A Tentative Secular National Balance Sheet for Switzerland¹

By Raymond W. Goldsmith, New Haven, Conn.

Switzerland is of such interest for the financial historian and analyst that I have made an attempt to construct its national balance sheet for the last century although the basic statistical data on which such an attempt must be based are much poorer in the case of the infrastructure of national wealth than for most other developed countries. No reasonably detailed estimate of national wealth, official or academic, has been made for nearly 40 years, and estimates for earlier benchmark dates are rare and far from consistent. For financial assets, on the other hand, the basic data are not inferior to those available for many other developed countries, though they seem never to have been brought together, and Switzerland still lacks the sectorized statements of financial assets and liabilities, which most other developed countries have constructed for a greater or smaller fraction of the postwar period as part of their flow-of-funds statistics.

In this situation it has not been possible to provide estimates, even rough ones, of the structure of national wealth for the first half of the period covered, i.e., for the four benchmark dates from 1880 to 1929. The best that could be done, and that only with a substantial margin of uncertainty, is to provide estimates of the aggregate of structures and equipment, using contemporary estimates in the case of 1913 and 1929 and extrapolating on the basis of the 1913 estimate for 1880 and 1900; and to combine the figures with still rougher estimates of the value of land assuming for 1880 and 1900 that the ratio of land to structures and equipment was slightly higher than in 1913, and in 1929 was between the 1913 and 1938 ratios. The resulting figures for national wealth for 1880 and 1900 are slightly higher than but not incompatible with Mulhall's estimates for the end of the 19th century, the sources of which are unknown.

From 1948 on the estimates of the main components of reproducible tangible assets – dwellings, other structures and equipment – have been derived by the

¹ This contribution is taken, with a few additions, from a forthcoming study on National Balance Sheets, which is based on the national and sectoral balance sheets of 20 and six countries respectively for a number of benchmark dates going back in many cases to the 19th century. This study permits a comparison of the structure of the national balance sheet of Switzerland with those of other developed and less developed countries, which are omitted from this article.

I am fully aware that these estimates should have been made by Swiss experts. Since none of them has apparently been willing or foolhardy or unwise enough to undertake the job I have had to set myself up as the St. Sebastian to suffer the slings and arrows of criticism. This contribution will have served one of its main purposes if it leads to better estimates by statisticians who know more about the economy of Switzerland and Swiss statistics than I do. The “tentative” in the title is more than a formality.

Thanks are due to several Swiss official and private organizations for providing some data and answering inquiries.
perpetual inventory method using the figures on gross capital expenditures in constant prices and the implicit deflators of the Swiss official national accounts. The starting point, the stock of such assets at the end of 1948, is weak, because there are no statistics of capital expenditures for the years 1939–1947, needed to provide the link to the official estimate of the stock at the end of 1938. Any error made in roughly estimating the capital expenditures of 1939–1947, however, cannot seriously affect the estimates of the capital stock from the 1960’s on. Another assumption that had to be made in developing the perpetual inventory estimates of the value of the stock of structures and equipment, is likely to impart a slight upward bias to the estimates. This is the application of the average net/gross ratio of capital expenditures in current prices of 0.58 for the period 1949/76 to the estimates of the gross capital stock for the benchmark years 1960, 1965, 1973 and 1978, instead of the corresponding unavailable ratios in constant prices. All in all, the estimates so derived of the current value of structures and equipment in Switzerland beginning in 1938 do not seem to be considerably inferior to those used for other developed countries.

As questions can be raised about the perpetual inventory estimates it is fortunate that Switzerland possesses statistics of the value of assets insured against fire that go back to the late 19th century. Table 1 compares them with the estimates used here for the last 50 years. It will immediately be seen that the reported fire insurance values are generally substantially above the perpetual inventory estimates, the reasons for the difference not being evident. In view of the independence of the two sets of figures, it is, however, comforting that their movements are very similar for the period for which both are available, i.e., from 1929 on. Thus the fire insurance value of 1978 is about 19 times that of 1938, while the ratio is nearly 18 for the perpetual inventory estimates used here.

