DINAMIKA KEPENDUDUKAN

Population change

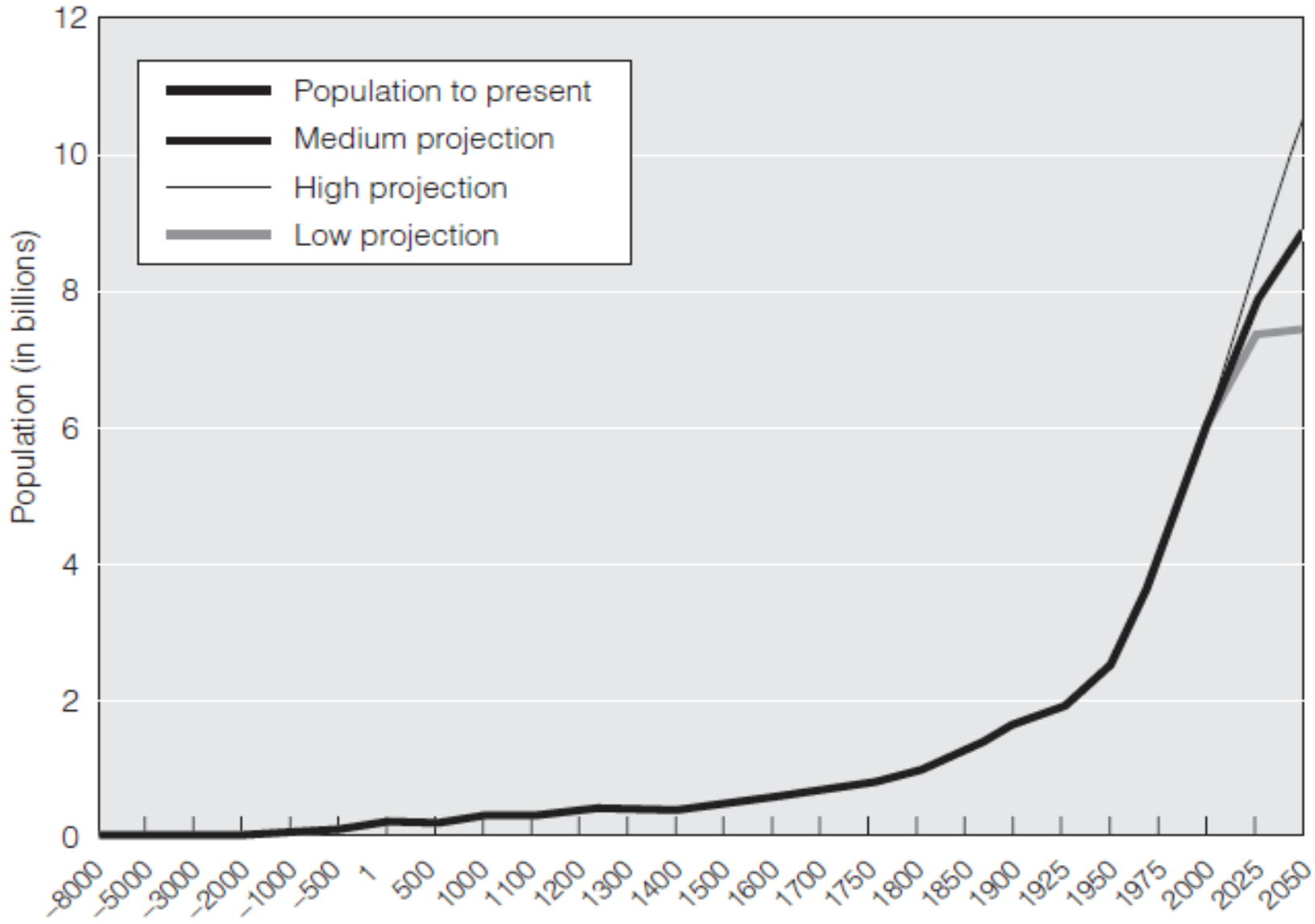

Figure 2.2 The World's Population Has Exploded in Size

The Power of Doubling—How Fast Can Populations Grow?

