

RELATION OF HIGHWAY DEVELOPMENT TO NATIONAL ECONOMY

BY CHARLES M UPHAM

Engineer-Director, American Road Builders' Association

SYNOPSIS

In all periods of business depression, unemployment increases and the national income decreases. In order to keep industrial activity at a high pitch there must be full employment. If history repeats itself there will be a period of economic unsettlement after the present war which will follow the same course as the business cycles following other wars.

The country will again face the unemployment problem, and steps should be taken to lessen the severity of any industrial decline which may occur. The remedy would lie in a planned highway program which could be put in effect before a business decline can get well underway. The group which is usually first and most seriously affected is the durable goods industry. Analyses have shown that if these producers can be kept fully employed, the other two groups which include the consumers and producers of consumer goods will have little if any unemployment. The building of highways is the best durable goods producer and a planned program of construction would play an important part in keeping the national economy on an even keel in time of need.

Highway construction and the benefits accruing to the general welfare as the result of highway transportation have proved their value in the national economic picture during the last 30 years. The demand for highways manifested itself from the beginning of the automobile era and the value of highway construction as a business stimulant and as a means of relieving unemployment was proved during the recent depression years.

Since 1932 various kinds of public construction have been put in effect for the purpose of assisting in the stimulation of business activity and putting people to work. Two government agencies have completed studies concerning these factors and both have proved the exceptional value of highway construction in meeting the requirements of both objectives.

The Bureau of Labor Statistics, Department of Labor, recently completed a five year study of the economic effects of various kinds of government construction projects. These included water supply, reclamation, residential and non-residential buildings, sewers and steam and electric power plant projects. It was found that highway and street construction provided the greatest amount of direct and indirect employment per dollar spent. Slightly less than half of the employment was at the job site and the remaining off-site employment was at the mills and quarries.

Exhaustive studies have been made by the National Resources Planning Board on the effects of various types of public works spending as it influences unemployment and other economic conditions.

As a result the Board has enumerated six considerations which must be fulfilled if the required benefits of a public works program are to result.

1. The utility of the work to the community
2. The flexibility of the project, the ease with which it can be undertaken at the appropriate time, and the ease with which its prosecution can be controlled or curtailed in relation to the need for rapid expansion or contraction of employment
3. The adjustment of the project to the character and regional distribution of unemployment
4. The adjustment of the material requirements of the project to available industrial plant capacity.
5. The employment creating value of the project
6. The extent to which the project induces further new investment and employment

BUSINESS CYCLES

The results of wars on the economic cycle have been generally uniform over a long period of years. The industrial trends which accompanied the War of 1812, the Civil War and World War I, have followed practically the same pattern. In each case there has been high business activity during the war, followed

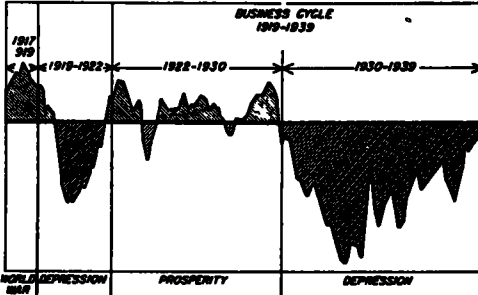


Figure 1. Business Cycle

The last world war stimulated business similar to the present high industrial activity. This was followed by a short period of depression in which transition from war to peacetime industry took place. After this came a period of prosperous business conditions as the demands of peacetime requirements were being satisfied, which ended in the long depression of the thirties. A similar cycle has taken place in all modern wars in all countries.

It is reasonable to assume that the present conflict will follow the same economic cycle. The remedy for the extreme fluctuations in industrial activity would be to stop them before they get well underway and out of control. Since the durable goods producers are always the group most seriously affected at the beginning of an employment downtrend, a public works program would act as a brake at the first sign of a depression following the war.

by a short depression, then a period of prosperity and a secondary depression of comparatively long duration. While there are some variations in the lengths of these various periods, the total time elapsed for the complete cycle has been about fifteen years.

The unsettlement immediately following a war is usually of short duration; the period of prosperity which follows is

a replacement or reconstruction period which burns itself out in a wave of speculation; and is followed by a long period of business stagnation and unemployment.

