Linking a Currency Union with Political Union: A Cautionary Tale from Early Soviet History[1]

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I

This paper considers early Soviet monetary history during the period 1919-24, an era when the pre-existing Tsarist monetary union began to disintegrate, only to be eventually revived by the Soviets. During this period, the country experienced hyperinflation and a proliferation of parallel currencies. It is argued that monetary union in the former Soviet Union achieved a political end, namely the restoration of a form of political union. Political union here refers to the presence of an effective central government over several regions.[2] This study also argues that the history of the chervonets, the seemingly

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[2] For the arguments of this paper, no judgements have to be made about the relative strength of the central government versus that of the regions which make up the State as a whole. As we shall see, there were, at the outset, a variety of preferences about the degree of economic or political autonomy desired by the regions within the Soviet State. However, whereas several of the regions did not accept any authority from the centre before monetary union, the situation changes at the time of monetary union (partly, of course, because of coercion exercised via military force).

stable parallel currency introduced in 1922, can be understood in these political terms. The reason is that few of the usual preconditions or economic fundamentals present in other successful stabilizations, such as a credible end to deficit spending and the creation of an independent central bank, were present in the Soviet case. These fundamentals of successful stabilizations are generally believed to be the hallmarks of successful ends to most hyperinflations.[3]

A difficulty anyone faces in understanding the events in the Soviet Union during the tumultuous period studied here is that revolution and major changes in economic policy also took place during the monetary episode in question.[4] However, these events must not be viewed as exogenous to the process of monetary unification. To be sure, while it is difficult to assign a weight to all possible influences on monetary policy in the years covered in this paper, they actually serve to amplify rather than mitigate the role of the political considerations which are deemed important for the arguments which follow.

The paper is organized as follows. In the next section I describe the economic costs of multiple currencies in the early history of the Soviet Union. I next discuss the the loss of seigniorage and the emergence of hyperinflation. Finally, I describe why the chervonets remained a reasonably stable currency for a time despite the absence of credible economic policies consistent with price stability. The paper concludes with a summary and some cautionary lessons are drawn.

II

The debate about the viability of a monetary union is relevant to questions about what constitutes an optimum currency area.[5] In

[3] Some relevant contributions are: Siklos (1990) and Végh (1992).

[4] It is noteworthy, however, that, despite all these events, Gregory (1982, p. 182) estimates the annual growth rate in total product to be in the range of -.5 to -.7 percent per annum during the 1913-28 period, which is rather modestly referred to as a 'transitional period'.

[5] Some relevant contributions are: Masson and Taylor (1994), and Wihlborg and Willett (1991). These sources provide surveys of this literature. Willett and Al-Marhubi (1994) consider the same issue as it pertains to the present situation in Eastern Europe, the Commonwealth of Independent States, and Europe more generally.

the case of the former Soviet Union, some have argued that monetary union is an ingredient in the transition to a market economy that is needed to maintain existing trade levels between the former Republics (Dornbusch 1992 and Goodhart 1995). It is sometimes contended that the heated debate about these issues arises because currency union is really about a form of political union (Bean 1992). Others argue that there are good economic grounds for single currency areas, such as those stemming from the elimination of the costs of exchange-rate volatility and the reduction of transaction costs. It has also been suggested that a single currency eliminates the incentive for individual states within the monetary union to competitively redistribute income amongst themselves via seigniorage (Rolnick, Smith and Weber 1994). Finally, Masson and Taylor (1994) point out that countries whose exports are concentrated in a few goods, and are therefore not diversified, would suffer most from an adverse shock. A monetary union can help with spreading the costs of such shocks, by providing a form of 'insurance' against purely regional shocks. It is this view which, it is argued, is applicable to the Soviet case. Of course, membership in a monetary union can also create costs if the fiscal authorities use transfer payments to replace the exchange rate as the adjustment mechanism in the event of adverse economic shocks.[6]

In at least two respects Russia before World War I fulfilled some of the conditions required for an optimum currency area. Regional economic interdependence was high, as the Tsarist economic policy consisted of concentrating industry in western regions of the country (Metzer 1977). The South and the Ukraine represented the agricultural heartlands while other regions became suppliers of raw materials. For example, North Russia exported timber, the second largest export commodity after grain (Pasvolsky and Moulton 1924), while the dairy and fish industries were important to Siberia. This policy was also driven by foreign investment since the time of the

[6] However, there may be savings in the form of lower transaction costs because trading need not be influenced by uncertainty about exchange-rate fluctuations.

Tsars (Gregory 1982), who favoured large-scale enterprises.[7] Moreover, inflows of capital were funnelled toward the building of the infrastrusture, railroads especially.[8] As a result, as World War I approached, economic policy succeeded in '... integrating the various economic regions into one economic organism, but also in creating new networks of communication and transportation that facilitated the mobility of people and ideas as much as the movement of goods.[9]

Even though each region alone would be especially vulnerable to external economic shocks, taken as a whole, there was sufficient diversity in Tsarist Russia to spread the effects of such shocks throughout the country. Hence, on political grounds, a single currency would be desirable even if, on economic grounds, this would not have been the case.[10]

TABLE 1 - Interdependence in Grain: 1908-11*

(millions of pounds)

Region	Net Importer	Net Exporter
Northern	12	
Lake	72	
Baltic	76	
Northwestern	21	
Central	62	
Middle Volga		34
Trans-Volga		50
Trans-Dniepr		36
Southern Steppes		17
Dniepr-Don		111
Volga-Don		96
Northern Caucasus		111

Source: Pasvolsky and Moulton (1924, p.88)

[7] In 1910, for example, 53.5% of workers worked in enterprises employing over 500 workers (see Lyashchenko (1949, p. 669)).

[8] Metzer (1977, p. 77) argues that, while the quantitative impact of the railroads on GNP would be small, the impact on transportation costs and regional development could have been significant.