The estimates for the other, much smaller, components of reproducible tangible assets – inventories, livestock and consumer durables – are much weaker than they are in most other countries. Thus inventories and consumer durables until 1929 had to be estimated on the assumption that they bore the same ratio to national product as in 1939, the earliest year for which the ratio can be calculated. For the benchmark dates after 1939 the value of the stock of consumer durables was put at four times the year-end rate of consumer expenditures on durables as reported in national accounts, a ratio based on fairly sophisticated calculations available for a few developed countries. As inventories, livestock and consumer durables account since the 1940’s for only one-tenth or less of total reproducible assets, even a large error in their estimation cannot substantially affect the accuracy of the larger aggregate.

The estimates of the value of land are much weaker than those for fixed reproducible assets. Those for the now dominant component, land underlying dwellings and other structures, have been set for the postwar period at 30 percent
Table 1
Comparison of Perpetual Inventory Estimates of Value of Reproducible Tangible Assets (A) with Sums Insured Against Fire (B), 1929–1978

<table>
<thead>
<tr>
<th></th>
<th>Amounts; bill. sfr</th>
<th>Index; 1938 = 100</th>
<th>Ratio to national product</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A (1)</td>
<td>B (2)</td>
<td>A/B (3)</td>
</tr>
<tr>
<td>1929</td>
<td>38.4</td>
<td>50.0</td>
<td>0.77</td>
</tr>
<tr>
<td>1938</td>
<td>45.7</td>
<td>58.0</td>
<td>0.79</td>
</tr>
<tr>
<td>1948</td>
<td>77.9</td>
<td>106.0</td>
<td>0.74</td>
</tr>
<tr>
<td>1960</td>
<td>150.3</td>
<td>196.8</td>
<td>0.76</td>
</tr>
<tr>
<td>1965</td>
<td>246.0</td>
<td>315.0</td>
<td>0.78</td>
</tr>
<tr>
<td>1973</td>
<td>552.0</td>
<td>726.5</td>
<td>0.76</td>
</tr>
<tr>
<td>1978</td>
<td>678.0</td>
<td>960.0</td>
<td>0.71</td>
</tr>
</tbody>
</table>

Sources:
Col. 1 Figures underlying Table 2, line II

of structure value on the basis of a ratio of 28 percent in the official estimate for 1938. The figure is not out of line with comparable ratios in other developed countries in Europe and North America.

A problem peculiar to Switzerland is presented by the estimation of the value of agricultural land in the postwar period. Swiss legislation provides that agricultural land passing within the family by inheritance or otherwise be valued at yield value (Ertragswert), which has fallen progressively behind the price of the small proportion of agricultural land sold in the market, a proportion estimated at below one-fifth (communication from Mr. Hofer of Schweizerischer Bauernverband). The prices of agricultural land in this minority of changes-of-hand are a multiple of the yield value, at least eight and possibly as much as 25 times as high (Hofer; Schweizerischer Bauernverband, e.g., 56, 126). Yield values apparently have hardly increased at all over the last 40 years, with the result that the present value of agricultural land at yield values of not over Sfr. four billion (Hofer) is not much above the official estimate of 1938 of Sfr. 3.2 bill. which then seems to have been not too far from market values, while the general price level (national product deflator) has more than quadrupled and the market price of
agricultural land might easily have risen considerably more if experience in some other European countries were applicable.

