# NOTES

## *Gold, Foreign Capital and the Industrialization of Russia*

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### I. Introduction

The defeat of Russia in the Crimean War pointed out the political and military costs to Russia of her industrial backwardness. That event may be taken as a benchmark after which the Russian Imperial Government came to accept that Russia had to industrialize to maintain her position in the world, and that the government had to play an active part in the process. From 1860 to 1917 Russia faced a continuous economic dilemma; how to resolve urgent needs for government revenue to satisfy the demands of maintaining Russia's political and military position and simultaneously build an industrial base. Not only did Russia need a trade surplus to service her foreign debt, but also finance ministers like Sergei Witte felt Russia had to have a payments balance which would enable her to build up her gold reserves so that once these reserves were large enough Russia could return to the gold standard. Only in this way did it seem possible for Russia to attract the foreign capital they thought necessary to build a proper industrial base. From the comfort of retrospect we will investigate the interrelation of Russia's balance of payments, foreign financial capital invested in Russia, and the effect of the massive accumulation of Russian gold of foreign ownership of claims on the Russian economy. We shall show how the policy of returning to the gold standard affected Russia's attempt to industrialize. In so doing we shall concentrate not on the impact of government policy on the growth of financial capital, but rather on the impact of government policy on what Russia could acquire in physical goods and services through production and imports. Since Russian

policy during the period under consideration was to encourage the industrialization of Russia, policies undertaken to further this goal will be evaluated in terms of their contributions to this goal. The substantive issues of this paper will be dealt with in the following three sections. In the next section we will discuss the methodology of constructing a time series estimate of foreign capital. The third section will deal with the actual estimation of the time series for foreign capital invested in Russia as well as make estimates for the series under alternative policies. Finally in the last section we will attempt to draw inferences on the desirability of various alternative policies based on the empirical results of the third section.

## II. Methodological problems in computing foreign capital

There are two basic methods of computing the stock of foreign capital invested in Russia over a span of time. The first, and more traditional, is to obtain data on the ownership of various securities, or if securities do not exist, the asset value of foreign-owned enterprises. There are two difficult problems associated with this approach. First, there is the problem of getting an accurate measure of just who owns which security or enterprise. For bonds this latter problem is not too serious, or at least not as serious as for equities, since from 1860 to 1915 the Russian capital markets were not well organized, hence probably not too efficient in the sense of accurately measuring the value of an enterprise even when quotations existed. In the absence of accurate quotations one could either do a detailed study of the firms' assets, or what was done, for example by Ol', take the par value of the firm's stock. The latter method is probably only useful for ballpark estimates.

The second basic method is to construct a balance of payments and use this to compute net yearly foreign investment. If the stock of foreign owned capital is known for one year, then the stock can be computed for all years for which balance of payments data are available. The basic relations used are:

> Balance of payments - Purchases of gold reserves from abroad - Interest on foreign debt = Exports of capital

and

> Foreign owned capital (year t) = Foreign owned capital (year t-1) + Exports of capital (year t-1).

There are problems associated with this method also. Some transactions do not enter official statistics, such as smuggling and expenditures of Russians travelling abroad or of foreigners travelling in Russia. Indeed, while good data

exist for trade in goods, trade in services is largely ignored in official statistics. There is the additional problem of the return on existing stocks of foreign investment. While a large part of foreign investment was in Russian bonds for which there exist good data on interest rates, part was direct ownership of Russian enterprises. The return on equity of ownership was no doubt higher than for bonds, but was subject to great uncertainty from year to year. The final problem with this second method is that in getting an estimate for the stock of foreign capital at some point in time one is doomed to making the same types of errors as enumerated for the first method for getting estimates of foreign ownership of capital for a specific year. This final problem cannot really be counted as a disadvantage of this method, since if one used the first method one would presumably make the same mistakes for that particular year anyway. The second method was used as a simpler alternative to the first. Moreover, by using a different technique an independent check could be made on existing estimates of foreign investment in Russia prior to 1917. Using the balance of payments method is advantageous in another respect. Since we shall be analyzing the effects of the policy of accumulating gold in order to return to the gold standard, the problem of suggesting what might have happened had another policy been pursued with respect to accumulating gold can readily be dealt with by merely substituting alternative figures for the gold stock. While such a procedure does not deal with the question of whether a different policy with respect to gold would change the balance on current or capital account, but, as we will discuss in part IV, this is distinction without a difference with respect to the policy objective of industrializing Russia.

