

18. FEDERAL INVESTMENT

Federal investment is the portion of Federal spending intended to yield long-term benefits for the economy and the country. It promotes improved efficiency within Federal agencies, as well as growth in the national economy by increasing the overall stock of capital. Investment spending can take the form of direct Federal spending or of grants to State and local governments.¹ It can be designated for physical capital, which creates a tangible asset that yields a stream of services over a period of years. It also can be for research and development, education, or

¹ For more information on Federal grants to State and local governments see Chapter 15, "Aid to State and Local Governments," in this volume.

training, all of which are intangible but still increase income in the future or provide other long-term benefits.

Most presentations in this volume combine investment spending with spending intended for current use. This chapter focuses solely on Federal and federally financed investment. It provides a comprehensive picture of Federal investment spending for physical capital, research and development, and education and training, but because it disregards spending for non-investment activities, it provides only a partial picture of Federal support for specific national needs, such as defense, transportation, or environmental protection.

DESCRIPTION OF FEDERAL INVESTMENT

The distinction between investment spending and current outlays is a matter of judgment. The budget has historically employed a relatively broad classification of investment, encompassing physical investment, research, development, education, and training. The budget further classifies investments into those that are grants to State and local governments, such as grants for highways, and all other investments, or "direct Federal programs." This "direct Federal" category consists primarily of spending for assets owned by the Federal Government, such as weapons systems and buildings, but also includes grants to private organizations and individuals for investment, such as capital grants to Amtrak or higher education loans directly to individuals.

The definition of investment in a particular presentation can vary depending on specific considerations:

- Taking the approach of a traditional balance sheet would limit investment to only those physical assets owned by the Federal Government, excluding capital financed through grants and intangible assets such as research and education.
- Focusing on the role of investment in improving national productivity and enhancing economic growth would exclude items such as national defense assets, the direct benefits of which enhance national security rather than economic growth.
- Examining the efficiency of Federal operations would confine the coverage to investments that reduce costs or improve the effectiveness of internal Federal agency operations, such as computer systems.
- Considering a "social investment" perspective would broaden the coverage of investment beyond what is included in this chapter to include programs such

as maternal health, certain nutrition programs, and substance abuse treatment, which are designed in part to prevent more costly health problems in future years.

This analysis takes the relatively broad approach of including all investment in physical assets, research and development, and education and training, regardless of ultimate ownership of the resulting asset or the purpose it serves. It does not include "social investment" items like health care or social services where it is difficult to separate out the degree to which the spending provides current versus future benefits. The definition of investment used in this section provides consistency over time (historical figures on investment outlays back to 1940 can be found in the Budget's historical tables).² Table 18–2 at the end of this section allows disaggregation of the data to focus on those investment outlays that best suit a particular purpose.

In addition to this basic issue of definition, there are two technical problems in the classification of investment data: the treatment of grants to State and local governments, and the classification of spending that could be shown in multiple categories.

First, for some grants to State and local governments it is the recipient jurisdiction, not the Federal Government, that ultimately determines whether the money is used to finance investment or current purposes. This analysis classifies all of the outlays into the category in which the recipient jurisdictions are expected to spend a majority of the money. Hence, the Community Development Block Grants are classified as physical investment, although some may be spent for current purposes. General purpose fiscal assistance is classified as current spending, although some may be spent by recipient jurisdictions on investment.

² The historical tables are available at <http://www.budget.gov/budget/Historicals> and on the Budget CD-ROM.

Second, some spending could be classified in more than one category of investment. For example, outlays for construction of research facilities finance the acquisition of physical assets, but they also contribute to research and development. To avoid double counting, the outlays are classified hierarchically in the category that is most commonly recognized as investment: physical assets, followed by research and development, followed by education and training. Consequently, outlays for the conduct of research and development do not include outlays for the construction of research facilities, because these outlays are included in the category for investment in physical assets.

When direct loans and loan guarantees are used to fund investment, the subsidy value is included as investment. The subsidies are classified according to their program purpose, such as construction or education and training. For more information about the treatment of Federal credit programs, refer to the section on Federal credit in Chapter 9, "Budget Concepts," in this volume.

