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Tragedy of Commonly-Shared Debts

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Abstract

The debates about how to deal with government budget deficits are raging all over the world. In the US, the federal government was forced to shut down for 16 days in October, 2013 because of the failure to pass a budget through congresses, and barely averted a default of federal government obligations due to failure to raise the federal debt ceiling limit. The city of Detroit filed the largest municipal bankruptcy in the US history on July 18, 2013, despite Michigan State constitution's balanced budget requirement. In Europe, the sovereign debt crisis has dragged down the entire EU economy since late 2009 with no end in sight. In Japan, the government debt to GDP ratio is well over 200%, which is one of the highest in the world. In the world of academics, the debates of government budget deficits have become the key battlegrounds of different schools of thoughts of economics and political ideologies. Economists and political scientists could not even agree to a framework to solve budget deficit problems, and let alone settle these debates. This paper provides a permanent and equilibrium solution to government budget deficits. Surprisingly the solution comes from the first principles of quantum politics. The political equilibrium structure has the time translational symmetry in treating different generations equally. One result of applying physics laws of social science to study the most stable political structure is that the most stable political structure is not only to require the majority voters must deal with minority voters fairly to avoid the tyranny of the majority, but also to require the voting generation must exercise their fiduciary duty to their children and unborn future generations. In terms of government budget deficits, the fiduciary duty means that the current voting citizens must take the full responsible of the current government budget deficits or surplus. The permanent equilibrium solution of government budget deficits is legally and personally held all the voting citizens accountable for the current fiscal surplus and deficit at all levels of governments. In contrast to the balanced budget approaches, the permanent equilibrium solution in this paper allows deficit spending and the accumulation of government debts as long as the government debts must be paid off by the responsible borrowers and voters. This method to solve the government budget deficit problem is an excellent example of applications of law of equilibrium, which can be used to solve economic, political, and other social problems in a value-free way. The permanent solution to government budget deficits presented in this paper is consistent with a different line of reasoning in economics, which is known as the tragedy of the commons. In cases of government budget deficits, the tragedy of fiscal abuse happens because the US Constitution fails to protect interests of the future generations. Through the commonly-shared responsibility for government debts, current voters and their political representatives have financially taken unfair advantage of their children and the future generations, who virtually have no political power.

1. Worldwide Government Debt Crises

The most essential responsibility of any government is to manage the government revenues and expenditures properly. However, most countries and many local governments in the world seem to have difficulties to manage the government budgets. Many countries in the world are trapped by the ever-increasing government debts. The problems of government budget debts are so intractable that government debts have become major sources of worldwide financial instabilities.

In the United States, the federal government debt to GDP ratio is about 101.5% in 2014, which is the highest number after the World War II. The federal government was forced to shut down for 16 days in 2013 because of the failure to pass a budget through congresses, and barely averted a default of federal government obligations due to failure to raise the federal debt ceiling limit. The unfunded financial liabilities of the federal government for the Social Security, Medicare, and Medicaid programs are estimated by two reports [1, 2] at 550% and 1300% of the GDP.

In the US, all states except Vermont have the balanced budget requirement by the state constitutions. However, it did not stop the City of Detroit to file the largest municipal bankruptcy in the US history on July 18, 2013. Many states such as Illinois and New Jersey have huge financial problems of the under-funded pension funds.

In Japan, the government debt to GDP ratio is well over 200%, which is one of the highest in the world. With an aging and declining population, Japanese unfunded financial liabilities become even more frightening. Japanese economy has been stuck in the deflation spiral for more than two decades. The combination of the heavy debt loads and the declining population, the Japanese deflation spiral is expected to continue in the foreseeable future and the lost decades drags on into a lost century.

In Europe, the sovereign debt crisis has dragged down the entire EU economy since late 2009. It appears that EU is following the Japanese foot step to enter the deflation spiral and its first lost decade.

In many developing countries, Argentina government debts have already defaulted multiple times. In China, the local governments have borrowed heavily from the banks and the shadow banking systems to fund infrastructure projects and the real estate booms. Many local governments are counting on selling lands to developers to service their debts. The Chinese speculative housing bubbles have become so big that the governments cannot afford to pop the bubbles.

