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2008

11th Annual High School Mathematical Contest in Modeling (HiMCM) Summary Sheet

(Please attach a copy of this page to each copy of your Solution Paper.)

Team Control Number: 2110
Problem Chosen: A

Please type a summary of your results on this page. Please remember not to include the name of your school, advisor, or team members on this page.

Six in ten voters indicated in exit polls that they believed the economy was the most important issue facing the nation. The ballooning national debt, which passed $10 trillion in September, contributes significantly to citizens' economic fears. The public needs help understanding the impact such a colossal debt has on their lives, and political leaders need information on how different economic policies will affect the nation.

We viewed the national debt as the composite resulting from revenues generated from taxes and expenditures allocated to various federal programs and created two models to represent the impact of the two components on the national debt separately.

For tax policy, we simulated the effect that taxation has on the income of individuals by subtracting taxes from incomes we found from the US Census Bureau. After taxes had been deducted, we also subtracted the cost of living to yield the disposable income. We plotted disposable incomes in a normal distribution and found the difference between an individual's disposable income and the mean. This difference was used to estimate the probability that a given change in salary would occur during the next fiscal year. We repeated this simulation for a given number of years to determine not only the revenue the government can expect from such a tax plan, but also the impact the tax plan has on individuals.

We also considered the effects of several expenditure plans. The plans placed differing degrees of importance on sectors within the economy: some sectors yield a small return on an investment, while others do not. Emphasizing such economically productive sectors over others changed the net value of expenditures and decreased the overall impact of expenditures on the national debt.

The two tax plans we tested were a flat tax rate, which charges all individuals a set rate, and a progressive tax rate, which changes the tax rate based on an individual's income. For expenditure plans, we considered three options. One plan allocated most funds to sectors that yielded a return; a second plan allocated the majority of funds to low-impact sectors; a third plan compromised the two extremes. We found that the flat tax brought in greater tax revenue but increased economic disparity; the progressive tax resulted in a slightly lower tax revenue but did less to widen the gap between the rich and the poor. For expenditure plans, we found that the compromise produced the most

desirable results because it helps expand the economy but does not neglect necessary expenses.

Assumptions

- All citizens spend at least $10,787 (the poverty threshold) to maintain a standard of living adequate for survival. Citizens whose disposable income surpasses this level spend $\frac{3}{10}$ of the remaining income after $10,787 has been paid on luxury spending.

- Citizens who have unused funds left at the end of a fiscal year are more likely to earn a higher salary the next year, because they have the capital needed to invest and create new wealth. Accordingly, the more a citizen earns, the more likely he is to secure a larger salary in the future.

- The change in salary for a citizen can range from a very large increase to a very large decrease. For our purposes, we assume that the curve modeling change in salary follows a normal distribution, with small positive or negative changes being far more likely to occur than large changes in either direction.

- Direct expenditures by the government will continue to grow in a relatively linear fashion at the rate of $.1 trillion per year; this is the rate at which direct expenditures have grown for the past five years.

- Investing in growth-enhancing programs yields a net return of 10% on the amount spent.

- The federal government continues to pay off previously-accrued interest with 10% of each year's budget.

Model

Understanding national debt and the way it evolves from year to year can be extremely complex. The key to our approach to debt was recognizing that modeling debt is essentially a two-pronged issue. Money flows in to the government in the form of the tax revenues it collects, and money flows out in the form of funding for federal programs. Because government spending is not predicated on the revenues it collects, it is difficult to model debt with an equation that assumes a relationship between revenue and spending that does not exist. Instead, we broke the problem into its two main components, tax policy and expenditure policy, and decided to analyze the economic impact of possible strategies on a year-by-year basis. We realized it would be most feasible to combine the data yielded by the two elements at the end of our model rather than trying to consider them simultaneously.

1. Tax Policy

To determine the effect tax policies have on national debt, we created a computer simulation that forecasts the future of an economy when different tax policies are applied. Given current census data and any method of taxation, the simulation can predict how much money the government will receive from taxpayers each year after the policy is enacted and which economic classes will carry the heaviest burden for that taxation plan.

Essential to our approach is the idea that taxes affect taxpayers individually rather than as an aggregate. A well-off person, for example, is more likely to increase their wealth than a poor person, simply because they have the money to invest in creating new wealth. But wealth doesn't necessarily guarantee continued success and poverty doesn't bar people from eventually achieving economic security. There is an individual, random element involved that allows people to rise and fall from the economic class they are currently in. To quantify this element of chance, we used weighted random functions to manipulate a simulated population of taxpayers, which we will discuss in detail later.

Our model begins by taxing the population from the census data according to a specific tax plan. Then, the absolute poverty threshold (a number calculated by the Census Bureau as the minimum amount of money required to live comfortably in the U.S.) is subtracted. Thirty percent of the remaining money (representing luxury expenses) is subtracted as well, if incomes are large enough. The remaining money, in theory, would be available for investing in entrepreneurial activities that could increase the taxpayer's salary in later years.

We fitted the amounts of leftover money all citizens had to a normal curve and used a z-score to determine the probability that an individual's salary would change, and if so, by how much. People with salaries near the national mean salary would have z-scores close to zero, and people with salaries on either extreme of the mean would have highly positive or highly negative z-scores. Because we're using a normal curve, extreme outliers on the curve do not significantly impact the data set because the probability of such a value occurring is very low.