[9] See Kahan (1989, p. 68, 70).

[10] See, however, Masson and Taylor (1994) who emphasize the economic significance of the insurance argument.

Unfortunately, there is little data about the relative importance of inter-republican trade. However, we do know that well over half of exports were foodstuffs in the year before World War I began (53.5%; see Pasvolsky and Moulton (1924, p. 70), while approximately 80% of imports were raw or manufactured goods (op. cit., p.71), which were destined for a different region of the country. Hence, one can surmise that regional economic interdependence was relatively high. It is also interesting to consider the nature of the interdependence between the regions in terms of grain, Russia's largest export and one of its most vital products. As revealed in Table 1, it is clear that the industrial portions of the country were heavily dependent on the grain-producing regions.

Below we discuss the development and economic consequences of multiple currencies prior to arguing how the desire to unify the currency in the Soviet Union was driven by political considerations.

III

To put into context the thinking of Soviet authorities regarding the introduction of the chervonets and the new ruble in a unified Soviet Union it is useful to make a brief detour to consider the operation of the Gold Standard in Russia.[11]

In the mid-XIXth century Russia had been one of the few countries on a silver standard but a mix of political and economic motives led to the adoption of the Gold Standard in 1897.[12] As in many other countries, this monetary arrangement operated until the beginning of World War I. With the adoption of the Gold Standard, gold coins were introduced, including the 10 ruble coin, which was to have some

[11] There is a large literature dealing with this topic and era in Russian. Some of the key references in English include Gregory (1982), Drummond (1976), Miller (1967), and Crisp (1953-54).

[12] Following a decree (or Ukaz) of 3 January 1897. Subsequent decrees (14 November 1897) made Russian notes convertible into gold but it was only in 1899 (7 June) that Russia was legally or formally on a Gold Standard. See, for example, Miller (1967, p. 107-8).

significance in the operation of the chervonets standard to be discussed below. Also, notes were declared convertible into gold.

There has been considerable debate among economists and historians concerning the fact that the quasi-central bank, namely the Gosbank (or State Bank),[13] never actually allowed the note issue to come near the maximum permissible amount.[14] Dealing with this era of Russian history also raises a measurement issue, namely how to properly measure the money supply (Drummond (undated)). While the Gold Standard certainly operated somewhat as it is depicted in classical analyses of this type of monetary regime, there were several elements which added a peculiar Russian touch to its development. Most importantly, perhaps, the Gold Standard gave Russia a relatively stable currency and the memory of this episode would take on some significance in the aftermath of the hyperinflation which would follow World War I and the October Revolution.

IV

After the Bolsheviks seized power in 1917, most Republics were cut off from central authority in Moscow. As a result, local Soviet governments began to issue their own notes, often called rubles, the name given to the national currency. Unfortunately, the local currencies often depreciated faster than the national currency (Yurovsky 1925), in part because they would not be accepted for trading purposes with neighbouring republics. As noted previously, it does appear that the breakdown of the Federal monetary system following the Bolshevik Revolution hampered trade.

In some republics, such as in Transcaucasia (i.e., Georgia, Armenia,

[13] The Gosbank is referred to as a quasi-central bank, in the modern sense of the word, in part because it regularly discounted commercial paper of private banks (not an uncommon phenomenon elsewhere in Europe as in the case, for example, of the Reichsbank in Germany) and also because the State Bank was 'directly subordinated to the Ministry of Finance' (again, not unheard of elsewhere; Miller (1967, p. 83).

[14] Drummond (1976) is an authoritative and comprehensive description of the debate about the operations of the Russian Gold Standard. Also, see Gatrell (1986, pp. 222-28) for a summary of this debate.

and Azerbaidjan) and the Far East, a single currency proved impossible to maintain. These developments created a multiplicity of exchange rates and deepened the difficulties faced by the federal authorities when currency unification was attempted after the Russian Civil War ended in late 1920. The reason, of course, is that it was never clear what exchange rate to use in exchanging local currency for the national currency. In some instances, reform was postponed, as in Georgia, because the local currency was actually more stable in value than the Soviet ruble (Yurovski (1925, p. 51)), an early indication that monetary union in what was then a weak political union was not economically desirable from the perspective of at least some of the republics. Indeed, in the Transcaucasian reform of 1922, a separate monetary system was introduced at a time when the Soviet ruble continued to depreciate rapidly. Only when the Soviets introduced the chervonets did the separate Transcaucasian monetary system begin to dissolve. The reason is that the balance of trade for this region became unfavourable by this time, necessitating credits from the central government which were forthcoming only once the relatively stable chervonets was introduced.

Siberia and the Far-East provide other illustrations of the economic costs of multiple currency arrangements during this period. Here, and unlike many of the other republics, provisional governments had to contend with the infiltration of a variety of foreign currencies, principally Japanese yen, although US dollars, pounds sterling and even Mexican dollars served as media of exchange.[15] Monetary chaos immediately following the revolution reached such a state that the Finance Ministry in Omsk decreed that local officials '...view with indulgence spurious certificates as long as they did not appear to differ widely from the genuine, and provided their counterfeit nature could not be definitively established' (Pogrebetsky (1924, p. 3)).

Thus began a series of events which ultimately led to the introduction of one currency after another with negative consequences

[15] The economic blockade imposed on the rest of the country limited considerably the quantity of foreign exchange entering into Russia (see Yurovsky (1925 p. 60).

for trade. To make matters worse, reserves of gold and of foreign currencies were largely kept abroad, principally in England, and the British refused to return these reserves (Michelson (1928, chap. IV)). Moreover, throughout the period in question, communication links with the rest of the Soviet Union were severed. It was not until early 1923, precisely when the chervonets was introduced, that 'normal' (i.e., pre-revolutionary) trading patterns resumed.