The national wealth estimator is thus in a quandary. Use of yield values leads to an obvious understatement if the generally agreed principle of valuation at market prices based on those properties that change hands is accepted. On the other hand, an attempt to base the estimate of the value of all agricultural land on the market prices which apply to only a minority of such land, apart from being affected by a very large margin of uncertainty, is likely to be too high, as it is likely that in the absence of the legal restrictions on the sale of most agricultural land the market price would be lower than it now is for the minority of marketable agricultural land. If the yield value of about Sfr. four billion is used agricultural land would account for only 0.2 percent of Switzerland’s national assets and to 0.5 percent of its tangible assets, ratios well below those for any other country – the latter ratio is about six percent in the United States and about one to five percent in the Scandinavian countries. Valuation of all agricultural land at the free market prices, on the other hand, would lead to ratios – in the order of five to ten percent of tangible assets – which are unreasonably high in international comparison. A compromise, unsatisfactory as it may be, is therefore indicated. The one adopted here is to move the 1938 value of agricultural land of Sfr. 3.2 billion in line with the movements of the general price level, i.e., the gross national product deflator. This leads to an estimate in 1978 of Sfr. 16 billion, four times the yield value, but still only two percent of tangible assets and 0.7 percent of national assets. This figure could also be defended as an average of the yield value for four-fifths of the acreage and the free market price for the rest. In terms of national, or even of tangible, assets the difference between the estimate used in Table 2 and yield values is moderate, in 1978 0.5 and 1.5 percent respectively. The structure of the national balance sheet of Switzerland and changes in it over the past century are thus hardly affected by the way the quandary is resolved.

The value of forest land, presumably including standing timber, which in 1938 was equal to only about one-third of that of agricultural land, has been estimated as following the trend of lumber prices.

The estimates for financial assets had to be built up piecemeal from scattered sources of varying quality, consistency and correspondence to theoretical requirements. The data are fortunately fairly satisfactory, indeed more so than for many other developed countries, for five of the main components: claims against financial institutions, defined as equal to their assets, as well as the loans made by them; domestic government debt; mortgages; and domestic corporate bonds from 1938 on. The one large component, for which the range of reasonable estimates is wide, is the market value of the stock of domestic corporations. Contemporary estimates exist for 1913, 1929 and 1938. Those for 1880 and 1900
are rough, derived by applying to reported nominal capital (which must be estimated for 1880) a multiplier based on its 1913 value. The same method is used for 1948, 1960 and 1965, estimating the multiplier on the basis of the 1938 and 1973 values and the movements of stock prices and yields, assuming that the fluctuations in the multiplier were considerably smaller than those of the indicators. For the 1970's the calculation can start from the official statistics of the market or tax-assessed value (Steuerwert) of the shares of Swiss traded corporations, which account for nearly one-fourth of the nominal capital of all domestic corporations, but for a substantially larger share of their dividends, book value and market value. The uncertainty thus affects mainly the multiplier to be applied to the nominal capital of the non-traded corporations. This is certain to be considerably lower than that of traded corporations for which it is in the mid-1970's in the neighborhood of five, but the size of the difference is a matter of judgement. For Table 2 a multiplier of two has been used, which should be regarded as a minimum.

Estimates of gross and net foreign assets, undoubtedly with a substantial margin of uncertainty, are available for seven of the ten benchmark years, viz. 1913, 1929 and 1960 to 1978. A rough estimate for 1938 can be derived by subtracting from the 1957 figure the net capital exports of the 1949–1957 period. Any figure entered for the benchmark dates 1880, 1900 and 1938 is necessarily arbitrary, except that for the latest date the values of 1913 and 1948 provide lower and upper boundaries.

While the margin of uncertainty is thus substantial in many of the estimates, particularly those for 1880, 1900 and 1929, the figures brought together in Table 2 should correctly reflect the main changes in the national balance sheet of Switzerland over the past century, and provide a reasonably solid base for an analysis of trends in the infrastructure and the financial superstructure.

There is, for example, little doubt that the financial interrelations ratio (domestic financial plus gross foreign assets divided by tangible assets) has increased sharply over the century, and is now, and indeed has been throughout the 20th century, one of the highest among developed countries. In 1880 the ratio was already slightly above unity, then a high level in international comparison. In 1900 and 1913 it appears to have been in excess of 1.50, again relatively very high values. There seems to have been no further increase between 1913 and 1929, a period during which the ratio rose considerably in several large developed countries, e.g., Great Britain and the United States. (Goldsmith, Chapter 7). From 1938 on, when the estimates of national wealth are less hazardous, the financial interrelations ratio has not shown a pronounced long-time trend, standing at about 1.60 at the beginning and at 1.80 at the end of the 40 year period. The main exception is the benchmark year 1948, when the ratio fell below 1.30, as the value of financial assets, particularly foreign assets, expanded less than needed
Table 2
National Balance Sheet of Switzerland, 1880–1978