We then used the z-scores to create a normal distribution curve for each taxpayer that represented the probability that their salary would increase or decrease during the next year. We determined that if incomes changed one-tenth of one percent per standard deviation from the mean, our model fit historical data and was therefore most likely valid. We translated the curve for probability of change in salary based on the z-score scaled so that a z-score of fifteen would translate the curve to the right by 1.5 percent of income.

This yielded a distribution we used to weight our random number generator to determine if an individual's salary would change. To choose random numbers weighted using our distribution, we used a computer algorithm similar to the Box-Muller Transform and Monte Carlo's method. This allowed us to weight the pseudo-random numbers generated by the computer according to the probabilities we found earlier. From our pseudo-random generator, we received percent change in income numbers that we applied to each individual. The next iteration of the simulation then used these new income numbers rather than the initial ones.

We then carried out the simulation on our population repeatedly using a computer. In each cycle, we taxed the population according to the plan provided, subtracted costs of living, and selected the percent change in salary for the next year from a weighted probability distribution based on the money left over. Using this method, we were able to determine not only the impact that the tax policy has on national debt, but also the impact on the taxpayers.

The power of this granular approach cannot be understated. It makes perfectly clear how different classes of people will be affected by the policy, and allows politicians to weigh the economic benefits of a policy with the hardship it might cause their constituents. That way, politicians can choose a plan that will help lower national debt while remaining loyal to the people who helped elect them to office.

The comparison of a flat rate tax vs. a progressive tax plan is a great example of how our model could be used to help politicians choose tax plans. The current US tax plan is a progressive one, meaning that it puts people into different tax brackets based on their income, and taxes the higher tax brackets more. Some politicians have proposed that the US adopt a flat rate tax, meaning that everyone pays the same percentage of their income in tax.

Using our model, one can learn about the cost and benefits of each tax plan. After running the simulations (simulation data available in appendix A), we found that the progressive tax acted differently than the flat tax as the number of iterations increased. Progressive tax slowly decreased debt, but kept income disparity constant. The flat tax, on the other hand, decreased debt quickly at the expense of income disparity. Under the flat tax, the rich became richer and the poor became poorer. Under progressive tax, the progression toward inequality was slowed. Therefore, those seeking equality of incomes should choose the progressive tax plan over the flat tax plan.

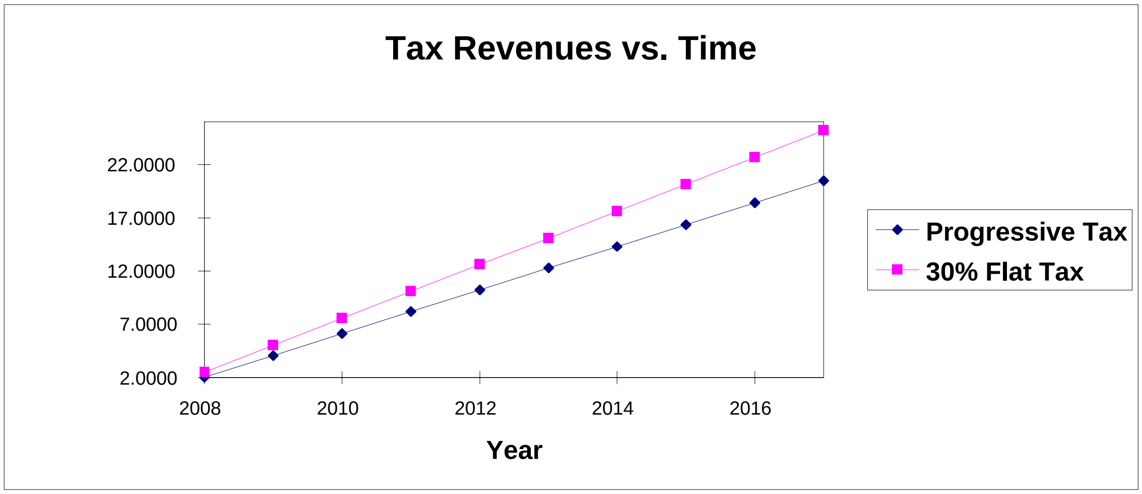
However, it should be emphasized that the model can be used to describe a wide variety of tax plans, not just these two. It can be used as an interactive and inventive tool as well as a comparative tool. Using the simulation's flexible syntax, it's possible to model a wide variety of tax plans or invent new plans with novel properties. Below is an example of the tax plan syntax:

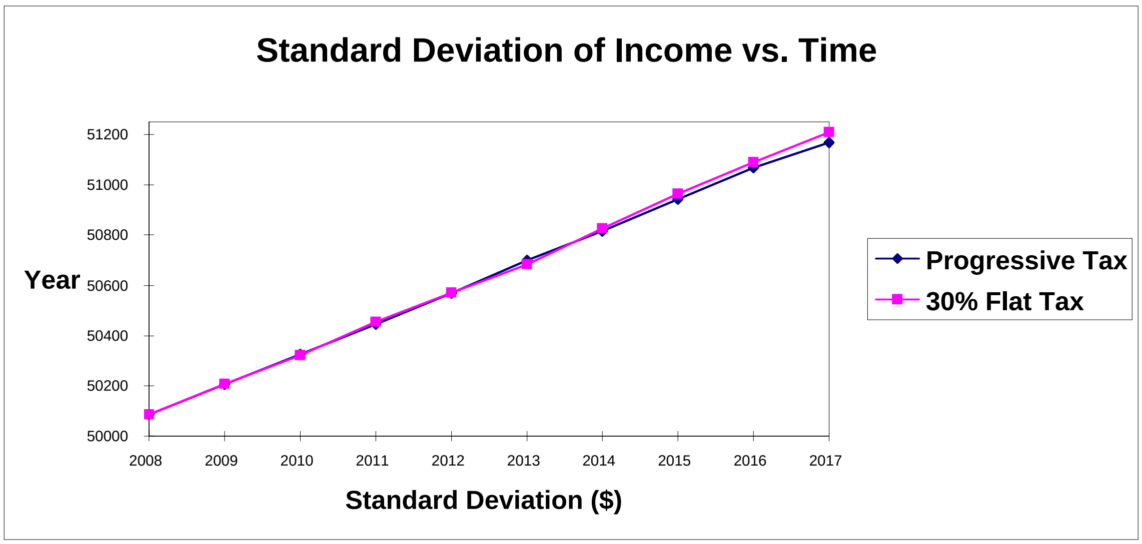
```
flat_tax = Proc.new { |income|  tax_rate = 0.3;  income*tax_rate }
```

By experimenting with new tax plans, we found some unexpected results. One tax plan we analyzed was a policy we like to call the Lottery Tax. Its simulation plan looks like this:

```
lottery_tax = Proc.new { |income| income*rand }
```

It works by randomly taxing each person between zero and 100 percent of their income each year. And while the plan would have little success in the real world, simulation reveals some of its interesting properties. In the simulation, the lottery method nearly doubled the yearly tax revenue versus the flat tax plan, while changing the income disparity (the standard deviation of the population) very little. Theoretically, this method could be used to discover new tax plans that fit the population's needs better than current tax plans like the flat or progressive tax.





This graph shows that using the flat tax increases the standard deviation of all incomes; in essence, the range of income widens as the rich get richer and the poor get poorer

A flat tax is the most effective at reducing the debt in the least amount of time. But unlike the progressive tax, the flat tax exacerbates the gap between the rich and the poor. Although the progressive tax brings in less revenue, it does not significantly affect class disparity.

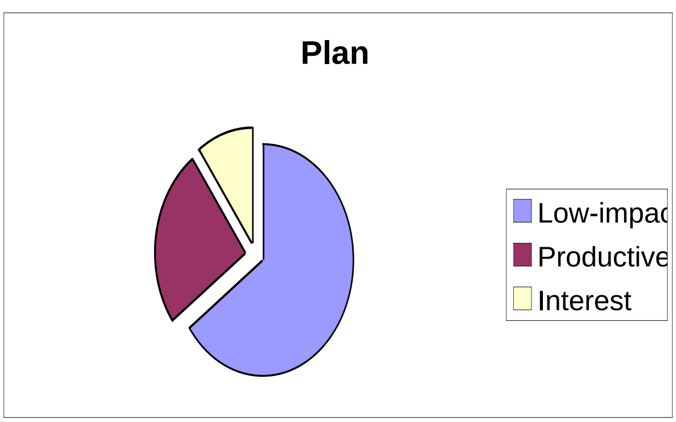
2. Expenditure Policy

When we began looking at ways to create expenditure policy, we recognized two different directions we could go. One route would have meant analyzing, in very broad terms, the effect of spending either more or less money on federal programs. We did not feel that this was as sensitive to real-world conditions, because proposed budget plans usually do not differ by significant dollar amounts. Instead, possible policies are more likely to vary by which sectors of the economy receive the most money. Therefore, we decided to consider expenditure policy in terms of which programs are allotted the largest proportions of the budget. It gradually became obvious that investing money in certain sectors can be considered growth-enhancing, while investing in others has little or no effect on economic growth. Growth-enhancing sectors include education, scientific research, and infrastructure; low-impact sectors include defense and the entitlement programs Social Security and Medicaid.

Then it was time to calculate the costs of different expenditure plans. The first step was to estimate the national budget for future years based on the available data. This seemed to be most easily accomplished by researching total U.S. expenditures for several past years. According to the U.S. Census, direct expenditures by the federal government have been increasing at about $.1 trillion per year. In 2008, then, total direct expenditures can be expected to be around $2.7 trillion. We concluded from the best information that we could find that an investment in a growth-enhancing sector would produce an approximately 10% return on the amount initially invested, decreasing the overall cost of the investment. No such calculation was necessary for the low-impact sectors. We then developed three plans that funneled different proportions of the total direct expenditures based on different priorities. These plans are politically feasible and represent some of the possible solutions to economic obstacles facing the U.S.