It is clear that the inflation, together with the proliferation of parallel and foreign currencies, slowed Moscow's ability to extend its influence throughout the country. This, in part, was due to the problems created by the currencies which circulated across the different regions. Throughout this period various regions of the country held conferences which always concluded that the establishment of a national currency was indispensable (Pogrebetsky 1924). Both political and economic motives explain how such a conclusion was reached. In particular, the proliferation of alternative currencies affected Moscow's ability to generate seigniorage. It was felt that the growing costs stemming from multiple currencies could only be offset via the adoption of a single currency. Together with the shortage of currency suitable for small transactions, these considerations can largely explain the proliferation of currency substitutes. From an economic perspective then, only the establishment of a single currency could eliminate the seigniorage problem created by the existence of a large number of parallel currencies. Seigniorage remained an important source of revenue for the government, as Davies (1958, chap. III) emphasizes. Moreover, it was only with the 1924/25 fiscal year (Oct 1 - Sept 30) that a credible state budget was formed.[16] Hence, the restoration of sound fiscal financing did not precede the desire or the return to a monetary union. By contrast, the central bank (though not independent; see below) became operational in November 1921 (Arnold 1937, p. 119). From the political perspective then, the loss of authority by Moscow, and

[16] One problem may have been the "scissors" crisis of 1923 (Dobb 1928, chapter 8; Siklos 1995) which arose out the faster recovery of industry relative to agriculture. The scissors analogy arises out of the shape of the relationship between agricultural and industrial prices.

the existing structure of the overall economy, precipitated the need to attempt monetary union which would also have the effect of providing the regions of the country with insurance to offset the potential costs in the event of asymmetric shocks arising from the inherited industrial and agricultural specialization of the country described in section II.

V

Lenin himself eventually recognized the dangers of the disintegration of the monetary system and its impact on political union. Arnold (1937, p. 145) quotes a statement apparently made by Lenin on the importance he attached to the ruble's stabilization. Atlas (1951, pp. 174-75) produces a similar quote also attributed to Lenin.

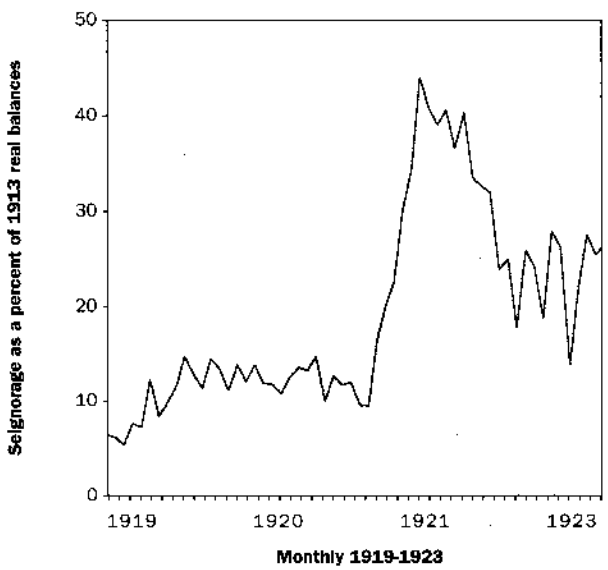
> 'But what is really important is the problem of stabilising the ruble... Practice shows that we have achieved decisive results in that field, we are beginning to push our economy toward the stabilisation of the ruble, which is of supreme importance for trade, for the free circulation of commodities, for the peasants, and for the vast masses of small producers' (Lenin 1966, p. 422, 24).

Lenin understood that when republics, and even enterprises, began to issue currency this implied less seigniorage would be forthcoming from the ruble note issue on which the central authorities still depended to generate much needed revenues.[17] Figure 1 shows that seigniorage revenues from the ruble issue fell sharply by the end of 1922. As a result, the Soviet government introduced a version of the gold ruble first issued at the end of the XIXth century when Tsarist Russia was under the gold standard. This previous adherence to the gold standard was associated with price stability at a time (1890-1914) of fairly rapid economic growth (Nutter 1962). Because the ruble under the gold standard had a high reputation for stability there is little doubt

[17] However, they do not explain how they calculated seigniorage revenues from the ruble.

that an important part of the Soviets' objective was to recapture some of the aura of stability first created by the gold ruble. The decree of 11 October 1922 (Zaleski 1971, p. 23), resulted in the introduction of the chervonets which would circulate in a parallel fashion with the Soviet ruble, also called the sovznak, without a stipulated exchange rate between the two currencies. It was hoped that the mere announcement of the new notes, combined with its store of value function, would be sufficient to persuade citizens that the chervonets would be viewed as being fundamentally different from the ruble. The recognition that a sound monetary system was important was part and parcel of the dramatic economic policy reversal in 1921 when the New Economic Policy or NEP was adopted.[18]

FIGURE 1 - Seigniorage from the Ruble*



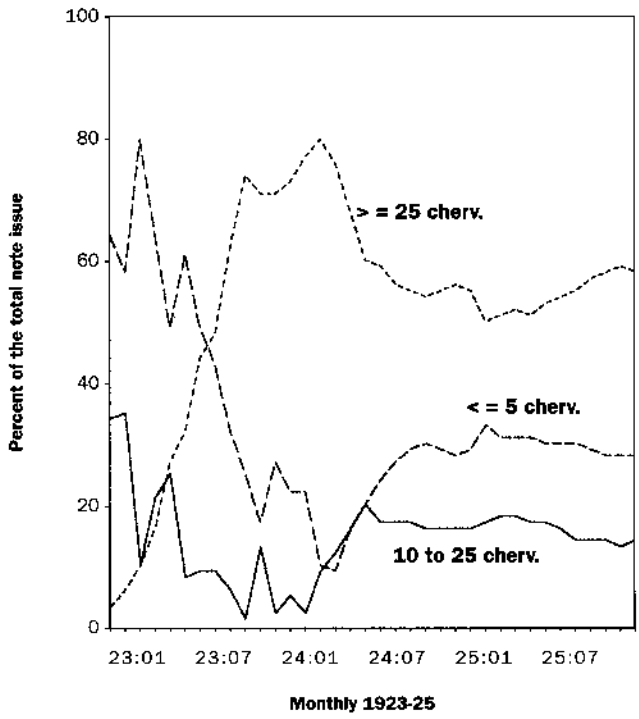
Note: Seigniorage is calculated as [$\Delta M_t/P_t$] as a percent of 1913 real balances (i.e., 1913 real balances = 100), where Δm_t = change in the nominal money supply and P_t in the price level.