Despite its dire consequences of government debts, there are few consensuses about what need to be done. In the US, the fiscal conservatives want to cut benefits and cut taxes to boost the economy. Keynesian economists advocate more government spending to boost the economic growth and raising taxes on the rich. There are political movements to add the balanced budget amendment to the constitution, and political movements to stop generational thefts.

This paper takes a new approach to the government budget problem. In an earlier paper [3], we proposed that the most stable political structure for any nation is an equilibrium political structure characterized by 16 democratic principles. Starting from the time translational symmetry of the equilibrium political structure, we conclude that the permanent equilibrium solution of government budget deficits is legally and

personally held all the voting citizens accountable for the current fiscal surplus and deficit at all levels of governments in the world.

2. Five Physics Laws of Social Science

One of the most fundamental questions in social science is whether exist universal laws of social science, which would unite all knowledge of social science, in the same manner fundamental laws of physics unite all knowledge of natural science.

An important clue that leads to establish laws of social science is the fact that fundamental concepts in social science, such as information, choice, causality, uncertainty, equilibrium, the most stable structure, and the direction of time, are also shared by many fields of natural science including quantum mechanics. In the framework of quantum physics, these concepts can be defined precisely in the language of mathematical physics. Once correctly formulated, the precise descriptions and behavior of these concepts, which becomes five physics laws of social science, are universally applicable to all fields of social and natural science.

Humans and human societies are made of elementary particles, and the behavior of elementary particles is governed by quantum mechanics. Therefore, there should be no surprise to anyone that quantum physics indeed is the theoretical foundation of all fields of social science. Quantum physics is widely believed to be the theory of everything, and everything must include politics and other fields of social science.

The starting point of establishing a scientific foundation for political science is the five physics laws of social science, which have been published elsewhere in a book [4] and an academic paper [5]. For the benefit of readability of this paper, we list five physics laws of social science in the following.

First Law – Law of Indeterminacy

For a closed system, the outcome of any future event in the system is indeterministic. The quantum uncertainty of the future is the fundamental property of nature and cannot be overcome by any means.

Second Law – Law of Prediction

For a closed system, any future event in the system can be and can only be predicted precisely to the extent of a joint probability distribution among all possible outcomes. The joint probability distribution function exists and is uniquely given by quantum mechanics.

Third Law – Law of Choice

Actions, which are constrained by fundamental laws of physics, can be taken between time 0 and time T to modify the joint probability distribution function of time T of a closed system.

Fourth Law – Law of Information

The complete historic information of any closed system cannot be recreated based on today's complete information. At any time step, new information is created and some historic information is lost permanently.

Fifth Law – Law of Equilibrium

For a system under certain constraints, quantum uncertainties in the system will eventually push the system toward equilibrium states.

Five physics laws of social science are closely related with each other. The Law of Indeterminacy is the starting point. The Law of Predict the Future addresses how to predict the future and the causality relationship of an indeterministic system. The Law of Choice addresses how to make a choice and the flexibility and plasticity of an indeterministic system. The Law of Information addresses how information is created and destroyed. The Law of Equilibrium, which is the generalization of the Second Law of Thermodynamics, addresses the direction of time and the equilibrium state of an indeterministic system. These five fundamental laws of physics are profound statements about the nature and human societies.

The explanation and discussion of these five laws can be found in the book [4] and series of papers [5-8]. These laws are fundamental laws of physics, which are applicable to any system including any physical and biological systems, and human societies. Fundamental equation of economics is one application of these physics laws in economics. Five physics laws of social science can be viewed as an extension of quantum physics to macroscopic systems. Many macroscopic phenomena like human free will could only be explained fully by applying quantum physics.