Plan 1

This plan would prioritize allocating large proportions of direct expenditures to domestic programs that would directly benefit the middle and working classes. Examples include expanding education and channeling money into creating green jobs that could not be outsourced. Both of these programs would eventually increase economic revenues-education because a better-educated workforce can produce more sophisticated products, and green jobs because protecting American jobs insures the economy. Thus, there is a small but significant return on the money invested in these projects; the long-term costs are lower than the initial cost because of the return value. We assume the federal government spends 65% of the budget on low-impact sectors, 25% of the budget on productive sectors, and the rest on interest (10%). The majority of the budget is still being spent on low-impact sectors, because most of the money allocated for these programs, like Social Security, has already been pledged by the federal government.



Pie chart showing allocation of federal budget under Plan 1

A value for the cost of such a plan can be found using a simple equation:

$$c = (l * b) + (p * b) - (.1 * (pb)) + (i * b)$$

where c= the total cost in trillions, l= the proportion of the budget spent on low-impact sectors, p= the proportion of the budget spent on productive sectors, i=interest rate, and b= the budget in billions. The part of the equation equal to one-tenth the product of p and b represents the return on the money invested in productive sectors and the last product in the equation is equal to the proportion of the budget allocated for interest on old debt.
For Plan 1 for 2009,

$$c = (.65 * 2.8) + (.25 * 2.8) - (.1(.65 * 2.8)) + (.1 * 2.8) = 2.73$$

So, the net cost of this plan would be approximately $2.73 trillion.

Plan 2

This plan would prioritize sectors that are not as economically productive as those favored by Plan 1; however, Plan 2 could become appropriate during times of national crisis. The first such catastrophe that might make Plan 2 appropriate would be the crash of Social Security. Economists have been worried for years about the financial impact of the retirement of the Baby Boomers, who will depend on Social Security funds for their economic survival. Unfortunately, the boomers will be retiring at the same time that the American workforce, whose incomes provide for Social Security, becomes the smallest proportion of citizens ever. The combined effect of these factors could sap Social Security funds, forcing the federal government to bail out the program.

A second possible situation in which Plan 2 would be extremely suitable would be the advent of new U.S. wars, or the amplification of wars the U.S. is already involved in. Such conflicts would be extremely expensive and require the federal government to channel ever-larger proportions of the federal budget into defense spending.

Either of these circumstances could influence the federal government to adopt an expenditure policy similar to Plan 2. We will assume that under these conditions the government opts to spend 78% of the federal budget on low-impact sectors like Social Security and Defense, 12% of the federal budget on productive sectors like education, and 10% on interest on old debt.
For Plan 2 for 2009,

$$c = (.78 * 2.8) + (.25 * 2.8) - (.1(.78 * 2.8)) + (.1 * 2.8) = 2.7664$$

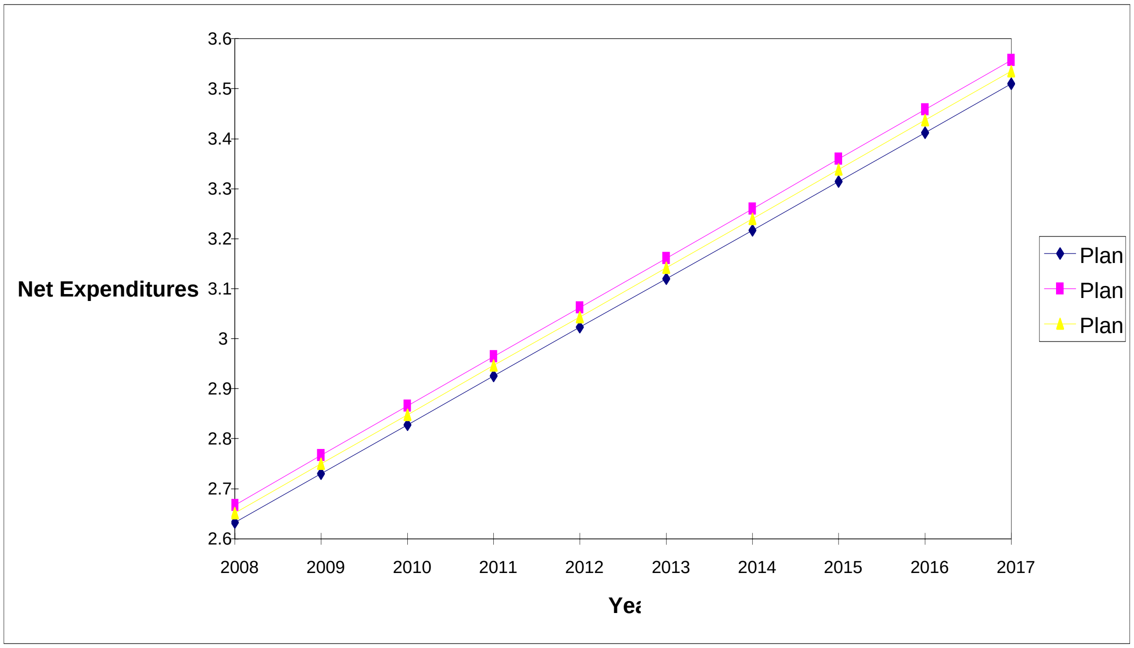
yielding a net cost of $2.77 trillion.