**Source*: Appendix

[18] Although several writers of Soviet history confirm that the policy was intended to be a temporary one. See, for example, Arnold (1937) and Gregory (1994).

The store of value role of the chervonets can be explained by several factors associated with its introduction. First, the notes were not, strictly speaking, made legal tender (Zaleski 1971, p. 23). Moreover, Sokolnikov (1931, p. 150) points out that the chervonets were intended for large transactions and were '... first only issued in small quantities for purposes of industrial credit...'[19] Figure 2 reveals that large denomination chervonets notes (i.e., 25 and 50 chervonets) soon dominated the total note issue as it represented between 60 and 80% of the total chervonets note issue by the middle of 1923. It should

FIGURE 2 - Chervonets Note Issue by Denomination Size

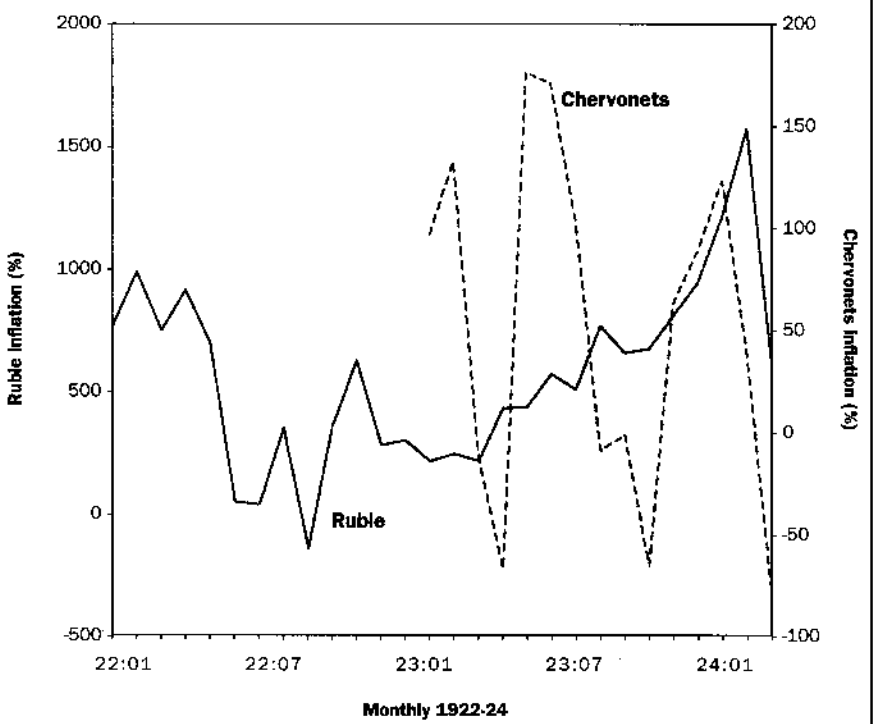


Source Atlas (1951). The different lines represent the percent of the total chervonets note issue in denominations of 5 chervonets or less, between 10 and 25 chervonets and 25 chervonets or larger.

[19] Public Record Office, Kew, London [henceforth PRO]: Cabinet Papers 24/181 (1925), p. 11.

be pointed out, however, that even the smallest chervonets denominations were not particularly suitable for small transactions.[20] 'What was perhaps more serious was that by December 1923 the ruble now began to drive the chervonets out of circulation' (Soviet Union 1925, p. 17). Thus, 'bad' money was indeed driving out good money.[21] By restricting the usefulness of the chervonets as a transactions medium seigniorage revenues were enhanced by a shift of the

FIGURE 3 - Inflation Rates in the Ruble and the Chervonets*



Note: Inflation rates are measured on an annual basis from monthly data. Thus, inflation is 1200 times (log P_t - log P_{t-1}, where P_t is the price level.

* *Source*: Appendix

[20] One chervonets was worth roughly $5 US in 1922 through 1924. See Katzenellenbaum (1925, p. 112).

[21] Katzenellenbaum (1925, p. 121) also reports '... a small premium on Soviet notes...' in rural areas especially.

seigniorage burden from the growing public sector onto the private sector (Siklos 1995).

At least 25% of the chervonets note issue was backed by precious metals.[22] Interestingly, however, the decree which launched the new currency did not specify in what proportions the metallic cover would consist of gold or silver (Arnold 1937, p. 149). The overall cover fell rapidly, which was unlike the experience of the gold standard regime of Tsarist Russia.[23] Moreover, and in contrast to the Tsarist regime, there was no convertibility between Russian and foreign currencies although foreign currencies were traded in private markets within the country (Arnold (1937, pp. 182-3) and Sokolnikov (1931, p. 196)). As a result, inflation resumed its hyperinflationary course, as shown in Figure 3. By contrast, inflation in the chervonets was volatile but comparatively low relative to ruble inflation. However, one cannot speak of the chervonets as being 'backed' by assets in any real sense. First, despite the country's potentially large gold and precious metals reserves which had been built up during the Imperial regime, as noted earlier (Michelson, Apostol and Bernatsky 1928), there remained considerable controversy about their fate. Second, the official rate of the chervonets or gold ruble bore '...no relation whatsoever to the rate of the free market and has nothing in common either with the price of gold or with the price of gold coins' (Association Financière (1922, p. 6), and Arnold (1937, p. 156)).