If history repeats itself, there will be a period of unsettlement after the present hostilities cease, which may be cushioned by a planned program of public works. After this period of transition is completed, a period of replacement and resulting high industrial activity should follow. This phase of the cycle is the result of generally depleted stocks of civilian goods. Of course, the longer the war the longer the period of high industrial activity. During this period, highway and building construction would be at a high level. If this phase of the cycle could be maintained indefinitely, there would be little necessity for more than a normal public works program as far as employment is concerned. However, there have always been secondary recessions of varying intensity. Judging from the past, the final phase of the current economic cycle is likely to develop a downward trend, unless something is done to keep the labor force fully employed.

LABOR FORCE

In recent years there have been various studies on employment classification. Normally about one-half the labor force is engaged in producing goods, while the other half is busy in service industries such as professions, transportation and other occupations of a similar nature. Analysis has shown that there would be little if any unemployment in this latter group if the producing group could be kept employed. Going further into the employment breakdown, the census has divided the producers into two groups, the first producing consumer goods and the second producing durable goods. Consumer goods include fuel, food, textiles and other goods of like nature, while durable goods include building, machinery, highways, bridges, and other similar commodities.

In an analysis of unemployment figures of all groups, it was found that during a depression period 75 per cent of the total unemployment occurred in the group

will have full employment. These facts concerning employment groups are pointed out to show that highway construction, which plays an important part in the durable goods industry, must loom large in any program of public works in order to make it most effective.

Highway programs have for many years been justified principally by the demands of traffic. Until recent years, the effect of this construction on the national economy had not been given much thought. During the thirties, various kinds of public works were carried on as a stimulation to industry and to relieve unemployment. When World War II broke out the emergency defense activities brought about the desired result, thereby at least postponing the final effects of the experiment on the national economy. It is certain, however, that lack of an organized plan of action caused waste of funds in the temporary types of relief work, and that the reduction in unemployment which took place, resulted from the construction program of useful public works.

Up to the time the war began to have its effect on the economic structure, 5,000,000 people had been put back to work; there were still 8,000,000 people unemployed and the national income had risen from \$40,000,000,000 to \$65,000,000,000. The war effort is expected ultimately to restore the entire labor force to full employment and the national income is expected to reach \$100,000,000,000 within the next two years. This combination of full employment and high national income spells prosperity. Regardless of other factors in the national economy, such as national debt, expenditures and receipts, the current activity must continue until the war is won or hostilities cease.

The problem then resolves itself into finding a means of maintaining a high national income and full employment after the war. If a period of reconstruction follows the present war similar to

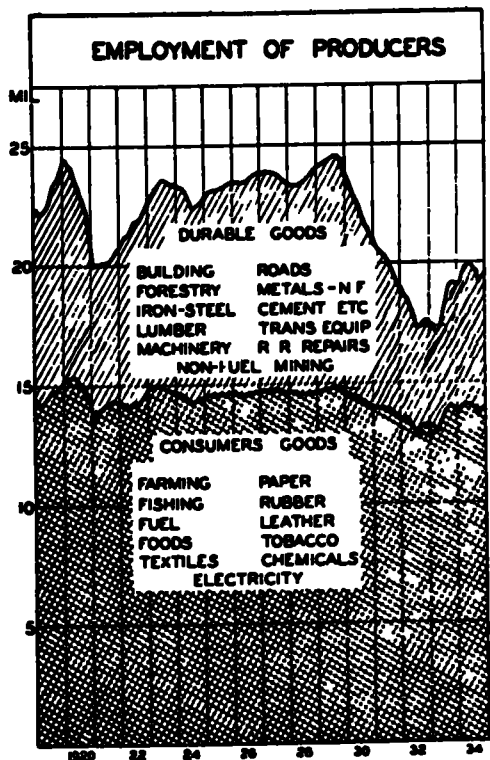


Figure 2. Employment of Producers

The labor force of this country is normally divided equally into two groups, the consumers and producers. The latter group is divided into producers of durable goods and producers of consumer goods. In periods of depression the collapse occurs in the production of durable goods. This group which includes the construction industry accounted for 75 per cent of the total unemployment during the last depression.

