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"ECONOMICS IN WAR"

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## LECTURE

## "ECONOMICS IN WAR"

by  
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Before the Army Industrial College.

Colonel McCain, Gentlemen

I thought that I would give you a picture of the national income of the U.S., and compare it with a few of the other countries. This should reveal to us the relative size of our income, and some notion of its composition. After that I thought I would pass from the purely economic phase of it, having to do with industrial output, to the financial problem which is involved when a nation gets into war, - the problem of providing the monetary means for controlling production and putting it into the possession of the Army and the Navy for the practical work of carrying on the war.

I shall not spend a great deal of time haranguing you on the general importance of the national income, and its size for national defense - you know that much better than I do. Every war, every project which the Government undertakes, is limited by the size of the national income - the volume of economic goods produced. The size of the national income is a matter of very great concern to every nation from the standpoint of defense alone, as well as from the standpoint of maintenance of standards of living.

One of the questions that confronts us when we get into war is how large that national income is - for the question of its size must determine in large measure how much is available for national defense. It will also condition the methods of getting control of it for that purpose. One difficulty that confronted the Secretary of the Treasury in the last war was to make an estimate of the size of the national income. We know more about that now than we used to, as a result of the work of the National Bureau of Economic Research during the last ten years. We have now a pretty accurate estimate of its size - it is about ninety billion dollars. That is very large compared with the 18 billion dollars of England, 18 billion in Germany, 12 billion in France and 9 billion in Italy.

But putting our annual output in terms of money only is not satisfactory in getting into the actual problem that confronts you. Your problem runs in terms of things, and when you get into

war prices change. Some people, espcially those who largely made their money on the stock market - tell about freezing prices, controlling prices in wartime. Whether strikes will use the financial machinery or it exists when war is over. If you could lay plans, all right, but that is not the burden upon us when war comes prices will rise. You can depend upon it that you will have a considerable rise in prices.

You will be greatly confused by such money figures as those I give you. We do not know much. I can illustrate this by telling you our own experience during the last war we entered in April 1917. In November we voted very large loan. Secretary of the Treasury had said and the members gave a great deal of thought on the question of whether it could put through a loan of that size and make it go through smoothly. We wanted to know how much money there was in the U.S. in the form of savings which would be available to carry on the war. We felt a need to know something about the subject. It happened that I had been doing some work on the very subject of the accumulation of savings in national character connection. The need is to come down to the Treasury where I was directed to Mr. Carter Glass, then First Assistant Secretary of the Treasury. I showed him in writing on the excess of production over consumption and the savings that were available and could be gathered into the Treasury by taxation and by loans. One of the things he said was "All of this does not mean nothing, all, all of this runs in money terms." He had found in his experiences to collect that bushel of wheat fed seven persons a certain number of days, whether it costs 50 cents or \$4.00. When you get into an situation requiring economic consumption it is in a you have to live - foods and services.

So, I have decided to tell you about the size of the income of the U.S. and its composition in which savings were money terms. It will be of some value to you in making estimates of this sort and it is something you can't find in books.

How does our national production compare in size with that of France? I can't say for the moment because she is like us in one respect. The French people are more self-sufficient. They manage to produce enough food to feed themselves. Germany does not manage to feed herself. She hopes to after ten years.

Italy does not begin to range to feed herself. Russia does, but in adequately. One of the most important things in time of war is this fact that you have got to feed the people and must provide the textile fabrics needed to supply clothing, at least for many people does it take in the U.S. to provide our nation food and clothing? Twenty-five out of every hundred. That is all, this ratio is fundamental. The surprising thing is that with less than one-fourth

in our labor power, we create enough food for ourselves and a sufficient amount for export to pay for our imports - tea, coffee, sugar, etc. We produce enough cotton for ourselves and 150 million other people and it pays for our imports of silk, etc.

That leaves available for industry and trade, and transportation, 78 people out of every 100. Fortunately, in the U.S. there is no need for increasing the food supply. Our agricultural problem is not, as in Europe, how to get enough to feed our people.