There are other reasons to doubt the credibility of the chervonets as a stable currency based on the fundamentals usually referred to in the literature on the credibility of economic reforms. The introduction of the chervonets was not accompanied by the creation of an independent central bank nor was there a promise to end the

[22] It is unclear what the significance of this cover was since the chervonets were not redeemable for gold or any precious metals. See also Rostowski and Shapiro (1992). Drummond (undated) also points out that the chervonets was irredeemable.

[23] The cover, measured as the quantity of precious metals and foreign currencies as a percent of the chervonets note issue fell from 97.7% on 1 January 1923 to 51% by 1 March 1924 (it then fell to 44% by 1 October 1924). See Kahan (1989, p. 51), and Katzenellenbaum (1925, p. 104).

practice of deficit spending (Dobb (1928), p. 259), Young (1925, p. 200), and Arnold (1937, p. 236-37)). As Garvy (1977, p. 15) suggests, the history of Russian banking up to this point is one of total dependence of the central bank on the Ministry of Finance (also see Goldenweiser 1925). With respect to the newly-formed State Bank 'The general supervision of the Bank's activity was vested in the People's Commissary of Finance, who was to direct the general policy of the Bank and upon whose approval the Bank's interest rate and commission charges, as well as basic rules for banking operations depended' (Arnold 1937, p. 120).

In fact, there was little credibility in the Soviets' promise to end deficits given that, since 1895, no Russian government managed to generate a balanced budget except in 1903, 1910-11, and 1913 (Pasvolsky and Moulton 1924, p. 51). Even the modest deficit proposal for 1922 was arrived at by utilizing pre-war prices which had nothing in common with prevailing prices (Association Financière (1922, p. 27-8)). Technically, the State Bank was to issue commercial bills ostensibly backed by the needs of trade, as in the real bills doctrine view of monetary policy. However, as property rights were non-existent, the bills were not, in effect, backed at all.

> '...the [State] Bank had no recourse whatsoever against insolvent institutions. By virtue of the provisions themselves of the Bolshevik Civil Code, the non-execution by the State industrial concerns of their obligations cannot involve the seizure of buildings, stock of raw materials, nor fuels. Therefore, it is absolutely false to pretend that the notes issued by the State Bank of the Republic of Soviets possess normal guarantees which could be compared with those of any European issue bank...' (Association Financière (1922, p. 9)).

Carr (1954, p. 130) also points out that the Soviet government decided to resume 'unlimited issue' of Soviet rubles by September 1923, only eight months following the introduction of the

chervonets. Davies (1958, chap. III) has a slightly more charitable view of Soviet finances. He argues that, until the Soviets restored some old forms of taxation,[24] state budgets of 1921 to 1923 were simply unrealistic as these were based on what Commissars[25] wished to spend with no thought given to anticipated revenues from taxation (especially see Davies (1958, Table II)). Moreover, Davies also suggests that control over the state budget was achieved after the economy began to improve and was part and parcel of the attempt to introduce a stable currency, as opposed to being an antecedent to monetary reform.[26]

Despite these drawbacks the chervonets appeared to be 'successful' since inflation in chervonets prices was considerably lower than inflation in sovznaki, as shown in Figure 3. While part of the explanation may have to do with the fact that the chervonets represented more a store of value than a medium of exchange, an equally powerful constraint on the behaviour of the policy makers was that, without a stable national currency, trade and agriculture would be further disrupted and, as a result, jeopardize the viability of the Soviet government.[27] At the same time, the chervonets solved a seigniorage problem for the central government. With so many currencies in circulation, and rampant inflation in the sovznak, each republic or region had the power to levy an inflation tax. Instead, seigniorage would henceforth accrue to the central government that was in dire need of additional revenues. One problem, mentioned previously, is that the Soviets issued high-denomination chervonets notes thereby rendering them of little use for most transactions purposes. This also partly explains the relatively short life of the chervonets, which was replaced as the official currency, by the new

[24] Such as the 'promtax', a tax on industry, trades and crafts which was a mixture of licence fees and a graduated profits tax.

[25] Roughly speaking, government ministers.

[26] As in the case with all of the better known inflation stabilization cases studied by economists.

[27] See Davies, Harrison, and Wheatcroft (1994), Davies (1990), and Horsman (1988, chapter 5) for useful and comprehensive accounts of this period.

Soviet ruble in March 1924.[28] Discussions about the need for a replacement for the depreciating sovznak took place as early as December 1923 (at the 10th Soviet Congress). Both inflation and seigniorage in the ruble (see Figures 1 and 3) had reached such levels that a reform was deemed necessary. It is often the case that anticipation of an imminent monetary reform actually has the effect of reducing the inflation rate and this effect is evident in the behaviour of inflation in both currencies in the last month of 1923.[29] Sokolnikov's views on the necessity of the reform prevailed but the rate of exchange between the old rubles, the chervonets, and the new Soviet ruble would not be formally announced until early March 1924 (Arnold 1937, p. 217).

With a single stable currency and a political union, in the form of the re-establishment of centralized authority from Moscow, there was no longer any scope for the members of the federation to levy their own inflation tax. The new ruble could not be introduced earlier because there was no mechanism to enforce acceptance of the currency. A stable currency would then also guarantee its widespread acceptance. Moreover, the elimination of the multiplicity of exchange rates in a highly interdependent economy[30] also eliminated the attendant welfare costs of multiple currencies.[31] The desire by the

[28] It is unclear whether the chervonets was replaced because it was felt to have outlived its usefulness or because it was viewed as an ultimately unsuccessful experiment. Arnold (1937) points out that 'the reform of 1924 was introduced at a time when the budget was still unbalanced, and consequently when it was known that the new currency would have to be used for the purpose of covering budgetary deficits'. Katzenellenbaum (1925, chap. V), on the other hand, contends that the state budget was well on its way toward balance and the trade balance was improving. Nevertheless, both he and the writings of the then Commissary of Finance, Sokolnikov (1993, pp. 156-57) point out the absence of a currency in sufficiently small denominations to carry out small transactions.