Human populations, like all living things, have the capacity for exponential increase. A common way of measuring the growth potential of any combination of birth and death rates is to calculate the doubling time, the number of years required for a population to double in number if the current rate of growth continues. You can calculate this easily for yourself by remembering the "rule of 69." The doubling time is approximately equal to 69 divided by the growth rate (in percent per year). So, if we estimate the world's rate of growth in the year 2010 to be 1.18 percent per year (see Table 2.1), we can calculate that the doubling time is 69/1.18 = 58 years. Where does the 69 come from in the doubling formula? Exponential growth is expressed mathematically by natural logarithms. Thus, to find out how long it would take a population to double in size, we first must find the natural logarithm (ln) of two. This turns out to be 0.69, which we multiply by 100 to get rid of the decimal point. Then dividing the rate of growth into 69 tells us how many years would be required for a population to double. Similarly, if we wanted to know how long it would take a declining population to be cut in half, we would first find the natural logarithm of 0.5, which is −0.69, or −69 when multiplied by 100. Dividing −69 by a negative rate of population growth then tells us how long it would take for the population to be only half as big as it currently is. As of 2009, Russia was estimated to be losing population at a rate of −0.3 percent per year (Population Reference Bureau 2009), at which pace it will halve its population in 230 years.

METODE DASAR

- Dalam perhitungan perubahan jumlah penduduk : "balancing equation"
- Persamaan keseimbangan
- $P_1+(B-D)+(I-E)=P_2$
- P_1 = Penduduk waktu 1 (awal)
- P_2 = Penduduk waktu 2 (akhir)
- B = Kelahiran; D= Kematian
- I= imigrasi masuk
- E= emigrasi (migrasi keluar)

PERTAMBAHAN ALAMIAH

- Pertambahan alamiah (NATURAL INCREASE) adalah surplus (lebih) atau defisit (kurang) dari kelahiran dibandingkan kematian dari penduduk dalam suatu waktu tertentu
- NI= B-D
- NI=pertambahan alamiah (natural increase)
- B= jumlah kelahiran
- D= Jumlah kematian

TINGKAT PERTAMBAHAN ALAMIAH

- Rate of Natural Increase adalah tingkat pertambahan atau pengurangan penduduk pada waktu tertentu karena surplus atau defisit dari kelahiran terhadap kematian, disajikan dalam persen dari populasi dasar.
- Perubahan jumlah penduduk dalam hal ini tidak melibatkan imigrasi/ emigrasi
- Rumus
- Tingkat Pertambahan Alamiah=$\frac{Jumlah\ kelahiran - jumlah\ kematian}{jumlah\ penduduk}$ x 100

TINGKAT PERTAMBAHAN ALAMIAH

- Contoh : Polandia (1996)
- Jumlah kelahiran: 429.000 kelahiran
- Jumlah kematian: 386.000 kematian
- Total penduduk :38.609.400 jiwa
- Tingkat pertambahan alamiah$=\frac{429.000-386.000}{38.609.400}$ x 100 = 0,11

TINGKAT PERTAMBAHAN ALAMIAH

- RUMUS LAIN
- Tingkat Pertambahan Alamiah=$\frac{tingkat\ kelahiran - tingkat\ kematian}{10}$

TINGKAT PERTUMBUHAN

- Growth Rate: Merupakan tingkat bertambah atau berkurangnya suatu populasi pada tahun tertentu akibat pertambahan alamiah dan migrasi netto
- Rumus
- Tingkat pertumbuhan=$\frac{\boldsymbol{Jumla}h\ kelahiran - jumlah\ kematian \pm migrasi\ neto}{jumlah\ penduduk}$
- = tingkat pertambahan alamiah + tingkat migrasi netto
- = rate of natural increase+ net migration rate

DOUBLING TIME

- Waktu yang dibutuhkan (tahun) oleh penduduk suatu negara/ wilayah untuk menjadi dua kali lipat jumlahnya.
- Rumus 70
- Waktu menjadi dua kali lipat$=\frac{70}{tingkat\ pertumbuhan\ (\%)}$ tahun

MODEL PERTUMBUHAN PENDUDUK

FERTILITAS ? MORTALITAS ?	MIGRASI		
	POSITIF	NEGATIF	NOL
F < M	Naik, Tetap, Stabil	Turun	Turun
F > M	Naik	Naik, Tetap, Stabil	Naik
F = M	Naik	Turun	Tetap