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From the 1931 sterling devaluation to the breakdown of Bretton Woods: Robert Triffin's analysis of international monetary crises

by Ivo Maes and Ilaria Pasotti

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Abstract

Robert Triffin (1911-1993) was one of the main protagonists in the international monetary debates in the postwar period. He became famous with his book Gold and the Dollar Crisis, published in 1960, in which he predicted the end of the Bretton Woods system. In his analysis there, Triffin was very much marked by the breakdown of the gold exchange standard in the early 1930s. In his view, the growth of foreign exchange reserves after World War Two repeated, but on a much larger scale, their similar expansion after the First World War. Triffin argued that the gold exchange standard had been a highly fragile construction as funds could move in and out due to changes in relative interest rates and/or changes in exchange rate expectations. The focus of this paper is on Triffin's analysis of the sterling devaluation of 1931 throughout his writings, from his early articles on the 1935 devaluation of the Belgian franc to his writings after the breakdown of the Bretton Woods system. The aim is twofold: to provide an assessment of Triffin's view of the interwar period and assess the significance of his analysis of the interwar period for his view on the Bretton Woods system.

Keywords: Robert Triffin, Bretton Woods system, gold exchange standard, pound sterling, Triffin dilemma

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Authors:
Ivo Maes, Chaire Robert Triffin, Université catholique de Louvain & ICHEC Brussels Management School - e-mail: ivo.maes@nbb.be
Ilaria Pasotti, Consultant at Archivio Storico Intesa Sanpaolo – e-mail: pasotti.ilaria@gmail.com

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Non-technical summary

Robert Triffin (1911-1993) was one of the main protagonists in the international monetary debates in the postwar period. He became famous with his book *Gold and the Dollar Crisis*, published in 1960, in which he predicted the end of the Bretton Woods system. In his analysis there, Triffin was very much marked by the breakdown of the gold exchange standard in the early 1930s. In his view, the growth of foreign exchange reserves after World War Two repeated, but on a much larger scale, their similar expansion after the First World War. Triffin argued that the gold exchange standard had been a highly fragile construction as funds could move in and out due to changes in relative interest rates and/or changes in exchange rate expectations. The sterling devaluation of September 1931 had devastating implications for the global monetary system. It was a major cause of the implosion of international liquidity, which contributed to the Great Depression. The focus of this paper is on Triffin's analysis of the sterling devaluation of 1931 throughout his writings, from his early articles on the 1935 devaluation of the Belgian franc to his writings after the breakdown of the Bretton Woods system.

Triffin produced a first important work on the international monetary system in 1946, *National Central Banking and the International Economy*. It is striking that in this work he did not discuss at all the 1931 sterling devaluation and the ensuing implosion of the gold exchange standard. In 1957, Triffin published his book *Europe and the Money Muddle*. The 1931 devaluation and the weaknesses of the gold exchange standard only come to the fore, a bit accidentally, in the concluding chapter. The sterling devaluation and the implosion of the gold exchange standard take centre place in *Gold and the Dollar Crisis*. He also provided there the classic formulation of the so-called Triffin dilemma:

> The gold exchange standard may ... help in relieving a shortage of world monetary reserves. It does so only to the extent that the key currency countries are willing to let their net reserve position decline through increases in their own gross reserves. If they allow this to happen, however, and to continue indefinitely, they tend to bring about a collapse of the system itself through the gradual weakening of foreigners' confidence in the key currencies (Triffin 1960: 67).

The 1931 sterling devaluation and the breakdown of the gold exchange standard would remain at the core of his writings in the 1960s. Moreover, the recurring sterling crises in the 1960s placed considerable stress on the Bretton Woods system.

However, the collapse of the Bretton Woods system did not happen in the way Triffin had predicted (an implosion of the international reserve component of international liquidity, leading to a worldwide deflation). Not deflation became the problem but inflation. Triffin had to admit that he had completely underestimated the willingness of central bankers to keep dollar balances, a strong contrast with the 1930s. A question is naturally why there was no fall in dollar liabilities. Two main reasons can be advanced: geopolitics and the dominance of the dollar as a reserve currency in the postwar period. The postwar period was marked by the cold war. The United States was the leader of the Western world and provided a security shield, which was especially important for Germany and Japan. Both countries had lost the second world war and were dependent on the US for their security against the communist threat. Geopolitical reasons were an important factor why these countries, which had important balance of payments surpluses, did not convert their dollar balances in gold. This contrasted with the attitude of France which, both in the interwar and the postwar period, converted dollars into gold (De Gaulle further insisted on the physical repatriation of the French gold to Paris with a French warship, a clear indication of the geopolitical importance of gold). Moreover, also from an economic and financial perspective, was the United States the dominant country in the postwar period. This contrasted with the interwar period when no single country could really claim economic leadership and both the dollar and sterling functioned as international currencies. The postwar dominance of the dollar as an international currency, with important network effects, gave the United States a greater degree of freedom to pursue its own domestic policies. Central bankers had not many alternatives for their reserve management than the deep and liquid United States financial markets, especially the US government bond market, where the safe asset of the postwar world was traded.

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1. Introduction

Robert Triffin (1911-1993) was one of the main protagonists in the international monetary debates in the postwar period. He became famous with his book *Gold and the Dollar Crisis*, published in 1960, in which he predicted the end of the Bretton Woods system. In his analysis there, Triffin was very much marked by the breakdown of the gold exchange standard in the early 1930s. In his view, the growth of foreign exchange reserves after World War Two repeated, but on a much larger scale, their similar expansion after the First World War. Triffin argued that the gold exchange standard had been a highly fragile construction as funds could move in and out due to changes in relative interest rates and/or changes in exchange rate expectations. In a later publication, Triffin (1969: 11) called these destabilizing capital movements the "Built-in" source of instability of the gold-exchange standard. Moreover, the return to gold at the pre-war rate made sterling highly vulnerable on the foreign exchange markets. The sterling devaluation of September 1931 had devastating implications for the global monetary system. It was a major cause of the implosion of international liquidity, which contributed to the Great Depression. The focus of this paper is on Triffin's analysis of the sterling devaluation of 1931 throughout his writings, from his early articles on the 1935 devaluation of the Belgian franc to his writings after the breakdown of the Bretton Woods system. The aim is twofold: to provide an assessment of Triffin's view of the interwar period and assess the significance of his analysis of the interwar period for his view on the Bretton Woods system.

2. Robert Triffin and the 1935 Belgian franc devaluation

Robert Triffin was born in a modest family and was the first in his family to study at high school and university (Maes with Pasotti 2021). In 1929, he enrolled at the Faculty of Law at the Catholic University of Louvain and, in 1934, he also started studying economics. During his university studies, he was active in progressive Catholic circles and soon became a convinced pacifist. Like several of his friends, he was attracted to the emerging science of economics as it offered real possibilities to improve the world. Triffin became active at the Institut des Sciences Économiques (ISE), which was set up in October 1928. For many years, business cycle analysis (the study of fluctuations in economic activity and prices) was the cornerstone of ISE's scientific work. The new Institute's research agenda was directly inspired by the activities of the Harvard Committee for Economic Research (van Zeeland 1929). The dominant figure at the institute was Léon-H. Dupriez, a leading scholar in business cycle analysis, considered in a broad sense, i.e. the interaction of growth and different types of cycles in economic life. The focus was very much on the different industrial sectors of the economy. Moreover, Dupriez, who also had a position at the National Bank of Belgium, felt that money and finance had a central place in economic life, as credit and the financial system played a key role in the financing of investment. Monetary and financial indicators were then very important in his business cycle analyses. Dupriez based his analysis on extensive empirical investigations (with a lot of attention to descriptive statistical methods, as well as charts and tables). Triffin was one of Dupriez's pupils and became an assistant at the Institute in 1934-1935.

During Triffin's time as a student, in the first half of the 1930s, the Great Depression was raging and Belgium too was badly affected, especially by sharply contracting world trade and falling international prices (Maes 2010). The 1931 devaluation of the British pound had a major impact on the Belgian economy, as Great Britain was one of Belgium's leading export markets and British producers were the main international competitors of Belgian producers, especially in sectors as textiles, coal and steel (Dupriez and Barboux 1933). This led to company closures and a sharp rise in unemployment. The Belgian economy went into a downward spiral. The financial system was hard hit and some banks went bankrupt (Eichengreen 1992: 359-364). In March 1935, Paul van Zeeland, a colleague of Dupriez, both at the National Bank and Louvain, was appointed Prime Minister. The new government immediately devalued the franc by 28%, and the young Robert Triffin was responsible for the concrete calculations of the devaluation percentage.