The initiation of a well planned highway construction program at the start of a decline in unemployment would keep the durable goods producers active and avert a major decline.

producing durable goods and that most of the remainder is dependent on this group. Then according to this analysis, if the producers of durable goods are kept fully employed, the entire labor force

that following World War I, a period of prosperity similar to that of the twenties might ensue and emergency public works activity could at least be postponed for some years. Due to the impossibility of foreseeing whether a disastrous depression will follow or a comparatively short unsettlement, followed by a period of replacement, a public works program is being set up by governmental agencies which is designed to go into effect if and when unemployment starts to increase

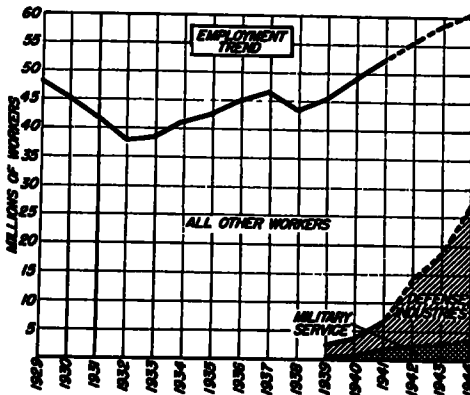


Figure 3. Employment Trend

By 1944 one-half the total labor force will be engaged either in war work or in the military forces. When hostilities cease, the greater portion of the war workers and military forces must be shifted to peacetime activity. A planned program of highway construction should be ready for the transition period, to provide for the employment of persons thrown out of work

In a program of this nature, highway construction should play an important part. During the last depression the various agencies of government engaged in administering public works funds found that highway construction was the best solution for unemployment and resulted in more economic benefits than any other form of public works. There can be no doubt that this work is badly needed and should be of major importance in any reconstruction activity.

EMPLOYMENT

Under normal conditions the total labor force in the United States amounts to about 40 per cent of the population. This means that 132,000,000 people, the current total population would be supported by about 53,000,000 workers. In 1932, a population of 125,000,000 was being supported by 37,000,000 which was only about 75 per cent of the total. It was conclusively proven that prosperity could

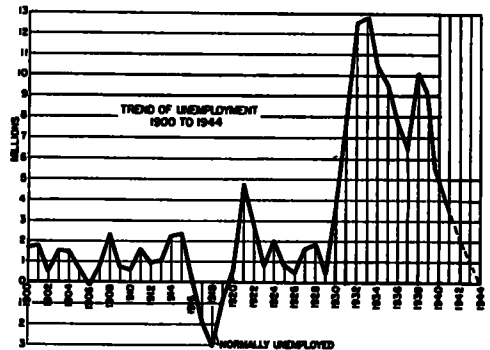


Figure 4. Trend of Unemployment

Economists predict that war activity will eliminate unemployment by 1944. A breakdown of the classes of unemployment during the thirties showed that 75 per cent occurred in the producers of durable goods which includes important items such as highways and bridges. The durable goods producers are busy currently, building ships, bombs and other implements of war. This group must continue maximum activity after the war if full employment is to continue. The building of highways would be the logical major peacetime activity to keep production of durable goods at a high level

not exist with one-quarter of the working population idle. The construction industry normally employs directly and indirectly 13,000,000 people. Averaging the years 1926-1933, the total annual construction expenditure was about \$9,000,000,000, of which private construction amounted to \$3,300,000,000, public utilities \$3,000,000,000, public highways \$1,375,000,000 and other public construction \$1,325,000,000. The highway program furnished employment for

1,400,000 annually and supported a total of 5,000,000 people.

NATIONAL INCOME—DEBT

The unprecedented growth of highway transport has overtaxed the highway facilities and is evidence that the highway construction program has never kept pace with the demand, leaving no doubt concerning the justification for a much larger expenditure for highways as soon as world conditions permit. The question of how much construction can be undertaken annually involves a study of its effect on the national economy.

With full employment it would be possible to have a national income in excess of \$100,000,000,000. This means that services and goods produced would amount to this figure, and it is assumed that with the full labor force working and the resulting high national income, government receipts would more than balance expenditures. Under present conditions it is impossible to forecast either the length of the emergency or the ultimate world economic situation. It is estimated that within two years every available person will be working and at the present rate about one-half of the working force will be engaged either in war production or in the military forces.

