IV. International Monetary System

1. Dollar hegemony, Bretton Woods I, Bretton Woods II

International monetary systems

Macroeconomics claims to study economies as a whole, but actually the economies studied are national economies. These economies are characterized by a territory with a unique government and a single currency.

The global (planetary) economy looks like a very different entity: several sovereign territories (and governments) coexist with several currencies.

The more integrated national economies become, the more they are closer to a 'national economy'. There is no prospect that integration will be political: for generations a global government is something that probably awaits in a distant future. In return attempts to (de iure or de facto) unify currencies have been welcomed or, at least, not openly oposed.

An international monetary system is simply the basic monetary and financial organization that aims to extend or adapt globally the monetary and financial kind of organization that are customary at the national level. Google's description seems fine:

> "An international monetary system is the framework of rules, institutions, and agreements that govern a country's financial interactions with other nations, facilitating international trade, investment, and the flow of capital by managing exchange rates and balance of payments. This framework ensures that cross-border payments are possible, provides sufficient liquidity for global economic activity, and offers mechanisms to correct global imbalances. Historically, major systems include the Gold Standard, the Bretton Woods system, and the current floating exchange rate system."

Everything taken for granted in a national economy is not guaranteed at the global level. In a domestic economy, seller and buyer share currency and financial regulations. In the global economy, seller and buyer from different national currencies may not agree on which currency to be used in a transaction, nor the rights or obligations involved in the transactions, nor the competent jurisdiction to resolve disagreements. Moreover, at a national level, it almost never is a concern whether some territories run a surplus (get paid more than they pay) against others; at the global level, this is one of the fundamental concerns: it is regarded as problematic that some national economy systematically runs a (current account) deficit against the rest of the world.

Since the global economy lacks a global currency, the basic issue that an international monetary system has to address is how to address that lack. There are two basic strategies: one, to solve the problem 'regionally' by creating a new common currency for a few countries (that is, to establish a monetary union, the eurozone being an example); two, to pick a national currency and give that currency, de facto, a global status (a national currency acting as a global reserve currency). Since after World War II the international monetary system has adopted the second strategy, with the dollar serving as the dominant global currency: for the last 80 years, the dollar has become the 'anchor' of the international monetary system.

For more details, and how the euro fares against the dollar, see Drazen Rakic & Leonardo Antonini (2025): "Global currency dominance in the 21st century: where does the euro stand?", EGOV, https://www.europarl.europa.eu/RegData/etudes/IDAN/2025/773690/ECTI_IDA(2025)773690_EN.pdf.

The 'exorbitant privilege'

Given that a national currency is given global status, the international monetary system so created is asymmetric. The country providing the global reserve currency enjoys a structural foreign demand for its currency[1] from which the members of that country benefit. Wikipedia lists some effects of this 'exorbitant privilege'.

- "Lower Borrowing Costs: The US can borrow at lower interest rates because there is a high demand for dollar-denominated assets.
- Trade Deficits: The US can run larger trade deficits without facing a balance of payments crisis, as its imports are purchased in its own currency.
- Currency Stability: The dollar's status provides domestic stability and liquidity in global markets.
- Economic Influence: The US has greater influence over global economic policies and financial markets.
- Global Financial Stability: Since many countries hold reserves in US dollars, any significant shift in the value of the dollar can affect global financial stability.
- Geopolitical Power: The dominance of the dollar enhances the US's geopolitical influence, as many countries rely on it for international transactions.
- Export Consequences: A stronger dollar can make US exports more expensive and less competitive in global markets.
- Capital Flows: The US experiences significant inflows of foreign investment.
- Monetary Policy Autonomy: The Federal Reserve has greater flexibility in setting monetary policy without worrying as much about the immediate effect on exchange rates or capital flows."

https://en.wikipedia.org/wiki/Exorbitant_privilege

Currency global dominance, and hence the exorbitant privilege, seem to be self-reinforcing: the more the time a currency is dominant, the more everything (norms, institutions, behaviour, policies, expectations…) adapts to this dominance, so that changing the dominant currency could be so costly that it does not pay to replace the current dominant currency (even if a better alternative emerges). That describes the current situation: probably no one likes the dollar dominance, but either there is

[1] Being a global currency, the domestic currency now fulfils the three quintessential money properties: international unit of account, international means of payment and international store of value. So values are internationally measured in dollars, international markets for products and commodities set prices in dollars and foreign investors looking for safe investment outlets consider first financial assets denominated in the global reserve currency (typically issued by residents in the country that offers its currency as the global currency).

no obviously better alternative or the cost of the transition to the alternative is too high. Keeping the current arrangement is the lesser evil[2].

What could induce a replacement of global currency? Most likely a global catastrophic event: a global geopolitical conflict, a global economic or financial crisis, a global natural disaster…

The gold standard

The gold standard was a gold-based international monetary system, consolidated between 1880 and 1914 (World War I put an end to the system)[3]; see Wikipedia (2025): "Gold standard", https://en.wikipedia.org/wiki/Gold_standard.

At the beginning of the 19th century, Great Britain launched the gold standard as the international monetary system, to which more countries gradually adhered. The gold standard required each country to fix the value of its currency in relation to gold and to guarantee the conversion of the currency into gold. The gold standard:

- implied fixed exchange rates, which facilitated international exchanges and reduced uncertainty about the value of foreign currencies;
- limited the growth of the quantity of money, since the gold stock would act as a cap on the quantity of money;
- guaranteed the convertibility of the currency into gold;
- guaranteed the free international circulation of gold;
- was associated with an automatic balance of payments adjustment mechanism (a country with a current account deficit[4] would experience an outflow of gold, which would decrease the quantity of money, which would cause deflation[5], which would improve competitiveness, which would reduce the deficit) and an expectation (that monetary policy would help in the adjustment process: the country that was losing gold was expected to raise the interest rate to attract the gold that had left in excess).

The period between World War I and World War II is characterized by international monetary disorder and discoordination. The attempt to recover the gold standard was not successful. During the period, hyperinflation, economic depressions, banking crises occurred… Protectionist measures were extended and flexible exchange rate systems were adopted. Economic, financial and geopolitical hegemony passed from Great Britain to the US.

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[2] Ronald McKinnon expressed thus our submission to the dictatorship of the dollar: "Nobody may love the dollar standard, but it is too valuable to lose and too difficult to replace", Ronald I. McKinnon (2010): "Rehabilitating the unloved dollar standard', Working Paper 419, Stanford Center for International Development.

[3] For more detailed information on the gold standar and subsequent international monetary systems see Ronald I. McKinnon (1996): *The rules of the game: international money and exchange rates*, MIT Press.

[4] The value of the purchases of goods and services abroad is larger than the value of sales of goods and services abroad.

[5] 'Less money chasing the same goods' raises the value of money in terms of goods, which is equivalent to the goods losing value in terms of money, which means falling prices of goods, which is deflation.

The dollar-gold standard

The Bretton Woods Conference in July 1944 attempted to reorganize the international monetary system so that the macroeconomic policy mistakes made after World War I (intransigent creditor countries, currency wars) will not be repeated after World War II.