Plan 3

Plan 3 represents a compromise between the previous plans. Significant proportions of the budget are allocated to the wealth-producing sectors but not at the expense of Social Security or defense needs. It is based on the actual budget numbers from the 2008 budget. 72% of the budget is used for low-impact sectors, 18% of the budget goes to economically productive sectors, and 10% pays for the interest on old debt.
For Plan 3 for 2009,

$$c = (.72 * 2.8) + (.18 * 2.8) - (.1(.72 * 2.8)) + (.1 * 2.8) = 2.7496$$

So, the net cost is approximately $2.75 trillion.



Graph showing net expenditures for Plans 1, 2, and 3 from 2009-2017

Overall, Plan 1 would have the least impact on the national debt, and Plan 2 would have the greatest impact. It is not necessarily true, though, that Plan 1 will be in the long term a better choice than either Plan 2 or Plan 3. Instead, as noted above, the plans should be chosen based on which federal programs need the most money according to current circumstances. Barring any unforeseen financial disaster or new war, Plan 2 offers the best combination: lower impact on the national debt and a spending plan that places roughly equal emphasis on creating new wealth and providing for vital operations like Social Security and the military. A graph charting the combined effects of both tax revenue and expenditure on the national debt can be found in Appendix B.

V. Discussion

STRENGTHS

-The recursive nature of our tax policy added sensitivity to our model. Because the disposable income a person has left over in one year has an appreciable influence on the person's economic status the next year, our model operates in a realistic way.

-Our model is extremely adaptable. Any values can be input for different income distributions, tax policies, and expenditure policies and the likely results on the national debt can be calculated.

-We built our equations from accurate, real-world data from reliable sources like

WEAKNESSES

-We should have run more iterations for our tax policy simulation and then averaged the values produced. Our values reflect only a slice of the possible results.

-We only considered two tax policies and three expenditure policies. There is a much greater diversity of options than we explored.

-More disposable income left at the end of a fiscal year would not always cause an

the United States Census Bureau.	increase in a person's salary during the next year.

Extensions

- Including a Lorenz curve in our model would have helped to illustrate the effects of various tax policies for different socio-economic classes. We would re-draw the Lorenz curve after every year in which the tax plan was implemented to show whether the distribution of wealth was becoming more or less equal. Calculating the Gini Coefficient for each year would also have helped us analyze the relative fairness of each tax policy.
- In reality, interest rates on the national debt would have increased as the amounts being borrowed increased. Due to time constraints, we had to view interest rate as a constant instead of a steadily-increasing value.
- More factors could have been taken into account when determining the change in income of a person from one year to the next. As people age, their salaries tend to increase as they gain experience.
- The population is dynamic, not static, as we assumed. We would have liked to considered demographic changes when modeling the changes in people's incomes from year to year.

Sources

"Consolidated Federal Funds Report." U.S. Census Bureau. 2 Oct. 2008. U.S. Census Bureau. 15 Nov. 2008 <http://www.census.gov/govs/www/cffr06.html>.

"Dimensions." The White House. Office of Management and Budget. 15 Nov. 2008 <http://www.whitehouse.gov/omb/budget/fy2009/pdf/apers/dimensions.pdf>.

Douglas, Seymour, and Oral Williams. "The Impact of Government Expenditure on Economic Growth in the OECS: A Disaggregated Approach." Geocities. 15 Nov. 2008 <http:/www.geocities.com/CollegePark/Library/3954/oral.pdf>.

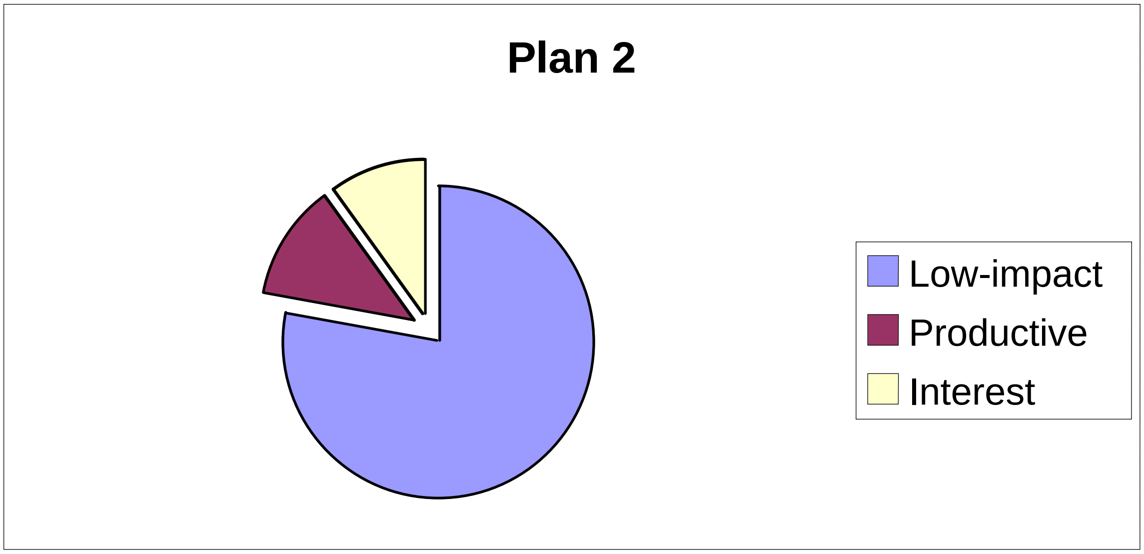
"Exit Polls: Economy Top Issue." Huffington Post. 15 Nov. 2008. Associated Press. 15 Nov. 2008 <http://www.huffingtonpost.com/2008/11/04/exit-polls-economy-top-is_n_141117.html>.