The problem to be solved after the war is the shifting of this war employment to peacetime activity without reducing the national income and without reducing the employment. Government spending will continue on a huge scale until the emergency is over and along with it an increasing national debt. The question of financing a program of public works during the post war period involves a study of expenditures against receipts, interest rates and debt trend. With full employment and a high national income, government receipts would be increased to a point where they would more than balance expenditures, the debt would reach its maximum and remain static or be slightly

reduced until the return of normal conditions. With industry functioning normally and with a slackening of government spending, the national debt could be further reduced.

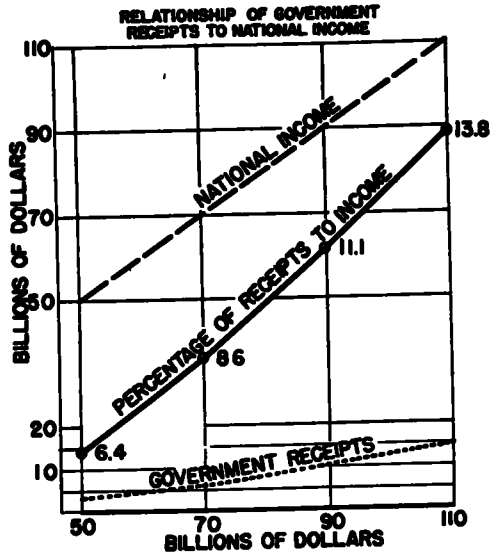


Figure 5. Relationship of Government Receipts to National Income

The national income must be kept at a high level. The ratio of receipts to income varies at different income levels, the percentage increasing as the income goes higher. With a \$50,000,000,000 national income government receipts would be 64 per cent or \$5,400,000,000, but with the national income doubled the percentage would be 138 per cent or nearly \$14,000,000,000. This is an example which assumes an unchanging taxing policy and shows how receipts increase as the tax base broadens.

This high income and the resulting receipts would finance normal government spending, and a program of public works with the possibility of ultimately reducing the national debt. This is the cycle—full employment, high national income, high receipts and expenditures, lower debt.

Government expenditures for purely relief purposes do very little for the economic structure. Projects undertaken must be chosen for durability, for the individual, and for general welfare and for future usefulness if they are to be

effective. Highways are in this category and perhaps the greatest asset lies in the fact that a large improvement program can be quickly started and the improvements utilized immediately.

The development of highway transportation has become the nation's best investment. The improvement of highways and streets has not been adequate to meet the demand and while the employment-producing characteristics of highway building operations outrank other types of construction, the secondary effects of the utility created are even more beneficial to the national economy.

ECONOMIC BALANCE—IDLE MONEY

In a period of business depression in a country such as this, economic unsettlement occurs when production and consumption do not balance; inventories become excessive, unemployment increases and there is general retrenchment. Money becomes stagnant and piles up in the banks, a situation which would not occur if everything produced were consumed and if the entire income from the production of goods and services were reinvested.

If the total amount of idle funds could be put into useful construction during periods of stagnation, these funds which at times amount to 18 per cent of income would eliminate unemployment and bring back a prosperous condition. Money must be kept working. It is of little use lying idle, and if there is no demand for its use by private industry, it should be used on public works until such time as industry can take up the slack. During the twenties about \$10,000,000,000 in Liberty Bonds were liquidated. The funds could not be taken up by industry and eventually found their way into speculative markets which finally collapsed. Had these funds been placed in useful public works, such as highways, during this period, there would have been less money for speculation, it is doubtful

if the economic depression would have been as severe and the country would have profited by a much needed transportation system.