The Wikipedia article, https://en.wikipedia.org/wiki/Bretton_Woods_system, is clear:

> "When many of the same experts who observed the 1930s became the architects of a new, unified, post-war system at Bretton Woods, their guiding principles became 'no more beggar thy neighbor' and 'control flows of speculative financial capital'. Preventing a repetition of this process of competitive devaluations was desired, but in a way that would not force debtor countries to contract their industrial bases by keeping interest rates at a level high enough to attract foreign bank deposits."
>
> "The Bretton Woods system was the first example of a fully negotiated monetary order intended to govern monetary relations among independent states. The Bretton Woods system required countries to guarantee convertibility of their currencies into U.S. dollars to within 1% of fixed parity rates, with the dollar convertible to gold bullion for foreign governments and central banks at US$35 per troy ounce of fine gold (or 0.88867 gram fine gold per dollar). It also envisioned greater cooperation among countries in order to prevent future competitive devaluations, and thus established the International Monetary Fund (IMF) to monitor exchange rates and lend reserve currencies to countries with balance of payments deficits."

The Bretton Woods system (1944-1971; fully functional 1958-1971) put the dollar at the centre but, due to gold standard nostalgia, also required the dollar to be tied to gold.

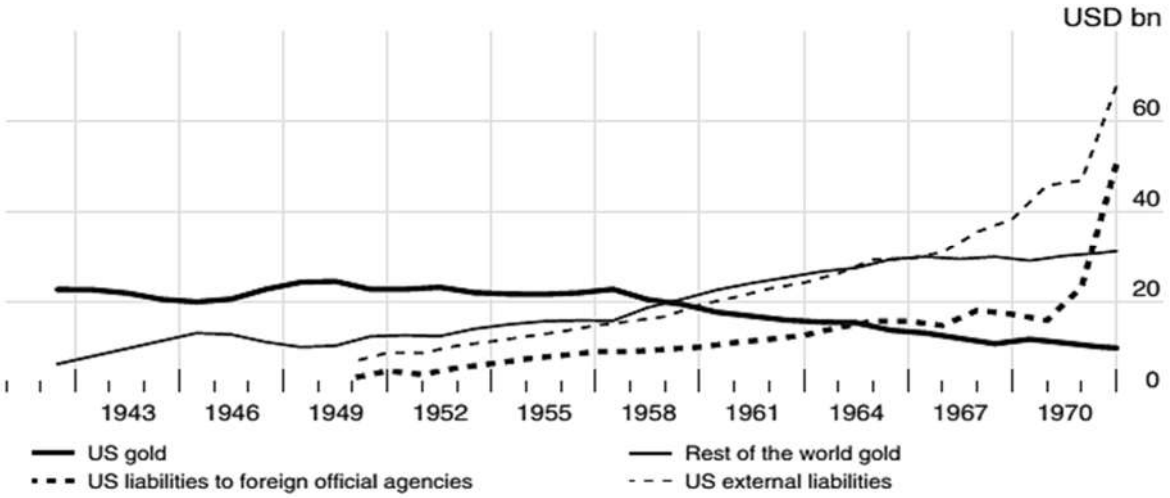
- It was an international monetary system for 44 capitalist economies (China and the Soviet Union were left out) built on the basis of ensuring the stability of exchange rates and avoiding the need to carry out competitive devaluations as in the 1930s (devaluations that ended up being detrimental to everyone).
- The US government was responsible for ensuring the stability of the system through a fixed exchange rate regime: a gold standard based on the dollar.
- All participants in the system had to establish a fixed, but adjustable, rate with the dollar.
- The dollar maintained a fixed exchange rate with gold: the US government undertook to exchange dollars for gold at the price of 35 dollars per ounce of gold.
- The other countries were responsible for maintainin , with an appropriate mix of economic policies, parity with the dollar within a permitted fluctuation range (a percentage up or down with respect to the fixed rate with the dollar).

https://www.federalreservehistory.org/essays/bretton-woods-created
https://www.federalreservehistory.org/essays/bretton-woods-launched

The dollar standard

The Bretton Woods system apparently died of success: the economic growth of countries under the auspices of US economic and financial leadership created an overabundance of dollars outside the US (due to insufficiently controlled growth in the demand by consumers, businesses and the US government for foreign goods and services) which depreciated its value in terms of gold and thus encouraged the conversion of dollars into gold.

The graph below illustrates the end of Bretton Woods: gold moved from the US to other countries until, in August 1971, US President Richard Nixon said enough was enough with depleting US gold reserves and canceled the US commitment to convert the dollar into gold.



The period of capitalist expansion coinciding with the Bretton Woods period has been called 'The Long Boom' or 'The Golden Age of Capitalism'. It was the most successful period in terms of economic development, extension of the welfare state, wage growth and control of economic inequality (a success that was concentrated in the countries of the global North, which reinforced the North-South economic division of the world).

The period following the collapse of Bretton Woods (1971-1990) has been called 'The Great Contraction': a couple of decades of system absence, exchange rate instability, speculative episodes and currency crises, low economic growth, inflationary tensions, distributional conflicts (internal, with increased unemployment, and external, associated with increased energy prices) and political instability (due to the inability of governments to resolve distributional conflicts). That period was a sort of 'no system' period: old rules were abandoned and the new ones were still being defined.

The International Monetary System since 1971 can be considered, in essence, the same as Bretton Woods: the dollar remains the centre of the system (the global reserve currency) but now gold plays no role and exchange rates can be flexible.

Problems of the Bretton Woods system

"It took close to 15 years to get the Bretton Woods system fully operating. As it evolved into a gold dollar standard, the three big problems of the interwar gold exchange standard re-emerged: adjustment, confidence, and liquidity problems."

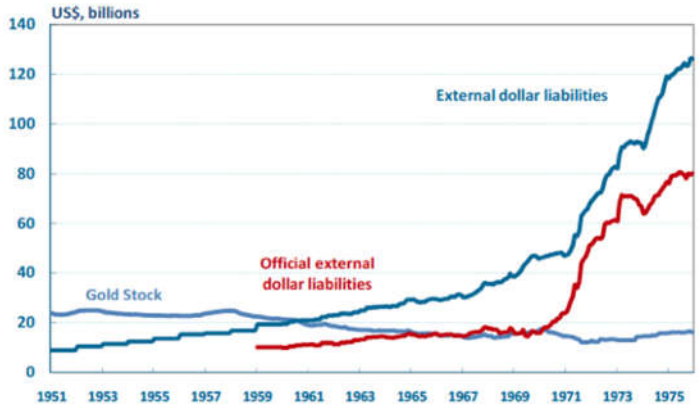
"The *adjustment* problem in Bretton Woods reflected downward rigidity in wages and prices which prevented the normal price adjustment of the gold standard price specie flow mechanism to operate. Consequently, payment deficits would be associated with rising unemployment and recessions. This was the problem faced by the UK, which alternated between expansionary monetary and fiscal policy, and then in the face of a currency crisis, austerity – a policy referred to as 'stop-go'. For countries in surplus, inflationary pressure would ensure, which they would try to block by sterilization and capital controls.

A second aspect of the adjustment problem was asymmetric adjustment between the US and the rest of the world. In the pegged exchange rate system, the US served as central reserve country and did not have to adjust to its balance of payments deficit."

"The US monetary authorities began to worry about the balance of payments deficit because of its effect on *confidence*. As official dollar liabilities held abroad mounted with successive deficits, the likelihood increased that these dollars would be converted into gold and that the US monetary gold stock would eventually reach a point low enough to trigger a run . Indeed by 1959, the US monetary gold stock equaled total external dollar liabilities, and the rest of the world's monetary gold stock exceeded that of the US. By 1964, official dollar liabilities held by foreign monetary authorities exceeded that of the US monetary gold stock."

"A second source of concern was the dollar's role in providing *liquidity* to the rest of the world . Elimination of the US balance of payments deficits (as the French and Germans were urging) could create a global liquidity shortage. There was much concern through the 1960s as to how to provide this liquidity.