I am sure there are some men here who remember the problem of agriculture as discussed in farm journals and by a commission appointed to consider it thirty years ago. The problem was how to stop the flow of population from the farm to the city. In 1921 I became President of the Agricultural College of Michigan. As far back as I had read and heard these discussions, but when I came back to the agriculture problem I learned something very quickly. I proceeded to study the statistics and found things that surprised me. I learned that we had no more people on farms in 1920 than in 1900. I learned also that production in agricultural products was about 40% larger. I quickly came to one definite conclusion about the agricultural problem. It was not a problem of moving people back from the cities to the farms. At that time we had about 105 million people in the U.S., and about 50 million on the farms - nearly 30%, on farms - and now we have three or four million people less on the farms than we had 30 years ago. We produce nearly 50% more food. You will never find a more significant economic fact. Not only that, but with an stimulus to agricultural production, in those fields where you need more products in time of war, you can easily increase it in any one of those lines from 20% to 50%. I am perfectly convinced that under pressure production of wheat would increase 40%. There is an immense amount of storage that can raise wheat and the farmers like to raise it. It takes three months to raise a crop of wheat and then they can play poker or raise hell the rest of the time.

We can increase our production enormously, with stimulation and need have no worry whatever on the future of the food supply in peace or in war.

Let us compare France. In France they also are self-sufficient in the matter of food supply but it takes 50% of them to produce it. That only leaves 50% of the people for industry, trade and transportation. That difference of 28 people that we have in the field of mining, manufacture, and transportation gives us advantages for defense. There are other advantages. They cannot increase their food supplies as easily as we can because they do not have the requisite amount of land or because of climatic limitations.

Germany has 31% of her people on the land. They do not produce enough food. It takes the production of another 9% making manufactured products to pay for the imported food and textile fibre imports. That leaves 60% for trade, industry, etc. Germany cannot increase production much, if any, during war. What did she do from 1914 to 1918? There was one striking thing she did. She devised substitutes.

She also slaughtered her hogs. The war was only going to last a few months. That illustrates one of the handicaps of a country like Germany that its poor soil to begin with. Up around Berlin they start with 1000 pounds of fertilizer per acre and we think we do wonders when we apply 500 pounds. They have climatic limitations which make it impossible to raise food grains in winter. That is one of her disabilities. The possibilities of increasing her production are very slight. They can increase only gradually, over a period of years.

When you come to Italy, it takes at least 65% of her labor, working on land, and manufacturing for export, to feed themselves. That leaves 35% free.

In countries like Russia at least 75% of those people are on the land. They do not much more than feed themselves. They have climatic limitations, no machinery, no modern methods in fertilizing, nor in plant and animal breeding.

Our people are better off than any other people on the face of the earth. We have facilities for expanding. A very small shift of people will at once take care of our conceivable demand for food and probably any that our allies would have in any war. But that is not the whole situation. There is great difference in productivity per worker. It is pretty obvious that there must be great superiority in the efficiency of our people on the land compared with those working in these other countries. Let me say that this disparity will increase so long. The next census will show one-sixth of the people on the land in the United States will be 123 million people and by the end of the decade we will have 140 million, and a few more will come if the farms prosper and returns.

How many does one American family feed on the farm? Twenty-two families feed 100 people. That means that every family feeds itself and 3½ other families. In France one family on the farm raises only enough food for itself and one other family. In Germany itself and 1½ others. The American farmer may be hardly off but he gets what 3½ families pay him for food. In Italy the farmer's family gets what ½ a family pays him. In Russia he gets what 1/3 family pays him for food. Even that we have more food per person than we have in Germany and France, and certainly far more than in Russia and Italy. If we take as a unit of food the amount needed for one family, then the American family raises 4½ units, the French 2, the German 2½, Russian 1-1/3, and Italy 1½. There is obviously a great

difference in the efficiency of agriculture here and abroad as measured in terms of output per worker

Now as to the difference in industrial efficiency. It is not easy to be exact, but you can reduce the error to a fairly narrow range as compared with a productive output of 100% for the American worker, as in transportation, manufacturing or mining, that of Germany will be about 50%. It will surprise you to hear so much about German efficiency. Before 1914 they were supposed to be the least word in efficiency. Since 1924 they have made great strides. They were the first nation to see that something new was happening in America - that we have had a new industrial revolution - new methods of mining labor and that these methods are far superior to any that had ever been developed before, just as the English revolution brought new methods and kept England in the lead in industrial development 150 years ago. People sometimes talk as if England's greatest wealth had been taken out of her colonies. Her greatest wealth is due to her invention of machine industry. She led the world from 1780 to 1880. The English colonial possessions were greatly expanded at the same time that the industrial revolution was emerging - and she developed the application of steam power to the field of industry and trade. It is very natural to credit the colonies with her increase in wealth but the colonies are worth little. I do not believe that England has made anything out of her colonies. The Germans were absolutelyhipped on the subject until a few years ago. Germany does not need colonies - she has no efficient technique of manufacturing.