Following the last war, a short period of unsettlement was followed by ten years of increasing business activity. Road building was stimulated by an increase in automobile registration of 9,000,000 cars during the period, which was about twice

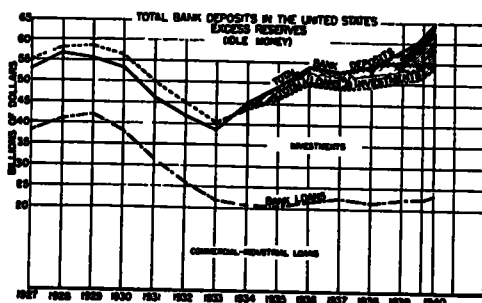


Figure 6. Total Bank Deposits in the United States

During the twenties total loans and investments exceeded the total bank deposits. There was little idle money and prosperous conditions existed until the 1929 collapse. The ensuing period was one of liquidation and money did not start to pile up until 1934. These funds now amounting to about \$12,000,000,000 are not in demand by business and due to war uncertainty, government aid to business, and profits being turned back into plant expansion, these funds are increasing. Under normal conditions these idle funds would indicate industrial stagnation, and unless reinvested in useful projects could cause slackening of employment and resulting economic decline.

the increase registered during the following decade. These were important factors during the reconstruction period. At the present time there is no industry in sight with the possible exception of aviation, comparable to the production of automobiles during the twenties, to take up the slack during the next transition period. Shortages in many commodities the world over will greatly exceed those which existed after the last war due to currently increasing restrictions on civilian require-

ments. It will take time to shift 27,000,000 men from defense work to the production of needed commodities. This is the critical period and the high national income level and full employment must be maintained. A planned post war highway program should be completed and ready to go when necessary.

HIGHWAY PROGRAM

The construction of highways is peculiarly suited to the purpose. It is doubt-

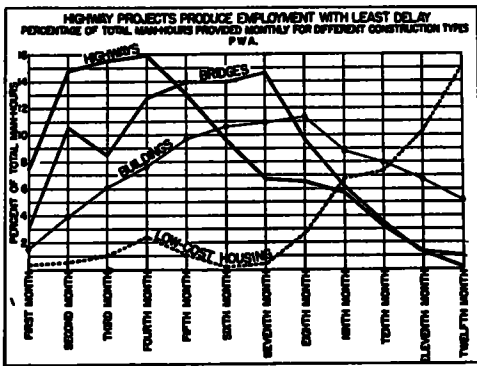


Figure 7. Highway Projects Produce Employment with Least Delay

Maximum employment occurs more quickly on highway and bridge projects than on any other types of construction. Highway projects have the unique characteristic of arriving at the maximum employment point soonest, regardless of whether the cost is \$1,000 or \$1,000,000, the size has no significance.

ful if there is any area where highways have been overbuilt and there is no question about the need for additional facilities not only in the heavily-populated areas but also for the benefit of agriculture. The present highway program is shifting more and more to strictly defense construction. While a portion of this construction on the strategic network will be beneficial for peacetime needs, much of the access road construction could fall into disuse after the emergency is over. It is likely that the program will do little better than hold its own until the war is

over, which will lead to an increased demand for replacement and new construction.

Fortunately, surveys which have been made in recent years by the Public Roads Administration, State highway departments and other agencies give a clear picture of the location and volume of the needed future program. There is an urgent demand for the contemplated program. It has a definite place in the national economy, for relieving unemployment and increasing the national income. However, regardless of unemployment and the general economic situation, there exists the necessity for a long-term highway program much larger than any hitherto put into effect.

During the years 1926-1933 the average annual public construction expenditure amounted to less than \$3,000,000,000, of which one-half was spent on highways. This was 17 per cent of the total public and private construction expenditure. Private construction accounted for 83 per cent and was an important durable goods producer during the twenties, playing a big part in keeping employment at a high level during that period. Its collapse, however, played an equally important part in the economic nose dive of 1929.

Inasmuch as both private and public construction are durable goods producers and have a similar effect on the national economy, an increase in public construction during periods of declining private construction would reduce unemployment until normal conditions returned.

A \$2,000,000,000 annual highway program would be 22 per cent of the total annual average construction program of 1926-1933 and would average about \$600,000,000 more than was spent annually during that period for highways. This would stabilize the employment of 2,000,000 persons annually in the durable goods industry and almost half as many more in the consumer industry. The

annual expenditure could be increased during periods of business depression.