Robert Triffin (1960) captured the problems in his famous dilemma. Because the Bretton Woods parities, which were declared in the 1940s, had undervalued the price of gold, gold production would be insufficient to provide the resources to finance the growth of global trade. The shortfall would be met by capital outflows from the US, manifest in its balance of payments deficit. Triffin posited that as outstanding US dollar liabilities mounted, they would increase the likelihood of a classic bank run when the rest of the world's monetary authorities would convert their dollar holdings into gold (…) Triffin's solution was to create a form of global liquidity like Keynes' (1943) bancor to act as a substitute for US dollars in international reserves."



US gold stock and external liabilities, 1951-1975

"The main threat to the system as a whole was the Triffin problem, which was exacerbated after 1965 by expansionary US monetary and fiscal policy which led to rising inflation (…) A key force that led to the breakdown of Bretton Woods was the rise in inflation in the US that began in 1965 (…) Increasing US monetary growth led to rising inflation, which spread to the rest of the world through growing US balance of payments deficits (…) A key reason for Bretton Woods' collapse was the inflationary monetary policy that was inappropriate for the key currency country of the

system. The Bretton Woods system was based on rules, the most important of which was to follow monetary and fiscal policies consistent with the official peg. The US violated this rule."

Bordo, Michael D. (2017) "The operation and demise of the Bretton Woods system: 1958 to 1971", NBER, Working Paper No 23189.
https://cepr.org/voxeu/columns/operation-and-demise-bretton-woods-system-1958-1971

Bretton Woods II

The period following the Great Contraction (1990 to either the present or the recent past) has been called 'Bretton Woods II'. The most notable event that defines Bretton Woods II is the rise of China, an economic rival of the US with the potential to make the renminbi a global competitor to the dollar (a task in which the euro has failed). Throughout Bretton Woods II, a kind of symbiosis has been established between the US and China: the US has a massive external deficit in relation to China and China uses the dollars from its surplus with the US to buy US financial assets (mainly public debt).

Both the dollar (as the global reserve currency) and Bretton Woods II (the 'system' the dollar dominates) are in very poor health. The financial crisis of 2008 onwards seemed at the time to end both, but it did not.

The main factor behind the crisis of Bretton Woods I was the loss of credibility in the commitment of US authorities to keep consistent macroeconomic policies, conducive to stability. Even though a trade deficit in the US was an essential component of the system, in order to provide liquidity to satisfy a growing demand of dollar denominated assets when Europe and Japan were growing and catching up with the US, the US authorities failed to realize that excessive expansion of domestic demand was injecting more liquidity in the world economy than what was consistent with stability.

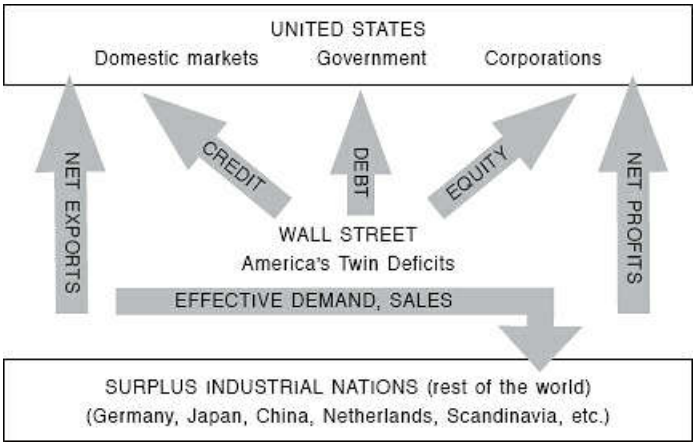
The global financial crisis of 2008 seemed to repeat history with Bretton Woods II: too much debt was fabricated in the US that ended up flooding the world.

Global minotaur hypothesis

"I might have called this book The Global Vacuum Cleaner, a term that captures quite well the main feature of the second post-war phase that began in 1971 with an audacious strategic decision by the US authorities: instead of reducing the twin deficits that had been building up in the late 1960s (the budget deficit of the US government and the trade deficit of the American economy), America's top policy makers decided to increase both deficits liberally and intentionally. And who would pay for the red ink? Simple: the rest of the world! How? By means of a permanent tsunami of capital that rushed ceaselessly across the two great oceans to finance America's twin deficits. The twin deficits of the US economy thus operated for decades like a giant vacuum cleaner, absorbing other people's surplus goods and capital (…) it did give rise to something resembling global balance: an international system of rapidly accelerating asymmetrical financial and trade flows capable of creating a semblance of stability and steady growth. Powered by America's twin deficits, the world's leading surplus economies (e.g. Germany, Japan and, later, China) kept churning out goods that Americans gobbled up. Almost 70 per cent of the profits made globally by these countries were then transferred back to

the United States, in the form of capital flows to Wall Street. And what did Wall Street do with them? It instantly turned these capital inflows into direct investments, shares, new financial instruments, new and old forms of loans and, last but not least, a 'nice little earner' for the bankers themselves. Through this prism, everything seems to make more sense: the rise of financialization, the triumph of greed, the retreat of regulators, the domination of the Anglo-Celtic growth model (…) The role of the beast was played by America's twin deficits, and the tribute took the form of incoming goods and capital."

"Central to this global surplus recycling mechanism (GSRM), which I have likened to a Global Minotaur, were the two gargantuan deficits of the United States: the trade deficit and the federal government budget deficit. Without them, the book argues, the global circular flow of goods and capital (see diagram below) would not have 'closed', destabilizing the global economy. This recycling system broke down because Wall Street took advantage of its central position in it to build colossal pyramids of private money on the back of the net profits flowing into the United States from the rest of the world. The process of private money minting by Wall Street's banks, also known as financialisation, added much energy to the recycling scheme, as it oozed oodles of new financial vitality, thus fuelling an ever-accelerating level of demand within the United States, in Europe (whose banks soon jumped onto the private money-minting bandwagon) and Asia. Alas, it also brought about its demise."



"… the Crisis did not alter the deficit position of the United States. The federal budget deficit more or less doubled while America's trade deficit, after an initial fall, stabilised at the same level. However, the US deficits are no longer capable of maintaining the mechanism that keeps the global flows of goods and profits balanced at a planetary level. Whereas until 2008 America was able to draw into the country mountains of net imports of goods, and a similar volume of capital flows (so that the two balanced out), this is no longer happening post-2008. American markets are sucking 24 per cent fewer net imports (thus generating only 66 per cent of the demand that the rest of the world was used to before the Crash) and are attracting into the American private sector 57% less capital than they would have had Wall Street not collapsed in 2008.

In short, of the mighty Global Minotaur, the only reminder that remains is the still accelerating flow of foreign capital into America's public debt (…), evidence that the world is in disarray and money is desperately seeking safe haven in the bosom of the reserve currency in this age of tumult. But as long as the Rest of the World is reducing its injection of capital into America's corporate sector and real estate, while America is reducing its imports of their net exports, we can be certain that the beast is dead and nothing has taken its place."

