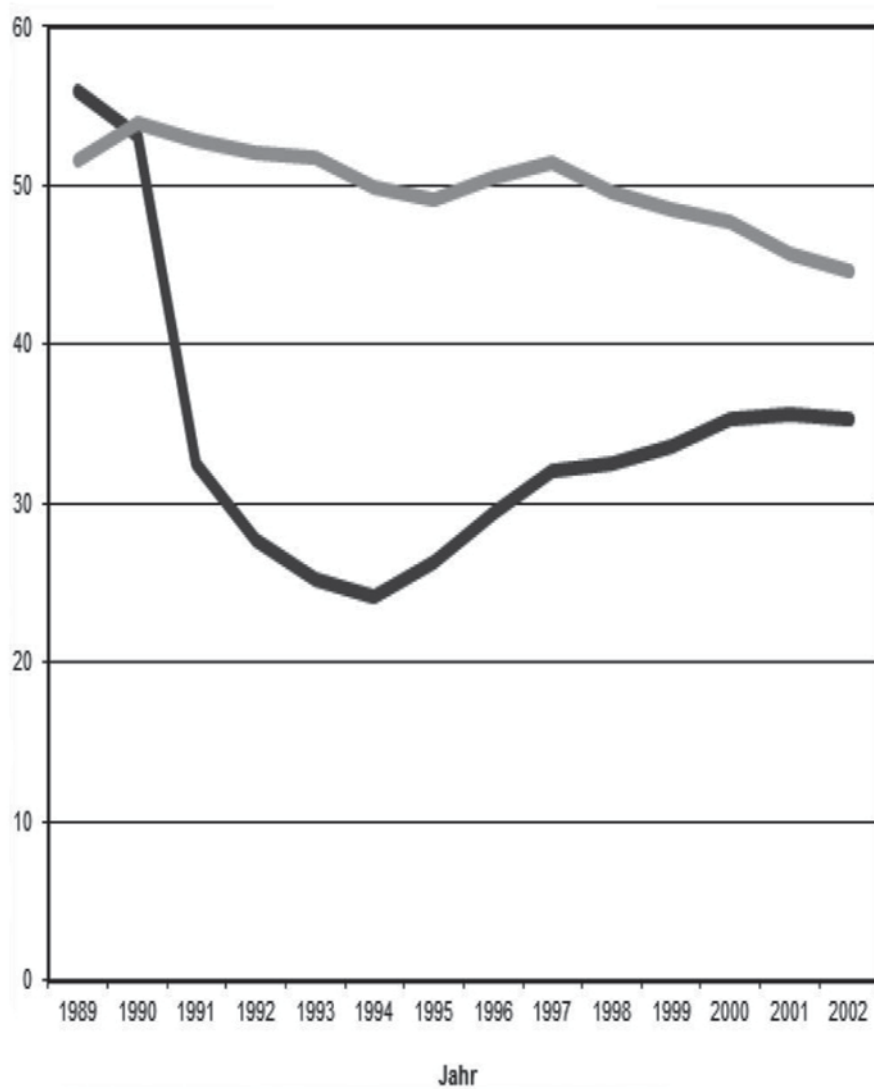
Charts are highly used demonstrating statistical findings. They can be manipulated consciously or unknowingly. Charts have to start definitely at zero point and the criteria for ordinate and abscissa have to be adequate and both scales have not to be deformed. Special awareness must be given to logarithmic scales, because they can change the visual impact of objective proportions. The accurate termination is shown in the following chart (Source: Scheuerer (2010), p. 64):

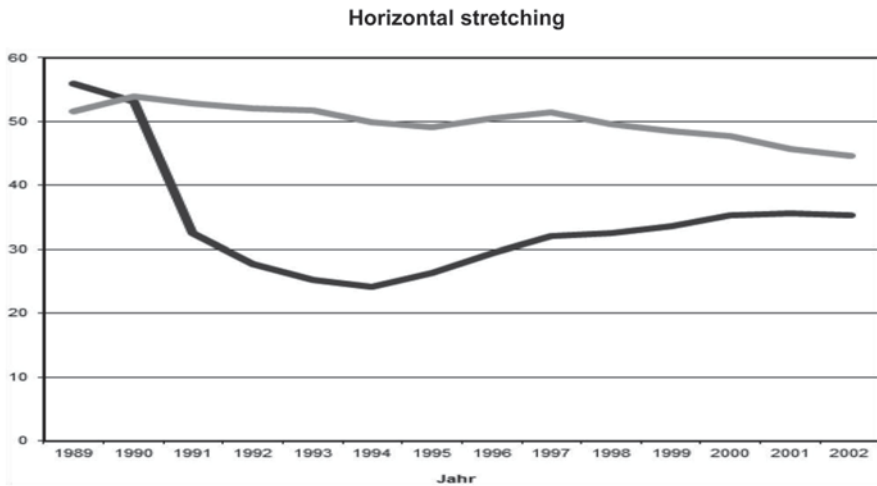
**Entwicklung der allgemeinen Fruchtbarkeitsziffer 1989 bis 2002
im früheren Bundesgebiet und Thüringen
- je 1.000 Frauen im Alter von 15 bis 45 Jahren -**



There are convenient potentialities to blend to a desired impression of the development of data as per stretching vertically or/and horizontally:

Vertical stretching





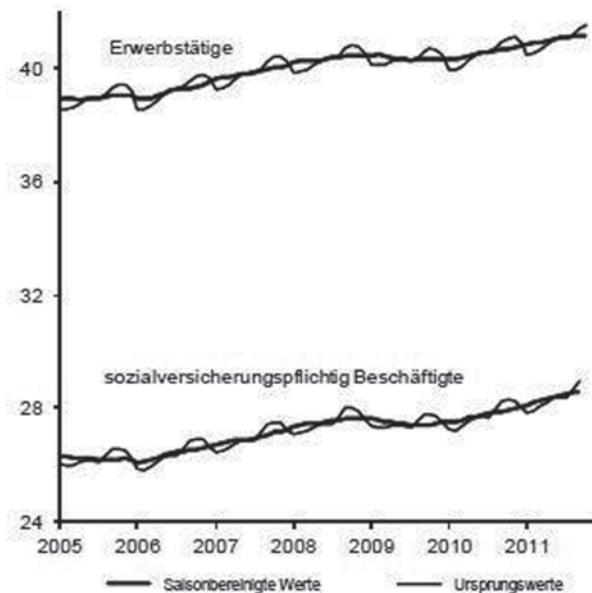
Today in many cases, charts don't start at zero point and only a cutaway of parts of the complete chart is shown, as we see below (Source: Bundesagentur für Arbeit (2011), p. 8):

Erwerbstätige und sozialversicherungspflichtig Beschäftigte

in Millionen

Deutschland

2005 bis 2011



Quelle: Statistisches Bundesamt (Erwerbstätige Inlandskonzept mit einem Monat Wartezeit), Statistik der Bundesagentur für Arbeit

Great Nations at Peril

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