Income Inequality

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Unit II, section RE 6

I. Lorenz curves
II. Empirical Evidence: Income Inequality
III. Economic Explanations
IV. Mini Overview

I. Lorenz curves

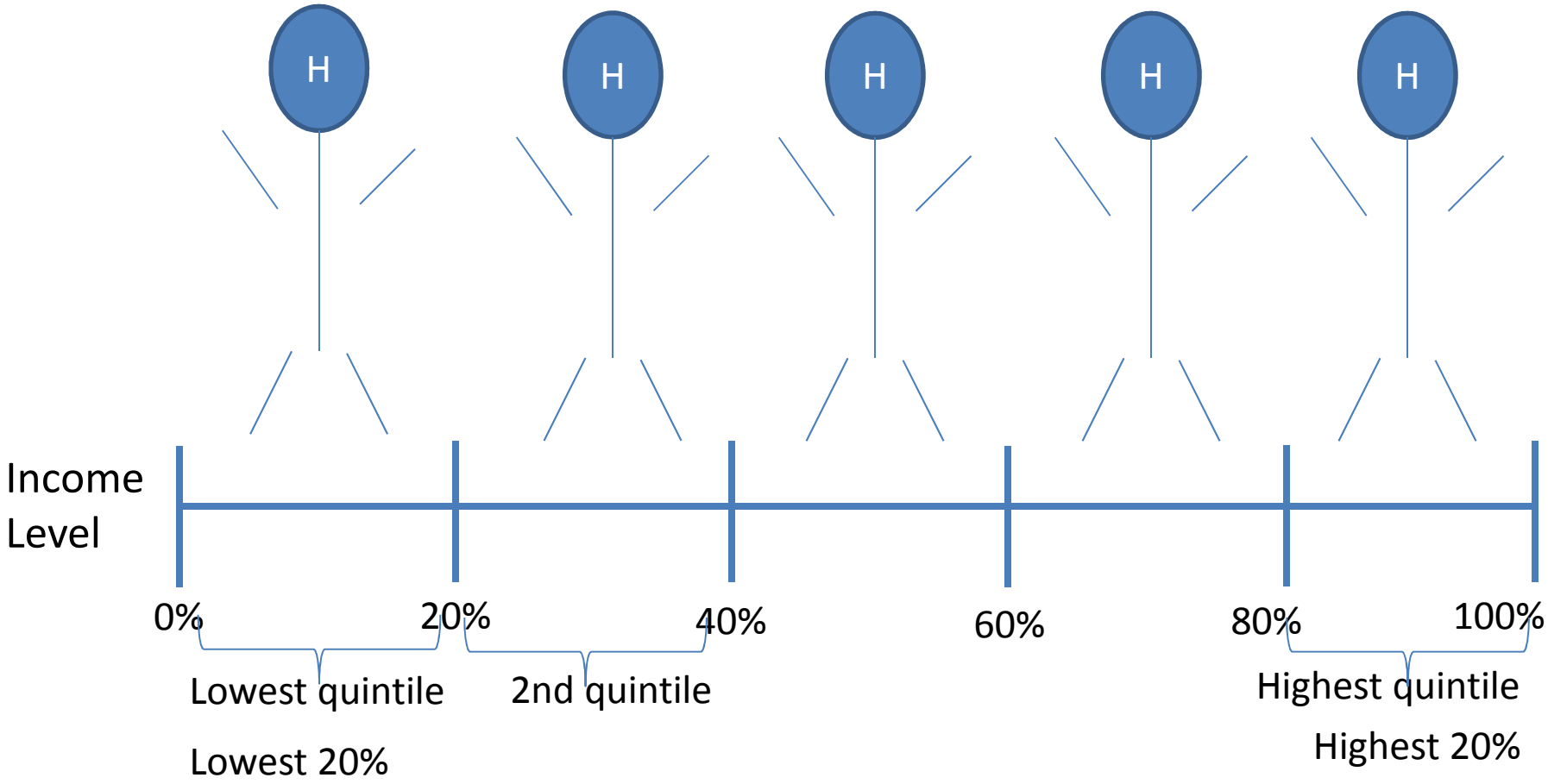
Lorenz curves = Graphical representation of income inequality

- Gini coefficient
- Quintiles: Analogous to percentiles on SAT

- Alternative measures
  - Share of total income going to quintiles

Quintiles

Sort all households from lowest income to highest income



US Income Distribution by Quintile

Table 1a

Distribution of U.S. Family Income by Quintile, 2007

Quintile	*Percent of Income*	*Cumulative Percent of Income*
Lowest fifth	3.4	3.4
Second fifth	8.7	12.1
Middle fifth	14.8	26.9
Fourth fifth	23.4	50.3
Highest fifth	49.7	100.0

Source: US Census Bureau: Income, Poverty and Health Insurance Coverage in United States, 2007, Table 1, page 7.