"Europe is disintegrating because its architecture was simply not sound enough to sustain the shockwaves caused by our Minotaur's death throes (…) For two years now, the German public has

become convinced that Germany has escaped the worst of the Crisis because of the German people's virtuous embracing of thriftiness and hard work; in contrast to the spendthrift Southerners (…) This mindset goes hand in hand with a moral righteousness which implants into good people's hearts and minds a penchant for exacting punishment on the grasshoppers – even if punishing them also punishes themselves (to some extent). It also goes hand in hand with a radical misunderstanding of what kept the eurozone healthy and Germany in surplus prior to 2008: that is, the Global Minotaur whose demand-generation antics were for decades allowing countries like Germany and the Netherlands to remain net exporters of capital and consumer goods within and without the eurozone (while importing US-sourced demand for their goods from the eurozone's periphery). Interestingly, one of the great secrets of the post-2008 period is that the Minotaur's death adversely affected aggregate demand in the eurozone's surplus countries (Germany, the Netherlands, Austria and Finland) more than it did the deficit member states (like Italy, Spain, Ireland, Portugal and Greece)."

"To recap, the Minotaur's surplus recycling was essential to the maintenance of the eurozone's faulty edifice. Once it vanished from the scene, the European common currency area would either be redesigned or it would enter a long, painful period of disintegration. An unwillingness by the surplus countries to accept that, in the post-Minotaur world, some other form of surplus recycling is necessary (and that some of their own surpluses must also be subject to such recycling) is the reason why Europe is looking like a case of alchemy-in-reverse: for whereas the alchemist strove to turn lead into gold, Europe's reverse alchemists began with gold (an integration project that was the pride of its elites) but will soon end up with the institutional equivalent of lead."

Varoufakis, Yanis (2015): *The global minotaur: America, Europe and the future of the global economy*, Zed Books.

Bretton Woods III? BRICS I?

The 2008 global financial crisis was originated in the US. This raised doubts as to whether the dollar could still be trusted as a global currency, just like after the 1971 decision of the US government to reject the gold convertibility compromise. The imposition of sanctions by the US government against geopolitical rivals or enemies (notably Russia after the 2022 invasion of Ukraine) and, under the Trump administrations, the breaking of international rules by unilaterally setting or increasing tariffs (and initiating trade wars), made clear to rising powers (the BRICS, originally Brazil, Russia, India, China and South Africa[6]) that the US no longer was behaving as a benevolent dictator or, at least, as a reliable hegemon. All these events suggested that submission to the dollar dominance was increasingly costly: the dollar dominance does not guarantee financial stability, nor fairness, nor respect for globally accepted rules.

In this regard, Zoltan Pozsar (2022) declared that we are entering Bretton Woods III:

[6] BRICS has recently expanded to BRICS+ by including Egypt, Ethiopia, Indonesia, Iran and United Arab Emirates. The share of BRICS+ in the world economy rivals G7's (G7: Canada, France, Germany, Italy, Japan, UK and US); https://en.wikipedia.org/wiki/BRICS.

"We are witnessing the birth of Bretton Woods III – a new world (monetary) order centered around commodity-based currencies in the East that will likely weaken the Eurodollar system and also contribute to inflationary forces in the West.

A crisis is unfolding. A crisis of commodities. Commodities are collateral, and collateral is money, and this crisis is about the rising allure of outside money over inside money. Bretton Woods II was built on inside money, and its foundations crumbled a week ago when the G7 seized Russia's FX reserves…"

"This crisis is not like anything we have seen since President Nixon took the U.S. dollar off gold in 1971 – the end of the era of commodity-based money. When this crisis (and war) is over, the U.S. dollar should be much weaker and, on the flipside, the renminbi much stronger, backed by a basket of commodities. From the Bretton Woods era backed by gold bullion, to Bretton Woods II backed by inside money (Treasuries with un-hedgeable confiscation risks), to Bretton Woods III backed by outside money (gold bullion and other commodities).

After this war is over, 'money' will never be the same again…

…and Bitcoin (if it still exists then) will probably benefit from all this."

Zoltan Pozsar (2022): "Bretton Woods III", Credit Suisse Economics
https://static.bullionstar.com/blogs/uploads/2022/03/Bretton-Woods-III-Zoltan-Pozsar.pdf

What a viable IMS demands

The international monetary system is currently characterized by a centre (developed countries) and a periphery that uses as reserve assets from the centre. The viability of this system depends on its participants to obtain from it what they want or need. Jeanne (2012) identifies three necessary conditions for the viability:

- the centre must provide liquid and safe assets;
- in a sufficient amount to meet the international demand; and
- providing a satisfactory return (global stable store of value).

The US has been playing a central role in the international monetary system . Will it continue to do so and for long? The 2008 financial crisis questioned the safety and liquidity of US assets. It is not clear whether the US economy will be strong enough to meet a rising demand for international liquidity. And the decisions by the US authorities on the return on the dollar (the US interest rate) are solely based on domestic considerations and do not take into account whether the decisions ensure that the dollar remains an international stable store of value. Despite all this, it does not appear likely that, in the near future, the international monetary system will become more multipolar (with the central role of the dollar shared with other currencies, like the euro or the renminbi, or replaced by the IMF's Special Drawing Rights).

Jeanne, Olivier (2012): "The dollar and its discontents", Journal of International Money and Finance 31, 1976-1989.

Why the dollar still rules

"The principle [*sic*] reason why the dollar remains the dominant international currency is that the United States has so far fulfilled three functions in the global monetary system:

(1) having open and highly developed financial markets that generate an adequate supply of liquid assets;

(2) having a central bank that more or less maintains the value of these assets;

(3) running current account deficits that allow it to play the role of global consumer-of-last-resort."

"There are two reasons to doubt that the ECB's relatively conservative monetary policy increased the attractiveness of the euro over the dollar. First (...) the ECB's refusal to buy more sovereign debt securities impaired the liquidity of European financial markets and the ability of the Eurozone to supply safe assets to the global monetary system. If there is one lesson to be drawn from the GFC [Global Financial Crisis] and the Eurozone crisis for the link between monetary policy and international currency status, it is that sovereign debt can lose its quality as a safe asset when it is not backstopped by the central bank (…). Second, the ECB's relative conservative monetary policy stance has prevented the Eurozone from playing a greater role in the generation of global demand."

Vermeiren, Mattias (2014): *Power and imbalances in the Global Monetary System: A comparative capitalism perspective*, Palgrave Macmillan UK.

Chimerica

Before the 2008 global financial crisis, 'Chimerica' designated the symbiotic relationship between China and the US: the Chinese produced and the Americans consumed.

"In the 1990s, despite concerns over China's human rights violations and American domestic manufacturing jobs, the U.S. renewed China's 'most-favored-nation' trade status year after year after intensive lobbying by big business and the Chinese government.

This marked the beginning of what analysts call 'Chimerica' — a symbiotic relationship where China produced and Americans consumed. For over two decades, both countries prioritized economic growth and cheap consumption while disregarding labor and human rights violations, environmental damage, and the integrity of quality and design.

U.S. politicians were happy to make moral compromises to fuel the economy — until the very relationship that served these interests began to threaten them. By the 2010s, China's economy had grown powerful enough to challenge American global dominance. Its clothing manufacturing industry became the largest in the world, and its tech industry became increasingly competitive."

Stella Cammack (2025): "Can Ordinary People Rewrite the U.S.-China Relationship?", FPIF https://fpif.org/can-ordinary-people-rewrite-the-u-s-china-relationship/

"The US emerged from the two world wars to become the economically and politically dominant core state. The US specialized in the production of the most advanced goods, which involves the

use of the most sophisticated technologies and capital-intensive production. The postwar international monetary order, the dual-peg exchange rates or the gold exchange standard, placed the dollar as the single core currency of the international monetary system (...) Nevertheless, after the late 1960s the US no longer held a significant economic advantage over its major allies in the sphere of world production (…) After 1971, the Bretton Woods system was de facto replaced by a regime of freely floating fiat currencies that remains in place to the present day (…) The principal benefits the US enjoyed from the dollar's status as the dominant international currency were: the ability to run balance-of-payment deficits that others could not, the willingness of foreign official institutions to purchase and hold US government bonds, and the related and crucial discretion of the Federal Reserve to implement expansionary monetary policy to stimulate a recessionary economy or inflate away debts (…) In this sense, the manufacturing disadvantages and the trade deficits of the US in the global economy were offset by the exorbitant privilege of the dollar in the post-Bretton Woods monetary order, which perpetuated the US's position as the core of the world economy (…) The dollar's core status in the international monetary system is the centerpiece of the US's core status in the international system."