3. Equilibrium Political State

One problem is standing out above all others in social science: how should humanity govern itself? The problem is so important that all wars of humanity in the past, present, and future, are directly related to this problem. An earlier paper [3] has proved that this problem is solvable scientifically applying physics laws of social science, if the problem is formulated in a correct way: what kind of governing political structure of humanity is most stable? Most-stable structure problems appear routinely in the theoretical and experimental condensed matter physics. We show that the humanity governing problem is equivalent to find an equilibrium political structure of a human society, which is a many-body physics problem 100% solvable using the maximum entropy approach widely-used in the condensed matter physics. Quantum politics says that we can create free, fair, just, peaceful, and prosperous human societies. There is certainly no better alternative than the equilibrium political structure, which is defined by a set of 16 democratic principles.

In this section, a short summary of these 16 democratic principles are in the following to show the common physics foundation of these democratic principles.

The principle of maximum freedom says that a free society should give individuals the maximum freedom and liberty because people love freedom, and the maximum freedom will push the economy toward the most efficient state and bring out the maximum creativities in fields of science, technology, and arts according to the law of equilibrium.

The principle of nonviolence and voluntary contract is to resolve conflicts of free wills without violence and to restrain free wills without harming the individual's freedom by asking citizens to be held accountable for voluntary contracts agreed by themselves.

The accountable citizen test is designed to tell whether a citizen can be held fully accountable for his or her voluntary contracts. With the exception of underage children and people with mental disability, nearly all people in a society are accountable citizens.

The principle of political equality says that all accountable citizens must have equal political rights. The principle of political equality means that the equilibrium political state is a symmetric structure with the exchange symmetry.

The principle of the rule of law guarantees that voluntary contracts will be enforced.

The principle of separation of power rise naturally from voluntary contracts. If the power could only come from citizens' voluntary contracts, the political power will not be concentrated in just one or a few people acting as rulers.

The principle of check and balance is needed because we cannot predict precisely how elected officials will behave according to the law of prediction. Strong institutional checks and balances will minimize probabilities that elected officials would abuse their powers.

The principle of optimal decision making is to optimize the collective decision making processes through scientific forecasting, separation of power, balancing interests of all parties involved, carefully choosing the goals and value systems by balancing the science, religion, and political philosophies, and carefully choosing the decision making methods.

The principle of individual rights and fiduciary duty says that fundamental individual rights must be protected from the governments, and collective decision makers have the fiduciary duty to guard interests of other citizens including the minority, children, the unborn future generations, foreigners, animals, plants, other living creatures, and the environment in general. The chronicle problems of budget deficits and environmental degradation are examples that political leaders have failed their fiduciary duty.

The principle of no scientific ultimate purpose comes from the fundamental limitation of science and technology. There are many important questions in social science that cannot be 100% answered by science. Science cannot answer what is the ultimate purpose for an individual or for a society. The human beings are fundamentally purposeful animals. While an individual can choose to have an ultimate purpose according to his free wills, a society must not have an ultimate purpose. To establish an ultimate purpose for the society would lead the society on the road to serfdom.

The principle of no scientific value system follows the similar logics. Because the value system is essential for virtually all decision making, quantum politics emphasizes the importance of personal religions and philosophies. The political equilibrium structure emphasizes the diversity of human behavior and the culture pluralism.

The principle of separation of church and state says that the government must not establish the official religion, and no ancient religious teachings should be used as the foundation of the constitutions. The law of information says ancient religious teachings are out dated. The law of prediction says ancient religious teachings have diminished powers to predict future challenges.

The principle of fairness says that in as long as the rules and the process of running a game are fair, the outcome of the game is fundamentally fair. The government should mainly concern the fairness of competition rules not outcome inequality such as the rich and poor gap.

The principle of maximizing wealth says that a human society will always try to maximize the wealth. The increasing wealth is a way to maximize the individual freedom.

The principle of human dignity says that a free society and the government have obligations to help its less fortunate citizens maintain human dignity through the social welfare system.

The principle of limitation of science and technology sets the boundary of science and technology. The decision making processes must go outside the boundary to use personal religions and philosophies. On the other hand, the individual freedom, economic development, and science and technology progresses would push the human knowledge to the limits of science of technology.