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<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
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<td>28.3</td>
<td>30.9</td>
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<td>20.9</td>
<td>23.9</td>
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<td></td>
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<tr>
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<td>6.4</td>
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<td>4. Livestock</td>
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<td>1.9</td>
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<td>5.1</td>
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<td>c) Other</td>
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<td>3.2</td>
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<td>2.0</td>
<td>1.9</td>
<td>2.0</td>
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<td>1.5</td>
<td>1.4</td>
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<td>11.9</td>
<td>10.3</td>
<td>12.0</td>
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<td>3.7</td>
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<td>1.4</td>
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<tr>
<td>b) Other</td>
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<td>2.1</td>
<td>1.9</td>
<td>2.0</td>
<td>2.5</td>
<td>1.8</td>
<td>1.5</td>
<td>1.4</td>
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<td>5. Domestic bonds</td>
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<td>1.1</td>
<td>1.4</td>
<td>1.1</td>
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<td>6. corporate stock</td>
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<td>7.5</td>
<td>10.6</td>
<td>9.5</td>
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<td>7.1</td>
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<td>7. Trade credit</td>
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<td>4.3</td>
<td>3.5</td>
<td>3.7</td>
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<td>3.5</td>
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<td>VI. Foreign Gross assets</td>
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<td>12.7</td>
<td>11.2</td>
<td>7.0</td>
<td>5.4</td>
<td>5.8</td>
<td>8.7</td>
<td>9.1</td>
<td>14.1</td>
<td>15.0</td>
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<tr>
<td>a) Net</td>
<td>4.7</td>
<td>8.4</td>
<td>8.5</td>
<td>4.0</td>
<td>2.0</td>
<td>1.8</td>
<td>4.3</td>
<td>4.2</td>
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<td>9.0</td>
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<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
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<td>a) bill. sfr.</td>
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<td>35.5</td>
<td>67.1</td>
<td>135.9</td>
<td>147.7</td>
<td>225.0</td>
<td>475.4</td>
<td>747.9</td>
<td>1737.0</td>
<td>2312.0</td>
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</table>

1 Only holdings of monetary authorities in cols (4)–(11).
2 Includes equity, i.e., equal to assets.
3 Excludes mortgages and loans to governments.
4 Includes Swiss Federal Railways.
5 Lines III + IV + V + VI (gross).

Sources of Table 2
Cols. 1–2 1
Estimated at about 60 percent of reproducible assets compared to ratio of 56 percent in 1913.
II-1,2
Extrapolated from 1913 value on basis of changes in fire insurance values (Statistisches Jahrbuch der Schweiz, 1958, 329; 1978, 319), some estimated on basis of reported values for neighboring years.
<table>
<thead>
<tr>
<th>Col. 3</th>
<th>Col. 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I</strong></td>
<td>Estimated at 40 percent of reproducible assets on basis of straight-line interpolation between 1913 and 1938 ratios.</td>
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<tr>
<td>II-1,2</td>
<td>Slightly increased over Wyler’s estimate for 1928 (<em>Handbuch der Schweizerischen Volkswirtschaft</em>, 1939, II, 520).</td>
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<tr>
<td>II-3–5, IV</td>
<td>As for col. 3.</td>
</tr>
<tr>
<td>V-1,2,7</td>
<td>As for cols. 1–2.</td>
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<tr>
<td>V-3</td>
<td>Estimated at 2.4 times the value for 6 cantons (<em>Statistisches Jahrbuch</em>, 1939, 232), the 1938 ratio.</td>
</tr>
<tr>
<td>V-4a,b</td>
<td>As for col. 3.</td>
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<td>VI</td>
<td>As for col. 3, Wyler’s figures for 1928 and 1936 increased in line with movements of holdings of banks of issue (<em>Schweizerische Wirtschaftszahlen</em>, 27).</td>
</tr>
</tbody>
</table>
Col. 5  I, II  Eidgenössisches Statistisches Amt, 1945, 15, 19 except for line II-5 which is put at 20 percent of national product, the ratio for later benchmark years. Allocation among residential and nonresidential structures based on capital expenditures in 1948–1976.