"…the US and China have formed a symbiotic relationship because of the dollar's core status in the international monetary system and China's excessive manufacturing capacity and dependence on foreign markets (...) China in the twenty-first century has been committed to export-oriented growth based on maintaining a low exchange rate (...) The result was the continuous expansion of China's foreign exchange reserves. China used part of these foreign reserves to purchase US Treasury bonds in order to finance American balance-of-payment deficits. On the one hand, China repressed its own domestic consumption and exported large quantities of inexpensive goods, which helped reduce US inflation and stimulate US consumption. On the other hand, China's massive purchase of US Treasury bonds helped lower their yields and bring down US interest rates, as another effort to secure the continuous increase of US demand for China's exports (…) It is estimated that about two-thirds of China's reserves are held in the form of dollar debt (…) The US and China have formed a symbiotic relationship in the capitalist world economy since the 1990s: the US consumes China's cheap exports, paying China in dollars, and China holds US dollars and bonds, in fact lending money to the US."

"China, as a semi-periphery, is more vulnerable in the symbiotic relationship of its own making (...) Were China to dump its dollar reserves and destabilize the world economy, it would definitely hurt itself as well as the US. China would not only lose much of the value of its reserves with the falling dollar, but would also jeopardize Americans' ability and willingness to continue to import Chinese goods, which would probably give rise to job loss and social instability in China. On the other hand, China's vulnerability can be seen in the enormous difficulties faced by its manufacturing exports after the global financial crisis (…) Therefore, it is more appropriate to describe the US–China economic relationship as symbiotic but asymmetric."

"Here arises the question of why the dollar remains the preeminent currency in the international monetary system despite the relative American economic decline and the obvious flaw of dollar hegemony. Eichengreen provides a simple but compelling answer: 'The dollar's dominance was supported by a lack of alternatives.'"

"Despite the rapid development of RMB [renminbi, the Chinese currency] internationalization, it is also worth noting that for the time being the inconvertibility of the RMB, as well as China's capital account control, both impose severe restrictions on the RMB's role as an international reserve currency. Therefore, the internationalization of the RMB is not expected to dethrone the dollar as the key international reserve currency in the foreseeable future (…) The growing roles of the euro and the RMB in the global economy indicate that the unipolar, dollar-based monetary system is evolving into a multipolar currency system that will exercise better discipline over the fiat currencies in the international monetary order."

"It is not in China's interest to take extreme measures to destabilize or overthrow the existing world order (…) it is still more appropriate to describe China as a 'dissatisfied responsible great power.' China's incremental reforms in both domestic and international domains after the global crisis reveal that China as a rising power is no longer a rule-taker, accepting the status quo with regard to the current arrangement of international monetary order. Rather, China is better viewed as some combination of a rule-maker (promoting global reforms of existing arrangements) and a rule-breaker (in that it is creating its own arrangements)."

Wang, Zhaohui (2017): "The economic rise of China: Rule-taker, rule-maker, or rule-breaker?", Asian Survey 57(4), 595-617.

Attributes of an international reserve currency

According to Barry Eichengreen, a currency must possess three attributes to be internationally adopted in commercial and financial international transactions and held as a reserve by central banks and governments.

- Scale: the country that issues the currency must conduct a sufficiently large amount of transactions with the rest of the world.
- Stability: the currency's users must believe that the value of the currency is sufficiently stable for the currency to perform well the functions of medium of exchange and deposit of value.
- Liquidity : financial assets denominated in the currency are available in sufficient quantities to be sold and bought, without the currency's value being significantly affected.

The country whose currency becomes internationalized must develop an economy which is significantly open and integrated with the rest of the world (open capital account), a reputation for financial (economic, political) stability and liquid markets in assets denominated in the currency.

Eichengreen, Barry (2011): *Exorbitant privilege: The rise and fall of the dollar and the future of the International Monetary System*, Oxford University Press, New York.

De-dollarization

"The U.S. dollar is the world's primary reserve currency, and it is also the most widely used currency for trade and other international transactions. However, its hegemony has come into question in recent times due to geopolitical and geostrategic shifts (…) In short, de-dollarization entails a significant reduction in the use of dollars in world trade and financial transactions, decreasing national, institutional and corporate demand for the greenback."

"There are two main factors that could erode the dollar's status. The first includes adverse events that undermine the perceived safety and stability of the greenback — and the U.S.'s overall standing as the world's leading economic, political and military power. For instance, increased polarization in the U.S. could jeopardize its governance, which underpins its role as a global safe haven. Ongoing U.S. tariff policy could also cause investors to lose confidence in American assets.

The second factor involves positive developments outside the U.S. that boost the credibility of alternative currencies — economic and political reforms in China, for example. 'A candidate reserve currency must be perceived as safe and stable and must provide a source of liquidity that is sufficient to meet growing global demand,' said Alexander Wise, who covers Long-Term Strategy at J.P. Morgan.

Fundamentally, de-dollarization could shift the balance of power among countries, and this could, in turn, reshape the global economy and markets."

JP Morgan (2025): "De-dollarization: Is the US dollar losing its dominance?"
https://www.jpmorgan.com/insights/global-research/currencies/de-dollarization

IMS: present and future

• Does reform cause instability?

"The monetary system was reshaped in the mid-1940s in the aftermath of the Second World War and again in the early 1970s after the first oil price shock. In both cases, global disruption shook the monetary system and caused prolonged instability. The question now is whether the current system of floating currency blocs with dollar-based trade and reserves can withstand the strains of the global adjustment ahead. It is time to consider alternatives for the IMS and to address the issue of its governance within the context of the postcrisis world economy. The IMS is where tensions from globalization—and the conflict between domestic policy goals and international obligations—tend to coalesce."

• Towards a multi-currency system?

"In the US, domestic priorities for growth and employment may lead to an attitude of 'benign neglect' vis-à-vis the dollar, which generally results in a weaker dollar. The current strength of the US currency, which reflects global risk aversion, with investors attracted to the dollar because of its role as key reserve currency, undermines this stance. Meanwhile, China—now the world's largest exporter as well as the largest holder of dollar assets—faces inflationary pressures as a result of keeping its currency anchored to the dollar, yet fears the instability and losses in reserve values that a loosening of the link would entail. China is also creating tensions by keeping its currency undervalued while preparing for its internationalization (…) At the same time, it has clearly shown the euro area's unwillingness to take the burden—and responsibility—that goes with issuing the world's second reserve currency. In this context, dialogue and policy cooperation play an important role in helping these countries to coordinate their efforts and rebalance the world economy. Policy cooperation should aim to avoid any protectionist reaction to exchange rate movements. It should also help prepare the ground for a smooth transition to a multi-currency system by fostering the

exchange of information among the world's main trading areas. That the system—or non-system—was no longer adequate, given the complexity of a burgeoning world economy, has been clear for some time."