This discussion presents spending for gross investment, without adjusting for depreciation.

Composition of Federal Investment Outlays

Major Federal Investment

The composition of major Federal investment outlays is summarized in Table 18–1. They include major public physical investment, the conduct of research and development, and the conduct of education and training. Total Federal investment outlays were \$489.2 billion in 2015. Federal investment outlays are estimated to increase to \$491.0 billion, less than one percent, in 2016, and increase by 1.0 percent to \$495.6 billion in 2017. In 2017, defense investment outlays are estimated to increase by \$6.1 billion, while nondefense investment outlays are expected to decrease by \$1.4 billion. The major factors contributing to these changes are described below.

Major Federal investment outlays will comprise an estimated 12.0 percent of total Federal outlays in 2017 and 2.6 percent of the Nation's gross domestic product. Greater detail on Federal investment is available in Table 18–2 at the end of this section. That table includes both budget authority and outlays.

Physical investment. Outlays for major public physical capital investment (hereafter referred to as "physical in-

Table 18–1. COMPOSITION OF FEDERAL INVESTMENT OUTLAYS

(In billions of dollars)

Federal Investment	Actual 2015	Estimate	
		2016	2017
Major public physical capital investment:			
Direct Federal:			
National defense	108.9	110.8	109.7
Nondefense	40.3	42.5	39.4
Subtotal, direct major public physical capital investment	149.2	153.3	149.1
Grants to State and local governments	77.2	78.0	85.3
Subtotal, major public physical capital investment	226.4	231.3	234.4
Conduct of research and development:			
National defense	70.7	71.7	78.9
Nondefense	61.3	63.8	67.8
Subtotal, conduct of research and development	132.1	135.5	146.7
Conduct of education and training:			
Grants to State and local governments	55.9	60.3	59.3
Direct Federal	74.7	63.9	55.3
Subtotal, conduct of education and training	130.7	124.2	114.6
Total, major Federal investment outlays	489.2	491.0	495.6
MEMORANDUM			
Major Federal investment outlays:			
National defense	179.6	182.5	188.6
Nondefense	309.5	308.5	307.1
Total, major Federal investment outlays	489.2	491.0	495.6
Miscellaneous physical investment:			
Commodity inventories	–*	–0.2	–0.0
Other physical investment (direct)	2.4	2.4	4.1
Total, miscellaneous physical investment	2.4	2.2	4.0
Total, Federal investment outlays, including miscellaneous physical investment	491.5	493.2	499.7

vestment outlays”) are estimated to grow by one percent in 2017 to \$234.4 billion. Physical investment outlays are for construction and rehabilitation, the purchase of major equipment, and the purchase or sale of land and structures. Just under two-thirds of these outlays are for direct physical investment by the Federal Government, with the remainder being grants to State and local governments for physical investment.

Direct physical investment outlays by the Federal Government are primarily for national defense. Defense outlays for physical investment are estimated to be \$109.7 billion in 2017, \$1.1 billion lower than in 2016. Approximately 93 percent of defense physical investment outlays, or an estimated \$102.0 billion, are for the procurement of weapons and other defense equipment, and the remainder is primarily for construction on military bases, family housing for military personnel, and Department of Energy defense facilities.

Outlays for direct physical investment for nondefense purposes are estimated to be \$39.4 billion in 2017. Outlays for 2017 include \$21.0 billion for construction and rehabilitation. This amount includes funds for water, power, and natural resources projects of the Corps of Engineers, the Bureau of Reclamation within the Department of the Interior, the Power Marketing Administrations within the Department of Energy, and the Tennessee Valley Authority; construction and rehabilitation of veterans’ hospitals and Indian Health Service hospitals and clinics; facilities for space and science programs; Postal Service facilities; construction for the administration of justice programs (largely in Customs and Border Protection within the Department of Homeland Security); construction of office buildings by the General Services Administration; and construction for embassy security. Outlays for this category are estimated to decrease by \$3.8 billion in 2017 primarily because outlays for 2016 include upward reestimates of the cost of past guaranteed loans for the construction and repair of apartment buildings, hospitals, and other health care facilities.