IV  As for cols. 1–2.

V-1, 2, 7  As for cols. 1–2.

V-3  As for col. 4.


V-4b  For cantons Statistisches Jahrbuch, 1971, 436; for others as for col. 3.

V-5  Statistisches Jahrbuch, 1958, 320/03. Figures exclude bonds issued by commercial and mortgage banks.

V-6  As for col. 4.

VI  Based on estimate of net foreign assets in 1936 of Sfr. 3 bill. (Wyler, loc. cit.).

Cols. 6–10  I-1  Moved in line with general price level (gross national product deflator); cf. text.

I-2  Moved in line with prices of lumber (Nutzholz); Statistisches Jahrbuch, var. issues.

I-3  Estimated at 30 percent of II-1, the 1938 ratio being 28 percent.

II-1, 2  Derived by perpetual inventory method from gross capital expenditures in 1970 prices (Eidgenössisches Statistisches Amt, 1979, 26/27 and Die Volkswirtschaft, 1979, 565) less depreciation of 42 percent, the 1949/76 average for capital expenditures in current prices (loc. cit., 20/27) reflated by implicit deflators (ibid). Stock for 1948 roughly estimated on basis of col. 5.

II-3  Estimated at 20 percent of gross national product, the 1938 ratio.

II-4  Roughly extrapolated on basis of changes since 1938 in value of livestock per ha (Statistisches Jahrbuch, 1978, 130). Estimate for 1978 based on changes in livestock numbers and prices (Statistisches Jahrbuch, 1979).

II-5  Estimated at four times year-end rate of expenditures on consumer durables United Nations (Yearbook of National Accounts Statistics, e.g., 1978, 1252).

IV  Derived from data in International Financial Statistics Yearbook, 1979, 40/43, 392/93. Covers only holdings of monetary authorities.

V-1  For cols. 6 and 7 Goldsmith, 1969, 545. For cols. 8 to 10 derived from comparable data on assets of various types of financial institutions in Statistisches Jahrbuch, except for assets of non-life insurance companies which are roughly estimated.

V-2  Loans, excluding mortgages, to private borrowers by all banks (Das Schweizerische Bankwesen im Jahre . . . . . var. issues). Hence slightly too low because not including similar relatively small loans by insurance organizations and finance companies.

V-3  Estimated at 240 percent of mortgages in six cantons (Statistisches Jahrbuch, 1978, 284), the 1938 ratio.

V-4a  Statistisches Jahrbuch . . . . , var. issues, e.g. 1978, 400; 1958, 309.

V-4b  For cantons Schweizerische Wirtschaftszahlen, 55, for cols. 5–8; Schweizerische Nationalbank Monatsberichte, for col. 10; estimated for col. 9. For others roughly estimated, except for col. 10 (Statistisches Jahrbuch, 1978, 400), the figure covering cities only.

V-5  Statistisches Jahrbuch, e.g., 1979, 262/63; excludes bonds issued by banks.

V-6  For cols. 9 and 10 market value of traded stocks (La Vie Economique, 1979, 709) plus value of other stocks estimated at twice their nominal capital. For cols. 6 to 8 estimated by multiplying nominal capital (Statistisches Jahrbuch, 1978, 371), by 2.5, 4.0 and 3.0 respectively, ratios derived from 1973–78 values averaging 2.7 and damped movements of stock prices (cf. text).

V-7  Estimated to be equal to inventories (line II-3).

VI  Iklé (Switzerland . . . . , 152/53 for cols. 7 and 8; estimates of Schweizerische Bankgesellschaft (communication of 9/25/80) for cols. 8 to 10. Does not
In order to meet the effect of war inflation on the value of tangible assets. The ratios were thus at most benchmark dates higher than those for any country except Great Britain in the first part of the period.