In 1935, Triffin was awarded a fellowship from the Commission for the Relief of Belgium (CRB) to fund graduate studies in the United States. Studying at Harvard, Triffin quickly fell under the spell of Joseph A. Schumpeter and general equilibrium theory. Moreover, Triffin took Edward Chamberlin's "very stimulating" class on Monopolistic Competition. He then wrote a thesis that wove together the general equilibrium approach, cherished by Schumpeter, and Chamberlin's monopolistic competition ideas. *General Equilibrium Theory and Monopolistic Competition* (Triffin 1940) would make Triffin's reputation as a theoretical economist. It would be an outlier in his long career as a very empirical, policy-oriented, economist, but it would shape his perception of economic phenomena.

During these years, Triffin published two articles related to the Belgian devaluation. The first one was entitled "Les mouvements différentiels des prix de gros en Belgique de 1927 à 1934" (Triffin 1935). It was a largely statistical article, explaining the calculation and interpretation of differential group indices of wholesale prices in Belgium, very much in line with the analyses of Dupriez. The second one was entitled "La théorie de la surévaluation monétaire et la dévaluation belge" (Triffin 1937) and it combined his experience of the Belgian devaluation as well as work for Schumpeter's advanced course on business cycles and for Gottfried Haberler's international trade course (Maes and Pasotti forthcoming).

In line with Dupriez's business cycle analysis, Triffin focused on situations of disequilibrium and the transition period. He argued that relative prices can move for two completely different reasons. As mostly emphasized in economic theory, changes in fundamental factors as technology and tastes will lead to divergent movements in prices of various goods and services. However, divergences in price movements can also be the result of greater or lesser resistance of different categories of prices to cyclical movements, "Different industries find their cost prices affected to varying extents by cyclical movements in prices, depending on the relative share that expenditure on more-business-cycle-sensitive raw materials takes up in their cost price, and by more rigid wage and capital charges." (Triffin 1937: 38).

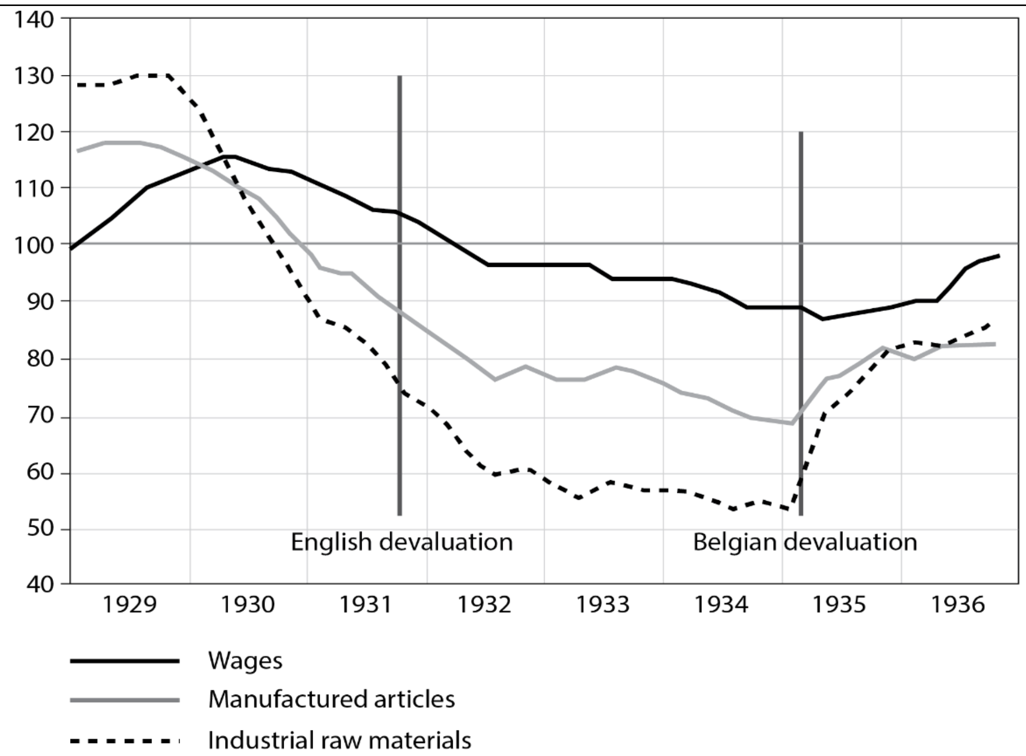
Triffin, in both articles, argued that the differential movement of prices, with prices of manufactured products falling more than domestic costs (see Chart 1), was causing serious losses in Belgian manufacturing, leading to closure of firms. "the relative stability of our sales prices solely reflected the rigidity of the internal components of our cost prices: wages and especially capital charges. And apparently favorable prices were for our industrialists actually famine prices, which, in 1934, pushed half the firms in the country into a loss" (Triffin 1935: 290). With such catastrophic losses, firms cut back production and investment, leading to growing unemployment in Belgium.[1] Given these differential movements of prices, Triffin defended the Belgian decision to base the

[1] It is noteworthy that Keynes, in his *Economic Consequences of Mr. Churchill* (1925), had also emphasized, like Triffin, these dislocations in relative prices, with raw materials and manufactured goods adjusting quickly to movements of the exchange rate, but wages much more slowly.

devaluation per centage not on wholesale prices (which were largely determined on the world market), but on cost of living indexes (comparing Belgium with the UK).

Chart 1 - Flexibility of different types of prices, 1929 - 1936

(index 1927 - 1933 = 100)



Source: Triffin (1937: 37, reproduced with kind permission of the University of Louvain).

The Belgian devaluation was generally well received and even singled out as an example of economic analysis supporting a crucial policy decision (Nurkse 1944: 128). Later, Alfred Sauvy (1984: 169) argued that “in the history of the interwar economy, there are few examples of scientific reasoning dictating, in this fashion, a political decision”.

It is further interesting to observe that Triffin also concluded that agricultural prices were much more sensitive to the business cycle. "It is above all the sheer intensity of the farm crisis over the last few years, at least in plant products, which, by their very nature and the lower protection they are given, tend to follow the highly depressed world prices more closely" (Triffin 1935: 290). This would become an important theme in his later work (see below), emphasizing that deflationary policies by countries at the centre of the economic system would have even stronger deflationary effects in the periphery of the world economy (Maes 2013).

3. National central banking and the international economy

In 1942, Triffin started working at the Federal Reserve Board in Washington, becoming responsible for Latin America. Moreover, he was involved in international monetary matters and became more and more interested in the changing nature of central banking. In his view, central banking in most countries lagged far behind the evolutions in economic theory and policy, marked by two world wars, the Great Depression and the Keynesian revolution. The prevalent pattern of central banking was still that of a banker's bank or lender of last resort, "molded, more or less slavishly, upon the traditions of the Bank of England". Triffin emphasized that these traditions were the product of a very special historical and geographical environment. "Transplanted into other times and other countries, they have proved as futile and worthless as a banana tree would be, if moved from a tropical land into an Arctic climate".[2] In Triffin's view central banking statutes still largely reflected the nineteenth century ideals of the gold standard. This implied that variations in the volume of money were governed by the inflow and outflow of monetary gold. For Triffin, such automatism was incompatible with modern concepts of monetary management and, in line with Keynesian thinking, monetary policy should be an integral part of economic policy.

In 1946 Triffin published his first important essay on the international monetary system, entitled "*National Central Banking and the International Economy*" (Triffin 1946). It included an extensive discussion of the role of the International Monetary Fund, where Triffin became one of the first economists, in July 1946. In the introduction to the article, Triffin underlined how the world had changed with the Great Depression and World War Two. The crucial policy issue was to reconcile national objectives with international balance. "Any attempt to enforce rigid solutions patterned after orthodox gold standard doctrines would be even more futile in the postwar period than it has proved to be in the interwar period" (Triffin 1946: 47-48). The focus of Triffin's paper was therefore on reconciling domestic monetary policies with the prerequisites of international balance.

