

PAGE ONE ECONOMICS NEWSLETTER

the back story on front page economics

Gini in a Bottle: Some Facts on Income Inequality

March 2012

Classroom Edition

An informative and accessible economic essay with a classroom application.

Includes the full version of the Page One Economic Newsletter, plus questions for students and an answer key for classroom use.

Common Core Standards (see page 11)



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March ■ 2012

Gini in a Bottle: Some Facts on Income Inequality

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“Equality of economic opportunity appeals to our sense of fairness...it also strengthens our economy.”

—Federal Reserve Chairman Ben S. Bernanke, February 6, 2007

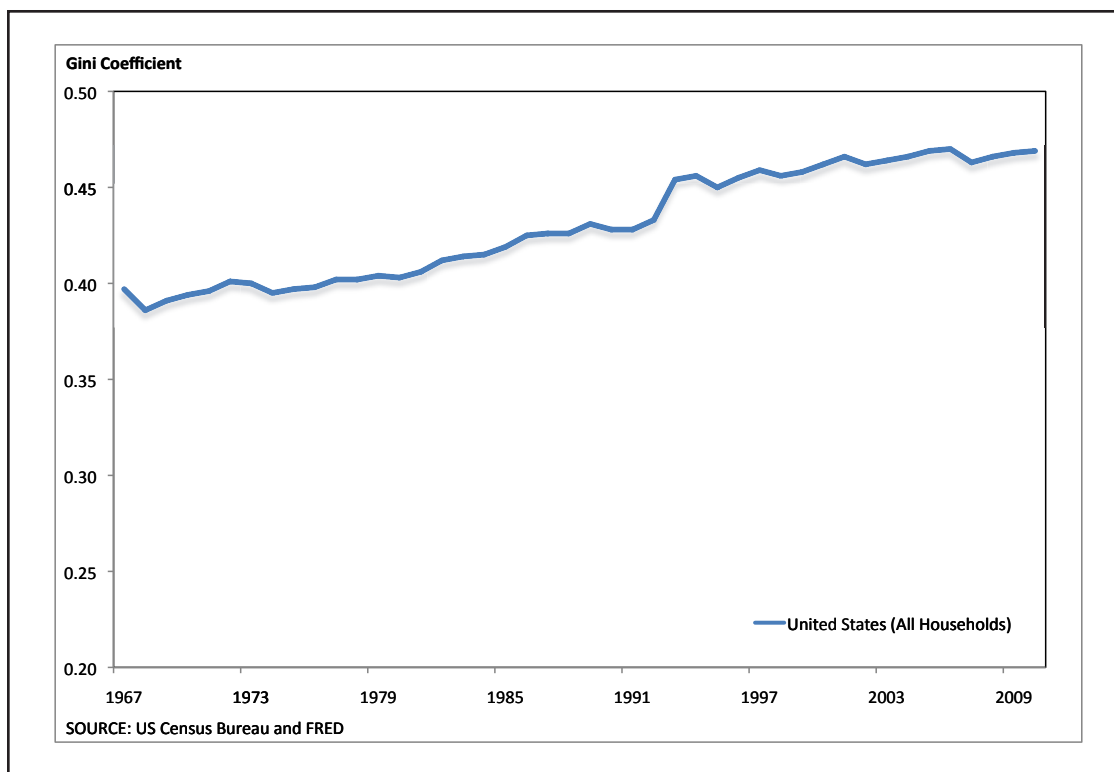
Income inequality has been rising in the United States. The recent recession may partially explain this phenomenon because higher unemployment and reduced working hours affect the incomes earned by many people during a downturn and weaker-than-expected recovery. Longer-term historical trends in income growth account for another part of it. The [Congressional Budget Office \(CBO\)](#) estimates that real (or inflation-adjusted) after-tax incomes¹ for the wealthiest 1 percent of Americans grew by 275 percent between 1979 and 2007 compared with 62 percent for the average household. Similarly, on a global level, income inequality rose in 17 of 22 developed countries (members of the Organisation for Economic Co-operation and Development) between the mid-1980s and the mid-2000s.