Median household income In Each Quintile

Table 1b

Money Income of Families in each Quintile, 2007
(in 2007 dollars)

Quintile	*Mean Household Income*
Lowest fifth	$11,551
Second fifth	$29,442
Middle fifth	$49,968
Fourth fifth	$79,111
Highest fifth	$167,971

Source: US Census Bureau: Income, Poverty and Health Insurance Coverage in United States, 2007, Table A-3, page 40.

Lorenz Curve Graph

Summary

Gini Coefficient: $g = \frac{A}{A+B}$

Perfect Equality: $A = 0, \quad g = \frac{0}{0+B} = 0$

Perfect Inequality: $B = 0, \quad g = \frac{A}{A+0} = 1$

II. Empirical Evidence: Income Inequality

Income Shares over Time, by Quintile

Table 2
Income Shares in Selected Years

Income Group	*2007*	*2001*	*1996*	*1990*	*1980*	*1970*	*1960*	*1950*
Lowest fifth	*3.4*	*4.2*	4.2	4.6	5.1	5.4	4.8	4.5
Second fifth	*8.7*	*9.7*	10.1	10.8	11.6	12.2	12.2	12.0
Middle fifth	*14.8*	*15.4*	15.8	16.6	17.5	17.6	17.8	17.4
Fourth fifth	*23.4*	*22.9*	23.1	23.8	24.3	23.8	24.0	23.4
Highest fifth	*49.7*	*47.7*	46.8	44.3	41.6	40.9	41.3	42.7

Sources: Baumol, W.J., and A.S. Blinder, Economics: Principles and Policies, Seventh Edition, 1996, and Table 1.