Triffin was critical of the classical gold standard theory, which ascribed balance of payments disequilibria to international cost and price disparities. He raised two main criticisms, in line with his

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2 Recent Monetary and Banking Reforms, Triffin, 1945, Yale Archives, Fond Robert Triffin, Box No. 7.

earlier work on cycles and imperfect competition theory, reinforced by his experience in Latin America. Firstly, he argued that the classical gold standard mechanism failed to distinguish between a fundamental disequilibrium in one country's international position and world-wide balance of payments disturbances, associated with cyclical fluctuations. According to Triffin, during the interwar period, exports and imports had mostly moved in the same direction for practically all countries. In his view, “many of the most spectacular disequilibria in balances of payments are world-wide in scope, and must be traced to cyclical fluctuations of an international character rather than to national price and cost maladjustments” (Triffin 1946: 59). Secondly, Triffin also criticised the classical readjustment mechanism, which was “vitiated by the underlying and totally unrealistic assumption of near-perfect competition between nations of roughly equal strength and importance in world trade" (Triffin 1946: 59). In Triffin’s view, the gold standard “classicists”, made the hypothesis that the discount policy of any country did not affect world market prices. Triffin then raised the question of whether the 19th century international monetary system was a gold standard or a sterling exchange standard: "in recent years many writers have emphasized the central position occupied by Great Britain in the nineteenth century functioning of the gold standard" (Triffin 1946: 58). Triffin argued, following the analyses of Thomas Tooke in the early 19th century, that changes in the discount rate also had significant effects on capital movements. Consequently, as Great Britain was the major hub of world trade and finance, the British discount policy immediately affected not only the domestic economy and prices but also other countries, thus transmitting British cyclical fluctuations. Triffin further underlined the asymmetric nature of the adjustment process as the discount policy of debtor countries did not have the same effect. "Capital tended to flow toward them in times of prosperity and away from them in times of depression, irrespective of their discount policy. The effect of such fluctuations in capital movements was to smooth down cyclical monetary and credit fluctuations in the creditor countries, but to accentuate them in the debtor countries. To that extent the financial centers could shift part of the burden of readjustment upon the weaker countries in the world economy" (Triffin 1946: 60). According to Triffin's statistical evidence, the consequence was that a restrictive British monetary policy would lead to an improvement in Britain's terms of trade and balance of payments, as prices in other countries, especially producers of raw materials in the periphery, were more affected than those in Great Britain. Triffin argued that the "improvement in the British terms of trade in periods of rising discount rates should not be surprising, in view of the special position of Britain as a financial center for world trade. On purely *a priori* grounds, it would appear at least as probable as the opposite pattern contemplated by the classicists" (Triffin 1946: 63). Eichengreen (1992: 48) later labelled this the "Triffin effect".

There is here an important continuity in Triffin’s analysis, as he had already concluded in his first article, back in 1935, that raw material prices were the ones most affected by the Great Depression. Triffin was thus very close to the ideas of Prebisch regarding "center" and "periphery".[3] However, while Prebisch is mainly known for elaborating the structural element, that prices of raw materials tend to fall compared to prices of manufactured goods, Triffin emphasised the business cycle aspect: that prices of raw materials fluctuate more during the cycle than prices of services and industrial goods. So, at the core of Triffin’s criticism of the classical gold standard, was that it propagated shocks in the centre of the world economy to countries in the periphery, due to the dominance of the London discount market: "The failure of British discount policy to effect the type of readjustments contemplated in classical theory is thus easily understandable. It was due primarily to the *international* character of the London discount market, whose expansion and contraction affected foreign prices as much as or more than British prices. It is also explainable by the fact that producers of agricultural and raw materials are more vulnerable to cyclical and credit fluctuations than is the British economy. " (Triffin 1946: 63).

It is interesting to note that Triffin very much focused on the 19th century international monetary system. Triffin himself observed that the interwar period was of “minor interest” for analysing these issues. He gave two reasons: new instruments of monetary policy had replaced the discount rate and “moreover, Britain was no longer the dominant financial centre of the world” (Triffin 1946: 62). It is further noteworthy that Triffin did not go into a discussion of the position of the pound Sterling in the interwar period. The 1931 devaluation of Sterling is not even mentioned at

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[3] Raúl Prebisch, an Argentinian economist, was one of the founders of the Argentine central bank and would, in the postwar period, be heading the Economic Commission for Latin America (ECLA) and the United Nations Conference on Trade and Development (UNCTAD). Triffin developed a close relationship with him, both personally and professionally (see Dosman 2008).

all.

From a policy perspective, Triffin's analysis implied that the “rules of the game” of the gold standard were totally inappropriate for dealing with world-wide cyclical disturbances. This had important implications: compensatory policies should be pursued, effectively putting global liquidity at the core of the international monetary system. It was necessary to have a "high level of international reserves, especially in raw material and food producing countries, and the willingness to spend these reserves liberally in times of crisis". Triffin also had a clear ranking of policy instruments, preferring exchange controls to devaluation. "When reserves are insufficient”, he said, “foreign or international assistance – such as is contemplated under the International Monetary Fund – will be necessary. Failing this, exchange control should be used as a third line of defense, in order to continue compensatory policies and avoid the greater evils inseparable from deflation or currency devaluation" (Triffin 1946: 80).

Triffin was quite optimistic about the new international monetary system with the International Monetary Fund at its core. He argued that the IMF had two important advantages: the financial resources at its disposal and its influence on member countries’ economic policies. Furthermore, Triffin believed that the IMF might develop a leadership and moral influence "far beyond the scope of mere official, formal recommendations" (Triffin 1946: 53).

4. Europe and the Money Muddle

In 1951, Triffin returned to the academic world and became a professor at Yale University. He produced his first important book in 1957, entitled *Europe and the Money Muddle: from Bilateralism to Near-convertibility, 1947-1956*. It was very much based on his earlier experience as a policymaker, especially in Paris for the IMF and the US Economic Cooperation Administration, which managed the Marshal Plan, where he became one of the main architects of the European Payments Union (Maes with Pasotti 2021).

At the centre of the book was the “world dollar shortage”, also the topic and title of the first chapter. In Triffin’s view, World War One was a watershed. Before 1914, the United States was a young and fast growing emerging market economy, with current account deficits and inflows of foreign capital. World War One marked an "abrupt and revolutionary jump": the United States' exports tripled, leading to current account surpluses and capital exports. The changes brought by the war would have a lasting impact and would lead to a new phenomenon, "dollar shortage": "The former capital-exporting countries of Europe emerged with large needs for reconstruction at the very same time that the United States had become the strongest economic power in the world. The United States replaced Europe as the world's banker (…). The world had entered the era of the so-called 'dollar shortage'" (Triffin 1957: 3). Already earlier, Keynes, in his *Tract on Monetary Reform,* had argued that the First World War marked a watershed, "a dollar standard was set up on the pedestal of the Golden Calf" (Keynes 1923: 155).

Contrary to what the title might suggest, the book was optimistic about the situation in Europe. Production had increased significantly, compared to both the pre-war period and the immediate post-war period. Moreover, Europe's exports had expanded, and the balance of payments had swung from a substantial deficit in 1947 to a surplus in 1955. Even with the United States, the balance of payments was close to equilibrium, compared to a significant deficit in 1947, the high days of dollar scarcity. Triffin emphasized strongly that Europe's recovery was based on sound fundamentals, in terms of both price stability and the creation of a strong productive basis through massive investment. The recovery was much stronger than a mere reconstruction of war-time destruction and damages. "Large-scale investment", he said, "combined with monetary readjustments, have brought to European economies a degree of strength and vitality which contrasts sharply not only with the near bankruptcy of 1947 but also with the relative stagnation and recurrent monetary instability of the pre-war era" (Triffin 1957: 85-86). Triffin was one of the first economists to point out that the period of dollar scarcity was over.

Triffin's concluding chapter is called "Current Prospects and Conclusions: The Tasks Ahead". He starts with emphasizing the enormous improvement in the reserve position of European countries. With the growing US balance of payments deficit, the European countries had been able to boost their international reserves, while those of the US declined. Triffin even became quite optimistic about the distribution of international reserves in the world, with one significant exception, the United Kingdom, "whose gold reserves and dollar holdings continue to fluctuate widely from year to year and provide only a fractional cover for foreign-held sterling balances” (Triffin 1957: 270). However, even for the United Kingdom, the situation had improved as sterling liabilities had declined in the post-war years.

It is only in this concluding chapter that Triffin, somewhat surprisingly, discusses the dangers of the gold exchange standard. The first discussion is in a quite technical section on the European Monetary Agreement, when he discusses the currency composition of the international reserves of European central banks in the new regime and when he, rather suddenly, turns to the threats of the gold exchange standard: “Yet this return to a multicurrency gold exchange standard carries with it very great dangers for future monetary convertibility and trade liberalization. Now, as in the 1920’s, sudden and often speculative shifts from one currency into another or into gold may greatly endanger the stability and convertibility of key currencies actually used as foreign exchange reserves by central banks. Moreover, some countries may again use trade concessions or the threat of trade restrictions as a weapon to induce other countries to accumulate their currency or spend it exclusively within their own currency area” (Triffin 1957: 284). Thereafter, he continued with a, more technical, proposal to transform the European Payments Union into a clearing house for European central banks.

At the end of the concluding chapter, Triffin has a section “The Role of World-wide Institutions”, focused very much on the International Monetary Fund. Triffin there underlined the fundamental importance of a “frontal attack by the Fund on the well-known deficiencies of the gold exchange standard” (Triffin 1957: 296). Triffin emphasised the vulnerability of the gold exchange standard to “sudden shifts from one currency to another or from foreign exchange balances into gold itself”, highlighting that this was “amply illustrated by the events of the early 1930s”. Triffin reminded his readers that “Massive conversions of foreign-held sterling assets into gold and dollars – particularly by the Bank of France – played a large role in the sterling crisis of September 1931 and did not prevent heavy exchange losses on the residual sterling balances held at that time by foreign central banks”. The result was “a generalized flight into gold and a drastic contraction in the foreign exchange component of international monetary reserves” (Triffin 1957: 296). In a footnote, Triffin gives more detail on these movements out of foreign exchange and into gold, referring to Nurkse’s (1944) *International Currency Experience* for the data.