Outlays for grants to State and local governments for physical investment are estimated to be \$85.3 billion in 2017, a 10.1 percent increase from the 2016 estimate of \$78.0 billion. Most of the increase is for the 21st Century Clean Transportation System proposal, which includes a number of grants and programs within the Department of Transportation. For more information on this proposal see Chapter 11, “Budget Process,” in this volume. Other major grants for physical investment fund sewage treatment plants and other State and tribal assistance grants, community and regional development, and public housing.

Conduct of research and development. Outlays for the conduct of research and development are estimated to be \$146.7 billion in 2017, an \$11.2 billion or 8.3 percent increase over 2016. These outlays are devoted to increasing basic scientific knowledge and promoting research and development. They increase the Nation’s security, improve the productivity of capital and labor for both public and private purposes, and enhance the quality of life. With an increase of \$7.3 billion over 2016, more than half

of research and development outlays, an estimated \$78.9 billion, are for national defense. Physical investment for research and development facilities and equipment is included in the physical investment category.

Non-defense outlays for the conduct of research and development are estimated to be \$67.8 billion in 2017, a \$4.0 billion or 6.2 percent increase over 2016. Most investments in this area are funded through programs in the National Institutes of Health (which accounts for half of the increase in 2017), the National Aeronautics and Space Administration, the Department of Energy, and the National Science Foundation.

A more detailed discussion of research and development funding can be found in Chapter 19, “Research and Development,” in this volume.

Conduct of education and training. Outlays for the conduct of education and training were \$130.7 billion in 2015. Outlays are estimated to decrease to \$124.2 billion in 2016, and decrease again in 2017 to \$114.6 billion. Investments in this category add to the stock of human capital by developing a more skilled and productive labor force. Grants to State and local governments for this category are estimated to be \$59.3 billion in 2017, 52 percent of the total. They include education programs for the disadvantaged and individuals with disabilities, training programs in the Department of Labor, Head Start, and other education programs. Direct Federal education and training outlays in 2017 are estimated to be \$55.3 billion, which is a decrease of \$8.6 billion, or 13.4 percent, from 2016. Programs in this category primarily consist of aid for higher education through student financial assistance, loan subsidies, and veterans’ education, training, and rehabilitation. The decrease in outlays for the conduct of education and training from 2015 to 2017 is more than accounted for by revisions in the cost of past student loan activity. Adjusting for these reestimates of past activity, this category of outlays would increase from year to year.

This category does not include outlays for education and training of Federal civilian and military employees. Outlays for education and training that are for physical investment and for research and development are in the categories for physical investment and the conduct of research and development.

Miscellaneous Physical Investment

In addition to the categories of major Federal investment, several miscellaneous categories of investment outlays are shown at the bottom of Table 18–1. These items, all for physical investment, are generally unrelated to improving Government operations or enhancing economic activity.

Outlays for commodity inventories are for the purchase or sale of agricultural products pursuant to farm price support programs and other commodities. Sales are estimated to exceed purchases by \$36 million in 2017.

Outlays for other miscellaneous physical investment are estimated to be \$4.1 billion in 2017. This category consists entirely of direct Federal outlays and includes primarily conservation programs.

Detailed Table on Investment Spending

The following table provides data on budget authority as well as outlays for major Federal investment divided

according to grants to State and local governments and direct Federal spending. Miscellaneous investment is not included because it is generally unrelated to improving Government operations or enhancing economic activity.

Table 18–2. FEDERAL INVESTMENT BUDGET AUTHORITY AND OUTLAYS: GRANT AND DIRECT FEDERAL PROGRAMS

(In millions of dollars)