## III. Construction of the time series for foreign capital

For our purposes we shall divide the balance of payments into three components, first the balance on reserve transactions, second the balance on trade transactions, and third the balance on capital account as a residual. In describing how the time series for foreign capital was estimated we shall use this ordering to describe in detail our treatment of these categories.

Russia's reserves consisted of gold held abroad, gold held in Russia, and probably to a minor extent, holdings of foreign currencies and demand assets. The amount of gold owned by the Imperial treasury is given in the *Yearbook of the Ministry of Finance* (hereafter *Yearbook*), but the stock of foreign currencies held could not be found. Unfortunately, even if one had excellent data on foreign currencies held by the Imperial treasury that would not be enough for the purpose of computing net foreign investment in Russia, for it is equally important to know the amounts of Russian currency held abroad. To the extent that the Russian treasury held more in foreign currencies and

demand assets than other governments held in Russia currency and demand assets, those other countries will have been able to either purchase more goods from Russia or invest the proceeds in Russia. For simplicity we will therefore assume the amount of foreign currencies and other demand assets held by the Russian treasury or nationals equals the amount of such non-interest bearing claims on Russia held by other governments and nationals. Since Russia was a major producer of gold, to attribute the increase in Russian gold reserves to international transactions would be mostly incorrect. Russia's gold production before 1897 more than accounted for increases in reserves plus net gold exports. After 1897 sizable amounts of gold began to be held abroad and these stocks will be counted as imports of gold. Whenever the increase in gold reserves is greater than production the discrepancy shows up in the gold trade statistics, so we shall assume that until 1897 there was no balance on reserve transactions.

There are a number of problems regarding the data on the balance of payments. First of all is the question of whether the trade figures in the Yearbook include shipping and insurance costs and duty charges made by Russia. If the cost of an imported good as shown in the official trade statistics includes the costs of shipping and insurance and a foreign country provides these services, then the official data will be correct as they will reflect the fact that Russia has "imported" these services. If, however, a Russian firm does the shipping and insuring, including such charges in the import data would overstate Russia's importation of goods and invisible services. As regards exports, if the official value of exports is the cost of the goods on the docks in Russia and Russian firms do the shipping and insuring, then the figures for exports will be too low since the export of invisible services would not be included. If foreign firms provide the invisible services then the export figures would be correct. Clearly the question of how the data are computed is important as regards any possible bias in the official balance of trade statistics. As regards exports, the figures for the average price paid for Russian wheat in 1903 were examined.[1] These figures would seem to indicate that exports were valued at the price of grain in Russian ports. As regards the question of how imports are valued an intermediate question must be answered, that of the treatment of import duties. If the figures for imports of goods include duty charges, imports would be overstated. To check on this question figures for imports of tea were checked against the price of tea on commodity exchanges and the duty rate on tea. Since the difference between import prices and

[1] In 1905 the average price paid for Russian wheat for export was 0.854 roubles/pood. The average price for a few selected countries was

| | | | | | |
|---|---|---|---|---|---|
| France | 0.852 | Holland | 0.854 | England | 0.846 |
| Turkey | 0.848 | Greece | 0.840 | | |

commodity exchange prices was accounted for fully by the duty rate, the conclusion is that import figures do not include duty charges. Moreover, since after subtracting the duty the price of tea on the exchanges equals the price of tea as shown from the important figures, it is also apparent that the value of imports reported includes shipping costs. Since the value of exports excludes shipping costs and the value of imports includes shipping costs, to the extent Russian firms engaged in the transportation or insurance of foreign trade the Russian surplus is understated.

Of course not all trade transactions were reported; the problems of smuggling and foreign travel must be dealt with. What matters as concerns smuggling is whether there was a systematic balance one way or the other. Since most smuggling probably involved either barter or payment in specie we shall assume that smuggling involved no net balance, and we shall ignore it. As regards foreign travel it is likely that expenditures by Russians travelling abroad were greater than expenditures by foreigners travelling in Russia. For simplicity we will assume that the deficit on travel expenditures equalled the surplus from supplying transport services for foreign trade.