Understanding the concept of income inequality and its underlying causes is necessary before discussing policy options. A society with perfect income equality would be one where *every* individual earns the same amount of income. Inequality occurs when a greater portion of a society’s income is earned by a certain share of the population.

Income inequality can be gauged in several ways.² The most common indicator, the Gini coefficient, provides numerical values between 0 and 1 to measure the disparity within an income distribution for a country. Higher values of the coefficient correspond to higher levels of inequality in a nation, and vice versa. For example, recent Gini coefficients were as low as 0.2 in traditionally egalitarian countries such as Sweden and Denmark; countries with historically greater levels of inequality (e.g., Chile and Mexico) had values closer to 0.5. The Gini coefficient in the United States is currently above 0.4 and rose by 18 percent from 1967 to 2010, as shown in the chart.

Economic theory suggests that some level of income inequality will always exist in society because people are paid according to their level of knowledge or skills. Essentially, this implies that a society’s highest-paid individuals are generally its most productive.³ From an efficiency standpoint, this is an ideal scenario for two reasons. First, such an economy would use its labor resources to full capacity. Second, differences in incomes would encourage less-productive individuals to increase their skills to achieve higher earnings.

In reality, the causes of inequality are more complex: Technology, less upward mobility for low-income families, rapid globalization, and institutional changes have all widened the earnings gap.⁴ As the service sector has grown in developed economies, firms have increased their use of technology in the production process. A corresponding surge in demand for educated workers with specialized qualifications (e.g., in operating computers) then resulted in higher



wages for skilled labor relative to the average worker. To illustrate, Fed Chairman Ben Bernanke noted that the difference in earnings between college graduates and those with only a high school diploma rose from 38 percent in 1979 to 75 percent in 2006.

Various studies show that inequality also stems from rigid societal structures. Historically, gender and racial discrimination were some reasons for these income differences. More recently, [limited intergenerational mobility](#)—where an individual’s background is strongly linked to his or her future income—has played a larger role in exacerbating the inequality gap. Statistics show that around 42 percent of American men in the lowest 20 percent of the income distribution who were born between 1957 and 1964 remained there, while only 8 percent reached the top quintile by about age 40. This trend may be explained by the fact that well-educated and high-earning parents can provide better development opportunities for their children, which then affect their future incomes.

By contrast, the effects of globalization, another possible cause of inequality, have been mixed. A rise in U.S. international [trade](#) activity over the past several decades has shifted a significant portion of low-skill jobs to other countries and reduced incomes of low-skilled workers relative to higher-skilled workers in certain industries. Globalization’s impact on the overall rise in income inequality is still a subject of continued debate among economists though. In addition, certain economists have found that inequality levels did not change significantly with a [greater inflow of foreign workers](#) from more open labor markets.

Institutional changes (e.g., in job market trends and tax policy) may also play a role. A study by David Card showed that a decline in union membership since the 1980s could have accounted for a [15 to 20 percent rise](#) in income inequality among male workers, especially those in middle-skill jobs. Other economists, such as Alan Krueger, have also echoed this

observation. Meanwhile, although income tax rates remain progressive, changes in the capital gains tax rate decreased the tax burden for high-income individuals who earn a large portion of their income from stocks and dividends. All in all, these are still likely to be less important than the main factors such as differences in intellect and skill levels.

Addressing the disproportionate rise in inequality through effective policy can benefit the economy, according to the [International Monetary Fund](#). However, care should be taken to focus on sensible measures that provide long-term economic opportunity. Public policies that broaden access to education, especially [early childhood programs](#), can improve a student's lifetime earnings and reduce demographic income gaps. Also, research from [Harvard University](#) shows that increasing teacher quality can positively affect educational outcomes among students. In labor markets, initiatives that encourage innovation, employment growth, and improvements in worker productivity through job training could be helpful. Lastly, macro-level policies have a role to play: Proposals to streamline the tax code can increase the progressivity of the tax system.⁵

Tackling the issue of income inequality remains a priority for some policymakers. Certain levels of income inequality will always exist in society as a reflection of variations in intellect and talent. However, public policies, especially ones designed to increase the educational attainment of the least skilled, can help workers compete in an increasingly globalized economy and promote more equal opportunity. ■

NOTES

¹ The CBO defines after-tax income as "market income plus transfer income minus federal taxes paid." Other definitions of [income](#) or different measures of well-being, such as [wealth](#), are also used in the current debate on inequality.

