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# APPENDIX C

# SERVICE LIVES OF CORPORATIONS' DEPRECIABLE. PROPERTY, 1959

The "Life of Depreciable Assets" study provides a substantial amount of detailed information about the service lives assigned by taxpayers to depreciable assets for purposes of computing depreciation allowances on corporate income tax returns.[1] In fact, two measures of average service life are afforded by these data. One is the weighted arithmetic mean life, derived for any given category (asset size class, industrial division, and so forth) by multiplying the reported service life of each entry in the category by the cost of each entry, summing these products, and dividing by the sum of the costs. The second measure is a harmonic mean service life, computed by dividing the sum of the costs of the entries in a given category by the sum of the quotients of the costs divided by reported lives.[2] The differences between these measures may be substantial.

At first glance, the weighted arithmetic mean may appear to be the superior measure. For example, suppose a group depreciable asset account contains two facilities, each costing $100, one of which has an assumed service life of ten years and the other of twenty years. The average life of the account appears to be fifteen years. But the annual straight-line depreciation with a fifteen-year service life is $6.67 per

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[1] Service lives for tax purposes may or may not coincide with the actual numbers of years that the properties are retained by the taxpayers. The LDA study affords data on year of purchase by service life, on the basis of which average age may be estimated and compared with service life, only for property acquired after 1953. These data are of little use in making the comparison because of the very few years of purchase, 1954–1959, included.

[2] The weighted arithmetic mean is $\dfrac{\Sigma(C_i \times L_i)}{\Sigma C_i}$, and the harmonic mean is $\dfrac{\Sigma C_i}{\Sigma(C_i/L_i)}$, where $C$ = cost, $L$ = life (in years), and $i$ = the $i^{th}$ entry.

$100.00 of depreciable basis, and over twenty years these annual allowances would aggregate to only $266.67, which would be $33.33 less than the total investment in the account during that period. An annual allowance of $7.50 per $100 depreciable basis is required, which is generated by using a service life of thirteen and one-third years, the harmonic mean life of the account. If the average service life is desired for analyses concerned with the amount of depreciation generated by facilities in group or composite accounts, the harmonic mean life is the superior measure. In fact, a substantial proportion of depreciable assets are in such accounts. We have, therefore, relied primarily on the harmonic mean service life in our analysis. In the following discussion, references to service life are to the harmonic mean, unless otherwise stated.

The average service life of all depreciable property on hand in the taxable year 1959 (as covered in the LDA survey) was 18.5 years. Not surprisingly, a shorter average life—14.7 years—is found for all property on hand in 1959 acquired after 1953.[3]

With respect to the latter facilities, little difference is revealed in the average service life of properties under the straight-line, declining-balance, and SYD methods, although the average service life of the small amount of property under "other" life methods is somewhat higher (Table C-1). The average service life increases with size of total assets, and the difference in each case between companies with total assets less than $1,000,000 and those with assets of $25,000,000 and over is quite substantial (Table C-1).

Substantial differences are also shown in Table C-2 in the average service lives from one industry to another, ranging from a low of 5.3 years in construction to 19.6 years in public utilities. Cross classified with size of total assets, the regular variation of average service life and company size seen in Table C-1 is less observable. In the finance, insurance, and real estate division, the mean service life is lowest in the largest size class, while in the agriculture and construction divisions, the lowest mean life is found among the middle-size companies.

A wide range in mean service lives is also found when the data are

[3] On the assumption of a positive correlation between service life and average age of property at retirement, the older the property, the likelier it is to have an older mean service life.

distributed by major asset type, as in Table C-3. For livestock, orchards, and vineyards, the mean life is 6.5 years while for structures and lease-hold improvements a mean life of 22.7 years is found. Here, too, a strong positive association between company size and service life is observable, with the exception of facilities classified as "intangibles" and "not identifiable."

It seems reasonable to suppose that asset type is the principal deter-minant of average service life and that differences in the asset type composition of depreciable facilities accounts chiefly explain differences in average service lives among size classes and industrial divisions. The fact, as shown in Table C-3, that smaller companies had shorter service lives than larger companies for each major type of property appears to challenge this supposition. A distribution by much more detailed asset types shows still more clearly that smaller companies used shorter serv-ice lives than larger companies. Of the 242 asset type classes, only 31 showed shorter service lives for the largest than for the smallest companies.[4] Not all differences from one size class to another in the composition of depreciable facilities are eliminated by this more de-tailed property classification, of course, but such differences must be greatly reduced in frequency. On the other hand, the shorter service lives of the property held by small companies may be accounted for by the fact that a relatively larger amount of this property was secondhand than in the case of bigger concerns and the service life assigned to secondhand facilities is the estimated remaining life. On the whole, how-ever, it appears that the differences in service lives are to be attributed primarily to differences in taxpayers' practices rather than to differences in property characteristics.