The final element of the trade balance which must be dealt with is the balance on private gold trade. The foreign trade figures exclude trade in gold; those figures are listed separately in the *Yearbook* for the years 1856-1899. After 1899 the series must be estimated. Just about the only gold imported was in the form of additions to the treasury stock, so the total for gold exports was treated as the balance on private gold transactions. To estimate gold exports for 1900-1915 the data for 1856-1899 were used in a regression of the change in government gold stocks, a time trend and dummy variable corresponding to the return to the gold standard on gold exports. The coefficients from the regression were used to predict gold exports for 1900-1915.[2]

The last major component of the balance of payments is the balance on capital account. As is well known the three major components of the balance of payments must net out to zero, so the combined balance on trade and official reserves equals the balance deficit on capital account. The balance on capital account has two components. First there is the flow of payments because of the stock of financial capital foreigners have invested in Russia in the past, and second there is the new flow of foreign investments into Russia.

[2] The equation used was

$$\text{Gold Trade} = \underset{(3.36)}{37.97} - \underset{(-1.539)}{0.14835}\text{DGS} - \underset{(-4.625)}{109.82}\text{D} - \underset{(-3,121)}{1.5306}\text{T}$$

$R^2$ (adj) = 0.605
Durbin-Watson = 1.60
t-statistics are below coefficients
D is a dummy for the resumption of the gold standard
T is a time trend
DGS is the change in gold stocks held inside Russia.

If we know the stock of foreign capital for a given year and the average rate of return on foreign investments in Russia as well as the balances on trade and official reserve transactions, then it is a simple matter to estimate the flow of new foreign investment into (or out of) Russia for that year. Once the process is started for one year we can estimate the stock of foreign capital as long as data on the first two components of the balance of payments and the rate of return on such foreign capital are available. We shall first describe the methods of estimating the stock of foreign capital for one year and why that year was chosen and second we shall try to estimate the average rate of return on foreign investments for the period 1861-1915. This will enable us finally to estimate the stock of foreign capital for the years 1861-1915.

In choosing the year for which the stock of foreign investment is to be estimated as a starting point or benchmark year, there are two considerations. First, it is desirable to have the benchmark year centrally located in the time series since any errors made in estimating the stock of capital for the benchmark year will be magnified by compound interest as one moves further from the benchmark year. The second consideration is the goal of getting an accurate estimate for the benchmark year. This consideration would favour a benchmark year early in the time series when the stock to be estimated was smaller and concentrated mostly in foreign owned government debt. The year 1883 was selected as the benchmark. The chief source for obtaining foreign capital for that year was *Russkiya Steniya Bumagi* by V. Degio.[3] That book gives the outstanding amounts and currency of denomination of the bonds of the Treasury both direct and assumed obligations of railroads as well as the amounts and currency of denomination of private railroad stocks and bonds. To get an estimate of other investments by foreigners the figures given by Ol' were examined.[4] For 1883 Ol' estimated 133 million credit roubles in direct investment, but acording to Degio direct equity investment in railroads totalled 242 million roubles. Thus we shall estimate non-railroad equity investment as 55 million roubles. The final total for the stock of foreign capital in 1883 is estimated at 3000 million credit roubles.[5]

The remaining question about the capital account is the average rate of return on foreign investments in Russia. From 1860 to 1915 the rate of interest paid on the Russian State debt declined slowly as Russia's bonds took on a more gilt-edged character. Inspection of yields on various issues leads to the conclusion that interest on the State debt portion of foreign capital declined linearly from 5.5% in 1860 to 4% in 1915. The rate of return on equity capital

[3] V. Degio, *Russkiya Steniya Bumagi*, St. Petersburg.

[4] Ol', P.V., *Inostrannye Kapitaly v Rossii*, Petrograd, 1922. Also *Inostrannye Kapitaly v Khoziastve Dovoennoi Rossii*, Petrograd, 1925.