Triffin then turned to the future and warned of the dangers ahead, “History might repeat itself tomorrow if convertibility was restored today on the same unorganized gold exchange standard” (Triffin 1957: 296). In his view, the conversion of short-term sterling into gold would be catastrophic for sterling and “could easily wreck sterling convertibility”. While he is more optimistic about the United States, he admits that a partial conversion of short-term dollar liabilities “might even create serious, although manageable, financial problems for the United States”. Triffin further observed that Europe’s stronger position was primarily the result of a vast redistribution of reserves, from the United States to the rest of the world (Table 1). Gold and dollar holdings outside the United States had risen by more than $12 billion since 1949. However, only $2.6 billion of this increase came from additions to the world’s monetary gold stock. The overwhelming portion of the increase – nearly $10 billion – reflected gold losses and increases in short-term liabilities on the part of the United States. Triffin observed the vulnerability of this process: “It is evident that such a movement could not continue indefinitely without eventually undermining confidence in the dollar itself” (Triffin 1957: 297), a clear formulation of the Triffin dilemma.[4]

4 Some authors, like Eichengreen (2019: 108), argue that Triffin already formulated the Triffin dilemma in *National Central Banking and the International Economy*. We are rather sceptical about this. We could not directly find a formulation in the text and it goes against the generally optimistic spirit of the article (Triffin 1946 does not discuss the flaws of the gold exchange standard). Moreover, Triffin (1988: 27) observed that he first formulated his proposals for reform of the IMS “based on what was soon to be dubbed the *Triffin dilemma*” (original italics) in *Europe and the Money Muddle*.

Table 1 – Gold Reserves and Dollar Holdings, 1938-1955

(in billions of US dollars, at the end of the year)

	1938	1949	1955
1. World (Gold)	**26.3**	**35.4**	**38.0**
2. United States (Net = A – B)	**12.4**	**16.3**	**6.5**
1. Gold	14.6	24.6	21.8
2. Dollar Balances	2.2	8.2	15.2
3. Other (Gold plus Dollar Holdings)	**13.8**	**19.1**	**31.5**
1. International	-	3.3	4.0
2. Foreign Countries	13.8	15.8	27.5
Of which:			
1. Continental Western Europe and Dependencies	7.3	6.3	13.6
2. Sterling Area	3.9	2.8	4.0

Source: compiled from Triffin 1957: 311

Somewhat further, Triffin explicitly used the word dilemma for this issue. He observed that an increase dollar balances, "in order to ward off monetary pressures toward deflation and trade restrictions would be bound, sooner or later, to overtax the strength of … the United States, and to endanger the acceptability of the dollar itself as a safe reserve medium for other countries". In discussing potential solutions "of this dilemma" (Triffin 1957: 299), Triffin pleaded for a reform of the international monetary system introducing a system of deposit accounts at the IMF. Moreover, as a "defense in depth" he argued for closer regional cooperation and integration.

In line with his earlier 1946 essay, *Central Banking and the International Economy*, Triffin emphasized in his conclusions that the enormous expansion of state intervention in economic life was incompatible with the restoration and maintenance of convertibility on the basis of uncoordinated national policies of independent sovereign states. "A collective organization and effective internationalization of the present gold exchange standard", he said "are particularly essential in this respect, if we are to eschew the well-known pitfalls unanimously denounced by economists and sadly demonstrated by events in the early 1930s" (Triffin 1957: 303). It is interesting to note that, for Triffin, the "fundamental dilemma of the twentieth century" was "the inadequacy of national sovereignty as a framework for policy decisions… in an interdependent world" (Triffin 1957: 303).

5. Gold and the Dollar Crisis

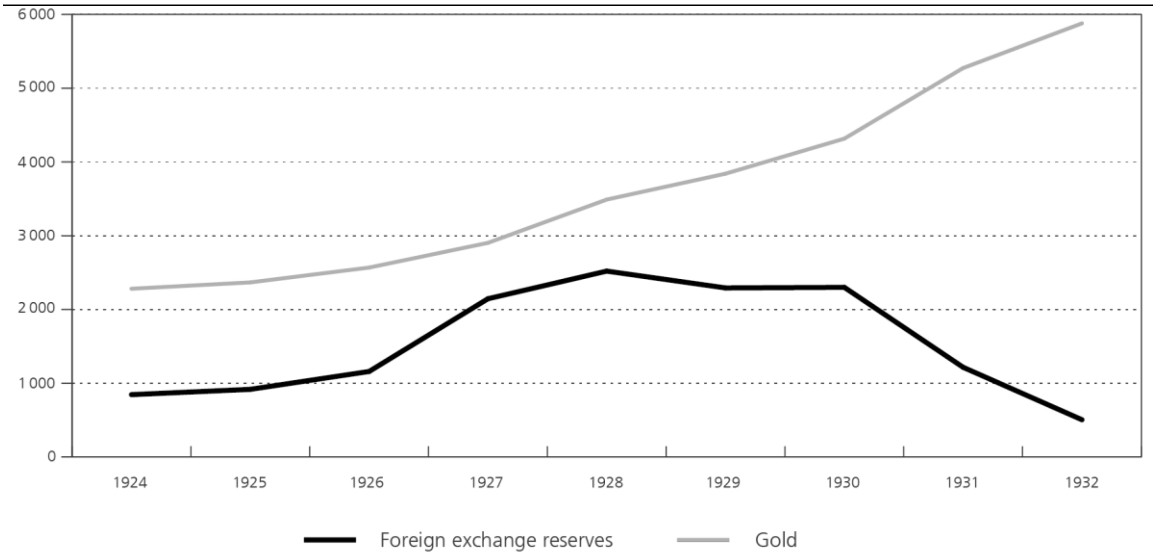
Triffin went on to elaborate the ideas of *Europe and the Money Muddle* in *Gold and the Dollar Crisis*, the book that made him famous and in which the collapse of sterling in the interwar period takes a crucial role. The main body of the book (published in 1960) reproduced, with only minor changes, the texts of two articles which Triffin had published in 1959 in the *Banca Nazionale del Lavoro Quarterly Review*, "The Return to Convertibility: 1926-1931, and 1958-…?, or Convertibility and the Morning After" (Triffin 1959a) and "Tomorrow's Convertibility: Aims and Means of International Monetary Policy" (Triffin 1959b).

Already from the title of the first article "The Return to Convertibility: 1926-1931, and 1958-…?, or Convertibility and the Morning After" it is clear that the 1931 devaluation of sterling plays a central role in Triffin's famous book. In the introduction of the article, Triffin focuses on international liquidity and the vulnerability of the international monetary system. For Triffin, these were two closely interrelated and urgent questions. His initial focus, in line with his earlier analyses, was on the level of international liquidity in the world economy, but this quickly led to a broader issue, "the vulnerability of a world monetary system whose operation becomes increasingly dependent on one or a few *national* currencies as major components of *international* monetary reserves" (Triffin 1960: 19, original italics). Triffin then observed that these same two problems were already causing "widespread concern" in the interwar period. Triffin referred to a series of reports of the Gold Delegation of the Financial Committee of the League of Nations in the early 1930s (including a book by Feliks Mlynarski) about the needs to economise on gold and to "palliate" the shortcomings of the gold exchange standard. He attacks the "complacency" of policy makers as one was returning to "the same unorganized gold exchange standard, on an even shakier basis than in the 1920's" (Triffin 1960: 20).

Consistent with his earlier analyses, Triffin made a distinction between two types of balance of payments deficits which had to be financed by international reserves. The first comprised reversible deficits, which reflected temporary fluctuations in foreign revenues and expenditures. The second case concerned fundamental disequilibria, calling for corrective action, but for which the adjustment would take time. This implied a need to finance temporary deficits. For someone so deeply affected by the experience of the 1930s, the alternative was gloomy. “In both cases, an insufficient level of reserves will force the deficit country to resort to otherwise unnecessary measures of deflation, devaluation or restrictions” (Triffin 1960: 34).

Figure 2 – Triffin’s Nightmare. Gold and Foreign Exchange Reserves, 1924-1932

(total for 24 countries, in millions of US dollar)



Source: Nurkse 1944: Annex 2.