In July 1962, the Treasury Department issued Revenue Procedure 62-21, which provides guidelines for service lives of broad classes of depreciable facilities. These guideline lives were, in general, materially less than those set forth in Bulletin "F," which was superseded by the Revenue Procedure. They were also thought to be moderately lower than the service lives widely in use. For all manufacturing corporation facilities, for example, a composite Bulletin "F" life was nineteen years; in the Revenue Procedure, the composite guideline life was thirteen

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[4] The distribution is provided in Table Set I of the "Life of Depreciable Assets" source book.

years; the LDA harmonic mean life was fifteen years; and the composite life in actual practice was estimated at about fifteen years.[5]

Bulletin "F" lives are longer than the corresponding lives in the guidelines, as measured by the LDA and as estimated by the Treasury in actual current practice (see Table C-4). The guideline lives, moreover, are in virtually all instances below the LDA and current practice estimates. Guideline lives were not so much intended to reflect average replacement practice as to reflect what was regarded as the replacement patterns of the more progressive companies in an industry subdivision. In combination with the reserve ratio test, these guideline lives are intended to offer inducements for reducing replacement cycles.[6]

It should be emphasized that none of these measures of service life is necessarily deemed to coincide with the actual periods of time, on the average, that the respective groups of assets are held by the taxpayers. These are measures of service lives for use in computing depreciation allowances for tax purposes. The Revenue Procedure 62-21 is intended to induce taxpayers to bring actual service lives in conformity with those assumed for tax purposes, but the guideline lives were not represented by the Treasury as accurate reflections of taxpayers' replacement policies.

[5] U.S. Treasury Department, Office of Tax Analysis, Release, July 10, 1962, and Internal Revenue Service, "Life of Depreciable Assets" source book. The last number appears to be a weighted arithmetic mean, derived in part from the Treasury Department's Depreciation Survey of 1959, in part from the LDA, and in part from industry sources. The Treasury Department survey was similar to the LDA in many important respects; indeed, the LDA relied extensively on these survey data for information which was not available on the tax returns of some of the LDA sample companies. The Treasury depreciation survey, however, was based very heavily on large companies; since these companies had longer service lives, on the average, than the smaller companies, part of the difference between the LDA service lives and those shown as "actual practice" in Table C-4 is undoubtedly attributable to the differing weights of small companies in the respective samples.

[6] See U.S. Treasury Department, Internal Revenue Service, *Depreciation Guidelines and Rules,* Publication No. 456 (7-62), July 1962, pp. 1, 2, 31 ff.

## TABLE C-1

*Average Service Lives of Corporations' Depreciable Facilities, by*

*Method of Depreciation and Size of Total Assets, 1959*

| Method of Depreciation | Size of Total Assets (million dollars) | | | |
| --- | --- | --- | --- | --- |
| | Under 1 | 1 Under 25 | 25 and Over | Total |
| *All Facilities on Hand in 1959* | | | | |
| Straight-line | 11.4 | 14.7 | 21.7 | 19.6 |
| Declining-balance | 10.3 | 13.5 | 17.2 | 15.6 |
| Sum-of-the-years-digits | 9.9 | 14.3 | 15.6 | 15.2 |
| Other-life methods | 10.1 | 19.2 | 22.2 | 22.2 |
| Total | 11.1 | 14.3 | 20.0 | 18.5 |
| *Facilities Acquired Since 1953* | | | | |
| Straight-line | 9.0 | 11.8 | 16.1 | 13.7 |
| Declining-balance | 9.8 | 12.3 | 17.2 | 15.4 |
| Sum-of-the-years-digits | 9.8 | 14.1 | 15.6 | 15.2 |
| Other-life methods | 10.1 | 14.9 | 18.5 | 18.5 |
| Total | 9.3 | 12.2 | 16.4 | 14.7 |

Source: U.S. Treasury Department, Internal Revenue Service, "Life of Depreciable Assets" source book.