² [The World Bank](#) provides a number of statistical methods to estimate income inequality.

³ [Productivity](#) is defined as the output per worker or output per unit of time.

⁴ Higher executive compensation and the growth of the finance industry over the past two decades may also be other factors that explain this gap; see *Economist*. "[Who Exactly Are the 1%?](#)" January 21, 2012.

⁵ A progressive tax system is one where "the share of income paid in taxes rises with income"; see Piketty and Saez (2007).

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Name _____ Period _____

Federal Reserve Bank of St. Louis *Page One Economic Newsletter*:
"Gini in a Bottle: Some Facts on Income Inequality"

After reading the article, answer the following questions.

1. Using information from the essay, provide evidence to explain how income inequality has changed in the United States over time.

2. Explain why it might be beneficial for a society to have its most productive members also be its highest paid, and what incentive some level of inequality provides.
 - 1)

 - 2)

3. How do worker skills and education affect income inequality?

4. Explain how policies enacted in the following areas can help address the rise in inequality.
 - Education

 - Labor market

 - Tax code

Teacher's Guide

Federal Reserve Bank of St. Louis *Page One Economic Newsletter*: "Gini in a Bottle: Some Facts on Income Inequality"

After reading the article, answer the following questions.

1. Using information from the essay, provide evidence to explain how income inequality has changed in the United States over time.

Real after-tax incomes for the wealthiest 1 percent of Americans grew by 275 percent between 1979 and 2007 compared with 62 percent for the average household. Also, the Gini coefficient in the United States rose by 18 percent from 1967 to 2010.

2. Explain why it might be beneficial for a society to have its most productive members also be its highest paid, and what incentive some level of inequality provides.

- 1) Such an economy would use its labor resources to full capacity.
- 2) Differences in income would encourage less-productive individuals to increase their skills to achieve higher earnings.

3. How do worker skills and education affect income inequality?

The increased use of technology has increased demand for educated workers with specialized qualifications, which has resulted in higher wages for skilled labor relative to the average worker. The difference in earnings between college graduates and those with only a high school diploma rose from 38 percent in 1979 to 75 percent in 2006.

4. Explain how policies enacted in the following areas can help address the rise in inequality.

Education

Increases in education can improve a student's lifetime earnings and reduce demographic income gaps. Also, teacher quality can positively affect educational outcomes among students, which would bode well for their future success as workers.

Labor market

Initiatives that encourage innovation, employment growth, and improvements in worker productivity through job training can help reduce income inequality.

Tax code

Streamlining the tax code can increase the progressivity of the tax system.

Teacher note: A progressive income tax is designed so that people with higher incomes pay a higher percentage of their income in taxes.

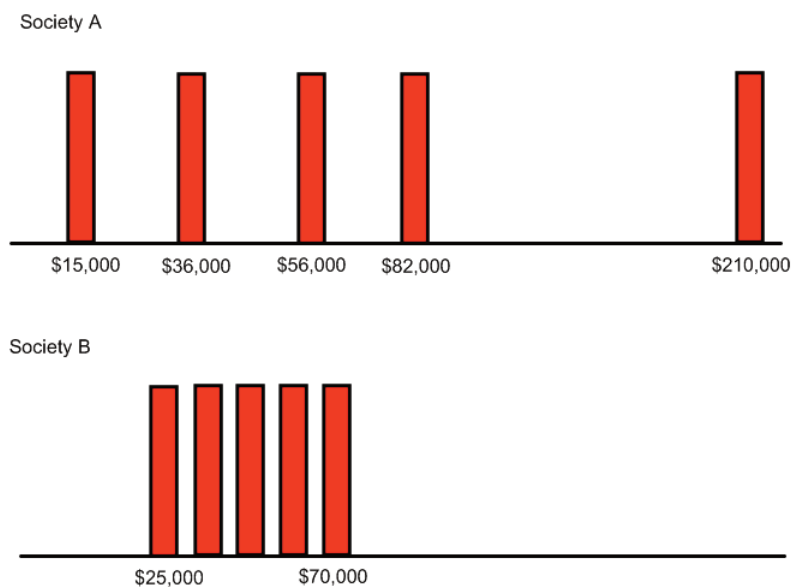
For Further Discussion

Display or distribute copies of the provided visual. Read the following to your students and lead a discussion based on the scenarios and results provided.