[29] This is a phenomenon first noted by Cagan (1956) was later formalized by La Haye (1985).

[30] While monetary union in this episode was not entirely voluntary, the adoption of a single currency could nevertheless improve economic welfare. Indeed, as has been argued above, the new Soviet ruble only emerged once it appeared to be in the interests of some of the republics to adopt a single currency. The German historical experience is also relevant in this respect (see Holtfrerich (1993)). For more on the process which led to the establishment of the Soviet Union, see Pipes (1964, chap. VI).

[31] A similar development can also explain monetary union in the United States (Rolnick, Smith and Weber (1994)).

Soviets to unify the country through a currency union also stemmed from the relatively weak position of the central government, politically and militarily, especially before 1923. As Casella (1992) shows, monetary union is viable if there is a transfer of seigniorage to those with more-than-proportional influence in a monetary union. The introduction of the chervonets, followed by the reintroduction of the new ruble in 1924, signalled a redistribution of seigniorage to the central government while the regions obtained a stable currency which permitted the restoration of previously existing trade patterns.[32] There is also a little bit of evidence of some form of fiscal federalism being introduced. Thus, for example, Davies (1958, Table 12) reports that 8.9% of budgetary expenditures were in the form of transfers to local budgets which did not exist in the 1913 budget. Moreover, spending on the 'national economy' rose to 18.7% from 6% in 1913. Part of this was for reconstruction purposes but the increase nevertheless also represents a form of fiscal federalism.

VI

A quantitative assessment of the role of the chervonets, and the problems created by the sovznak, is possible by estimating a Cagan (1956)-type short-run money-demand model which relates real balances (i.e. a measure of the money supply deflated by a suitable price level) to inflation and, possibly, other determinants. Table 2 presents such estimates. Cagan's model, in logarithmic form, can be written as:

$$M_t - P_t = \alpha_0 + \alpha_1 \pi_t^e + u_t \qquad \textbf{(1)}$$

where M and P are the logarithms of the money stock and the price level, and where inflationary expectations (π^e) are hypothesized

[32] It is interesting to note that opposition to the establishment of the Soviet Union was strongest perhaps in Georgia which was relatively successful economically and least dependent on trading patterns with the rest of what was to be called the Soviet Union. (See Pipes (1964, chap. VI)).

to reduce the demand for real balances ($m_t - p_t$). It is common to proxy-expected inflation with lagged actual inflation particularly when inflation rates are high. The time-series properties of the series under hyperinflationary conditions require differencing prior to estimation of (1). Hence, real balances enter in first differences (i.e., $\Delta (m_t - p_t) = (m_t - p_t) - (m_{t-1} - p_{t-1})$), as do inflation expectations, and is regressed against a lag of the same variable, current and lagged changes in inflation (as a proxy for expectations of inflation), the proportion of large denomination chervontsy notes as well as (lagged) changes in real balance holdings of chervonets. Of course, since there are two parallel currencies separate estimation of (1) for sovznaki and the chervontsy is feasible.[53]

TABLE 2 - Estimates of Money Demand

Dependent Variables	(1) Log Change in Real Ruble Balances coeff.	(t-ratio)	Independent Variables	(2) Log Change in Real Chervonets Balances coeff.	(t-ratio)
Constant	3.61	(3.82)	Constant	.56	(4.90)
$\Delta m(-1)$	.60	(1.83)	π_r	-.0004	(-2.94)
$\Delta\pi$	-0.003	(-4.74)	$\pi_r(-1)$	-.001	(-4.53)
$\Delta\pi(-1)$	-.001	(-3.43)	$\pi_r(-2)$	-.0003	(-2.52)
EC(-1)	.25	(3.79)	EC(-1)	-.04	(-3.73)
CHER	.03	(3.42)	CHER	-.003	(-2.06)
$\Delta m_r(-1)$	-.20	(-2.08)			
$\bar{R}^2$	.92		$\bar{R}^2$	.60	
F(6,3)	17.47		F(5,27)	10.67	

Legend:
- Δm = log change in real rubles
- Δm_r = log change in real chervonets
- π = inflation rate in the ruble
- π_r = inflation rate in the chervonets
- EC = error correction term (estimated from the cointegrating regression (1))
- CHER = proportion of large chervonets note issue (i.e., larger than 25 chervonets)
- $\bar{R}^2$ = adjusted coefficient of determination
- F = F-statistic of the joint significance of all independent variables; degrees of freedom in parenthesis

Note: Sample is 1922.10-1923.10 for column (1); 1922.10-1926.10 for column (2). Data are monthly.

[53] To the extent that the two currencies are substitutes, simultaneous estimation of (1) for both currencies is desirable but not practical given data limitations. Instead, I have allowed for substitutability primarily via the impact of the chervonets denomination size variable (also see Figure 2).

Finally, an additional econometric issues is raised by the fact that (1) is expressed as an equilibrium relationship. In other words, one expects a "long-run" relationship between money demand and expected inflation (or its proxy). However, the differencing necessary to properly estimate (1) destroys any underlying equilibrium relationship which might exist. Consequently, it is necessary to test for cointegration between $(m_t - p_t)$ and p_t^e (results not shown). If, in fact, there exists an equilibrium relationship between the two series then the error-correction term should enter the short-run money demand equation.[34] The statistical significance of the error-correction term would be further evidence of the existence of the cointegration property between real balances and inflation. In particular, the 'error correction' term should be negative if an equilibrium relationship exists. By contrast, a significant positive coefficient indicates movements further away from equilibrium and therefore instability.