[5] All figures in this paper should be assumed to be in credit roubles unless otherwise noted.

is assumed to be 15% per year.[6] As time progressed a greater share of foreign capital became concentrated in equity capital. Based on data from Ol' and Gindin' the share of equity capital was assumed to be 16% until 1881, then increases linearly to 24% in 1915. Thus the average rate of return in 1860 was

$$5.5\% \times .84 + 15.0\% \times .16 = 7.02\%$$

and in 1915 it was

$$4.0\% \times .76 + 15.0\% \times .24 = 6.64\%.$$

In computing the time series for foreign capital an adjustment was made for the effect of Russia's return to the gold standard and devaluation of the metallic rouble. In 1883 foreign capital invested in metallic roubles denominated bonds amounted to 674 million metallic roubles. Since by 1897 government debt held abroad had more than doubled, and hence the capital loss to foreigners as a result of the devaluation was about 675 million credit roubles. We lump this loss into 1897 even though the anticipation or resumption probably caused the capital loss to the holders of such bonds to be spread over a number of years, but the decline in foreign claims on Russia as a result of the devaluation falls completely in 1897. The figures for policy one are estimates of what would have happened had the Imperial treasury exported all additions to its gold stock after 1861 and policy two is a policy of increasing gold stocks in each year by half of what was in reality added.

Our estimates of what would have happened had the large stock of gold not been amassed by Russia rest upon the assumption of everything else being unchanged. There are two main objections to such an assumption. The first objection is that had Russia not accumulated gold the terms of trade might have changed so that our estimates of hypothetical foreign capital would not have been realized. Such an objection would be hard to defend or disprove from sheer ignorance of the demand and supply relations that existed. The second objection is that not acquiring a large gold stock would have had implications for monetary policy which could have counteracted the advantages of less foreign ownership of claims on Russia (or of greater imports for the same level of foreign ownership). In fact, over the period 1878-1896 the

[6] Since there is risk involved with equity capital the true return no doubt fluctuated, but for simplicity that will not be taken into account. The 15% figure seemed to be a reasonable one considering the degree of risk and the opportunities for investment that doubtless existed.

[7] GINDIN E.F., *Russkiye Kommercheskiie Banki*, Moscow, 1948.

amount of currency outstanding varied very little while the gold stock increased by 760 million roubles, so it is unlikely that a different gold policy would have changed the money supply. After resumption in 1897 gold began to circulate as a component of the money supply. In effect the Russian government was importing part of its money supply, indeed importing gold which was used to retire part of the issue of credit roubles. There is no reason to believe that the supply of money could not have been expanded without a large stock of gold, and since the only large issues of paper occurred during a war or civil disturbance, there is no reason to suspect that a large gold stock was needed to encourage moderation during normal times.

## IV. The relation of foreign capital and the policy of resumption

As stated earlier the policies pursued by Russia in this period should be judged in terms of the avowed goal of industrializing Russia. We will deal only with the economic implications of different policies, but the political and social consequences may well have been more important. From the table in the preceding section it is obvious that had the massive stocks of gold not been accumulated the stock of foreign capital would have been greatly reduced. The implication of this is that had a policy of not accumulating gold been followed nothing would have changed except that beside having a smaller foreign debt Russia would not be making such large interest payments to foreigners and more real goods and services would have been available for domestic use. Alternatively, with the same level of foreign investment Russia could have imported billions of roubles more in capital goods. To put the issue in perspective the cost of the trans-Siberian and Chinese eastern railroads was about 864 million roubles and the total capital outlay for railroads equalled about 4.7 billion roubles 1900.[1] Whether the result was a smaller stock of foreign capital is not really important; either way taken as a whole Russia would have been able to consume or invest more real goods and services.

This relation between foreign capital and the gold stock should help disabuse economic historians of the notion that foreign capital served an important role in the industrialization of Russia. Over the period 1883-1913 Russia exported more than she imported. In effect Russia helped the rest of the world industrialize in the fundamental sense of providing more real goods and services to the rest of the world than were provided to Russia when gold is excluded. Obviously Russia could not produce the capital goods needed for industrialization, so a more exact interpretation of the data is that while foreign capital did not aid the industrialization of Russia, foreign trade

[1] Lyashchenko Peter, *History of the National Economy of Russia to the 1917 Revolution*, New York, pp. 534, 585.