The volume of private construction fluctuates with business conditions. The volume of public construction can be more readily stabilized at a given level. From the standpoint of national economy an annual highway program of at least \$2,000,000,000 would be justified and would have the effect of stopping extreme fluctuations in business cycles.

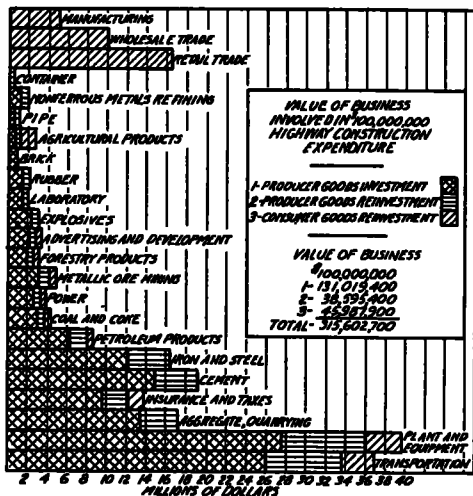


Figure 8. Value of Business

The total value of business resulting from highway construction expenditures amounts to about three times the original expenditure due to transaction of business in affiliated industries. Distribution spreads into many activities, including mines, processing plants, and transportation.

HIGHWAY ECONOMICS

Highway construction and the benefits accruing to the general welfare as the result of highway transportation have proven their value in the national economic picture during the last 30 years. The demand for highways manifested itself from the beginning of the automobile era and the value of highway construction as a business stimulant and as a means of relieving unemployment

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Since 1932 various kinds of public construction have been put in effect for the purpose of assisting in the stimulation of business activity and putting people to work. Two government agencies have completed studies concerning these factors and both have proved the exceptional

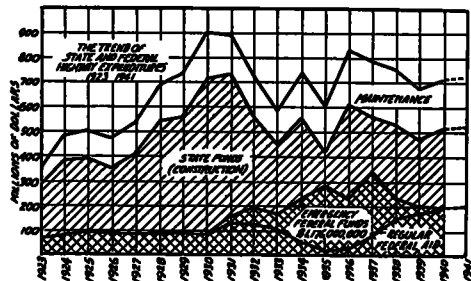


Figure 9. Trend of State and Federal Highway Expenditures, 1923-1941

During the reconstruction period following the last war, State and Federal expenditures for highways increased from \$300,000,000 in 1923 to more than \$700,000,000 in 1930. Other construction followed this same trend. Even during the peak years of highway construction, the improvement did not meet the current demand and was entirely inadequate for the future, yet despite recent rapidly increasing vehicle registration and highway usage, the construction program has never reached the peaks of 1930 and 1931.

As a durable goods producer the construction of highways is an important factor during a period of industrial stagnation, yet the demand for highways is greater during prosperous periods. Under any conditions there is economic justification for bigger annual programs than those of 1930 and 1931.

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- 3 The adjustment of the project to the character and regional distribution of unemployment

- 4 The adjustment of the material requirements of the project to available industrial plant capacity.
- 5 The employment creating value of the project.
6. The extent to which the project induces further new investment and employment.

Funds spent in the improvement of highways fulfill all these requirements better than in any other form of public works. The value of the highway as a utility is reflected in every phase of the Nation's welfare. The social, economic, industrial and agricultural life of the nation is dependent on highway transportation.

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DISCUSSION ON HIGHWAY DEVELOPMENT AND POST WAR ECONOMY

DEAN T. R. AGG, *Iowa State College*.
I would like to make one comment in connection with the presentation by Mr. Upham in which he pointed out the possibilities of absorbing labor through a program of road improvements. Mr. Upham made it quite clear that the dollars expended in actual road construction result in an expenditure of two additional dollars in supplementary fields—in the supply field for instance. I would like to point out another phase of that problem which is that if these improvements are properly allocated, if they are of the correct type, if they are well planned, then

when a dollar has been expended for the improvement of a particular section of highway, there will occur a saving to the operators of vehicles on that particular section of highway. If the work is done according to a well conceived plan the reduction in the costs to the users of the highway will eventually retire the costs of the improvements. This cannot always be achieved exactly but it is approximately true. Therefore as in this instance, so long as the improvements are located on roads that *need* to be improved, it is an investment of the type that might be called self-liquidating.