Description	Budget Authority			Outlays		
	2015 Actual	2016 Estimate	2017 Estimate	2015 Actual	2016 Estimate	2017 Estimate
GRANTS TO STATE AND LOCAL GOVERNMENTS						
Major public physical investment:						
Construction and rehabilitation:						
Transportation:						
Highways	39,018	41,382	39,658	42,002	42,030	42,863
Mass transportation	12,190	12,950	14,684	11,784	11,669	12,859
Rail transportation	1,394	1,452	2,269	2,415	3,342	4,778
Air and other transportation	3,548	3,677	18,327	3,454	3,779	7,125
Subtotal, transportation	56,150	59,461	74,938	59,655	60,820	67,625
Other construction and rehabilitation:						
Pollution control and abatement	2,651	2,880	2,721	3,310	3,281	3,324
Community and regional development	3,964	4,322	3,810	7,766	8,467	7,886
Housing assistance	3,498	3,601	3,631	4,036	3,131	3,849
Other	387	514	1,140	360	431	663
Subtotal, other construction and rehabilitation	10,500	11,317	11,302	15,472	15,310	15,722
Subtotal, construction and rehabilitation	66,650	70,778	86,240	75,127	76,130	83,347
Other physical assets	1,912	2,021	2,389	2,117	1,869	1,937
Subtotal, major public physical investment	68,562	72,799	88,629	77,244	77,999	85,284
Conduct of research and development:						
Agriculture	334	339	335	247	478	388
Other	221	214	221	164	168	167
Subtotal, conduct of research and development	555	553	556	411	646	555
Conduct of education and training:						
Elementary, secondary, and vocational education	37,063	38,167	42,842	38,021	39,792	38,195
Higher education	328	363	363	373	392	381
Research and general education aids	736	781	837	741	783	804
Training and employment	3,073	3,375	3,529	3,309	3,600	3,676
Social services	11,764	12,678	13,411	11,099	12,588	12,649
Agriculture	416	418	456	402	586	611
Other	2,232	2,265	2,294	1,994	2,579	2,982
Subtotal, conduct of education and training	55,612	58,047	63,732	55,939	60,320	59,298
Subtotal, grants for investment	124,729	131,399	152,917	133,594	138,965	145,137
DIRECT FEDERAL PROGRAMS						
Major public physical investment:						
Construction and rehabilitation:						
National defense:						
Military construction and family housing	5,156	6,672	6,274	7,524	7,671	7,702
Atomic energy defense activities and other	138	145	190	3	6	186
Subtotal, national defense	5,294	6,817	6,464	7,527	7,677	7,888
Nondefense:						
International affairs	1,731	1,602	1,752	956	1,007	1,270
General science, space, and technology	1,173	1,219	1,254	1,373	1,279	1,254
Water resources projects	2,935	2,990	2,010	3,326	3,468	3,448
Other natural resources and environment	1,093	1,161	1,518	1,169	1,219	1,267
Energy	5,986	5,593	4,596	6,142	5,075	4,567
Postal service	429	402	402	385	402	524

Table 18-2. FEDERAL INVESTMENT BUDGET AUTHORITY AND OUTLAYS: GRANT AND DIRECT FEDERAL PROGRAMS—Continued
(In millions of dollars)