The principle of globalization says that the law of equilibrium will push the globalization of the political, economic, and legal systems toward the world permanent peace.

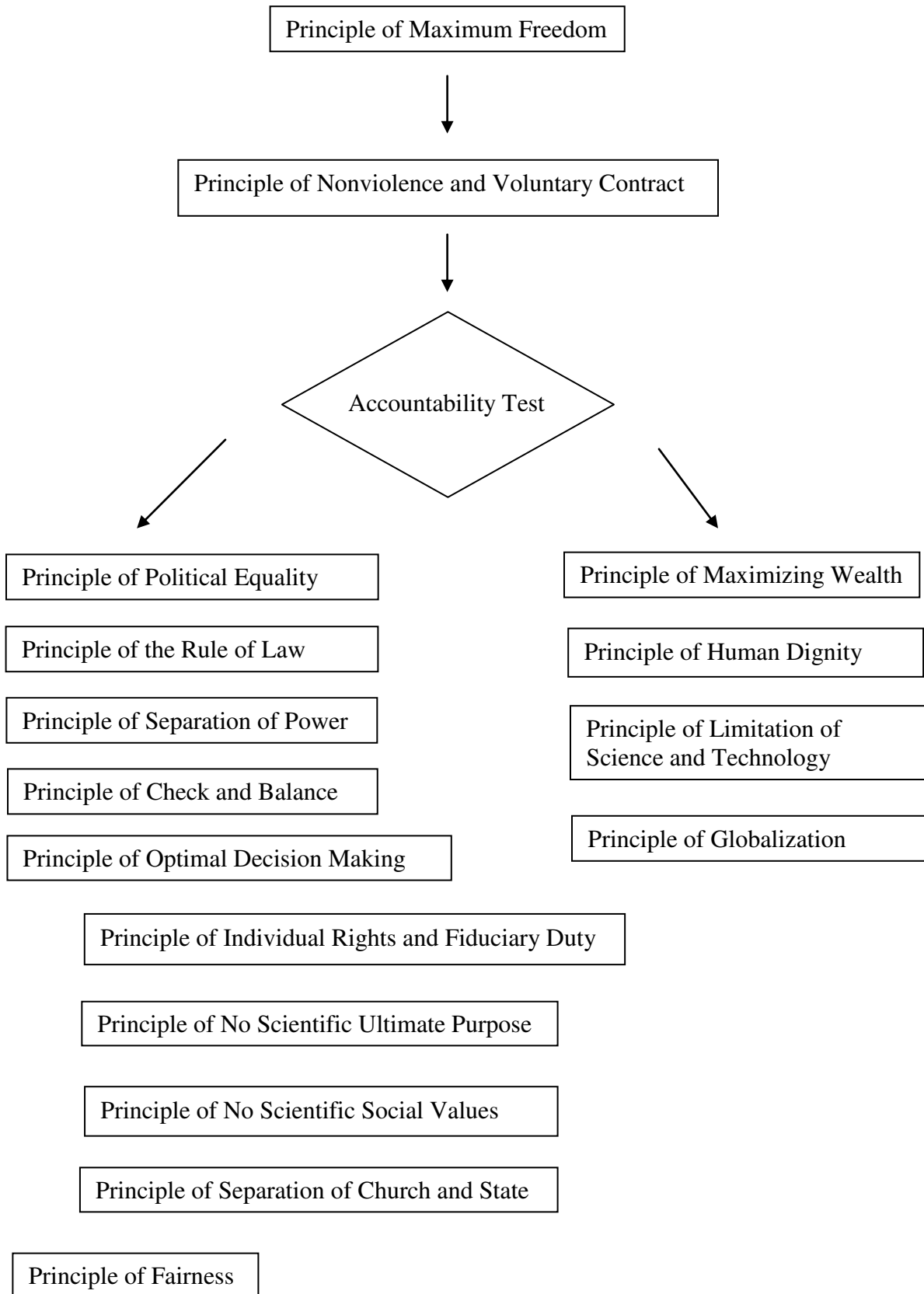
All these 16 principles are based the concept of free will and physics laws of social science. Because people's free wills are quantum uncertainties and the behavior of free will can be only described by quantum mechanics, these sixteen democratic principles are rooted in quantum mechanics, and they are universally applicable to all nations and the world.