Imagine two fictional societies:

Society A (See Visual 1): Each bar represents the average income of a quintile (segments representing 20 percent) of the population. The lowest quintile has an average income of \$15,000 per year. The highest quintile has an average income of \$210,000 per year.

Society B: The average incomes across the quintiles range from \$25,000 to \$70,000.



1. Ask the students to identify which society exemplifies more income inequality and to support their answer.

Society A exemplifies more income inequality. Society A has quintiles with average incomes that range from \$15,000 to \$210,000. Not only is the spread in incomes wider from low to high, but there is a sizable gap between the fourth quintile (\$82,000) and the fifth (\$210,000). The incomes in society B range from \$25,000 to \$70,000, the lowest income is higher than the lowest income in society A, and the highest income is lower than the highest income in society A.

2. Ask the students in which society they would rather live.

Some students may choose society A because it offers the opportunity to earn a very high income. Others may choose society B because, while it reduces the likelihood of a very high income, it also reduces the risk of a very low income.

3. Ask the students what factors might be at play in the differences in income inequality. Why might society B more equal than society A?

It could be that the workers in society B have more similar skills and education than workers in society A. Or it might be that society B has government policies that have influenced the distribution of income in the economy.

Governments can use policy to change the distribution of income. One method is income redistribution, whereby a minimum amount of income, or in-kind goods and services (such as food stamps or subsidized housing), is provided for citizens. This type of redistribution is often funded by taxing members of society who earn high incomes. Government decides what amount constitutes “high” income.

The trade-off between incentives and income equality

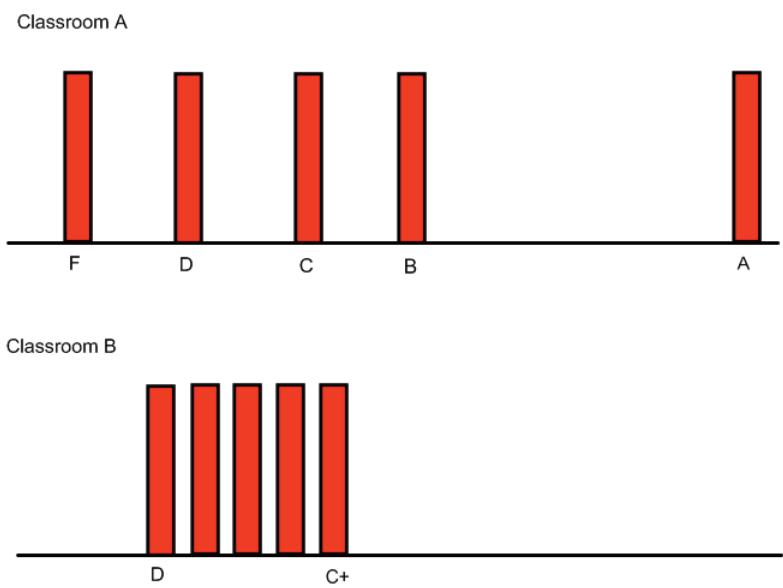
Some economists view this discussion in terms of trade-offs. Government policies designed to encourage economic equality, if carried too far, can reduce the incentives for economic output. For example, guaranteeing a certain minimum level of income might reduce the incentive to work for some people. And since providing income subsidies requires taxation of those with high incomes, it can reduce the incentives for high-income earners to take additional risks. Remember that risk implies that the activity may result in a gain or a loss. These risks may look less attractive since any potential income earned will be smaller since it will be taxed at a higher rate.