To identify the main factors determining the level of the financial interrelations ratio and changes in it, use may be made of a simplifying formula (Goldsmith, loc. cit.) treating as independent variables the issue ratios, i.e., the period's issues divided by national product ($\delta$, $\phi$ and $\xi$ for domestic nonfinancial and financial and foreign issues); the ratio of net revaluation changes on outstanding issues to period's issues ($v$); the inverse of the rate of growth of nominal national product ($(\gamma^{-1})+1$); the inverse of the capital-output ratio ($\beta^{-1}$); the truncation ratio ($\tau$) which lies between 0 and 1 and allows for the fact that the summation extends only over a limited period rather than to the beginning of time; the value of financial assets at the beginning of the period ($F_{t-n}$); the corresponding revaluations ratio ($v'$); and the value of tangible assets at the end of the period ($W_t$) so that

$$\text{FIR}_t = (\delta + \phi + \xi)(1 + v)(\gamma^{-1} + 1)\beta^{-1}\tau + (F_{t-n}/W_t)(1 + v')$$

Since the calculation requires fairly long periods in order not to be too much influenced by short-time fluctuations, it will be limited here to the three benchmark dates of 1913, 1939 and 1978 using data for the periods 1881–1913, 1914–1939 and 1948–1978 each of which spans about three decades. The results are shown in Table 3. It is interesting to see that while the financial interrelations ratios of 1913 and 1978 are very similar, they result from the combination of quite different determinants. In the 1949–1978 period all three issue ratios were much higher than they had been in the 1881–1913 period, but this was offset by a much lower level of the multiplier ($\gamma^{-1} + 1$), which reflects the much more rapid rise of national product in current prices, and particularly that in the price level, the capital-output ratios being almost identical. The differences in the two other determinants also approximately offsets each other, the truncation ratio ($\tau$) being much higher and the carry-over ratio $[F_{t-n}(1 + \gamma)/W_t]$ much lower in the more recent period, a result again of the more rapid increase in nominal national product. The determinants of the lower financial interrelations ratio of 1948 are quite...
Table 3
The Determinants of the Financial Interrelations Ratio
1913, 1948 and 1978

<table>
<thead>
<tr>
<th></th>
<th>1881 to 1913 (1)</th>
<th>1914 to 1948 (2)</th>
<th>1949 to 1978 (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. New issue ratios(^1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Non-financial domestic issues ((\delta))</td>
<td>0.304</td>
<td>0.256</td>
<td>0.641</td>
</tr>
<tr>
<td>2. Financial domestic issues ((\phi))</td>
<td>0.149</td>
<td>0.130</td>
<td>0.242</td>
</tr>
<tr>
<td>3. Foreign issues ((\xi))^2</td>
<td>0.098</td>
<td>0.092</td>
<td>0.239</td>
</tr>
<tr>
<td>II. Multiplier ((\gamma^{-1} + 1))</td>
<td>0.057</td>
<td>0.034</td>
<td>0.160</td>
</tr>
<tr>
<td>III. Output-capital ratio ((\beta^{-1}))</td>
<td>35.1</td>
<td>27.7</td>
<td>14.6</td>
</tr>
<tr>
<td>IV. Truncation ratio ((\tau))</td>
<td>0.194</td>
<td>0.200</td>
<td>0.199</td>
</tr>
<tr>
<td>V. Carry-over ratio ((\Gamma_{t-n}/W_t))</td>
<td>0.57</td>
<td>0.65</td>
<td>0.88</td>
</tr>
<tr>
<td>VI. Financial interrelations ratio(^3)</td>
<td>0.373</td>
<td>0.423</td>
<td>0.158</td>
</tr>
<tr>
<td>Calculated</td>
<td>1.55</td>
<td>1.34</td>
<td>1.80</td>
</tr>
<tr>
<td>Observed</td>
<td>1.51</td>
<td>1.33</td>
<td>1.82</td>
</tr>
</tbody>
</table>

\(^1\) Includes effects of revaluations (v or v').
\(^2\) Includes monetary metals.
\(^3\) End of period.