FOREIGN CAPITAL TIME SERIES 1861-1915

| Year | Trade Balance | Gold Stock | Gold Trade | Foreign Capital | Capital Policy One | Capital Policy Two | Gold Policy Two |
|---|---|---|---|---|---|---|---|
| 1861 | 10.1 | 82.0 | 8.6 | 850.3 | 850.3 | 850.3 | 82.0 |
| 1862 | 27.6 | 72.0 | 34.3 | 891.3 | 901.5 | 896.5 | 77.0 |
| 1863 | 0.0 | 82.0 | 65.9 | 891.8 | 892.9 | 892.6 | 82.0 |
| 1864 | 11.5 | 65.0 | 25.0 | 888.2 | 906.0 | 897.7 | 73.5 |
| 1865 | 44.9 | 72.0 | 20.7 | 913.5 | 926.4 | 920.4 | 77.0 |
| 1866 | 17.6 | 78.0 | 25.7 | 911.2 | 919.2 | 915.8 | 80.0 |
| 1867 | 29.9 | 78.0 | − 19.2 | 930.9 | 939.7 | 936.0 | 80.0 |
| 1868 | − 34.3 | 90.0 | − 33.5 | 984.3 | 981.9 | 984.0 | 86.0 |
| 1869 | − 77.5 | 189.0 | 13.0 | 1119.7 | 1018.3 | 1070.1 | 135.5 |
| 1870 | 24.0 | 201.0 | 21.2 | 1260.7 | 1140.7 | 1202.0 | 141.5 |
| 1871 | 0.8 | 205.0 | 10.3 | 1301.5 | 1169.6 | 1237.1 | 143.5 |
| 1872 | − 108.2 | 236.0 | − 5.1 | 1378.9 | 1207.3 | 1294.9 | 159.0 |
| 1873 | − 78.5 | 285.0 | − 5.9 | 1585.7 | 1353.7 | 1471.7 | 183.5 |
| 1874 | − 36.7 | 296.0 | 0.9 | 1777.1 | 1518.7 | 1650.3 | 189.0 |
| 1875 | − 162.4 | 310.0 | 21.6 | 1932.5 | 1643.1 | 1790.5 | 196.0 |
| 1876 | − 76.9 | 310.0 | 97.8 | 2202.9 | 1894.4 | 2051.8 | 196.0 |
| 1877 | 206.9 | 187.0 | 8.3 | 2329.1 | 2123.5 | 2229.9 | 134.5 |
| 1878 | 22.6 | 204.0 | − 2.4 | 2269.0 | 2033.2 | 2155.2 | 143.0 |
| 1879 | 40.1 | 230.0 | − 4.6 | 2399.3 | 2122.3 | 2265.4 | 156.0 |
| 1880 | − 124.1 | 276.0 | 16.4 | 2522.4 | 2181.6 | 2357.2 | 179.0 |
| 1881 | − 11.3 | 298.0 | 59.0 | 2796.3 | 2411.5 | 2609.8 | 190.0 |
| 1882 | 51.0 | 271.0 | 70.7 | 2930.7 | 2549.7 | 2747.5 | 176.5 |
| 1883 | 78.0 | 264.0 | 15.4 | 3000.0 | 2601.1 | 2808.2 | 173. 0 |
| 1884 | 51.9 | 298.0 | − 0.5 | 3102.1 | 2643.2 | 2880.9 | 190.0 |
| 1885 | 103.7 | 303.0 | 1.8 | 3253.0 | 2759.1 | 3014.8 | 192.5 |
| 1886 | 45.9 | 367.0 | 9.6 | 3359.7 | 2769.6 | 3073.9 | 224.5 |
| 1887 | 224.1 | 382.0 | 15.5 | 3523.4 | 2879.8 | 3211.5 | 232.0 |
| 1888 | 393.3 | 390.0 | 7.1 | 3513.7 | 2820.1 | 3177.4 | 236.0 |
| 1889 | 313.9 | 430.0 | 9.3 | 3342.6 | 2563.8 | 2964.4 | 256.0 |