Case Study: The classroom economy

Imagine two fictional classrooms:

Classroom A (See Visual 2): Each bar represents the grade of a quintile (segments representing 20 percent) of the student population. The lowest quintile has an average grade of F. The highest quintile has an average grade of A.

Classroom B: Each bar represents the average income of a quintile of the population. The range of grades across the quintiles averages from D to C+.



1. Ask the students in which classroom they would rather learn.

Some students may choose classroom A because it offers the opportunity to earn a very high grade. Others may choose classroom B because, while it reduces the likelihood of a very high grade, it also reduces the risk of a failing grade.

2. Ask the students how a teacher might design a class to move from a grade distribution as in Classroom A to a distribution as in Classroom B.

In Classroom A, the teacher might “tax” the students who earn As and Bs and redistribute the points to students who earn Fs and Ds.

3. Ask the students how such grade distribution might change the incentive structure in the classroom.

Students who might normally earn As and Bs might not work as hard since some of their points will be taxed away. Students who might normally earn Fs and Ds might also decide to work less hard since they will be provided with a “safety net” through grade redistribution.

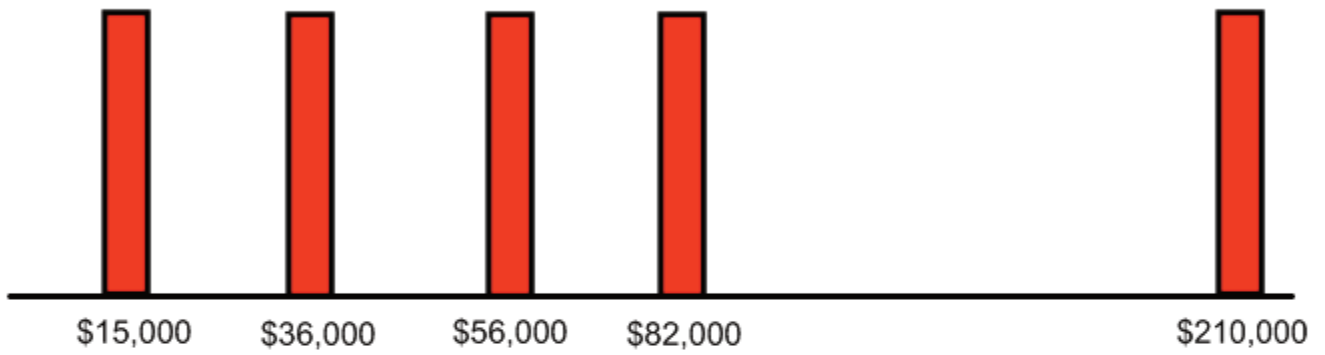
4. Ask the students how the change in behavior will affect the overall output—or learning—that takes place in the classroom.

For many students incentives to learn would be reduced. The result would be less learning overall.

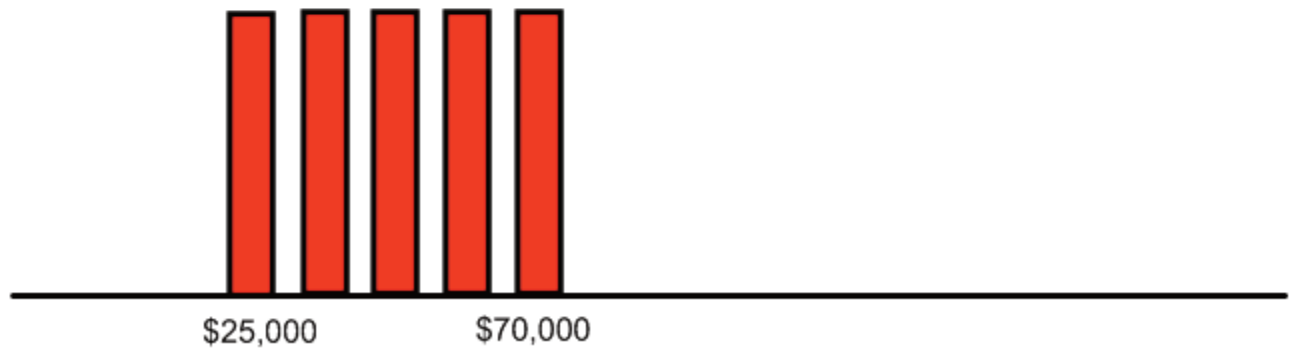
Similar to the classroom example, government policies that attempt to reduce income inequality through income redistribution can reduce incentives for productive work and risk-taking. So, when it comes to income redistribution, governments must weigh the costs and benefits of the policies to determine whether the policy is the best for society at large.