These democratic principles can be grouped into three categories:

- (1) Interpersonal relationships. These 10 principles reflect the interpersonal relationships in the equilibrium state include principle of nonviolence and voluntary contract, principle of political equality, principle of the rule of law, principle of separation of power, principle of check and balance, principle of optimal decision making, principle of fiduciary duty, principle of fairness, principle of human dignity, and principle of globalization.
- (2) People and environment relationship. These 3 principles reflect the principle of maximizing wealth, principle of limitation of science and technology, and principle of fiduciary duty.
- (3) People's individual freedom, private space, philosophy, and spirituality. These 5 principles are the principle of maximum freedom, principle of individual rights, principle of no scientific ultimate purpose, principle of no scientific value system, and principle of separation of church and state.

It is easy to see that the political equilibrium state has very refined interpersonal relationships. That is not surprising because politics is all about resolving conflicts of free wills.

These 16 democratic principles are also summarized in a figure in the next page for the easy reference.



4. Scientifically Answerable and Unanswerable Question about Fiscal Deficits

It is very important to distinguish scientifically answerable and unanswerable questions in social science. The scientifically unanswerable questions are unanswerable in a value-free manner. For example, how to set the current year federal government budget in the US? The answer depends on the goal and the value system.

The scientifically answerable questions are answerable in a value-free manner: how is the federal government fiscal deficits handled in the political equilibrium state? Because the political equilibrium state is a value-free physics concept, the equilibrium condition requires the government fiscal deficits to be handled in a well-defined manner. Therefore, the question is 100% answerable with physics or quantum politics.

5. Permanent Solution to Government Fiscal Deficit Problem

In this section, we provide the permanent solution to the government fiscal deficit. We will discuss many issues involved to provide a complete and satisfactory answer to the government deficit problem.

5.1 Permanent Solution to Government Fiscal Deficit Problem

The permanent solution of government budget deficits is to hold all the voting citizens accountable legally and personally for the current fiscal surplus and deficit at all level of governments.

The political equilibrium structure has the time translational symmetry in treating different generations equally. One result of applying physics laws of social science to study the most stable political structure is that the most stable political structure is not only to require the majority voters must deal with minority voters fairly to avoid the tyranny of the majority, but also to require the voting generation must exercise their fiduciary duty to their children and future generations. In terms of government budget deficits, the fiduciary duty means that the current voting citizens must take the full responsible of the current government budget deficits or surplus.

Although the permanent solution of government budget deficits is highly theoretical, the equilibrium solution is applicable to current government fiscal deficits problems in many countries, because the basic logic of asking the current voting citizens to exercise their fiduciary duty to their children and the unborn future generation is universally applicable to all countries and all levels of the government.

Logically the permanent solution makes a lot of senses, because the definition of the government budget deficit implies that that there are no enough tax revenues to cover the government spending, and one simplest solution to the government budget deficit must be to raise more tax revenues from current tax payers. If the current voters make a choice to cover the budget deficits through issuing debts instead of raising taxes, the current voters must be held responsible for the new debts.

5.2 Tragedy of Commonly-Shared Debts

The permanent solution to government budget deficits presented in this paper is consistent with a different line of reasoning in economics, which is known as the tragedy of the commons.

In the case of the tragedy of the commons [9-13], a commonly-shared asset is so poorly managed that the long-term value of the asset is compromised by the greedy individual interests. For example, the Atlantic cods in the Atlantic oceans are commonly-shared precious assets by people all over the world. Because there were few regulations, the greedy individual self-interests could lead to overfish and caused the collapse of the pollution of Atlantic cods. The long-term value of asset diminished.

In our case of government debts, the responsibility of repaying the debts are commonly-shared by current voters, their children, and the unborn future generations. Because there is lack of the precisely defined responsibility, the governments has natural tendencies to accumulating too much government debts. Because their children and the unborn future generations have virtually no political power, it is easy for current voting generations financially take unfair advantage of their children and the future generations.

