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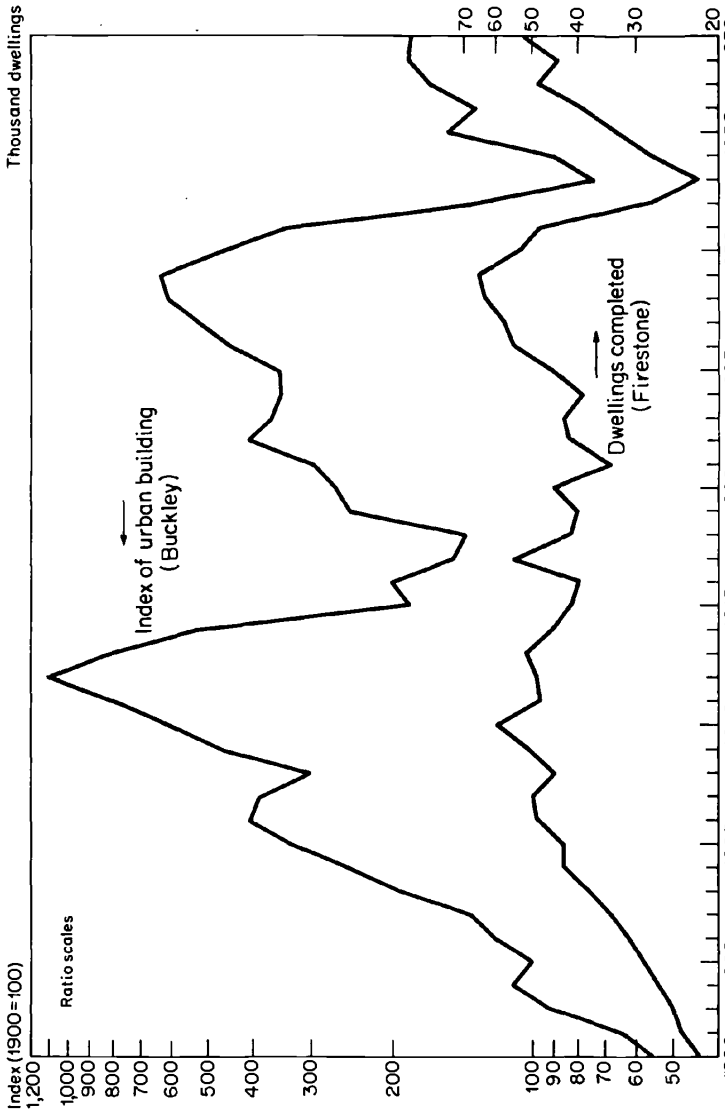
Appendix I

CANADIAN BUILDING INDEXES

There are two available indexes which reflect urban building: (a) The National Index of Urban Building from 1867 to 1946 by Buckley; (b) Dwellings Completed 1900–53 by Firestone. These are graphed in Chart I-1. The one index is residential and the other covers all urban building. Nonetheless, any index series for urban building will conform closely to a comparable index for residential building for the same area. The indexes however behave quite differently. For the period after 1920, the divergent behavior is plausible and consists merely in the greater amplitude of rise and fall during the twenties and thirties. Likewise during the first ten years of the century—1900–1910—the indexes harmonize in their movement, the Buckley index again showing greater amplitude. However, the next decade is full of problems. The upper turning point for the expansion movement varies by two years—1910 in the Firestone index and 1912 with the Buckley. Then the Buckley index shows a marked downsweep to 1918, which is not at all mirrored in the Firestone index. Moreover, in the Buckley index the boom of the twenties begins in 1918, while the Firestone index begins to rise in 1921. Yet during 1910–20 the Buckley index reflects building patterns of a large sample of cities, at least 35 from 1915 onward and perhaps more between 1910 and 1915 [35, p. 122]. At the same time Firestone asserts that the figures for 1900–1920 are “preliminary since the method yields only a rough approximation of the trend of housing completions.” Firestone feels that the index report may understate completions in the 1910’s and that building materials may have been used to a greater extent than allowed for nonresidential purposes induced by the war [89, p. 302]. Wartime building for nonresidential purposes probably distorted the estimates of wartime residential building.

The Buckley index lacked adequate coverage in the early years; it is based on two cities in 1886 and on three cities in 1890. The pattern of the movement of the Buckley index—when cumulated for the decades of the 1880’s and 1890’s—compares

CHART I-1
Alternative Measures of Building Activity in Canada, Nationwide, 1896-1939



SOURCE: (1) [89, Table 90, pp. 299-300] (extrapolated to 1896 on the basis of series (2) next.
 (2) [35, Table 0, pp. 140-42].

favorably with the *pattern* of the Firestone benchmark figures for decadal production of housing.

<u>Years</u>	<u>Urban Building Index Cumulated over Decade and Averaged^a</u>	<u>Firestone^b</u>
1881-91	74	15
1891-1901	90	21

SOURCE: ^a [35, p. 141].

^b [89, p. 299].

The pattern of the Firestone benchmark estimates for 1867-81 runs counter to the pattern involved in the Buckley index (when compared with the succeeding decade). The Firestone ratios are 24/15, while the Buckley index averages are 53/74. Moreover, the Firestone net value-added construction for 1880 and 1890 shows very little of the extreme rise projected in the Buckley index. If the Firestone benchmark construction estimates are sound (for 1870, 1880, 1890) then the urban building index becomes highly implausible both in its dive (or low of 1881) and its high in 1890. The Buckley construction estimates allow for a nearly constant fraction of housing to construction quadrennially for a 30-year stretch [35, p. 10].

Both Buckley and Firestone derive estimates of total construction expenditures for the years 1900, 1910, and 1920 by the Kuznets method of "blowing up" estimates of materials used. The allowances for materials used and values of total construction are as follows in million dollars:

	<u>Gross Construction Value Current Prices^a</u>		<u>Materials Used Ratios (Current \$)</u>	
	Buckley	Firestone ^b	Buckley	Firestone ^c
1900	119	128	49.8%	51.6%
1910	453	386	45.6%	51.6%
1920	986	852	48.3%	51.6%

^a Based partly on letter from T. R. Vout, Economist, Office of the Prime Minister, Ottawa, Canada, February 7, 1961.

^b Computed from [89, pp. 268, 296].

^c Computed from [89, p. 294].

The values obtained are discrepant, as are likewise the underlying estimates of materials used and the "blowup" ratio which results from various statistical manipulations. One reason for the

discrepant estimate is Firestone's assumption (based on 1934–51 operating experience) that materials used (in current dollars) will be 51.6 per cent of construction expenditures, while Buckley used a 43.21 per cent ratio (in real 1913 dollars) based on the 1921 Census.

Divergence between the Firestone and Buckley versions of urban building are thus in part similar in character to the divergent picture of building activity yielded by a Kuznets index (based on materials used) and a Riggleman index based upon building permits issued by central cities. The American experience with comparable statistics has indicated that the one method tends to understate, while the other method overstates, amplitude. Trend will be biased with both statistical methods, depending upon changing allowance made for repair, use of building materials, degree of reliance upon older permit-issuing cities and other factors.