The Germans say in 1924-25 that they did something new in industry when they got the Dawes plan in 1924 they had almost completely exhausted their resources. They had less than five million marks worth. After they accepted the plan they were able to get short-time credit once more for the purchase of materials. Their wages were \$10 a week - 40 marks. Ours were \$15 a week in the automobile industry. They thought they could undersell America. Imagine their surprise when they found they could not make the article as cheaply as we could with \$5 a week labor. And German labor is good. They said - "We are obviously using our own labor inefficiently as compared with America, even though we are not inefficient as compared with French and Italian labor. These nations must know something new about how to use labor in production." They got started, and from that day to this their industry has increased in effectiveness. They adopted our methods just as in 1870 they adopted England's. Germany industrialists admit that the German efficiency is relatively one-half as high as ours. The French is not over 40%. That puts French civilization below Germany in efficiency. Italy's is 35-1/3, and Russia's roughly 25%.

Despite reported payments the standard of living in Germany is higher than in France and the reason for the difference is

that the German working man is more industrious than the French, and more efficient. I went through the files of work in Germany with the number, production etc., but the orderliness and efficiency of the German workers had said they turned out decidedly more work per man than the French plant.

Now if you take 78 people producing 100 units per man, you get an industrial output of 7800. In France 50 workers at 40, gives 2000, in Germany 60 workers at 50% output yields 3,000. It is 1,200, in Russia 625. These comparative figures are incredible but they are roughly true. I think it is one of the most interesting comparative tables ever evolved. The output is expressed in terms of actual physical production - not money.

It must be clear that if there are only 3000 units of output of mining, manufacturing, etc., in Germany and 7800 in America, it is perfectly clear that there are a lot of non-essential products in American production. That is one of the problems facing us now - to shift production from non-essential to the things needed for the execution of military plans.

One day in the spring of 1918 they called me to the Treasury. They said - "The war will cost us 20 billion dollars this year and 8 billion has to be raised by taxes. If it is your problem, - to draw up a tax plan which will take 8 billion dollars from the American people without hurting industry and without too much grumbling." The problem was largely one of suppressing unnecessary production. If you wish to see the things we thought were unnecessary for the life and happiness of the people, take a look at the tax bill that was passed in 1918. It contained a list of luxuries which were subject to taxes. They yielded 1½ billion dollars. Hence people succeeded that they would "do not put you to paying taxes. Just take that money and buy Liberty bonds." The theory is to suppress these things.

In that 7800 units of American production there must be an enormous amount of non-essential production. A new Census of Manufactures has just come out and if you study it you will be surprised at the number of things that are non-essential.

America can muster almost unlimited production or sacrifice from the standpoint of economics. We could spend 2 billion dollars a year on defense and it would be a corporatively small matter in the economic lives of our people. Perhaps we ought to publish this and circulate it broad. It might discourage competitive armament programs.

I have not seen anything in months that surprised me so much as the Census of Manufactures for 1929. It revealed that in the ten years 1919-1929 the number of wage earners in the U.S. in

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	Agric- culture	Industry Trade Transportation	Productive Efficiency	Output per 100
U S	22	78	100	7800
France	50	50	40	2000
Germany	40	60	50	3000
Italy	65	55	53-1/3	1200
Russia	75	25	25	625
England	55	65	60	3900

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manufacturing establishments declined 3% but the output of manufactures in that period increased 42%. That is the rate at which efficiency was accelerated in the U.S. during the last decade.

The years 1920-1925 marked a turning point in American industry. This is true in agriculture, mining and transportation. In the three main lines - agriculture, forestry, mining - we get to the point where it took fewer people to maintain our normal rate of growth in the volume of output. We are producing an enormous increase in output, with actually fewer people. That is very significant fact for defense.

When nations get into war the question arises "How are you going to put this industrial power at the disposal of the military establishment?" This tall about commanding factories is not likely to come to anything. Theoretically it sounds all right, and some of it probably has to be done. My guess is that in the next war we will do as nations have done before. The Government will buy at the market price, and the money needed to pay the price will be raised by taxes and loans. The important thing is that you should see what steps you must take, and see them from the beginning - that is, you need a program.