The obvious solution is to clarify the exact legal responsibility of repaying the government debts in terms of different voting generation.

5.3 Generational Accounting

The tool to deal with the intergeneration asset and liability transfer is the generational accounting [14-17].

In the United States, the minimum voting age in federal election is 18 years old. Once they are eligible to vote for their political representatives, they should be held accountable for fiscal results due to their wise or unwise choices. For the ease of discussion, we could use their birth year as the label of the age cohort with the general election day as the cutoff day.

If each age cohort is held legally and personally responsible for the federal government budget surplus, deficits, and all future liabilities, in theory at least, there will be no government fiscal problem forever.

Because the taxable financial resource for each age cohort is finite and very limited, therefore, the financial responsibility will impose very strong monetary constraints on the potential government fiscal spending.

In contrast, the combined potential taxable financial resources of the current voters, their children, and the future unborn children are much greater than those of the current voters alone. That is the main reason for the governments all over the world to accumulate too much debt.

In the United States, although we can clarify the asset and liability of each age cohort through the generational accounting, there is no strong legal foundation to deal with the liability and asset transfer issues right now. Ultimately, it should be up to the US Constitution to clarify the exact boundary of the liability and asset intergenerational transfer among different age cohorts. The failure to protect the financial interests of our children and the future unborn generations is a major fundamental design flaw of the United States Constitution [18].

Because of this design flaw of the Constitution, it dramatically weakens the US government in terms of the financial strength. The skyrocketing budget deficits, trade deficits, and frightening future unfunded financial liabilities clouds the outlook of this once great country.

5.4 Generational Theft

According to Merriam-Webster online dictionary, theft is “the act of stealing; specially: the felonious taking and removing of personal property with intent to deprive the rightful owner of it.”

In United States, with the mounting deficits and potential financial liabilities, there is almost no chance for current voters to pay off the deficits and unfunded financial liabilities without taking from our children and the unborn generations.

Therefore, by definition, the act of taking from our children and the unborn generations without their permission and with no intension to ever pay back is a “generational theft” [19].

Since the dawn of the humanity, theft is universally regarded as bad behavior in all human societies. One of the Ten Commandments is “Thou shall not steal.” It is interesting to notice that a country with an overwhelming Christian majority like the United States openly and shamelessly steals from our children and the unborn future generations.

While calling the action of taking from our children and the unborn future generations as the generational theft, it should emphasize that the permanent solution is government fiscal deficits is not based on the moral judgment. The permanent solution is a value-free solution while the moral judgment is not. In social science, it is very common to see that an equilibrium solution happens to be the same solution based on the some types of the moral judgment.

5.5 New Conditions for Richardian Equivalence

When spending more than the revenue, a government is always facing the choice of covering the gap by raising taxes or issuing debts. About two hundreds of years ago, David Richardo [20] analyzed the problem and questioned whether these two approaches are equivalent. Antonio De Viti De Marco extended Richardo’s analysis [21, 22] in the 1890s. Robert J. Barro [23, 24] put the Richardian Equivalence into a solid mathematical framework in 1974 and the result is known as the Richardian Equivalence Theorem.

Barro listed three conditions for the Richardian Equivalence to hold:

1. Families act as infinitely lived dynasties with operative altruism;
2. Capital markets are perfect with the same lending and borrowing rates;
3. The path of government expenditure is fixed.

Under these conditions, fiscal effects of taxes or debt finance would have no effect on aggregate demand, interest rates, and capital formation.

In this paper, we would propose a new condition to replace the operative altruism assumption because the central tenet of economic man is a selfish man and altruism is simply a bad assumption of human behavior for general economic matters.

The new condition is that each age cohort of voters is held personally and legally responsible for their shares of government budget deficits and potential liabilities.