Similar to those of the 1978 ratio, the difference being accounted for primarily by the lower multiplier, i.e., the slower rate of growth of nominal national product.

The main change in the structure of tangible assets, which can be followed in Table 2 only since 1913, has been the sharp decline in the share of agricultural and forest land, according to the estimates from 22 to two percent of the total, most of the decline apparently occurring between 1913 and 1938. This has been partly offset during the last 40 years by the increase in the share of other, largely residential, land. The changes among reproducible assets have been small, and show no definite long-term trends over the last 40 years except for the sharp decline in the always small share of livestock. Residential structures have accounted at all benchmark dates for between 20 and 23 percent of the total, while the share of non-residential structures has risen from 34 to 37 percent and that of equipment has declined from 33 to 31 percent. Variations in the shares of inventories and consumer durables are more pronounced, but they must be interpreted cautiously because of the much weaker statistical basis of the estimates. As they stand they suggest an increase in the share of these two components between 1948 and 1960 from seven to nine percent and a decline after 1965 resulting in only a very small net increase over the entire period.

Changes in the structure of domestic financial assets over the century have been substantial and generally in line with those observed in other developed countries. The outstanding movement is the doubling of the share of financial
institutions from fully one-fifth to nearly one-half. This means that, making a rough allowance for interfinancial assets, at the present time financial institutions are involved as either lender or borrower in over four-fifths of all domestic financial instruments against a ratio of less than two-fifths a century ago. Most of the increase in the share of financial institutions occurred between 1880 and 1913 and, to a lesser extent, between 1948 and 1973, while the share was fairly stable at close to two-fifths between 1913 and 1938. Although the banking system always remained dominant among financial institutions, insurance and pension organizations grew more rapidly, increasing their share in total domestic financial assets from one to nine percent and that in the assets of financial institutions from about five to 18 percent. Most of these gains were made during the first half of the century and their share reached its peak in 1960. The share of mortgages, which had been the most important financial instrument in 1880, was cut in half from nearly 45 to below 25 percent, mostly in the first three decades of the period. Assets of financial institutions and mortgages together have throughout the century accounted for about two-thirds of all domestic financial assets, leaving the other third to the various other financial instruments.

Among those instruments the share of the debt of the Confederation has shown wide fluctuations, reflecting between 1900 and 1913 the nationalization of most of the railroads and between 1913 and 1929 military expenditures during World War I. Since the Confederacy borrowed little for other purposes except in the 1930's and mid-1970's and at times retired debt its share in total domestic financial instruments outstanding was at most dates very low in international comparison, in the 1970's well below two percent. The share of the debt of local governments, mostly for investment, has not shown a definite trend, remaining in the neighborhood of three to four percent of total domestic financial assets from 1913 on. Corporate bonds have accounted without trend for about two percent of the total since 1913 after the retirement of private railroad bonds soon after the turn of the century, when most of the companies were nationalized. The share of corporate stock increased substantially between 1880 and 1929; remained close to one-fifth during the following 35 years; and declined to one-seventh by the late 1970's, the level of 1913, thus sharing, though to a smaller extent, a movement observed in most developed countries.

The financial structure of Switzerland has always been characterized by a high share of foreign investments. It seems to have reached a first peak around the turn of the century. In 1913, when the first reasonably trustworthy estimate is available, the share was close to one-fifth of all financial assets and over one-fourth of tangible assets. The share declined considerably in the interwar period falling in 1938 and 1948 to about one-tenth of financial assets and not much over one-eighth of tangible assets. It increased rapidly during the postwar period reaching in 1978 nearly one-fourth of all financial and over two-fifths of tangible
assets with net foreign assets equal to nearly one-fifth of national wealth. It thus appears that the position of foreign investments in the financial structure of Switzerland and in relation to its national wealth is now not much different, though probably a little larger, than it was at the eve of World War I.