FOREIGN CAPITAL TIME SERIES 1861-1915 (*continued*)

| Year | Trade Balance | Gold Stock | Gold Trade | Foreign Capital | Capital Policy One | Capital Policy Two | Gold Policy Two |
|---|---|---|---|---|---|---|---|
| 1890 | 277.3 | 475.0 | – 2.2 | 3237.6 | 2363.0 | 2812.3 | 278.5 |
| 1891 | 328.0 | 576.0 | – 76.9 | 3174.1 | 2141.3 | 2670.5 | 329.0 |
| 1892 | 71.7 | 642.0 | – 109.1 | 3130.4 | 1964.1 | 2560.9 | 362.0 |
| 1893 | 135.7 | 852.0 | – 24.0 | 3372.6 | 1920.0 | 2660.8 | 467.0 |
| 1894 | 109.2 | 895.0 | – 86.7 | 3481.5 | 1890.9 | 2701.6 | 488.5 |
| 1895 | 150.6 | 912.0 | – 36.2 | 3686.8 | 1975.2 | 2847.5 | 497.0 |
| 1896 | 98.8 | 964.0 | – 116.3 | 3813.9 | 1938.1 | 2893.5 | 523.0 |
| 1897 | 166.6 | 1095.0 | – 196.8 | 4081.2 | 1951.6 | 3035.1 | 588.5 |
| 1898 | 115.2 | 1185.0 | – 126.6 | 3703.9 | 2019.7 | 3219.2 | 633.5 |
| 1899 | – 23.5 | 1008.0 | – 31.4 | 3958.2 | 2340.6 | 3530.3 | 545.0 |
| 1900 | 90.0 | 843.0 | – 28.0 | 4272.9 | 2714.1 | 3899.3 | 462.5 |
| 1901 | 168.2 | 737.0 | – 53.8 | 4491.4 | 2936.2 | 4146.3 | 409.5 |
| 1902 | 261.2 | 709.0 | – 132.5 | 4672.0 | 3042.7 | 4318.2 | 395.5 |
| 1093 | 319.5 | 769.0 | – 70.2 | 4850.4 | 3054.0 | 4443.4 | 425.5 |
| 1904 | 355.0 | 909.0 | – 66.7 | 4920.2 | 2865.6 | 4416.4 | 495.5 |
| 1905 | 442.2 | 1032.0 | – 24.0 | 4955.8 | 2642.9 | 4357.3 | 557.0 |
| 1906 | 294.2 | 927.0 | – 152.6 | 4864.0 | 2503.8 | 4278.6 | 504.5 |
| 1907 | 205.6 | 1191.0 | 34.5 | 5043.0 | 2263.3 | 4287.1 | 636.5 |
| 1908 | 85.6 | 1169.0 | 17.2 | 5135.6 | 2194.4 | 4340.7 | 625.5 |
| 1909 | 521.3 | 1220.0 | – 155.3 | 5371.8 | 2185.5 | 4499.0 | 651.0 |
| 1910 | 364.6 | 1415.0 | – 38.2 | 5360.7 | 1768.9 | 4332.7 | 748.5 |
| 1911 | 429.7 | 1450.0 | – 32.9 | 5388.8 | 1524.5 | 4275.3 | 766.0 |
| 1912 | 347.0 | 1436.0 | – 65.5 | 5348.5 | 1242.6 | 4168.4 | 759.0 |
| 1913 | 146.1 | 1556.0 | – 21.3 | 5421.3 | 923.4 | 4103.0 | 819.0 |
| 1914 | – 141.9 | 1695.0 | – 62.8 | 5655.8 | 720.8 | 4180.6 | 888.5 |
| 1915 | – 700.6 | 1732.0 | – 532.5 | 6235.7 | 936.3 | 4644.1 | 907.0 |

Capital stock in 1883 assumed known; Capital loss of 675.0 millions of credit rubles in 1897; Gold trade figures estimated after 1900; All figures are in millions of credit rubles.

certainly did. If anything, the effort to attract foreign investment made Russia worse off.

If a case justifying foreign investment can be made it must be that foreign investments generated beneficial externalities. While Russians did not earn any interest on the capital invested in a foreign owned factory in Russia, it is possible that such a factory enabled native Russians to acquire technological or entrepreneurial skills so that the stock of such "human capital" in Russia increased. Such arguments cannot be used to show a beneficial effect of foreign ownership of government bonds. If we accept Ol's estimate of 2206 million roubles in foreign — owned private industry inside Russia in 1913 it would have been possible for almost half of such investments to have been made even if the Russian gold stocks had not been accumulated.

In conclusion, we can say that the accumulation of a large stock of gold by Russia was a blunder of the first magnitude and that one of the consequences of this blunder has been to conceal the fact that foreign capital played a much smaller role in the industrialization of Russia than has been commonly acknowledged. The foreign contribution to the industrialization of Russia was mostly the provision of entrepreneurial services.

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