The regression estimates provided in Table 2 reveal that the demand for rubles was inversely related to inflation, as Cagan's theory predicts, but is positively related to the fraction of large denomination chervonets notes. This result is to be expected given the poor transactions medium properties of the chervonets. The significance of lagged chervonets real balances does indicate, however, some substitution between the two currencies, which is not surprising in view of the store of value property of the chervonets. Finally, note the positive and significant coefficient on the error-correction term which reveals the instability in the demand for rubles and provides a statistical explanation of the pressure felt by the Soviets to initiate a successful monetary reform.

Turning to the demand for the chervonets we also see that it is negatively related to its own inflation rate, a result again consistent with Cagan's model. The fraction of large denominations exerts a negative influence on the demand for chervontsy, for reasons argued earlier, while the negative and significant error correction suggests that an equilibrium type relationship did exist between the chervonets

[34] This would be the lagged value of u_t (i.e., u_{t-1}) from estimates of (1).

and inflation in that currency. Clearly, the demand for the two parallel currencies followed a very different pattern.

VII

One should be very careful, of course, in reading too much into the Soviet experience with a currency union to search for lessons to be learned. First, a currency union existed prior to the Soviet revolution. Second, if we consider, for example, European monetary union among participating EU countries, such an event would only take place after they have satisfied a series of convergence criteria. In the Soviet case, monetary union was brought about following unsustainably high rates of inflation. As Dornbusch (1992) points out, a currency union is unlikely to be maintained when the national currency is unstable in value. Third, the infrastructure of the economy was conducive to the return of a single currency. However, it is precisely the high degree of interdependence between the regions and the desire for a stable currency to facilitate trade which highlights the importance of these considerations when considering those factors which produce favourable conditions for a currency union. It is certainly difficult to argue that there was cohesion between the republics, as the desire for sovereignty in some republics was as strong then as it is today. But, in return for a solution to the seigniorage problem created by the existence of multiple currencies, the republics obtained the benefits of a single stable currency.[35] The currency union also provided a form of insurance against the impact of asymmetric economic shocks. What is more difficult to establish is whether the Soviet authorities also implemented a form of fiscal federalism as a way of compensating some of the regions, especially those which might have opposed the currency union, although some evidence of this phenomenon was presented. It is hard to believe, however, that

[35] It is difficult to assess stability in the usual economic sense of the term because by 1924 (some sources date its beginning in 1928) central planning with regulated prices became a feature of the Soviet economic system. Thus began the era of repressed inflation.

such a currency union would have been viable without some form of political union, whether or not it was partially achieved by force. Indeed, the Soviet experience suggests that the introduction of a single stable currency enhanced the prospects for a politically unified Soviet Union since it avoided the complex coordination problems inherent in a system of highly interdependent sovereign states, a fact clearly relevant in the current post-Soviet era. Needless to say, there are other considerations not directly addressed in the context of this paper, such as the loss of fiscal independence in a monetary union of the kind implemented in the Soviet Union, and issues raised by existing counter-examples of highly-integrated economies which have not contemplated a currency union (e.g., the US and Canada). It may be, however, that the specific nature of the interdependence between the regions in a currency area, rather than the mere existence of some kind of economic interdependence, is an important consideration in explaining the combination of political and monetary unions.

DATA APPENDIX: SOURCES AND DEFINITIONS

Series Details

Money Supply: Notes in Circulation (millions of rubles). In 1916, the money supply consisted of credit notes, gold, silver, and copper coins. Katzenellenbaum (1925, p. 51) identifies different periods in Russian monetary history. The figures used are beginning-of-month figures. Data was cross-checked with *Economic Statistics of the Soviet Union (1925)* and *State Bank of the USSR*, various issues.

Price Level: Index used has a 1913 base. Data are from Gosplan (i.e., State Planning Commission) and represent prices in Moscow. Data are also from Katzenellenbaum (1925, p. 74-75) and appear to reflect actual prices based on other sources consulted in the Public Records Office and compiled by Britsh diplomats.

Chervonets notes in circulation: Data are from Katzenellenbaum (1925, p. 104), and Arnold (1937, p. 226) who present different data for 1925 especially. The January 1923 observation reported in Katzenellenbaum seems to be incorrect according to every other publication I have examined. For example, see *Commercial Yearbook 1925*, p. 346.

Price Index for the Chervonets: Base year is 1913. Data are from Arnold (1937, p. 168-9).

REFERENCES

Arnold, A.Z., *Banks, Credit, and Money in Soviet Russia* (New York: Columbia University Press, 1937).

Association Financière, Industrielle et Commerciale Russe, *Le Débacle des Soviets et la Restauration Economique de la Russe* (Paris, 1922).

Atlas, Z.V., *Pénzforgalon es Hitel a Szoviet Unióban* [Money and Credit in the Soviet Union] (Budapest, 1951).

Bean, C.R., 'Economic and Monetary Union in Europe', *Journal of Economic Perspectives*, 6 (Fall, 1992), 31-52.

Cagan, P. 'The Monetary Dynamics of Hyperinflation', in M. Friedman (ed.), *Studies in the Quantity Theory of Money* (Chicago: University of Chicago Press, 1956), 25-1117.

Carr, E.H., *A History of Soviet Russia, vol. 4: The Interregnum 1923-1924* (London: Macmillan and Co. Ltd., 1954).

Casella, A., 'Participation in a Currency Union', *American Economic Review* 82 (September, 1992), 847-863.

Crisp, O., 'Russian Financial Policy and the Gold Standard at the End of the Nineteenth Century', *Economic History Review*, 6 (1953-54), 156-72.

Davies, R.W., M. Hanson, and S.G. Wheatcroft, Editors (1994), *The Economic Transformation of the Soviet Union, 1913-1945* (Cambridge: Cambridge University Press).

Davies, R.W., Editor (1990), *From Tsarism to the New Economic Policy* (London: Macmillan).