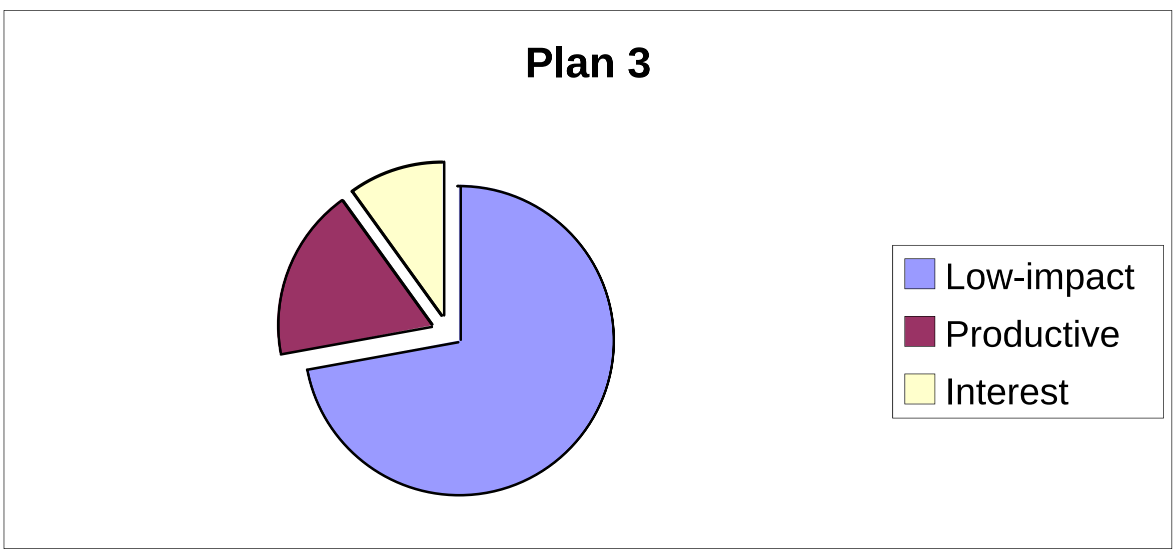
Irmen, Andreas, and Johanna Kuhnel. "Productive Government Expenditure and Economic Growth." Working Papers: The University of Heidelberg Department of Economics 464 (2008). 15 Nov. 2008 <http://ideas.repec.org/p/awi/wpaper/0464.html#provider>.

Appendix A: Expenditure Data

Year	Yearly Budget*	Investment in Low-Impact Sector*	Investment in Productive Sector*	Return from Productive Sector*	Interest*	Net Expenditure*
Plan 1						
2008	2.7	1.89	0.54	0.054	0.27	2.646
2009	2.8	1.96	0.56	0.056	0.28	2.744
2010	2.9	2.03	0.58	0.058	0.29	2.842
2011	3.0	2.1	0.6	0.06	0.3	2.94
2012	3.1	2.17	0.62	0.062	0.31	3.038
2013	3.2	2.24	0.64	0.064	0.32	3.136
2014	3.3	2.31	0.66	0.066	0.33	3.234
2015	3.4	2.38	0.68	0.068	0.34	3.332
2016	3.5	2.45	0.7	0.07	0.35	3.43
2017	3.6	2.52	0.72	0.072	0.36	3.528
Plan 2						
2008	2.7	2.106	0.324	0.0324	0.27	2.6676
2009	2.8	2.184	0.336	0.0336	0.28	2.7664
2010	2.9	2.262	0.348	0.0348	0.29	2.8652
2011	3.0	2.34	0.36	0.036	0.3	2.964
2012	3.1	2.418	0.372	0.0372	0.31	3.0628
2013	3.2	2.496	0.384	0.0384	0.32	3.1616
2014	3.3	2.574	0.396	0.0396	0.33	3.2604
2015	3.4	2.652	0.408	0.0408	0.34	3.3592
2016	3.5	2.73	0.42	0.042	0.35	3.458
2017	3.6	2.808	0.432	0.0432	0.36	3.5568
Plan 3						
2008	2.7	1.944	0.486	0.0486	0.27	2.6514
2009	2.8	2.016	0.504	0.0504	0.28	2.7496
2010	2.9	2.088	0.522	0.0522	0.29	2.8478
2011	3.0	2.16	0.54	0.054	0.3	2.946
2012	3.1	2.232	0.558	0.0558	0.31	3.0442
2013	3.2	2.304	0.576	0.0576	0.32	3.1424
2014	3.3	2.376	0.594	0.0594	0.33	3.2406
2015	3.4	2.448	0.612	0.0612	0.34	3.3388
2016	3.5	2.52	0.63	0.063	0.35	3.437
2017	3.6	2.592	0.648	0.0648	0.36	3.5352