Figure 2: Lorenz Curves, 1980 and 2007
Rising Income Inequality

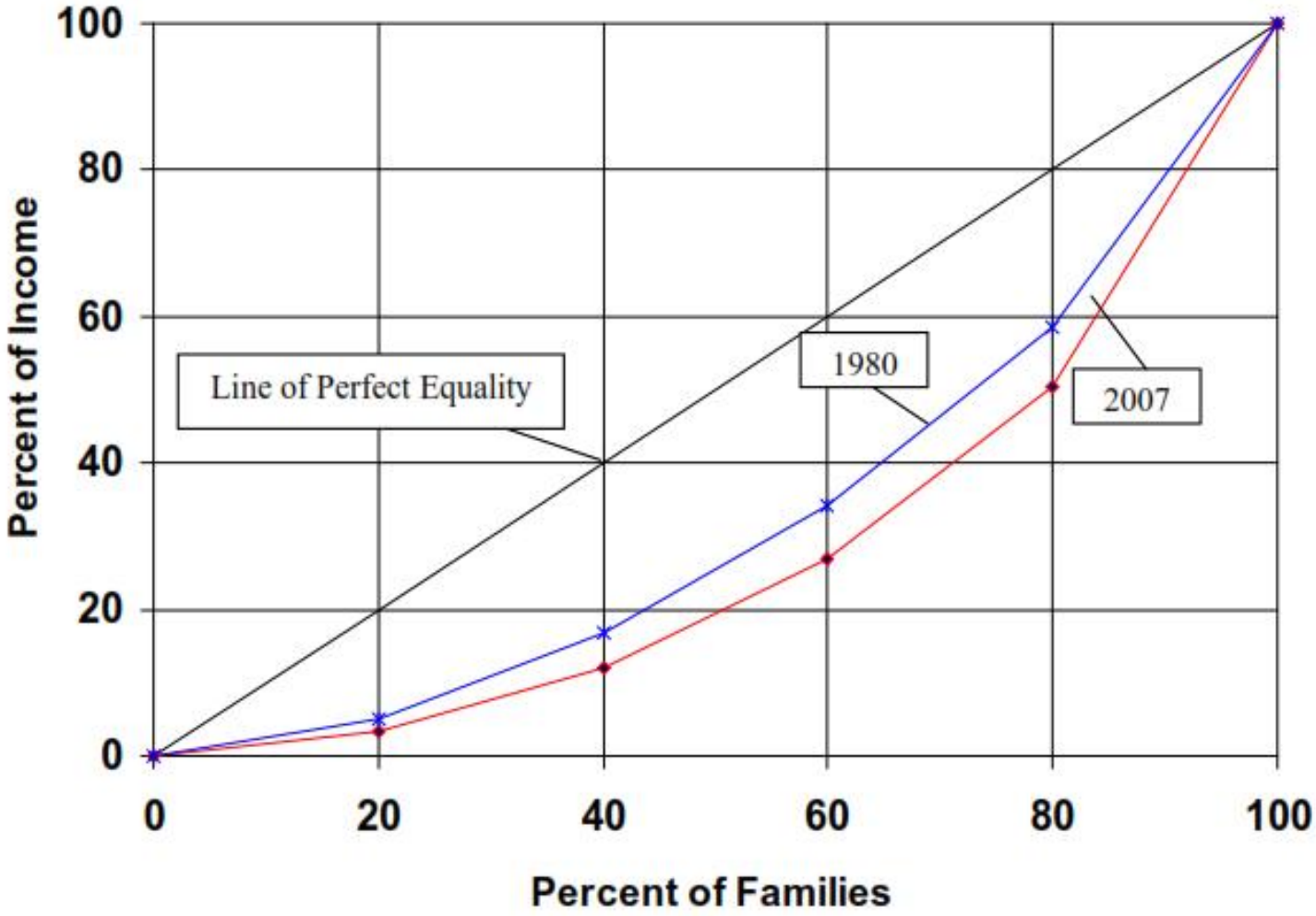
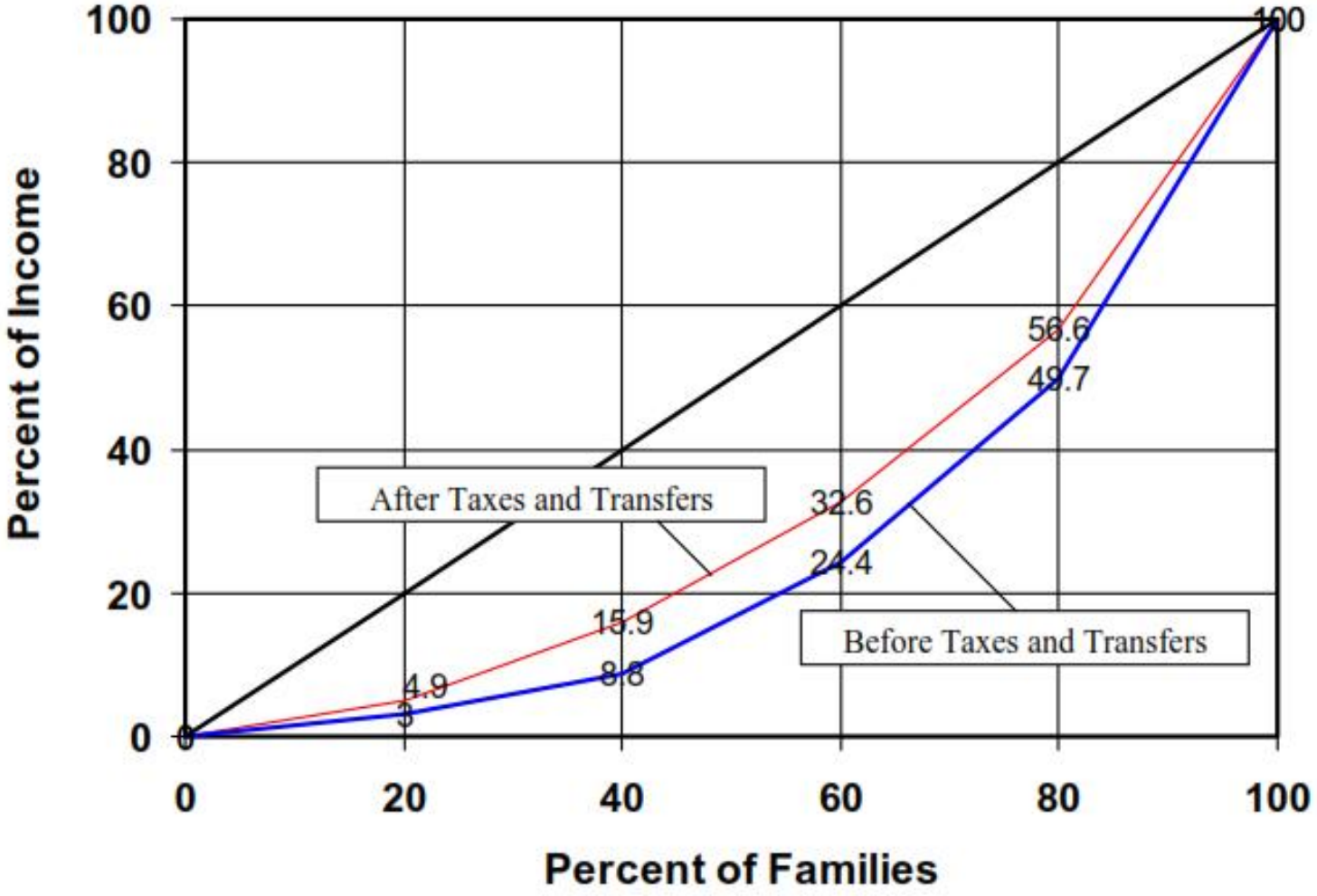