"… in today's larger and more integrated world economy the dependence on the dollar as the basis of both trade flows and financial reserves has clearly become excessive, creating a system that is fundamentally unbalanced (…) The existing IMS needs to evolve into a multicurrency system in which a number of international currencies, ideally representing the main trading areas, have the functions of storing value and providing the unit of measure. A multicurrency system would respond more flexibly to the demand for liquidity and would provide a way to diversify the accumulation of reserve assets. Such a system would be better suited to a multipolar world economy."

Subacchi, Paola (2010): "Who is in control of the international monetary system?", International Affairs 86(3), 665-680.

• Power redistribution

"Major developments have dramatically shifted the distribution of power in the system. Many have noted that power is now more widely diffused, both among states and between states and societal actors. Finance is no longer dominated by a few national governments at the apex of the global order. Less frequently remarked is the fact that the diffusion of power has been mainly in the dimension of autonomy, rather than influence (…) While more actors have gained a degree of insulation from outside pressures, few as yet are able to exercise greater authority to shape events or outcomes. Leadership in the system thus has been dispersed rather than relocated—a pattern of change in the geopolitics of finance that might be called *leaderless* diffusion. A pattern of leaderless diffusion generates greater ambiguity in prevailing governance structures. Rule-setting in monetary relations increasingly relies not on negotiations among a few powerful states but rather on the evolution of custom and usage among growing numbers of autonomous agents—regular patterns of behaviour that develop from longstanding practice."

"The diffusion of power, however, has been mainly in the dimension of autonomy, rather than influence—a pattern of leaderless diffusion in financial geopolitics. The days of concentrated power in a largely state-centric system are now over. Three major developments share principal responsibility for this change: (1) the creation of the euro; (2) the widening of global payments imbalances; and (3) the globalization of financial markets."

"The dynamics of power and governance in global finance today are indeed changing. A leaderless diffusion of power is generating greater uncertainty about the underlying rules of the game. At the state level, governments increasingly question the need for a strictly national currency. At the systemic level, governance now relies more on custom and usage, rather than intergovernmental negotiation, to define standards of behaviour."

Cohen, Benjamin J. (2008): "The international monetary system: diffusion and ambiguity", International Affairs 84(3), 455-470.

2. The Triffin dilemma and other financial trilemmas

A general global/national trilemma

There are many instances of a trilemma involving

- the achievement of global goals,
- the achievement of national goals,
- the use of national tools (policies, institutions) to achieve all the goals.

The explanation is that, as a rule, national goals tend to be in conflict with global goals and if both are entrusted to national governments (or are implemented through national policies) then the most likely outcome is that governments will give priority to the achievement of national goals.

For instance, the 1997 Kyoto Protocol was an international treaty under which industrialized countries accepted to reduce their greenhouse gas emissions. It was replaced by the 2015 Paris Agreement on climate change. Yet, one world's largest emitters, the US, refused to ratify the Protocol and ceased participation in the Agreement (on 1 June 2017). In both cases the reasons adduced were damage to the national economy: 'America first'.

> "… the Kyoto Protocol failed to equate emissions reductions with economic opportunity and some countries grew to view mitigation as a costly punishment. Following this line of reasoning the US Senate refused to ratify the Kyoto Protocol, citing potential damage to the US economy as their motive, setting a precedent for countries such as Canada and Japan to pull out of the deal without penalty in 2011 and providing a serious setback on the agreements effectiveness."

https://www.climateforesight.eu/articles/success-or-failure-the-kyoto-protocols-troubled-legacy/

> "The United States must grow its economy and maintain jobs for its citizens while playing a leadership role in global efforts to protect the environment (…) It is the policy of my Administration to put the interests of the United States and the American people first in the development and negotiation of any international agreements with the potential to damage or stifle the American economy. These agreements must not unduly or unfairly burden the United States (…) The United States Ambassador to the United Nations shall immediately submit formal written notification of the United States' withdrawal from the Paris Agreement under the United Nations Framework Convention on Climate Change."

https://www.whitehouse.gov/presidential-actions/2025/01/putting-america-first-in-international-environmental-agreements/

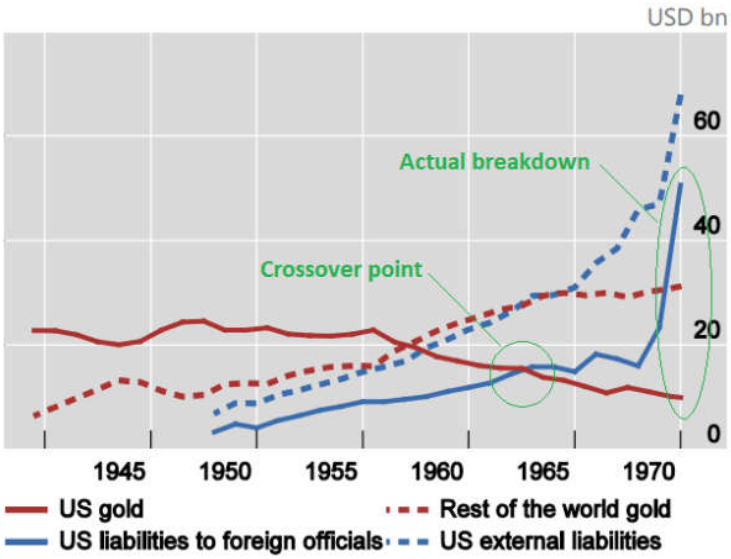
The Triffin dilemma

Economist Robert Triffin predicted in 1960 the end of the Bretton Woods system, which relied on the credibility of the commitment of dollar convertibility into gold. Triffin argued that the system faced a dilemma. On the one hand, to meet the international liquidity needs (which were growing with an expansionary world economy), a sufficient amount of dollars should circulate; that is, foreign dollar balances should increase. But, on the

Robert Triffin

other, a large and growing proportion of foreign dollar balances with respect to US gold reserves threatens the credibility of the convertibility commitment. Hence, if the US international liabilities grew too slowly, global trade would be restrained and deflation may ensue; but, to satisfy the demands of a growing international trade, if the US international liabilities grew too much, the dollar would lose value against gold and a run on the US gold stock will precipitate the downfall of the system. The chart on the right illustrates (again) how the Bretton Woods system broke down: an increasing gap between US liabilities capable of being converted into gold and the US gold reserves.

US liabilities to foreign officials and US monetary gold, 1940-1971



Specifically, in the context of the Bretton Woods international monetary system the Triffin dilemma asserts that there is a tension between

- satisfying an increasing international demand for dollars (the global goal of sufficient international liquidity) and
- keeping the US commitment of convertibility of dollars into gold at a fixed rate of 35 dollars per ounce of gold (the US domestic goal of preserving the value of dollars in gold).

The Triffin dilemma identifies the following structural problem in the Bretton Woods international monetary system. The US trade deficit was the source of global liquidity. If the US stopped running a trade deficit, then the global liquidity shortage would cause a global recession. If the trade deficit continued, global liquidity would become excessive ('a dollar glut'), confidence in the value of the dollar would be eroded and the dollar would cease to be accepted as the global currency.

Triffin, Robert (1960): Gold and the dollar crisis: The future of convertibility , Yale University Press.

IMF: "Triffin's dilemma", https://www.imf.org/external/np/exr/center/mm/eng/mm_sc_03.htm.