As in his 1957 book, Triffin observed that the world's liquidity requirements were increasingly being met by the growth of foreign exchange reserves, especially dollar balances. He was exceedingly concerned by this. He again turned to the interwar period and the experience with the sterling exchange standard (see Figure 2). In his view, the growth of foreign exchange reserves during and after World War Two repeated, but on a much larger scale, their similar expansion after the First World War. Foreign exchange reserves had then risen from an estimated 16% of total reserves in 1913 to 38% of reserves in 1928. In Triffin's view, this trend was encouraged by policymakers at the international monetary conference in Genoa in the spring of 1922. An important reason was a shortage of gold. Triffin was especially critical of the role of the United Kingdom, “whose very low reserve position was considerably eased by foreign accumulation of sterling balances” (Triffin 1960: 56). The British return to convertibility in 1925 was thus significantly facilitated by the maintenance of short-term sterling balances by foreign countries in the London market. In Triffin’s view, this was a very fragile construction, as funds could move in and out due to changes in relative interest rates and/or changes in exchange rate expectations. Moreover, the return to gold at the pre-war rate made sterling highly vulnerable on the foreign exchange markets. The financial crisis of the 1930s put further pressure on the pound. “The final blow came in the summer of 1931, when the development of the world crisis put into difficulties the Credit Anstalt of Vienna, triggering a financial panic which spread rapidly throughout Central Europe and led to further and massive withdrawals of funds from London” (Triffin 1960: 57). The ensuing devaluation of sterling in September 1931 had devastating implications for the global monetary system and international liquidity. In Triffin’s view, it marked both the end of the gold exchange standard and an implosion of international liquidity. As Triffin described the process, “The conversion of pounds into gold and dollars was accompanied and followed by similar conversions of dollars into gold. The foreign exchange component of the world's monetary reserves was nearly wiped out in the process, except for the countries of the sterling area” (Triffin 1960: 57). This dramatic fall in international monetary liquidity contributed to the Great Depression.

By the end of the 1950s, Triffin was becoming more and more worried about the United States’ international reserve position, as the country was losing gold and its foreign dollar liabilities were increasing. Strongly influenced by the experience of the pound sterling in the 1930s, Triffin's view was that the continued deterioration in the US net reserve position would undermine foreigners' confidence in the dollar as a safe medium for reserve accumulation. “The time will certainly come, sooner or later”, he said, “when further accumulation of short-term foreign liabilities will either have to be slowed down or substantially matched by corresponding increases in our already bloated gold assets. If this were not done on our own initiative, foreign central banks would do it for us by stopping their own accumulation of dollar assets and requiring gold payment instead for their overall surplus with the United States" (Triffin 1960: 63). This was precisely the policy followed by Charles De Gaulle in France in the 1960s, under the influence of Jacques Rueff (Solomon 1977). For Triffin, the conclusion with regard to international liquidity was clear: "further increases in dollar balances cannot be relied upon to contribute substantially and indefinitely to the solution of the world illiquidity problem" (Triffin 1960: 63). So, in Triffin's eyes, the gold exchange standard was not sustainable, leading to his famous dilemma:

> The gold exchange standard may ... help in relieving a shortage of world monetary reserves. It does so only to the extent that the key currency countries are willing to let their net reserve position decline through increases in their own gross reserves. If they allow this to happen, however, and to continue indefinitely, they tend to bring about a collapse of the system itself through the gradual weakening of foreigners' confidence in the key currencies (Triffin 1960: 67).

Triffin did not fear a dollar collapse, but the return of a liquidity shortage and a repeat of the gloom and doom of the 1930s. In his view, the growing inadequacy of world reserves would lead to a "new cycle of international deflation, devaluation and restrictions, as it did after 1929" (Triffin 1960: 70).

One might naturally ask the question of whether Triffin was the first economist to come up with the "Triffin dilemma". Eichengreen (1992: 203) argued that Feliks Mlynarski had already formulated it in his 1929 book *Gold and Central Banks*. Mlynarski emphasized that the accumulation of foreign exchange reserves was the key feature of the gold exchange standard, but these reserves were "nothing other than an accumulation of short-term credits granted to foreign countries by the banks which apply this system" (Mlynarski 1929: 79). And, as foreign deposits were growing relative to the gold stocks of the reserve currencies, convertibility of the reserve currencies was threatened. Mlynarski (1929: 12) also observed that advocates of a "managed currency" like Keynes (1927) were concerned about certain vulnerabilities of the gold exchange standard, especially the "hoarding" of gold by France. That Triffin had forerunners should not be surprising as, as argued here, Triffin's thesis was strongly inspired by the experience of the interwar period, especially the collapse of sterling. As said earlier, Triffin (1960) had explicitly mentioned the work of Mlynarski.

Table 2 - International Reserves
1913-1958 (in $billions)

	1913	1928	1932	1938	1947	1949	1953	1957	1958
Gold	7.29	10.51	11.35	25.95	32.4	33.15	34.37	37.36	38.07
Foreign exchange	0.5	3.25	1	1.8	13.9	10.85	14.83	16.54	16.55
of which:									
Dollar				0.5	2	3.11	6.01	8.29	8.52
Sterling				1.3	12.15	7.41	7.03	6.14	6.77

Source: compiled from Triffin 1960, Table 14

A more general issue is how Triffin looked at the interwar monetary system. Did he still consider it as a sterling exchange standard? For Barry Eichengreen and Marc Flandreau the "conventional wisdom, epitomized by Triffin" was that sterling was the dominant reserve currency during the interwar period (Eichengreen and Flandreau 2009: 402). They challenge this and argue that sterling and the dollar broadly shared reserve currency status in the interwar period, with the French franc playing a minor role.[5] Their thesis is supported by new original archival research on the currency composition of central banks. According to their data, the dollar overtook sterling in the early 1920s, but, with the dollar devaluation in 1933, sterling became again the dominant reserve currency. They are very critical of Triffin (1960), who "offered a sharply contrasting view for 1928, namely that sterling's share of global foreign exchange reserves was in the order of 80 per cent" (Eichengreen and Flandreau 2009: 379).[6] We are a bit surprised at this. We did not find in Triffin (1960) a composition of foreign exchange reserves for 1928 (see Table 2). The earliest year for which Triffin (1960: 72) presented data is 1938. They show a share for sterling of about 70 per cent (as also

5 Also Keynes was on this line. In his *Tract on Monetary Reform* he observed that, except for Great Britain and the United States, no other countries should set up an independent standard, "Their wisest course would be to base their currencies either on sterling or on dollars by means of an exchange standard… holding reserves of gold at home and balances in London and New York" (Keynes, 1923: 159-160).

6 Eichengreen and Flandreau do not give a page reference as to where exactly they found this figure in Triffin (1960). We contacted them for further reference. Eichengreen admitted that he had been in charge of this part of the text and that he needed to have a closer look at it.

observed by Eichengreen and Flandreau). However, while Triffin has no data for the composition of foreign currency reserves before 1938, he provides data for dollar and sterling balances (Triffin 1960: 61, see Table 3). While these data on dollar and sterling balances are clearly not the same as data for foreign exchange reserves, it can still be interesting to have a look at them. They show that, in 1928, dollar balances were slightly higher than sterling balances (2.5 compared to 2.4 billion dollar). Thereafter, after the devaluation of sterling in 1931, they both went down sharply, but the dollar balances more strongly than the sterling balances. In 1932 sterling balances were higher than the dollar balances (1.4 compared to 0.7). In 1938, both sterling and dollar balances had increased, but sterling balances were more important (2.8 compared to 2.2, a share for sterling of 55 percent, compared to a sterling share in international reserves of 70 per cent). Moreover, these data seem consistent with Triffin's vision, as he had, in *Europe and the Money Muddle*, marked the first world war as a watershed and the beginning of dollar scarcity. The devaluation of sterling in 1931 was another watershed, leading to the implosion of the gold exchange standard. Sterling was, paradoxically, less hurt as a reserve currency, in part because countries of the Commonwealth maintained sterling balances. Triffin succinctly summarised his position: "Sterling, the dollar, and, subsidiarily, the French franc thus became the main reserve currencies in the 1920's" (Triffin 1960: 67), very much also the conclusion of Eichengreen and Flandreau.

Table 3 - The reserve position of the center countries
1928-1958 (in $billions)

	1928	1932	1938	1947	1949	1953	1957	1958
United States								
Gold Reserves	4.1	4	14.6	22.9	24.6	22.1	22.9	20.6
Dollar Balances	2.5	0.7	2.2	7.1	8.2	12.7	16.6	17.6
United Kingdom								
Gold and Dollar Reserves	0.7	0.6	2.9	2.2	1.8	2.5	2.4	3.1
Sterling Balances	2.4	1.4	2.8	15.7	10.4	11.2	10.9	11.1

Source: compiled from Triffin 1960, Table 13

6. Triffin on the Bretton Woods system in the 1960s

The sterling devaluation and the ensuing collapse of the gold-exchange standard remained key to Triffin's analysis of the 1960s Bretton Woods system. In October 1960, during the US presidential race, rumors of a change in US policy led to a panic buying of gold in the London market, with a spike in the price of gold from US$35 to US$40 per ounce and a speculative attack on dollar. In Triffin’s view, "a tragic repetition of the international monetary crisis unleashed in September, 1931 by the collapse of the sterling" (Triffin, 1968a, p. 35) was only just averted. However, according to Triffin, there were two major differences in the international monetary situation between the interwar period and the beginning of the 1960s. First, the world economy was in far better shape than it was in 1931, “and the overall economic and financial position of the United States is far stronger than that of 1931 Britain". Secondly, the policymakers were aware of the impact of a repetition of the 1931 policies on the international monetary system and had therefore developed modes of cooperation and had created both worldwide and regional monetary institutions “necessary to organize, on a durable basis, the functioning of an international monetary system adapted to the realities of the financial, economic, and political interdependence of their theoretically sovereign countries" (Triffin 1968a: 35).

