Assumptions: This year, everyone has a 50% chance of being unemployed; next year, when times are better, everyone will have a 0% chance of being unemployed. Employed people earn \$100 a year and unemployed people earn \$50 a year. Utility is given by the log of income. People discount the future at 90%. The deadweight loss due to taxation is 1/3 of the amount taxed.

Jack is a typical employed person and Jill is a typical unemployed person, so this year Jack earns \$100 and Jill earns \$50. Jill can consume \$c by borrowing (c - 50) from Jack at some interest rate r. Next year, she'll have to pay back (c - 50)(1 + r) from her income of \$100, so she'll consume 100 - (c - 50)(1 + r). Therefore her utility (accounting for the 90% discount rate) is

$$\log(c - 50) + .9\log(100 - (c - 50)(1 + r))$$

and she maximizes this by setting c = (1500 + 500r)/(19 + 19r).

Jack solves a similar problem (deciding how much to lend to Jill) and decides to consume the amount (2000+1000r)/(19+19r).

The amount Jack lends has to equal the amount Jill borrows, which is equivalent to saying that Jill's consumption plus Jack's must add to \$150, which is the total of their incomes. Adding the two expressions for Jack's and Jill's consumption and setting the total equal to \$150, we can solve for the equilibrium interest rate $r \approx 48\%$. At this interest rate, Jill consumes \$61.84 today (by borrowing \$11.84 from Jack) and \$82.46 next year (after repaying Jack with interest). Her utility is $\log(61.84) + .9 \log(82.46) \approx 8.1$. A similar calculation shows that Jack's utility is 8.77, for a total of about 16.87.

Now suppose the government taxes Jack \$15 in order to pay a \$10 unemployment benefit to Jill (with \$5 disappearing as deadweight loss). Then we repeat all the calculations, changing Jack's current income to \$85 and Jill's to \$60. The result is that Jill borrows \$5.92 from Jack at an interest rate of 53%, and earns a utility of 8.25, while Jack earns a utility of 8.59, for a total of 16.84.

The amnesiac, who has equal chances of being Jack or Jill, maximizes the average of Jack's and Jill's utilities, which is equivalent to maximizing the total. (That the amnesiac wants to do this requires some argument, but that argument is in all the textbooks.) Therefore, because 16.87 is less than 16.84, the amnesiac rejects the unemployment benefit.