Table 2 like practically all estimates of national balance sheets, is expressed in current prices. There is unfortunately no conceptually satisfactory or statistically implementable way of transforming these estimates into constant prices, presumably in order to measure the growth of the "quantities" reflected in the balance sheet. At the moment all that can be done, and it is not much, is to reduce the estimates in current prices into a set expressed in the prices of a base year by using the gross national product deflator as a rough indicator – to say a measure would be to claim too much – of changes in the general price level. This procedure assumes no changes in the relationship between the prices of the numerous components of national assets and, of course, leaves the structure of the balance sheet unaffected. Applied as in Table 4 to total national assets it presupposes that the average of the prices of the various assets has moved in line with those of current output. To what extent this is true in the case of Switzerland over the past century nobody knows, though some indications as to how reasonable the assumption is can be obtained for the postwar period by studying the movements of construction costs, prices of machinery and bond and stock prices.

For the past century as a whole national assets in current prices have expanded at an average annual rate of nearly five percent, while the price level has increased by 2-1/4 percent a year and population has grown at somewhat less than one percent. As a result deflated national assets show an average annual rate of growth of a little over 2-1/2 percent, reduced to about 1-3/4 percent for national assets per head. During the same period national product in current prices happens to have grown by the same average of nearly five percent per year so that the asset/product ratio was the same at the beginning and end of the century, viz nearly 15. Considerable variations, however, have occurred, over these nearly one-hundred years in the rate of change in nominal national assets, in their relation to national product, and in the share of changes in the price level, in population, and in deflated assets per head in those of nominal national assets.

Thus national assets in current prices grew much more rapidly in the postwar period than between 1880 and 1929, practically stagnating in the 1930's; and the share of increases in prices was much larger, particularly since the mid-1960's. The shares shown in cols. (8) to (10) are only rough approximations to more correct figures – even ignoring the conceptual limitations of the calculation – because asset prices changes have been assumed equal to national product deflator movements.

The ratio of national assets to national product, both in current prices, has shown no trend and only moderate fluctuations – it moved only between 11.2
and 14.5 and for five of the eight benchmark years ranged between 11.2 and 12.0—, which is remarkable in view of the far-reaching changes which have occurred in this century in the structure of the real infrastructure and in the financial superstructure of the Swiss economy.

Table 4
Trends in Nominal and Deflated National Assets, 1880–1978

<table>
<thead>
<tr>
<th>Year</th>
<th>Movements; 1913 = 100</th>
<th>Rate of growth¹; percent per year</th>
<th>Ratio to national product</th>
<th>Share in col. (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current prices</td>
<td>Deflated total</td>
<td>Current prices</td>
<td>Deflated total</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Per head</td>
<td></td>
<td>Per head</td>
</tr>
<tr>
<td>1880</td>
<td>32</td>
<td>47</td>
<td>64</td>
<td>.</td>
</tr>
<tr>
<td>1900</td>
<td>53</td>
<td>68</td>
<td>82</td>
<td>2.61</td>
</tr>
<tr>
<td>1913</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>5.01</td>
</tr>
<tr>
<td>1929</td>
<td>202</td>
<td>126</td>
<td>120</td>
<td>4.51</td>
</tr>
<tr>
<td>1938</td>
<td>220</td>
<td>158</td>
<td>145</td>
<td>0.94</td>
</tr>
<tr>
<td>1948</td>
<td>335</td>
<td>150</td>
<td>126</td>
<td>4.30</td>
</tr>
<tr>
<td>1965</td>
<td>1118</td>
<td>356</td>
<td>234</td>
<td>7.34</td>
</tr>
<tr>
<td>1978</td>
<td>3446</td>
<td>568</td>
<td>346</td>
<td>9.07²</td>
</tr>
</tbody>
</table>

¹ For period ending with year indicated.
² For 1881–1978 2.58 in col. 4; 1.73 in col. 6.
³ For 1881–1978 0.17 in col. 9; 0.37 in col. 10.

Sources Cited