Figure 3: Effects of the Tax and Transfer System on Inequality, 1992



Source: Statistical Abstract of the United States, 1998.

Gini coefficients of income inequality in OECD countries, mid-2000s
Cross-Section

	Gini coefficient	OECD-30 average
	Coefficient Gini	Moyenne OCDE-30
DNK	**0.232**	0.311
SWE	**0.234**	0.311
LUX	**0.258**	0.311
AUT	**0.265**	0.311
CZE	**0.268**	0.311
SVK	**0.268**	0.311
FIN	**0.269**	0.311
BEL	**0.271**	0.311
NLD	**0.271**	0.311
CHE	**0.276**	0.311
NOR	**0.276**	0.311
ISL	**0.280**	0.311
FRA	**0.281**	0.311
HUN	**0.291**	0.311
DEU	**0.298**	0.311
AUS	**0.301**	0.311

	Gini coefficient	OECD-30 average
	Coefficient Gini	Moyenne OCDE-30
OECD-30	**0.311**	
KOR	**0.312**	0.311
CAN	**0.317**	0.311
ESP	**0.319**	0.311
JPN	**0.321**	0.311
GRC	**0.321**	0.311
IRL	**0.328**	0.311
NZL	**0.335**	0.311
GBR	**0.335**	0.311
ITA	**0.352**	0.311
POL	**0.372**	0.311
USA	**0.381**	0.311
PRT	**0.385**	0.311
TUR	**0.430**	0.311
MEX	**0.474**	0.311
OECD-30	**0.311**	

Source: OECD income distribution questionnaire

Trends in Gini Coefficients of Income Inequality in selected OECD Countries
Panel Data

Country	Mid-1980s	Mid-1990s	Mid-2000s
Canada	0.287	0.283	0.317
France	0.300	0.270	0.270
Germany	0.257	0.272	0.298
Ireland	0.331	0.324	0.328
Italy	0.309	0.348	0.352
Japan	0.304	0.323	0.321
Mexico	0.452	0.519	0.474
Portugal	0.329	0.359	0.385
Turkey	0.434	0.490	0.430
UK	0.325	0.354	0.335
US	0.338	0.361	0.381
OECD-24 average	0.293	0.310	0.313

III. Economic Explanations

1. Globalization
2. Skill-Biased Technological Change
   - Autor, Katz, Krueger, etc.
3. (Race between Education and Technology; Econ 325:Economics of Education, Prof. Stevenson)
   - Goldin, Katz

- Other Explanations:
  - Superstar effect
  - Immigration effect
  - Union power effect
  - …

Model: Supply and Demand of Labor Market

Globalization
e.g. textiles, manufacturing

Skill Biased Technological Change
e.g. self-checkout machines, self-driving cars, automation

Policy Implications

- Globalization
  - Less obvious
- Skill-Biased Technological Change
  - Less obvious
  - SR: low skilled workers dislocated from jobs
  - LR: high skilled workers increase??
- The Race between Education and Technology
  - Early childhood education
  - Financial aid packages for college
  - Improve quality of high schools

IV. Mini Overview: Midterm 1*

*subset of previous class sides

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GDP

$$Y = C + I + G + NX$$

- C= Consumption = Household spending on G&S

- I = Investment = Firm purchases of capital equipment, structures, inventory, & new housing
- G = Government spending on G&S

- NX = X – IM = Net Exports

Measuring GDP

- (Measured) GDP = The market value of all final goods and services produced within a country in a given time period.
  - (Measured) GDP vs "Ideal" GDP
  - Ideal GDP = Perfectly measured GDP = GDP that includes the value of **both market and nonmarket** final goods and services…