In essence, if the current voters are allowed to push debt repayment responsibility to their children and the unborn future generations, there will be a violation of Richardian Equivalence. The issuing debts will be always good for raising the short-term consumptions and outputs enjoyed by current voters. The negative long-term effects will be felt by the future generations in terms of the debt deflation or running away inflation. The Greek government debt crisis and Japanese debt deflation are excellent examples of the dire consequences implied by the violation of Richardian Equivalence.

5.6 Changes to Social Security Program and Other Programs

For many American seniors, the social security is one of most important social safety nets. However, the social security is often criticized as a Ponzi scheme or a pyramid scheme. The cash flow and funding mechanism of the social security is the same as a typical Ponzi scheme because the future payment depends mainly on the tax payments of the future generations. If the future generations refuse or simply could not afford to pay the amount taxes needed to sustain the cash flow, the social security could collapse just like a Ponzi scheme. The social security program is not exactly a Ponzi because the program is transparent financially and the participation of the program is required by the law and not voluntary.

If each age cohort of voters is held personally and legally responsible for their shares of government budget deficits and potential liabilities, the social security, and government-funded pension funds, and many other government programs must be overhauled. The end result is that each age cohort is financially responsible for their own social security, pension funds, Medicaid, Medicare, and other government programs.

5.7 Retirement Cutoff Age and Wealth Transfer

While in principle each age cohort of voters is held personally and legally responsible for their shares of government budget deficits and potential liabilities, many aging seniors might not able to absorb financially the fluctuations of the annual government budgets.

As the seniors age, the populations of each age cohort shrinks rapidly. After a certain cutoff retirement age, the seniors should be financially protected from the fluctuations of the annual government budgets through a government-sponsored insurance program. For example, through the private life insurance companies, the cash could be converted into an inflation-protected stable annuity payment stream.

Therefore, at a certain cutoff age, the savings accumulated by the age cohort can be converted into an inflation-protected stable annuity payment stream through a government-sponsored insurance program. The amount of savings accumulated for each age cohort depend on the surplus and deficits during their lifetime.

The wealth transfers among the current voters are legal and inevitable as long as there are taxes and welfare systems. Therefore, it could be necessary for the congress to help the aging seniors financially.

Although the wealth transfer from the children and the unborn future generations to the current voters is a big problem, the wealth transfer among the current voters is not a problem.

5.8 Government Spending for Investment or Consumption

If each age cohort of voters is held personally and legally responsible for their shares of government budget deficits and potential liabilities, the government spending for investment and consumption must be separated carefully.

By definition, the government spending for investment means that the invested money could be got back in the future plus some profits. For example, the government spending to build an elementary school is an investment for the future of a community. Just like any commercial real estate, the construction costs could be got back by charging a fee for future generations to use the school.

On the other hand, the government spending for the salaries of government employees is simply spending. The money is gone forever.

Therefore, the permanent solution to government deficits will put strong constraints to limit government spending for consumption but not the government spending for future investments.

5.9 Constraints on Keynesian Active Fiscal Policies

One of the central tenets of the Keynesian economics is for governments to fiscal policies as a tool to reduce the output fluctuations due to the business cycles.

Because the permanent solution of the government deficits allows the government to borrow money as long as the voters responsible for issued debts are well-defined, the permanent solution does not prevent the Keynesian active fiscal policies.

However, the permanent solution does put strong constraints on the government spending on consumptions but not on investments. Just like in personal finance, borrowing money for the personal consumption is justified occasionally but generally not a good idea, while borrowing money for investment could be justified on the ground of risks and rewards analysis.

Therefore, in terms of the Keynesian active fiscal policies, the permanent solution prefers government spending on investments rather than consumptions.

5.10 Borrowing for National Emergencies like World Wars II

One interesting question is how the permanent solution would handle national emergencies like the World War II when all available government resources must be used.

The short answer is to treat the government spending during the national emergencies as investments in order to maximize the government borrowing capacity.

Because the exact boundary between government spending on investments and consumptions could be murky, it could lead to new financial abuses by classifying most of consumptions as investments.

The ultimate solution to prevent the financial abuse is the constitutional requirement of the fiduciary duty of current voters. Classifying government spending on national emergencies as investments could be justified by current voters.