International monetary cooperation was further reinforced after the October 1960 crisis with a wide array of defensive arrangements agreed between the central banks, both on bilateral basis and within the framework of the IMF, to support the stability of the two key reserve currencies, dollar and sterling. In 1961 the Gold Pool was created, whereby central banks intervened in the (private) London gold market to stabilize the price of gold. Moreover, a swap network between central banks was set up; it provided for reciprocal short term credits, so that central banks could dispose of a large supply of foreign currency to intervene in the foreign exchange markets. Furthermore, the so-called Roosa bonds were issued by the US Treasury, that is medium-term securities mainly offered to European central banks as an interest-bearing alternative to converting dollars into gold. Finally, in 1962, the General Agreements to Borrow, a line of credit from the most important industrialized countries of the IMS, were established (Bordo 1993: 58-59).

Later Triffin argued that with the international monetary cooperation throughout the 1960s the gold-exchange standard was transformed from a "spontaneously held credit reserves" to a "negotiated credit reserves" standard (Triffin 1972: 188). He recognized that the negotiated credit reserves standard had avoided a collapse of the various components of the international reserve pool (i.e. massive liquidation of sterling and dollar reserve balances and large scale transfers of gold from official reserves to private gold market), as well as a global liquidity shortage (by credit operations in the face of the drying up of new gold supplies to monetary authorities). Yet, he remained convinced that the IMS was not sustainable and that it rather became more prone to crisis. Most of the arrangements were "extremely precarious forms of financing" subject to continuous negotiations of short-term and medium-term credits between countries that would feed a speculative climate prompting destabilizing movements of funds which further aggravate the risks inherent in the gold exchange standard. Moreover, they conferred a "disproportionate political power" to major creditor and reserve-debtor countries "to distort the normal functioning of the so-called adjustment mechanism". As Triffin explained:

Creditor countries are legally entitled to decide whether to finance persistent deficits of the reserve-debtor countries and to switch at any time such financing from one country to another - converting, for instance, their sterling holdings into dollar holdings, or vice-versa - or to extract from them, in repayment of previously as well as currently accumulated claims, huge amounts of gold, far in excess of new world supplies and even of the debtor countries' outstanding gold stocks. The reserve debtors on the other hand - i.e. the United Kingdom and, primarily today, the United States - can use the threat of default and their enormous economic and political power to force weaker countries to finance their continuing deficits (Triffin 1972: 189).

In Triffin's view, the recurrent crises of sterling, starting from 1961, constituted a dangerous threat for a repetition of the 1931 crisis and the ensuing implosion of the gold exchange standard. He argued that, despite that sterling played only a secondary role as an international currency and it was held nearly exclusively by countries of the overseas sterling area (Triffin 1963 and Triffin 1969), it was still important for the stability of the IMS: “The indebtedness to foreign monetary authorities constituted a far greater threat to British liquidity than in former days, not only because of its size, but also because it was now far more vulnerable than formerly to withdrawal and liquidation”. He observed that the bulk of the sterling balances was held by countries which had gained their independence since the end of the war. “They were thus freer than before to draw on the bloated sterling balances they had been forced to accumulate during the war”. Moreover, these countries had to finance ambitious development plans and combat domestic inflationary forces. “The sterling component of the gold-exchange standard was thus even more vulnerable in 1958 than it had been on the eve of the 1931 debacle (Triffin, 1969: 11).

Triffin, following a type of “domino” theory (as the US was also applying in Vietnam), argued that the fate of sterling and dollar were intertwined

The stability of the dollar is thus far more vital to the world monetary system than that of the pound, but the two are inextricably linked. Nobody doubts that a devaluation of the dollar would quickly entail a sterling devaluation as well. It is almost equally obvious that any substantial devaluation of the pound would unleash speculative movements of funds from the dollar into sterling, on a scale that would present an almost irresistible danger for the dollar itself (Triffin 1963: 103).

From November 1964 sterling crises occurred almost constantly and they took a central place in Triffin's writings. According to Triffin, the crises sprang from two distinct, “but closely interrelated, root-causes": the recurrent deficits of the UK balance of payments and, as often emphasized by Triffin, the haphazardness and vulnerability of the world reserve system (Triffin 1965a: 341). Triffin, ever the empiricist, remarked that the two problems showed up in the fact that capital movements, rather than the current account, accounted for most of the overall deficits or reserve losses suffered by the United Kingdom from the end of the 1950s (see table below). He also noted that the current account surpluses in 1962 and 1963 were "uncomfortably small for a major financial, economic and political power, with vast responsibilities in the world". He further stressed that the deterioration of the current account in 1964 might reflect "in large part, speculative stockbuilding and other transactions stimulated by political uncertainties about the election, and the anticipation of import restrictions and/or ultimate devaluation of the pound" (Triffin, 1965a, p. 341).

Table 4 - Balance of Payments of the United Kingdom, 1958-1964
(years or yearly averages, in millions of US dollars)

	1958-60	1961	1962	1963	Jan.-Jun. 1964
I. Current Account and Official Capital	**-47**	**-154**	**28**	**61**	**-863**
A. Current Account	444	297	658	736	-130
B. Official Capital	-491	-451	-630	-675	-734
II. Private Capital*	**658**	**-845**	**836**	**-524**	**218**
III. Net Monetary Reserves**	**611**	**-1000**	**864**	**-462**	**-644**

*Including errors and omissions
** Gross monetary reserves minus indebtedness to IMF and foreign monetary authorities
Source: Triffin 1965b: 134

Triffin especially put emphasis on the role played by the "highly volatile movements of private capital" (Triffin, 1965a, p. 341). They reflected the speculators' perception of policy dilemma of the UK authorities - between the implementation of desirable domestic policy and the protection of sterling from international pressures (leading to so-called stop and go policies) - and hence of the financial fragility of the gold-exchange standard. The instability of the capital balance, particularly of short-term account, and its impact on the Britain's net reserve position emerged clearly in a table prepared by Triffin in which he distinguished between the years of improvement and those of deterioration in the settlements balance (Table 5).

Table 5 - The Role of Current Account and Capital Account Fluctuations in Year-to-Year Changes in Reserve Settlements (1959-1967) (in millions of pounds)

	Settlements balance	**Total Basic Balance**	***Current Account°***	***Long term capital***	**Total Short-term Capital**	***Sterling balance***	***Other***
Improvement of settlements balance	+ 2171	+16	-143	+159	+2155	+1082	+1073
1960	+376	-345	-396	+51	+721	+352	+369
1962	+654	-50	+120	-170	+704	+501	+203
1965	+533	+475	+322	+153	+58	+177	-119
Jan.-Sept. 1967	+608	-64	-189	+125	+672	+52	+620
Deterioration of settlements balance	-3916	-857	-746	-111	-3059	-1974	-1085
1959	-496	-260	-193	-67	-236	-167	-69
1961	-643	+521	+285	+236	-1164	-721	-443
1963	-472	-51	+9	-60	-421	-156	-265
1964	-502	-732	-479	-253	+230	-146	+376
1966	-408	205	+108	+97	-613	-227	-386

° Including seasonal adjustment
Source: Triffin 1969, Table 2 (our elaboration).

The sterling crisis between 1964 and 1966 elicited significant central banks interventions to avoid a devaluation of the British pound and score off further speculation on the exchange market, especially against the dollar (Cairncross & Eichengreen, 1983). Triffin argued that these rescue interventions should be considered as "tranquillizers rather than remedies, since any credits actually used will presumably have to be repaid with few months or, when transferred to the IMF, within a period of three or five years" (Triffin 1965b: 134). Moreover, he observed that they could even have strengthened the uneasiness of private speculators, “highly conscious of the continuous growth of US and UK indebtedness, legally convertible into gold on sight or short notice”. He further noted that central banks, could not give up this right to gold conversion “without exposing themselves to unreasonable risks and to an unlimited and inflationary financing of future US and UK deficits” (Triffin, 1965a, p. 342).