> "Many economists and government officials have concluded that the unipolar, dollar-based monetary system is seriously flawed. Belgian-American economist Robert Triffin pointed out in the 1960s that an international monetary system based on the currency of one country cannot sustainably deliver both liquidity and confidence. More specifically, the continuous growth of the world economy demands a steady stream of dollars, which requires the US to run balance-of-payments deficits. However, excessive US deficits erode people's confidence in the dollar's value (convertible into gold at a fixed price). This inherent conflict between the dollar's role as the world's reserve currency and the declining confidence in the dollar in the postwar international monetary system is called the Triffin dilemma. Though the Triffin dilemma was

directed against the Bretton Woods monetary system, it remains valid for today's international monetary system. The modern version posits that the massive amount of dollars created by the US authorities to satisfy world demand is inconsistent with people's confidence in the dollar's value (convertible into a fixed basket of US goods and services)."

Wang, Zhaohui (2017): "The economic rise of China: Rule-taker, rule-maker, or rule-breaker?", Asian Survey 57(4), 595-617.

The Triffin dilemma as a trilemma

Since the Triffin dilemma presumes that both goals (enough global liquidity and guaranteed convertibility of dollars into gold) are to be achieved with a domestic instrument (the US national currency), it could be formulated as a trilemma (and, actually, as a particular case of the general global/national trilemma).

The Triffin trilemma would claim the existence of a tension between

- the provision of enough global liquidity,
- the convertibility of dollars into gold (at a given fixed rate) and
- the use of the dollar as the global reserve currency.

Thus, one cannot expect from a national currency to simultaneously and sustainably provide global liquidity and preserve the confidence in the currency as a global currency. The first goal (supply abundant liquidity) is associated with running an increasing current account deficit, which threatens the second goal (the achievement of domestic goals may force the adoption of measures to stop the deficit growth).

Consequently, given a relatively fixed amount of gold, trying to achieve the first goal with an increasing demand for global liquidity threatens the credibility of the convertibility commitment. As in a bank run, the perception that the amount of dollars in the global economy is excessive in relation to the US gold reserves will cause a massive demand for converting dollars into gold. The implicit prediction in the Triffin dilemma is that convertibility (not the use of the dollar as a global currency) will be sacrificed.

A new Triffin dilemma and trilemma

The essential tension expressed by the Triffin dilemma seems to remain still valid. As a result, a new Triffin dilemma has been formulated, which claims that there is a tension between

- satisfying an increasing international demand for dollars and
- preserving the purchasing power of dollars.

It therefore seems difficult to reconcile the provision of massive amounts of dollars to satisfy the global demand for liquidity (which is related to the means of payment function of any form of money) and keeping a stable value of the dollar (associated with the store of value function). As in the original Triffin dilemma, a national currency cannot provide liquidity and confidence (in the currency's value) for long.

The above dilemma could be formulated as a trilemma opposing

- trust in the dollar as a stable store of value;
- trust in the US (government and/or economy) to guarantee dollar stability;
- trust in the dollar as a global reserve currency (meaning that one believes that everybody else trusts the dollar as a stable store of value).

A general Triffin dilemma

Tommaso Padoa-Schioppa (2010) suggested a Triffin general dilemma:

"En l'absence d'une autorité publique qui oeuvre pour 'ce qui est bon pour le monde', la simple moyenne de politiques conduites avec des objectifs nationaux ne peut produire ce bien public mondial que constitue une ancre monétaire stable à l'échelon mondial. En conclusion, il n'existe aucune piste pour contourner la nécessité d'une structure de policy qui ancre le standard global à un objectif de stabilité mondiale."

["In the absence of a public authority that works for 'what is good for the world', the simple average of policies conducted with national objectives cannot produce this global public good that constitutes a stable monetary anchor at the global level. In conclusion, there is no way to circumvent the need for a policy structure that anchors the global standard to an objective of global stability."]

"What we might call Triffin's 'general dilemma' can thus be expressed as follows: the stability requirements of the system as a whole are inconsistent with the pursuit of economic and monetary policy forged solely on the basis of domestic rationales in all monetary regimes devoid of some form of supranationality."

The Triffin general dilemma can be viewed as another instance of the general global/national trilemma because it postulates the tension between

- the stability of an international monetary system (the global goal),
- the lack of supranational tools (so domestic tools are used in a rather uncoordinated manner), and
- the use mainly of domestic policies to achieve all goals.

This analysis is connected with Jan Tinbergen's basic rule of economic policy: use at least as many policy tools as policy goals. For the trilemma just above (or the general trilemma at the beginning) to fail a single instrument (domestic tools) must in general be capable of delivering two goals (the domestic and the global ones). Tinbergen's rule says that one should not expect to always kill two birds with one stone.

Padoa-Schioppa, T. (2010): "L'ombre de Bancor: la crise et le désordre monétaire mondial", https://institutdelors.eu/publications/lombre-de-bancor-la-crise-et-le-desordre-monetaire-mondial-discours-de-tommaso-padoa-schioppa/ .

Padoa-Schioppa, T. (2010): "The ghost of Bancor: The economic crisis and global monetary disorder", Louvain–la–Neuve, 25 February 2010.

Fundamental problems of the IMS – I New Triffin dilemmas

Padoa-Schioppa's general Triffin dilemma ("the stability requirements of the system as a whole are inconsistent with the pursuit of economic and monetary policy forged solely on the basis of domestic rationales in all monetary regimes devoid of some form of supranationality") is one the current fundamental problems of the international monetary system.

The US monetary policy has strongly influenced global monetary conditions; yet, this policy has almost always been conducted without taking into account its international repercussions. In general, the US uses its privileged economic status to its own advantage, letting the rest bear the costs of the collateral effects the US decisions cause abroad (the global financial crisis, started around mid-2007 in the US, could be a case at hand; the collapse of the Bretton Woods system, another).

> "In the last few years, the relative decline of the economy of the United States and the presumed decline of the dollar as an international currency have led scholars to formulate new versions of the Triffin dilemma. The fear is that in the face of a growing demand for currency reserves, mainly from emerging countries, the supply of reserve instruments in dollars, in particular, treasury bonds, will not be able to increase at the same pace. Two different explanations have been provided for this process. The first, closer to the original version of the Triffin dilemma, maintains that the creation of international liquidity by the United States is due to its large and persistent current account deficits (…). Over time, the persistence of these deficits and the corresponding rise in US debt will result in mistrust in the solvency of the United States and its dollar. In this view, the shortage of international liquidity goes hand in hand with the decline in the dollar's standing as an international currency. In another recent version of the Triffin dilemma, the prospect of a lack of international liquidity is due to the fact that, even if US foreign accounts were in balance, the importance of the US economy within the world economy is decreasing. Correspondingly, the impact of US government deficits (and of the securities issued to cover them) on the world economy is decreasing. It follows that the supply of US Treasuries will result in being inadequate to meet demand (…). The two recent versions of the Triffin dilemma may take different paths, but they both come to the same conclusion, namely, that in the coming decades, the world economy will be marked by a shortage of international liquidity and high levels of deflation."

Seghezza, Elena (2018): "Can swap line arrangements help solve the Triffin dilemma? How?", World Economics, DOI: 10.1111/twec.12669.

The safe assets dilemma

The original Triffin dilemma can be seen as presenting a medium to long-run incompatibility between growth and stability: the unbalanced growth of a monetary magnitude (the amount of dollars outside the US economy) generates systemic monetary instability (collapse of an international monetary system based on the dollar a global currency).

The safe assets dilemma by Bordo and McCauley (2017) is another example of economic instability caused by unsustainable growth. The Triffin dilemma claims that the global demand for a stock (US international official liabilities) would outgrow the US official holdings of another stock (gold).