Visual 1

Society A

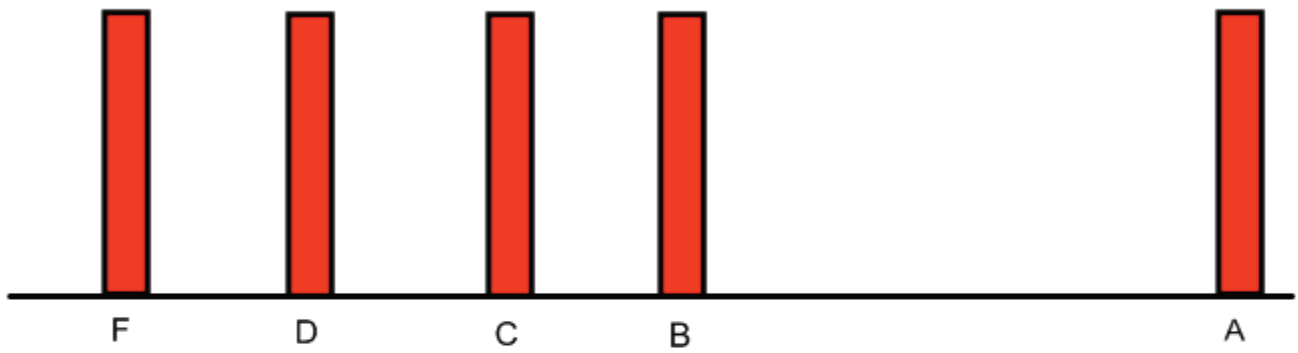


Society B

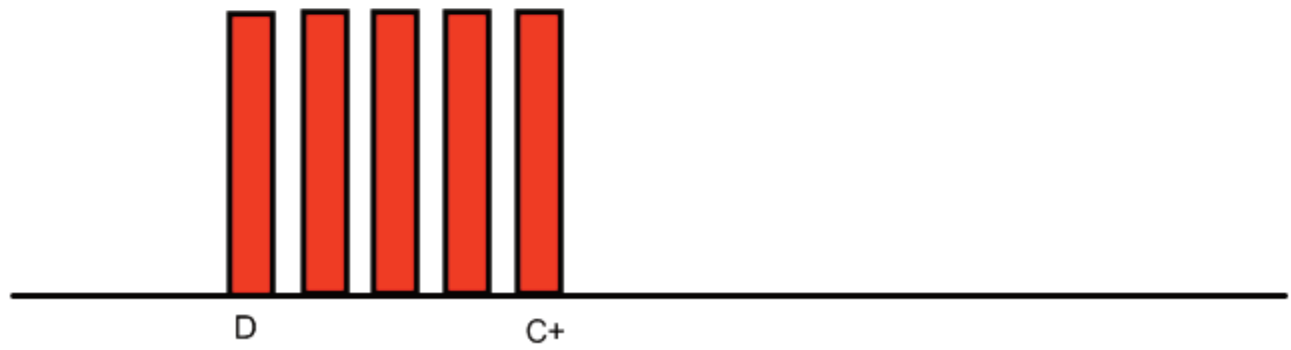


Visual 2

Classroom A



Classroom B



Common Core Standards

Grades 6-12 Literacy in History/Social Studies and Technical Subjects

- **Key Ideas and Details**

RH.11-12.1. Cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole.

RH.11-12.2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary that makes clear the relationships among the key details and ideas.

- **Craft and Structure**

RH.11-12.4. Determine the meaning of words and phrases as they are used in a text, including analyzing how an author uses and refines the meaning of a key term over the course of a text (e.g., how Madison defines *faction* in *Federalist* No. 10).