5.11 Alternative Approaches to Government Budget Deficits

We will compare side-by-side the equilibrium solution and other alternatives to the government budget deficit problem.

In US, the constitutional balanced budget amendment is often promoted as a solution to the government budget deficit problem. There are many problems with the balanced budget amendment:

1. There are fundamental uncertainties in forecasting the future government revenues and expenditures. For example, as percentage of GDP, the US federal government receipts and outlays [25] were 17.9% and 19.0% in 2007, 14.6% and 24.4% in 2009. If the strict balanced budget amendment was enforced annually, it would mean sharp cutbacks in federal government spending and massive layoffs of government employees in 2009 and 2010. It would certainly deepen the recession much further. If the strict balanced budget amendment was enforced over a full business cycle, the forecasting of the business cycle is one of biggest unsolved problems in the economics.
2. The balanced budget amendment approach still allows the government borrowing in cases of national emergencies, recessions, depressions, and wars. There is no clarification of the exact responsibility of repaying the debts. There is no mechanism to prevent the financial abuses of the future generations, because the balanced budget amendment approach does not address the root cause of financial abuses through commonly-shared debts.
3. Historically states and local cities have been required by laws to have the balanced budgets. However, many states and cities around the countries are in deep financial troubles. The City of Detroit filed for Chapter 9 bankruptcy on July 18, 2013. One big problem is the insufficient funding of the government pension funds. However, the laws of balanced budgets for the states and local cities have successfully limited the sizes of state and local governments comparing to the federal governments, and the holes in the budgets are much smaller in terms of percentages of the local GDP than that of the budget deficits of the federal governments.

In US, the maintaining constant level of debt to GDP ratio is another popular approach when the population and GDP are growing. There are several problems with this approach as well:

1. Once the target level of debt to GDP ratio is reached, this approach shares the same problems as the balanced budget amendment approach. For example, because it is difficult to forecast the future government revenues and

expenditures, it is hard to enforce the constant level of debt to GDP ratio through business cycles, national emergencies, and wars.

2. No clear guidance of what level of debt to GDP to be maintained. If current voters are allowed to steal from the future generation, current voters always prefer the highest possible debt to GDP ratio. The natural limit of debt to GDP is set by the financial market which lends money to the governments. However, the future behavior of the financial markets is very hard to predict. Once the financial markets refuse to lend new money or roll over the old debts, it immediately becomes a full-blown government debt crisis like the euro government debt financial crises.
3. This approach fails to address the root cause of financial abuses through commonly-shared debts. As long as there are strong incentives to steal from the future generation, creative politicians will find ways to steal including hiding the true level of debts from the public and investors, as the case of Greece government during the euro government debt financial crises.
4. Many economists wrongly believe that when the population and nominal GDP are growing, the maintaining constant level of debt to GDP ratio is equivalent to free money for current voters. Analyzing the cash flow for each age cohort would reveal that there is no free money exists. If each age cohort is responsible for their own finance, borrowing is equivalent to increasing the financial leverage. Because borrowers have to pay back the principle plus interests to the lenders, there is no free money. If there is free money, those money must be stolen from the future generations. There is no justification for stealing just because the future generation could be richer in nominal terms than current voters.
5. The growing GDP and population assumption might not be true. In Japan, the population is expecting to fall sharply in the coming decades. In Europe, the GDP has been barely growing.

Through above comparison, the permanent solution has clear advantages to other alternative approaches. There is virtually impossible to expect politicians would act responsibly without strong legal constraints. Around the world, government debts are major sources of financial instabilities. Providing a stable and sustainable government funding environment is probably the best approach for the long-term economy growth and the wealth maximization.

6. Concluding Remarks

The government budget is one issue that touches the vital interests of every citizen in the world. The debates about how to deal with government budget deficits are raging in all capital cities. This paper has presented a permanent equilibrium solution to the government budget deficit based on the analysis of the equilibrium political structure.

This method to solve the government budget deficit problem is an excellent example of applications of law of equilibrium, which can be used to solve economic, political, and other social problems in a value-free way.

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