TABLE C-2

*Average Service Lives of Corporations' Depreciable Facilities Acquired After 1953, by Industry Division and Size of Total Assets, 1959*

| Industry Division | Size of Total Assets (million dollars) | | | |
|---|---|---|---|---|
| | Under 1 | 1 Under 25 | 25 and Over | Total |
| Agriculture, forestry, and fisheries | 7.2 | 7.0 | 8.3 | 7.4 |
| Mining | 5.4 | 6.4 | 13.3 | 10.9 |
| Construction | 5.1 | 4.7 | 7.3 | 5.3 |
| Manufacturing | 7.4 | 9.8 | 14.3 | 13.5 |
| Transportation, communication, electric, | | | | |
| gas, and sanitary services | 6.0 | 9.4 | 20.8 | 19.6 |
| Trade | 7.0 | 7.6 | 12.2 | 8.9 |
| Finance, insurance, and real estate | 17.9 | 20.0 | 14.7 | 17.5 |
| Services | 7.5 | 7.7 | 8.4 | 7.8 |
| Total[a] | 9.3 | 12.2 | 16.4 | 14.7 |

Source: Internal Revenue Service, "Life of Depreciable Assets" source book.

[a]Includes facilities of companies not allocable to an industry division. not shown separately.

## TABLE C-3

*Average Service Lives of Corporations' Depreciable Facilities Acquired After 1953, by Major Asset Type and Size of Total Assets, 1959*

| Major Asset Type | Size of Total Assets (million dollars) | | | |
|---|---|---|---|---|
| | Under 1 | 1 Under 25 | 25 and Over | Total |
| Structures and leasehold improvements | 18.2 | 21.3 | 23.8 | 22.7 |
| Furniture, fixtures, office and store machinery and equipment | 7.5 | 8.3 | 8.9 | 8.6 |
| Transportation vehicles and equipment | 4.2 | 5.6 | 9.1 | 7.1 |
| Production machinery and equipment | 6.9 | 8.2 | 14.9 | 13.5 |
| Livestock, orchards, and vineyards | 6.2 | 6.8 | 6.9 | 6.5 |
| Not identifiable or intangible | 10.3 | 9.2 | 13.9 | 13.2 |
| Total | 9.3 | 12.2 | 16.4 | 14.7 |

Source: Internal Revenue Service, "Life of Depreciable Assets" source book.

## TABLE C-4

*Service Lives of Depreciable Facilities in Manufacturing Subgroups*

| Manufacturing Subgroup | Bulletin "F" Composite (years) | Guideline Life | LDA Life[a] | Actual Current Practice[b] |
|---|---|---|---|---|
| Aerospace | 15[c] | 8 | n.a. | 10 |
| Apparel and fabricated textile products | 15-30[d] | 9 | 10 | 15 |
| Chemicals and allied products | 15-22 | 11 | 14 | 13 |
| Electrical equipment | 17-20 | 8-12 | 12 | 15 |
| Fabricated metal products | 14-28 | 12 | 13 | 16 |
| Food and kindred products | 12-40 | 12-18 | 14 | 13-19 |
| Lumber, wood products, and furniture | 10-25 | 10 | 10 | 16 |
| Machinery except electrical machinery, metalworking machinery, and transportation equipment | 10-28 | 12 } | 12 | 15 |
| Metalworking machinery | 17-20 | 12 } | | 16 |
| Motor vehicles and parts | 15-20[e] | 12 | 13 | 14 |
| Paper and allied products | 15-28 | 12-16 | 17 | 19 |
| Petroleum and natural gas | 5-33[d] | 6-16 | 12-17 | 16-19 |
| Primary metals | 17-30[d] | 14-18 | 19 | 23 |
| Printing and publishing | 10-25 | 11 | 13 | 16 |
| Professional, scientific, and controlling instruments, photographic and optical equipment | 17-25 | 12 | 12 | 15 |
| Railroad equipment | 25-28 | 12 | 10 | 16 |
| Rubber, leather, and plastic products | 15-17[f] | 11-14 | 13 | 15 |
| Ship and boat building | 20-25 | 12 | n.a. | 19 |
| Stone, clay, and glass products | 15-40[d] | 14-20 | 17 | 19 |
| Textile and mill products | 15-25 | 9-15 | 17 | 17 |
| Tobacco and tobacco products | 15-20 | 15 | 17 | 17 |
| Other manufacturing | n.a. | 12 | 14 | 14 |
| All manufacturing | 19 | 13 | 15 | 15 |

Source: U.S. Treasury Department, Office of Tax Analysis, Release of July 10, 1962, and Internal Revenue Service, "Life of Depreciable Assets" source book.

[a]Harmonic means.

[b]Office of Tax Analysis estimates.

[c]Except small tools (4-5 years).

[d]Item lives only.

[e]Special jigs, dies, patterns, which have life of 3-4 years.

[f]Except the mold account (3 years).