Always the first step is to go to the banks and get more money. It is a great advantage to have a central banking system like our own Federal Reserve System, the Bank of France, or the Bank of England. You could probably get it from either bank but it is a slow process. You can sell short-time Government obligations to the Federal Reserve Banks and the Government can at once put itself in funds. It is a great advantage to be able to get the first of that money from the Reserve Bank for as that money is paid out it gives all the other banks reserve funds. It makes no difference whether the Federal Reserve buys bonds or whether the member banks buy them. The Government gets the money in any case, but the credit is easier if the first method is pursued.

The next step is to put out long time bonds. The people and the banks will buy bonds for they are regarded as gilt-edged investments in a time of uncertainty. Then you have to get at the heart of this thing - taxation. I think the U.S. did pretty well on taxation during the last war. It should have done so of course, because it had the benefit of the experience of France and England. The German experience was not worth so much. Germany's difficulties were not financial - her difficulty was in her economic situation. I shall never forget an editorial in the New York Sun which had a good bit of wisdom in it. The Germans loaned a big loan in 1915 and it was oversubscribed. One banker in talking to another said he did not see how the allies were going to defeat a nation that after 15 months of war could raise money like that. The other one said it

reminded him of two men who started on a trip from New York to San Francisco in the days of the first transcontinental railroad. They heard before starting that whiskey was \$10. a quart in San Francisco and it was only \$1 in New York. They took along some and when they got to Poughkeepsie one of them opened a bottle and took a drink for which he gave his partner 50 cents. Then the other man took a drink and gave his partner back 50 cents. That kept on all the way to San Francisco and each had finally paid the other \$200 for the whiskey he had drunk. But the money they had between them was the same and the whiskey was gone. A man could lecture to you for a week and tell you a lot less about the relation of the financial problem to the economic problem.

Our tax problem in 1917 was largely influenced by the fact that we had an enormous rise in prices and profits before we got into the war. The year of highest profits up to 1929 was 1917. Profits of all corporations jumped from \$4,700,000,000 in 1913 to \$8,600,000,000 in 1916. In 1917 they advanced to the record figure of \$10,730,000,000.

It is perfectly clear that profits were far larger than necessary. Necessary profits are those which are high enough to get the production you want. Any excess over this necessary amount constitutes surplus profits. Senator Borah called for a transcript of all corporations that made more than 15% on the capital stock in 1916 and 1917. You probably remember the Borah resolution on Corporate profits. I grouped these when I was at the Treasury and was amazed at the great mass of people who earned more than 20% profit on their invested capital. So we evolved the excess profit taxes. It yielded as high as \$2,505,000,000 in 1918. All these figures on taxes you will find in the Statistics of Income or the Treasury and in the Report of the Secretary of the Treasury. Prices are going to rise - production is going to increase under the stimulus of Government buying and you are going to have higher profits in every war period. The best thing to do is to cover the excess profits into the Treasury by taxes.

One of the great fallacies I have put forth is that the excess profits tax had driven up prices. This tax does not raise prices. You can read something of that in Elv's "Outlines of Economics."

Then you have the people with large incomes. Everybody who gets a large income is in a privileged position and one of his duties is to support the Government in times of crisis. It is a great privilege to be allowed to inherit property and have a large income without working. It is a great privilege and a snap. You can levy personal income taxes at almost any rate you choose in time of war. People with large incomes save a great deal of it and it is merely a question as to whether they are going to buy Liberty Bonds or have it taken away from them in taxation. The person with the right of

property has it only because the Government maintains the right of private property and he has obligations of peculiar nature in time of national defense.

You should put on consumption tax which will repress non-essential expenditures. There is also a psychological problem there, but one of the very best ways of repressing consumption is putting on taxation. The offence for consumption taxes is evasion. Why don't you buy an article for 15 cents instead of 50 and pay for Liberty Bonds with the difference?

You necessarily have to use the banking system at first in issuing bonds. Some of the war finance is going to seep into the credits extended by banks. If you go to the banks directly as they did in Germany you get inflation. If we had gone on we probably would have gotten it. The way to head it off is to put on an adequate scheme of taxation at the beginning. Make it so heavy as you can.

In this country we did rather well with our scheme of taxation and there is reason to hope that we will enter the next war when we come to it, much more intelligently than we ever did any other war.

When you get to the question of how to finance a war you look around to find people who have had training in taxation - you are usually limited to a handful of people. There is real danger that a great many of these lessons of the last war will be forgotten before the next war comes. But I hope when we come to it we will have people in the Army who can help the Treasury formulate an intelligent program of war taxation.