*All amounts in trillions of dollars


Plan 2
Low-impact
Productive
Interest


Plan 3
Low-impact
Productive
Interest

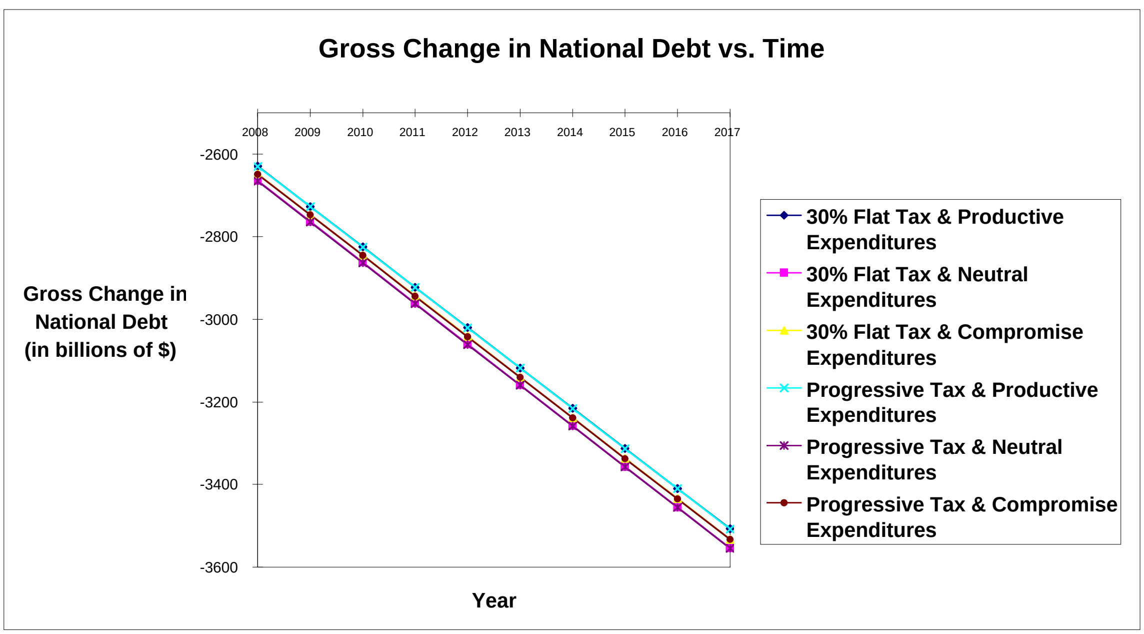
Appendix B: Tax Revenue Data

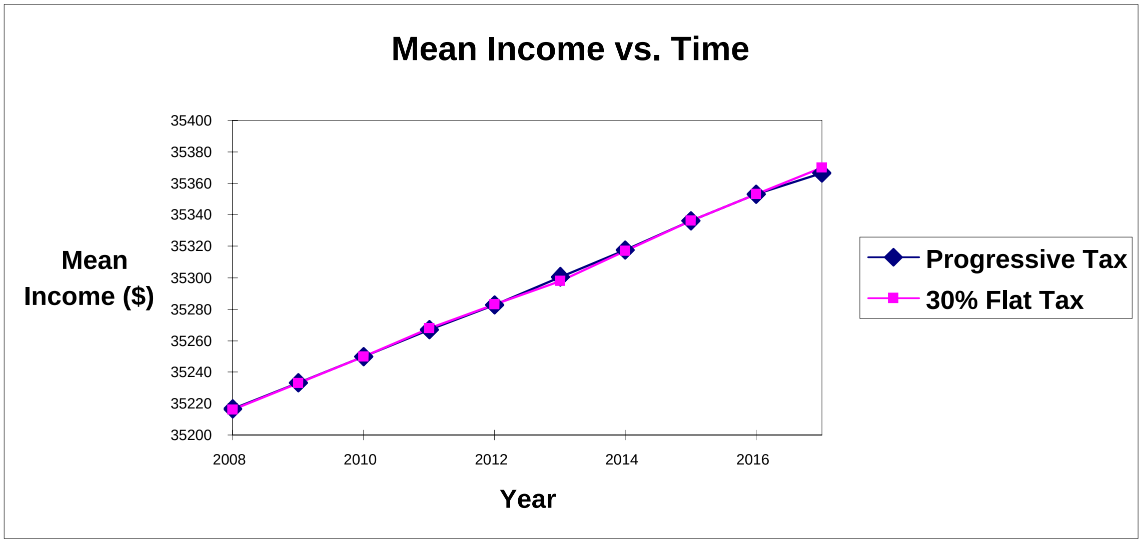
Progressive Tax

Year	Standard Deviation ($)	Mean Income ($/yr)	Smallest Salary ($/yr)	Largest Salary ($/yr)	Tax Revenue ($)	Cumulative Revenue (in billions of $)
2008	50086	35217	2500	749622	2040220140	2.0402
2009	50206	35233	0	754648	2041818179	4.0820
2010	50327	35250	0	757714	2043299631	6.1253
2011	50446	35267	0	765312	2044937140	8.1703
2012	50570	35283	0	791426	2046521737	10.2168
2013	50699	35300	0	794909	2048229189	12.2650
2014	50814	35318	0	811735	2049712556	14.3147
2015	50942	35336	0	815497	2051399917	16.3661
2016	51067	35353	0	894611	2052917365	18.4191
2017	51167	35366	0	898876	2054076555	20.4731