Calculating GDP Deflator

Steps:

1. Specify the base year
2. Fix prices in the base year
3. Holding prices fixed, compute real GDP for every year
4. Compute $GDP\ Deflator_t = \frac{nom\ GDP_t}{real\ GDP_t} * 100$ for every year
5. Compute inflation rate for every year

CPI

CPI = Measure of the overall cost of a typical basket of goods and services bought by the average consumer

Steps:

1. Specify the base year
2. Fix the basket in base year [4 Chips, 2 Donuts]
3. Holding the basket (quantities) fixed, compute the basket cost for every year
4. Compute $CPI_t = \frac{Cost\ of\ basket\ in\ year\ t}{Cost\ of\ basket\ in\ base\ year} * 100$ for every year
5. Compute inflation rate for every year

π: Inflation rate

$$\pi_t = \%\Delta P_t = \frac{P_t - P_{t-1}}{P_{t-1}} * 100$$

$$\pi_t = \frac{CPI_t - CPI_{t-1}}{CPI_{t-1}} * 100$$

- $\pi_{11} = \frac{CPI_{11} - CPI_{10}}{CPI_{10}} * 100 = \frac{175-100}{100} * 100 = 75\%$
- $\pi_{12} = \frac{CPI_{12} - CPI_{11}}{CPI_{11}} * 100 = \frac{250-175}{175} * 100 = 43\%$

Sources of Economic Growth

Determinants of real GDP or output

1. K = Amount of physical capital
2. L = Amount of labor
3. Technology level
4. H = Human capital or education
5. Quality of management/entrepreneurship
6. N = Natural resources

A =Total Factor Productivity = Intangible factors

Growth Accounting Equations

$$\%\Delta Y = \%\Delta A + \alpha\%\Delta K + (1-\alpha)\%\Delta L$$

$$\%\Delta\left(\frac{Y}{L}\right) = \%\Delta A + \alpha\%\Delta\left(\frac{K}{L}\right)$$

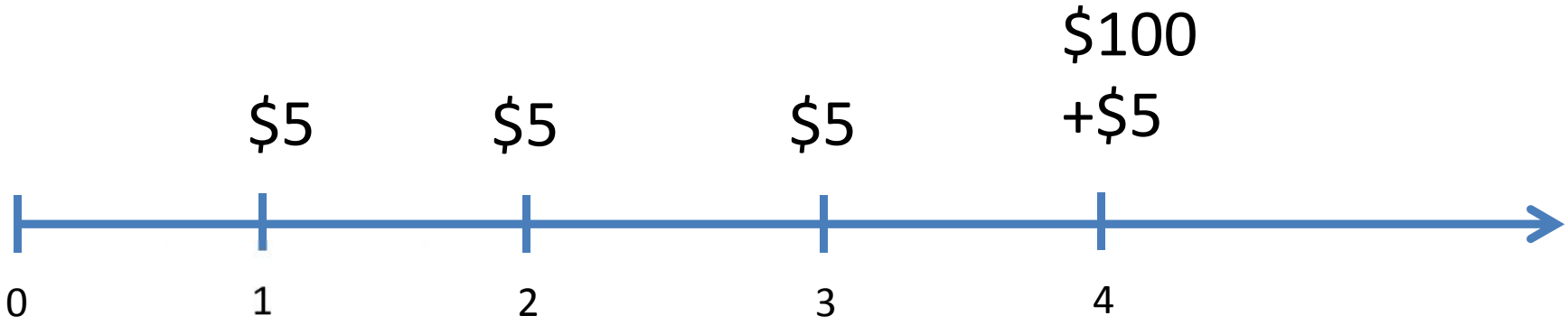
$$\frac{C}{pop} = (1-s)\left(\frac{Y}{L}\right)\left(\frac{L}{pop}\right)$$

S & I in the National Income Accounts

$$Y = C + I + G + NX$$
$$Assume\ closed\ economy \Rightarrow NX = 0$$
$$Y = C + I + G$$
$$Y - C - G = I$$
$$S = I$$

- S = National Savings = Total income in the economy that remains after paying for consumption and government purchases

Present Value: Bond



$$P_B = PV = \frac{5}{(1.07)} + \frac{5}{(1.07)^2} + \frac{5}{(1.07)^3} + \frac{5}{(1.07)^4} + \frac{100}{(1.07)^4}$$

$$= 4.67 + 4.37 + 4.08 + 3.81 + 76.29 = 93.22$$