Triffin also warned about the impact of a sterling devaluation on the stability of the dollar. At his testimony at the US Congress in December 1966, he alerted the US authorities that the primary weakness of the Bretton Woods system was the increasing issue of dollars against a limited supply of gold, due to US inflationary policies to finance the Vietnam War and the Great Society program. Yet, he also emphasized the crucial position of the pound sterling:

Any substantial devaluation of sterling wou1d be widely viewed - and not only by speculators - as a sign that the "game is up" for the dollar as well. It would probably trigger vast outflows of funds to London, in view of the expectation that most other currencies would be bound to follow suit, at least partly, sooner or later. This would indeed be likely, and speculative funds would then move, on a large scale, from any non-devalued currencies to those that have devalued. While central bank cooperation could offset these private flows through opposite flows of reserve funds between the countries involved, it is difficult to imagine that it could be developed with sufficient speed and on a sufficient scale to deal adequately with the problem (Triffin 1966a: 10).

The scenario predicted by Triffin materialized in November 1967, when sterling was finally devalued. However, he observed that it did not lead to a currency war as in the 1930s: “For the first time in history, meaningful international consultations determined the new rate, prevented a spiraling of mutually defeating devaluations by other major countries, and elicited from them large credits in support of the new rate” (Triffin 1968b: 23).

Triffin further analysed the impact of both spontaneous liquidation of previously accumulated sterling balances and of the "negotiated" rescue operations in the sterling crises (Table 6). He broadly approximated the "negotiated" with the official sterling balances of Western Europe and North America ("Atlantic area"), and the "spontaneous" with the changes in other net sterling balances. He remarked that the small decline of sterling balances from January 1964 through September 1968 masked two very different movements: a sharp decline of $3,9 billion in spontaneously held balances and an increase of $3,6 billion on the sterling balances accumulated by the monetary authorities of the Atlantic area. And he concluded that the total amount of liquidation since the end of 1963 ($3,6 billion) far exceeded the reserves of Britain ($2,7 billion) and could not have been honored without the foreign assistance negotiated to finance them.

Table 6 - Sterling balances: 1957-September 1968
(billions of dollars)

	1957	**1963**	**Sept. 1967**	**Dec. 1967**	**Sept. 1968**	**1958-1963**	**1964-Sept.1968**
A. Gross £ liabilities to foreign monetary authorities	6,5	6,6	7,9	7,8	8,1	+0,1	+1,5
1. Sterling countries	5,1	5,3	5,1	4,2	3,6	+0,2	-1,8
2. Other countries	1,3	1,2	2,7	3,6	4,5	-0,1	+3,3
a. Atlantic Area	-	0,6	0,5	3,2	4,2	-	+3,6
b. Other countries	-	0,6	0,5	0,4	0,4	-	-0,3

Source: our elaboration of Triffin 1969, Table 3.

Yet, the sterling devaluation started a period of international instability, with strong speculative waves hitting the dollar and gold:

it unleashed an unprecedented wave of speculation and even greater doubts as to the survival of our international monetary system. Why? Market analysts take note of the failure of the devaluation to restore full confidence in the pound and bring back to London a substantial portion of the short-term funds that flew from it in the preceding weeks, months, or years. They see speculative unrest spreading from the pound to other currencies, and particularly to the dollar. Private gold purchases appear to have risen to record levels of possibly $1 billion, or more, in the month following the pound devaluation (Triffin 1968b: 23).

In Triffin's view, the basic issue that determined the ultimate outcome of the crisis was "the death throes of the present gold exchange standard", however, it was "aggravated and accelerated by the huge and persistent deficits of the two countries whose national currencies serve as international reserves for others, i.e. the United Kingdom, and primarily today the United States." (Triffin 1968b: 23).

The 1967 sterling devaluation marked also a shift in US policies towards a more self-serving approach to the IMS. The US adopted restrictions for protecting the dollar against a massive conversion into gold of dollar balances held by foreign countries. Yet, Triffin warned about the consequences of a nationalistic behaviour: "[n]ew troubles and spiralling restrictions are likely to be forced upon other countries by our measures, just as they were forced upon us by the aftermath of the British pound" (Triffin 1968b: 26). As well as he reminded that a suspension of dollar convertibility into gold or even a dollar standard – if the US succeeded in persuading or forcing foreign countries to maintain the dollar as a reserve currency - would finally lead to a "renewal of the divisive and destructive monetary and economic chaos of the 1930s" (Triffin 1968b: 25). However, in March 1968 the gold pool collapsed. It was a first step in the suspension of the convertibility of the dollar, as private investors would have to pay a higher (and fluctuating) price of gold, contrary to central banks which could still convert dollars into gold at the official price of 35 US dollars an ounce.

The Nixon Administration, inaugurated in January 1969, gave priority to domestic policy aims. At the end of the 1960s, there was a marked deterioration in the US balance of payments. US gold reserves declined while foreign dollar liabilities increased. "The Triffin dilemma was apparent for all to see" (Volcker with Harper 2018: 64). The spring of 1971 saw massive capital flows from the dollar to the German mark. By the end of 1970, inflation and unemployment increased, while the balance of payments heavily deteriorated. The spring of 1971 saw massive capital flows from the dollar to the German mark. Fearing inflation, Germany halted intervention and allowed the mark to appreciate. With a gold run looming, on August 15, 1971 Nixon suspended the gold convertibility of the dollar.

7. Triffin on the post-Bretton Woods system

For Triffin, the suspension of the gold convertibility of the dollar confirmed his prediction of the unsustainability of the Bretton Woods system. He again made the comparison with the devaluation of sterling in 1931, arguing that the “obvious shortcomings of the gold-exchange standard led to its predictable - and widely predicted - collapse on August 15, 1971, 40 years nearly to the day after its previous downfall on September 21, 1931” (Triffin 1978a: 54).

In an article written for the *Bulletin de la Banque Nationale de Belgique* in November 1971, Triffin outlined a parallel between the aftermath of August 1971 and September 1931. He argued that protectionist reactions could be unavoidable in the various countries affected by exchange rate uncertainties and trade restrictions. But, he underlined that the danger of deflationary policies was "pratiquement nul" and that competitive devaluations were not an immediate danger, as compared to what happened in the aftermath of the September 1931 sterling crisis. However, he warned that, "ceci n'est qu'un encouragement précaire, car les 'politiques' risquent fort d'être partout frustées et dépassées par des événements échappant au contrôle d'autorités nationales agissant séparément en ordre dispersé" (Triffin 1971: 5). Moreover, in Triffin's view, countries which were highly dependent on foreign markets were especially vulnerable. This all might result in a burst of protectionism and restrictions on trade and imports, aimed both at preserving the domestic market for national producers and at mitigating the impact of national policies on the balance of payments and level of reserves. He emphasised that these measures could be contagious, « appelant, inévitablement des mesures de défense et de représailles qui aggravent les difficultés de chacun" (Triffin 1973: 5). Finally, Triffin stressed that « plus angoissante encore pour les autorités monétaires » was the complete disappearance of an international reserve currency « Le dollar bénéficiat hier à cet égard d'un monopole quasi absolu, dépassant de loin le rôle de la livre sterling à la veille de septembre 1931. Le dollar est devenu soudainement une monnaie-papier, inconvertible non seulement en or, mais en autres devises, droit de tirage spéciaux, ou tout autre instrument généralement acceptable. Les banques centrales peuvent-elles se résigner à accroître encore les montagnes de dollars-papier déversés sur elles? (Triffin 1971: 5).

Triffin was convinced that the question could only have a negative answer. Yet, in reality the dollar extended its influence. World reserves were increasingly expressed in dollars and the dollar remained important as an intervention currency too. The dollar also continued to play a dominant role in trade invoicing and the international capital markets. From March 1973 currencies were left to float freely (a practice then legitimized with the Jamaica Agreement and the Second amendment to the IMF Articles of Agreements in 1976). This meant the end of the gold-exchange standard as established by the Bretton Woods agreement. However, against Triffin's prediction, inflation and not deflation became the fundamental policy problem of the ensuing decades (De Grauwe, 1989).

Triffin remained a 'hedgehog' and steadfastly defended his viewpoint. The Triffin dilemma continued to be the basic tool of his analysis of the IMS. Yet, he adapted some of his views over time. While he continued to stress the irresponsibility of US policies from the mid-1960s onward in the increase in world liquidity, he acknowledged that he "was totally wrong in underestimating the duration and the size of the U.S. deficits that foreign central bankers would be willing to absorb, at the cost of an inflationary explosion of world monetary reserves and of a multiple expansion of the money supply in their countries under the traditional system of fractional reserve requirements." (Triffin 1978b: 4). Triffin gave various reasons why he had underestimated the willingness of central banks to keep dollars. Certainly, "US political pressures on unwilling dollar accumulators - the threat, for instance, to withdraw US troops from Germany, if Germany withdrew gold from Fort Knox", played a part in the process. Yet he believed that "other types of motivation were probably more important" (Triffin 1978b: 5). Firstly, the "merely bureaucratic routine, inherited from the days of the dollar shortage, and the convenience with which foreign central banks could invest their surpluses in the hugest financial market in the world". Secondly, the "fear of rocking the boat" and of relapsing into the 1930s, when the refusal to maintain sterling as reserve currency led to world depression. Thirdly, the "reluctance to accept the appreciation of its exchange rate" that would follow from a country's refusal to accumulate dollars, with the consequent deterioration of the country's competitiveness in world trade.