30% Flat Tax

Year	Standard Deviation ($)	Mean Income ($/yr)	Smallest Salary ($/yr)	Largest Salary ($/yr)	Tax Revenue ($)	Cumulative Revenue (in billions of $)
2008	50086	35216	2500	749622	2516043867	2.5160
2009	50208	35233	497	768322	2517237165	5.0333
2010	50322	35250	0	772925	2518445745	7.5517
2011	50454	35268	0	805345	2519694133	10.0714
2012	50571	35283	0	808982	2520778319	12.5922
2013	50682	35298	0	810549	2521837347	15.1140
2014	50826	35317	0	825474	2523213989	17.6373
2015	50963	35336	0	824120	2524561797	20.1618
2016	51089	35353	0	832077	2525784104	22.6876
2017	51209	35370	0	833896	2526972233	25.2146




Mean Income vs. Time
Mean Income ($)
35400
35380
35360
35340
35320
35300
35280
35260
35240
35220
35200
2008
2010
2012
2014
2016
Year
Progressive Tax
30% Flat Tax

Appendix C: Computer Algorithm & Code

1. Collect/input census data and place citizens in the correct income brackets used in the model. (Brackets can be changed)
2. Apply the tax plan to be tested to every citizen, and record the money left over. (The tax plan is the input of the algorithm)
3. Record the total amount of tax revenue.
4. Subtract the minimum cost of living from each person and record the money left over. (Minimum cost of living can be changed)
5. Subtract the luxury consumer expense, the cost of living beyond the bare minimum, and record the final disposable income. (the luxury expense is proportional to the income after taxes.)
6. Place all citizens' disposable income on a normal distribution curve.
7. Calculate the mean(μ) of the set of disposable incomes, and the standard deviation(σ) of the set of disposable incomes.
8. Use the mean and standard deviation to calculate the z-score, the number of standard deviations away from the mean, for every person. (This allows someone's position on social ladder to be easily quantified)
9. Create a standard normal distribution curve with magnitude of income change, in percentage of income, on the horizontal axis, and the probability that the change will occur on the vertical axis.
10. To give an accurate probability density curve, the standard deviation is set to .1% of annual income. (This can be changed according to inflation and other circumstances)
11. To account for the different probabilities of salary change for different people, the probability density curve is shifted left or right according to the z-score of the person being tested. The curve is shifted right (z/3000)% of annual income. (This can also be changed as above)
12. Using a random number generator that implements a technique for choosing numbers similar to Monte Carlo's Method and the Box-Muller Transformation, pick a random point inside the probability density curve weighted according to the probability that a given change in income will occur.
13. Using the point chosen, apply the salary change to the person being tested.
14. Repeat steps 11-13 for all of the citizens involved in the study.
15. If any salary falls below \$0 per year, readjust it to \$0 per year because a negative salary in physically unfeasible.
16. All of the salaries, after being adjusted in this method, are the salaries for the new fiscal year.
17. Repeat steps 2-16 for as many years as desired, while keeping a cumulative tax revenue total as well.
18. After the algorithm is repeated the desired number of times measurements of cumulative tax revenue, final economic incomes of the population, the mean of disposable income changing over time, and the standard deviation of the disposable income over time is obtained.

Dear Mr. President,

I wanted to take this opportunity to share with you the results of some research I have recently undertaken. I believe my study will help you make comparisons between economic policies and ultimately enhance your ability to choose appropriately by providing you with a more thorough understanding of the long-term effects of each policy.

No one knows better than you do how difficult it is to create an economic policy that does not dramatically increase the national debt but also does not crush the American people under an unbearable tax burden. What tax policies provide much-needed revenue without aggravating the already large gap between the rich and the poor? What kind of expenditure policies invest money in programs that help increase economic potential?

My research has led to the development of a mathematical model that answers these questions. For any tax plan you are interested in implementing, you will be able to run the simulation that I have developed and see for yourself the most likely results. You will be able to discover which socio-economic class benefits economically from a tax plan, which class suffers economically, and how long it will take for these effects to occur. My model is innovative precisely because it allows you to explore the hidden ramifications of any imaginable tax plan, and such intricate details will help you craft the right policy, because you will have specific information about how different groups will fare under each tax plan.

Your ability to analyze expenditure policies is similarly limitless. The key to comprehending the impact of different expenditure plans is recognizing that spending money on different programs changes the effect that total spending has on the national debt. Sectors of the economy can be divided up into those that increase economic potential and those that have little or no impact on economic potential; in essence, sectors that produce some return on an investment and sectors that do not yield such a return. A program that would fall into the former category is education, because expanding education leads to a more capable workforce, and a program that would fall into the latter category is Social Security, because providing Social Security does not significantly encourage economic growth. Therefore, spending $10,000 on education and $10,000 on Social Security does not have the same impact on the national debt, because some of the money spent on education will be offset by the return it produces, decreasing its overall effect on the debt. Based on your priorities, you will be able to calculate how much different expenditure policies contribute to the national debt because of the varying degrees of importance they place on economically productive and neutral programs.

I greatly look forward to working with your administration to help the United States move into a brighter economic day.

Sincerely,
Team #2110