Description	Budget Authority			Outlays		
	2015 Actual	2016 Estimate	2017 Estimate	2015 Actual	2016 Estimate	2017 Estimate
Transportation	291	385	274	294	236	413
Veterans hospitals and other health facilities	3,385	3,635	3,005	3,278	3,482	3,248
Administration of justice	1,959	2,561	1,456	1,645	2,206	1,543
GSA real property activities	1,361	2,343	2,172	995	1,166	1,644
Other construction	3,292	5,171	11,894	3,902	5,271	1,835
Subtotal, nondefense	23,635	27,062	30,333	23,465	24,811	21,013
Subtotal, construction and rehabilitation	28,929	33,879	36,797	30,992	32,488	28,901
Acquisition of major equipment:						
National defense:						
Department of Defense	101,956	115,961	109,057	101,237	102,802	101,382
Atomic energy defense activities	474	450	490	184	353	439
Subtotal, national defense	102,430	116,411	109,547	101,421	103,155	101,821
Nondefense:						
General science and basic research	328	394	420	321	379	419
Postal service	1,325	1,388	1,388	850	1,392	1,389
Air transportation	3,309	3,393	3,906	3,459	3,382	3,696
Water transportation (Coast Guard)	918	1,581	945	1,258	1,196	1,280
Hospital and medical care for veterans	1,838	1,550	2,313	1,760	1,512	1,987
Federal law enforcement activities	1,649	1,580	2,323	1,272	1,379	996
Department of the Treasury (fiscal operations)	292	292	345	231	266	281
National Oceanic and Atmospheric Administration	2,098	2,313	2,152	1,932	2,126	1,979
Other	4,728	4,941	5,127	5,120	5,523	5,704
Subtotal, nondefense	16,485	17,432	18,919	16,203	17,155	17,731
Subtotal, acquisition of major equipment	118,915	133,843	128,466	117,624	120,310	119,552
Purchase or sale of land and structures:						
National defense	-40	-36	-38	-48	-28	-34
Natural resources and environment	223	328	557	201	271	406
General government					7	
Other	-72	-37	-37	431	252	250
Subtotal, purchase or sale of land and structures	111	255	482	584	502	622
Subtotal, major public physical investment	147,955	167,977	165,745	149,200	153,300	149,075
Conduct of research and development:						
National defense:						
Defense military	65,431	70,839	72,630	65,666	66,754	71,959
Atomic energy and other	6,038	5,567	6,970	5,062	4,915	6,958
Subtotal, national defense	71,469	76,406	79,600	70,728	71,669	78,917
Nondefense:						
International affairs	290	315	327	290	315	327
General science, space, and technology:						
NASA	11,565	11,773	11,225	11,170	10,872	11,096
National Science Foundation	5,569	5,693	6,070	5,059	5,231	5,218
Department of Energy	4,399	4,502	4,827	4,159	4,520	5,060
Subtotal, general science, space, and technology	21,533	21,968	22,122	20,388	20,623	21,374
Energy	3,019	3,331	4,347	2,785	2,966	3,615
Transportation:						
Department of Transportation	696	742	881	645	790	868
NASA	516	500	681	555	555	644
Other transportation	17	18	23	24	17	24
Subtotal, transportation	1,229	1,260	1,585	1,224	1,362	1,536
Health:						
National Institutes of Health	28,880	30,490	31,204	28,358	29,222	31,220
Other health	1,745	1,689	1,786	1,314	1,273	1,734
Subtotal, health	30,625	32,179	32,990	29,672	30,495	32,954

Table 18-2. FEDERAL INVESTMENT BUDGET AUTHORITY AND OUTLAYS: GRANT AND DIRECT FEDERAL PROGRAMS—Continued
(In millions of dollars)

Description	Budget Authority			Outlays		
	2015 Actual	2016 Estimate	2017 Estimate	2015 Actual	2016 Estimate	2017 Estimate
Agriculture	1,655	1,669	2,077	1,623	1,818	1,907
Natural resources and environment	2,124	2,320	2,457	2,050	2,279	2,490
National Institute of Standards and Technology	589	624	681	482	639	681
Hospital and medical care for veterans	1,178	1,220	1,252	1,224	1,222	1,255
All other research and development	1,485	1,570	1,556	1,181	1,420	1,067
Subtotal, nondefense	63,727	66,456	69,394	60,919	63,139	67,206
Subtotal, conduct of research and development	135,196	142,862	148,994	131,647	134,808	146,123
Conduct of education and training:						
Elementary, secondary, and vocational education	1,410	1,472	1,709	1,271	1,230	1,369
Higher education	49,235	39,102	35,114	51,335	38,715	29,459
Research and general education aids	2,119	2,239	2,429	2,172	2,179	2,260
Training and employment	2,184	2,263	2,385	2,111	2,368	2,605
Health	1,595	1,776	1,857	1,677	1,802	1,866
Veterans education, training, and rehabilitation	15,369	14,647	16,668	13,605	15,129	15,296
General science and basic research	927	864	915	805	784	790
International affairs	612	608	657	642	763	668
Other	1,051	816	1,103	1,097	918	1,001
Subtotal, conduct of education and training	74,502	63,787	62,837	74,715	63,888	55,314
Subtotal, direct Federal investment	357,653	374,626	377,576	355,562	351,996	350,512
Total, Federal investment	482,382	506,025	530,493	489,156	490,961	495,649