Davies, R.W. (1958), *The Development of the Soviet Budgetary System* (Cambridge: Cambridge University Press).

Dobb, M., *Russian Economic Development Since the Revolution* (New York: E.P. Dutton and Co., 1928).

Dornbusch, R., 'Monetary Problems of Post-Communism: Lessons from the End of the Austro-Hungarian Empire', *Weltwirtschaffliches Archir*, vol. 128 (1992), 391-425.

Drummond, I.M., 'Notes on Russian Currency', University of Toronto.

Drummond, I.M., 'The Russian Gold Standard', *Journal of Economic History*, 36 (September, 1976), 663-88.

Garvy, G., *Money, Financial Flows, and Credit in the Soviet Union* (Cambridge, Mass: Ballinger for the NBER, 1977).

Gatrell, P., *The Tsarist Economy* (London: B.T. Batsford Ltd., 1986).

Goodhart, C.A.E., 'The Political Economy of Monetary Union', in C.A.E. Goodhart, *The Central Bank and the Financial System* (Cambridge, Mass.: The MIT Press, 1995), 156-202.

Goldenweiser, A. (1925), 'Banking and Currency Reform in Russia', *Journal of Political Economy*, 33, 234-43.

Gregory, P.R. (1994), *Before Command* (Princeton: Princeton University Press).

Gregory, P.R., *Russian National Income, 1885-1913* (Cambridge: Cambridge University Press, 1982).

Holtfrerich, C-L., 'Did Monetary Unification Precede or Follow Political Unification of Germany in the 19th Century?', *European Economic Review*, 37 (1993), 518-24.

Horsman, G. (1988), *Inflation in the 20th Century* (New York: St. Martin's Press).

Kahan, A., *Russian Economic History: The Nineteenth Century*, edited by R. Weiss (Chicago and London: The University of Chicago Press, 1989).

Katzenellenbaum, S.S., *Russian Currency and Banking 1914-24* (London: P.S. Ling and Co., 1925).

La Haye, L., 'Inflation and Currency Reform', *Journal of Political Economy* 93 (June, 1985), 537-60.

Lenin, V.I., *Selected Works* (Moscow: Progress Publishers, 1966).

Lyashchenko, P.T., *History of the National Economy of Russia* (New York: MacMillan, 1949).

Masson, P.R. and M.P. Taylor, 'Optimal Currency Areas: A Fresh Look at the Traditional Criteria', in P.L. Siklos (Ed.), *Varieties of Monetary Reforms: Lessons and Experiences on the Road to Monetary Union* (Kluwer Academic Publishers: Dordrecht, The Netherlands, 1994).

Metzer, J., *Some Economic Aspects of Railroad Development in Tsarist Russia* (New York: Arno Press, 1977).

Michelson, A.M., P.N. Apostol and N.B. Bernatsky, *Russian Public Finance During the War* (New Haven: Yale University Press, 1928).

Miller, M., *The Economic Development of Russia 1905-1914*, Second Edition (New York: Augustus M. Kelley, 1967).

Nutter, G.W., *Growth of Industrial Production in the Soviet Union* (Princeton: Princeton University Press for NBER, 1962).

Pasvolsky, L. and H.G. Moulton, *Russian Debts and Russian Reconstruction: A Study of the Relation of Russia's Foreign Debts to Her Economic Recovery* (New York: McGraw-Hill, 1924).

Pipes, R., *The Formation of the Soviet Union* (Cambridge, Mass: Harvard University Press, 1964).

Pogrebetsky, A.I., *Monetary Circulation and Currencies of the Russian Far East During the Revolution and Civil War*, Hoover Institution Archives, (Stanford University, Palo Alto, California, 1924).

Rolnick, A.J., B.D. Smith, and W.E. Weber, 'The Origins of the Monetary Union in the United States', in P.L. Siklos (Ed.), *Varieties of Monetary Reforms: Lessons and Experiences on the Road to Monetary Union* (Kluwer Academic Publishers: Dordrecht, The Netherlands, 1994).

Rostowski, J. and J. Shapiro, 'Secondary Currencies in the Russian Hyperinflation and Stabilization of 1921-24', Center for Economic Performance Discussion Paper no. 59, 1992.

Siklos, P.L., "Tales of Parallel Currencies: The Early Soviet Experience", in J. Reis (Ed.), *International Monetary Systems in Historical Perspective* (London and New York: Macmillan and St. Martin's Press, 1995), pp. 231-59.

Siklos, P.L., 'Hyperinflations: Their Origins, Development, and Termination', *Journal of Economic Surveys* 4, 1990, 225-48.

Sokolnikov, G.Y. (Ed.), *Soviet Policy in Public Finance 1917-28* (Stanford, CA: Stanford University Press, 1931).

Soviet Union (1925), *Economic Statistics.*

Végh, C.A., 'Stopping High Inflation: An Analytical Overview', *IMF Staff Papers* 39 (September, 1992), 626-95.

Young, J.P., *European Currency and Finance*, serial 9, vols. I and II (Washington, D.C.: Government Printing Office, 1925).

Yurovsky, L.N., *Currency Problems and Policy of the Soviet Union* (London: Leonard Parsons, 1925).

Wihlborg, C., and T.D. Willett, 'Optimum Currency Areas Revisited on the Transition Path to a Currency Union', in C. Wihlborg, M. Fratianni and T.D. Willett (Eds.), *Financial Regulations and Monetary Arrangements After 1992* (New York: Elsevier Science Publishers, 1991), 279-297.

Willett, T.D., and F. Al-Marhubi, 'Currency Policies for Inflation Control in the Formerly Centrally Planned Economies', *World Economy* 17 (November 1994), 795-815.

Zaleski, E., *Planning for Economic Growth in the Soviet Union, 1918-32* (Chapel Hill: North Carolina Press, 1971).