Triffin also remarked that the post-Bretton Woods monetary system - which he would call "a paper dollar standard" (Triffin 1978b: 9) - led to severe inflationary effects. There were several reasons for this. Firstly, the adoption of floating exchange rates had not restrained the "inflationary proclivities of the system". On the contrary, the elimination of the stigma of devaluation had weakened the resistance of policymakers to inflationary policies, not only in US but also in other countries.

Practically all countries of the world (...) shared in these reserve increases, enabling some of them to pursue inflationary policies of their own without the usual sanction and restraint of reserve depletion, and make it next to impossible for others, more averse to inflation, to offset fully through domestic credit contraction the inflationary impact of their foreign exchange purchases (Triffin 1978a: 53).

Secondly, the "paper dollar standard" had further stimulated the increase in international liquidity in the world economy. In Triffin's view, the role of foreign branches of US banks in Europe was particularly striking in this process. Accordingly, he, ever the empiricist, enlarged the concept of international liquidity that he was using to incorporate the Euro dollar market.

The international paper-dollar standard has become even more distasteful and unbearable to foreign dollar accumulators than the pre-1971 gold-dollar standard. The flooding of world reserves by dollar and Eurodollar overflows caused them to double over the past years 1969-72 an to redouble over the years 1973-1977. Central banks so called 'stabilization' interventions in the exchange markets absorbed these overflows, but at the cost of 'high power' reserve money issues of their national currency, multiplied by their commercial banks under traditional fractional-reserve practices (Triffin 1978b: 9).

Table 7 - The Inflationary Explosion of International Liquidity, 1969-1977
(in billions of dollars, end of year)

	1969	1972	1977
Foreign dollar claims	**78**	**146**	**363**
On US government and banks	49	85	210
On foreign branches of US banks	29	61	153
International monetary reserves	**79**	**159**	**319**
Foreign exchange	33	104	244
Dollars and Eurodollars	20	81	197
Other currencies	7	15	27
Other	7	8	22
Other*	46	55	75
Commercial bank foreign liabilities	**121**	**217**	**658**
In dollars and Eurodollars	94	157	481
In other currencies	27	60	177

*World monetary gold, SDR allocations, and IMF loans and investments.
Source: Triffin 1978a: 4

Triffin's policy conclusion was clear: "[t]he control of international liquidity must encompass not only three components of official world reserves (gold, foreign exchange, and SDRs or other reserve deposits at the IMF) but also the mushrooming of commercial bank lending" (Triffin 1978b: 11).

Thirdly, a dollar-anchored system of reserve creation increased the inequalities between rich and poor countries. In Triffin's own words, it led "nearly automatically to their investment in the United States and a few other rich countries, rather than in the countries most in need of foreign capital. (...) In the area that is - or should be - most amenable to their influence and control, national and international monetary authorities do exactly the opposite of what they preach: they foster capital investments, not in the poorer countries most in need of capital, but in the richest, most capitalized countries" (Triffin 1978a: 54).

Triffin further argued that, contrary to Friedman's argument, floating rates were not playing their equilibrating role on the foreign exchange markets, due to capital movements. Instead they "have tended ... to amplify anticipatory capital movements: *overcorrecting* exchange rates well beyond what would be needed" (Triffin 1978b: 13, original italics).

In his policy recommendation, Triffin referred tirelessly to his proposal for an international reserve currency and urged that the SDRs should be substituted as rapidly as possible for gold and national reserve currencies (Triffin 1978a; Triffin 1978b). This would permit the IMF to adjust the creation of international reserves to the optimal noninflationary potential of world trade and production.

However, he was also aware of the reluctance of the major countries to resume the drive of the reform of the IMS started in 1967. His reflection, especially in the 1980s, focused on the politics of international monetary matters, an aspect that as he admitted he had been slow to understand: "I belatedly woke up - after my old friend and once collaborator, Fred Boyer de la Giroday - to the fact that major international monetary reforms have always been dictated by political, far more than by economic considerations" (Triffin, 1987, p. 28). On this basis in the acceptance lecture of the Frank E. Seidman Distinguished Award in Political Economy in 1988 entitled "The Intermixture of Politics and Economics in the World Monetary Scandal: Diagnosis and Prescription", Triffin began with a political analysis of the IMS explaining that a political excursion should not be regarded as what Schumpeter dubbed a "Ricardian sin", that is an inadmissible digression from the only field of competence of an economist, economics. He was rather convinced that "[e]conomists are also citizens and cannot remain silent on political issues that are in fact at the root of the world economic crisis of the last 20 years" (Triffin 1989: 7).

In his last articles Triffin recognised that the US played a political and economic hegemonic role that was largely accepted and supported by the other countries. Triffin deemed that the reluctance of US to abandon its "exorbitant privilege" "had to be expected" (Triffin 1989: 8). The possibility of financing most of the US deficits through the acceptance of the dollar as an international settlements medium - by foreign central banks, commercial banks and other international investors - reduced the US need for unpopular tax increases or reductions in expenditures. He believed that "the major blame" should be put on the other countries "for being persistently willing to extend such financing to the US" (Triffin 1989: 8). Triffin identified three reasons that explained their consensus to the paper dollar standard. Firstly, "by bureaucratic routine, the negotiating difficulties of agreeing on an alternative world currency to be created *ex nihilo* and the reluctance of foreign firms in competition with US firms at home or abroad to abandon the advantage derived by them from the resulting 'overvaluation' of the dollar" (Triffin 1989: 8). Secondly, the disadvantages of the US 'exorbitant privilege' were mainly confined to a few countries with large surpluses, primarily Japan, Germany and the newly industrialized countries (the so-called NICs). Thirdly, the other countries' "dependence on the US nuclear umbrella as a crucial contribution to their own defense against the Soviet aggression or blackmail" (Triffin 1989: 9).

8. Conclusion

The 1931 devaluation of the pound sterling takes a central place in Triffin’s *Gold and the Dollar Crisis* and the so-called “Triffin dilemma” is very much inspired by the ensuing implosion of the gold exchange standard in the 1930s. In this paper we focused on Triffin’s views on the pound sterling throughout his career.

The young Robert Triffin, who was responsible for the calculations for the Belgian franc devaluation in 1935, was concerned with the impact of the sterling devaluation on the Belgian economy. He focused on finding an appropriate benchmark for calculating the devaluation percentage to restore the competitiveness of the Belgian economy (also avoiding an undervaluation of the Belgian franc).

Triffin produced a first important work on the international monetary system in 1946, *National Central Banking and the International Economy*. It is striking that in this work he did not discuss at all the 1931 sterling devaluation and the ensuing implosion of the gold exchange standard. In 1957, Triffin published his book *Europe and the Money Muddle*. The 1931 devaluation and the weaknesses of the gold exchange standard only come to the fore, a bit accidentally, in the concluding chapter He also brings in this book a first formulation of the Triffin dilemma. The sterling devaluation and the implosion of the gold exchange standard take centre place in *Gold and the Dollar Crisis*. They remain key to his analysis in his writings in the 1960s. Moreover, the recurring sterling crises in the 1960s placed considerable stress on the Bretton Woods system.

The collapse of the Bretton Woods system did not happen in the way Triffin had predicted (an implosion of the international reserve component of international liquidity, leading to a worldwide deflation). Not deflation became the problem but inflation. Triffin had to admit that he had completely underestimated the willingness of central bankers to keep dollar balances, a strong contrast with the 1930s. A question is naturally why there was no fall in dollar liabilities. Two main reasons can be advanced: geopolitics and the dominance of the dollar as a reserve currency in the postwar period. The postwar period was marked by the cold war. The United States was the leader of the Western world and provided a security shield, which was especially important for Germany and Japan. Both countries had lost the second world war and were dependent on the US for their security against the communist world. Geopolitical reasons were an important factor why these countries, which had important balance of payments surpluses, did not convert their dollar balances in gold. This contrasted with the attitude of France which, both in the interwar and the postwar period, converted dollars into gold (De Gaulle also insisted on the physical repatriation of the French gold to Paris with a French warship, a clear indication of the geopolitical importance of gold). However, the French balance of payments surpluses in the postwar period were more limited. Moreover, also from an economic and financial perspective was the United States the dominant country in the postwar period. This contrasted with the interwar period when no single country could really claim economic leadership and both the dollar and sterling functioned as international currencies. The postwar dominance of the dollar as an international currency, with important network effects, gave the United States a greater degree of freedom to pursue its own domestic policies. Central bankers had not many alternatives for their reserve management than the deep and liquid United States financial markets, especially the US government bond market, where the safe asset of the postwar world was traded.

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