The safe assets dilemma holds that the global demand for another stock (US Treasury liabilities) would outgrow a flow (the US GDP, a flow that provides the taxes that the conventional approach to macroeconomics sees as necessary to service the Treasury's debt; by contrast, Modern Monetary Theory contends that a government running a debt in its own currency has no financial constraint and that taxes are not a funding device but a tool to regulate aggregate demand and inflation).

In sum, the safe assets dilemma identifies a tension between

- satisfying an increasing international demand for a safe dollar-denominated asset (US public debt) and
- trusting the ability of the US economy to generate funds to repay the US public debt.

Bordo, Michael; Robert McCauley (2017): "A global shortage of safe assets: A new Triffin Dilemma?", Atlantic Economic Journal 45(4), 443-451.

The open economy trilemma actually a dilemma?

Remind the open economy trilemma by Robert Mundell and Marcus Fleming: it is hard to impossible to reconcile the policy goals of

- financial integration (money is free to leave or enter the economy: currency markets are not controlled);
- monetary independence (the domestic price of money, the interest rate, can be freely chosen); and
- exchange rate stability (the foreign price of money, the exchange rate, is held fixed).

The uncovered interest rate parity condition (UIRPC) justifies the trilemma. According to UIRPC, in the absence of a risk premium, speculation makes the expected rate of appreciation E^e of the domestic currency against a foreign currency approximately equal to the difference between the foreign interest rate i^* and the domestic interest rate i. Speculation requires currencies to be bought and sold without constraints. Hence, by UIRPC , financial integration ensures that $E^e \approx i^* - i$. In addition, exchange rate stability implies that no appreciation (nor depreciation) of the domestic currency should be expected; that is, $E^e = 0$. It then follows from financial integration and exchange rate stability that $i^* \approx i$, which means that monetary policy cannot be independent. Summing up, financial integration under fixed exchange rates forces weaker economies to adopt the monetary policy of stronger economies.

Fleming, J. Marcus (1962): "Domestic financial policies under fixed and floating exchange rates", IMF Staff Papers 9, 369-379.

Mundell, Robert A. (1963): "Capital mobility and stabilization policy under fixed and flexible exchange rates", Canadian Journal of Economics and Political Science 29(4), 475-485.

Hélène Rey (2015) finds evidence of the existence of a global financial cycle, characterized by correlated changes in asset prices, money flows and leverage levels. Specifically, "Global financial cycles are associated with surges and retrenchments in capital flows, booms and busts in asset prices and crises."

She also finds that, being the dollar the global reserve currency, the US monetary policy is one determinant of the global financial cycle: global capital flows are fundamentally influenced by US monetary policy. In this context, regardless of the exchange rate regime, financial integration with the US limits severly the freedom of the domestic monetary policy.

She concludes that the global financial cycle reduces the open economy trilemma to a dilemma, that she names 'irreconcilable duo': "Independent monetary policies are possible if and only if the capital account is managed, directly or indirectly."

In other words, Rey's irreconcilable duo holds that one cannot have at the same time

- financial integration with the US and
- a monetary policy independent from the the US monetary policy.

Rey, Hélène (2015): "Dilemma not Trilemma: The global financial cycle and monetary policy independence", NBER Working Paper 21162.
https://cepr.org/voxeu/columns/dilemma-not-trilemma-global-financial-cycle-and-monetary-policy-independence

Fundamental problems of the IMS – II Bias against deficit countries

The present international monetary system has a bias against countries with current account deficits. Since countries running a current account surplus generally have no incentive to eliminate the surplus, the burden of the adjustment of international trade imbalances falls exclusively on deficit countries (a point already made by JM Keynes). If the deficit countries do not receive the financing needed to handle the adjustment or the surplus countries do not pursue more expansionary policies to neutralize the global contractionary effects of the adjustment by deficit countries, the impact of the adjustment on the world economy will be contractionary.

- In connection with this bias, the absence of a cooperative international system to manage exchange rate fluctuations has increased currency speculation and global imbalances.
- Global (or at least multilateral) exchange rate arrangements appear necessary to maintain global stability, to avoid the risk of collapse of the global trading system and to facilitate adjustment in crisis-stricken countries.

Fundamental problems of the IMS – III Rich-country bias

The present international monetary system is not equitable. Developing countries have a need to accumulate international reserves. These reserves are typically issued by developed (rich) economies. Consequently, developing countries are forced to transfer resources to developed countries to obtain international reserves. Financial liberalization and the pro-cyclical nature of the capital flows destined to developing countries (foreign capital quickly flies from a developing country with disappointing growth performance) have magnified the inequity bias. In this context, developing countries have been forced to accumulate international reserves in excess as a precaution against sudden or intense contractions in international financing.

- From the point of view of developing countries, the first role of international financial institutions should be the ability to counteract the pro-cyclical effects of financial markets (that is, these markets magnify economic expansion and economic contraction).
- Not paradoxically, the same financial markets that create trouble in developing countries subject those countries to credit ratings reinforcing the rich-country bias.

More on the international monetary system in:

Bordo, Michael D.; Robert N. McCauley (2016): "The current account version of the Triffin dilemma", Atlantic Economic Journal, DOI 10.1007/s11293-016-9499-1.

Bordo, Michael D.; Robert N. McCauley (2017): "A global shortage of safe assets: A new Triffin dilemma?", Atlantic Economic Journal, DOI 10.1007/s11293-017-9558-2.

Campanella, Edoardo (2010): "The Triffin dilemma again", Economics: The Open-Access, Open-Assessment E-Journal 4, 2010-25. doi:10.5018/economics-ejournal.ja.2010-25.

Chen, Chih-huan; Ching-chong Lai (2010): "An interpretation of the collapsing process of the Bretton Woods system", Open Economies Review 21, 449-463.

Davis, Ann E. (2018): "The new Triffin dilemma", Review of Radical Political Economy 1-8.

Dooley, Michael; David Folkerts-Landau; Peter Garber (2009): "Bretton Woods II still defines the International Monetary System", Pacific Economic Review 14(3), 297-311.

Eichengreen, Barry (2008): *Globalizing capital: A history of the International Monetary System*, Princeton University Press.

Eichengreen, Barry (2011): *Exorbitant privilege: The rise and fall of the dollar and the future of the International Monetary System*, Oxford University Press.

Endres, Anthony M. (2011): *International financial integration: Competing ideas and policies in the Post-Bretton Woods era*, Palgrave Macmillan.

Grabel, Ilene (2019): "Continuity, discontinuity and incoherence in the Bretton Woods order: A Hirschmanian reading", Development and Change 50(1), 46-71.

Hall, Stephen G. (2011): "The debate about the revived Bretton-Woods regime: A survey and extension of the literature", Journal of Economic Surveys, 1-24.

Maes, Ivo (2013): "On the origins of the Triffin dilemma", European Journal of the History of Economic Thought 20(6), 1122-1150.

Mandilaras, Alex S. (2015): "The international policy trilemma in the post-Bretton Woods era", Journal of Macroeconomics 44, 18-32.

Pozsar, Zoltan (2011): "Institutional cash pools and the Triffin dilemma of the U.S. banking system", Working Paper 11/190, IMF (published in Financial Markets, Institutions & Instruments, 2013).

Salin, Pascal (2016): *The International Monetary System and the theory of monetary systems*, Edward Elgar.

Triffin, Robert (1960): *Gold and the dollar crisis: The future of convertibility*, Yale University Press.

Wang, Jingyi (2016): *The past and future of International Monetary System, with the performances of the US dollar, the euro and the CNY*, Springer Singapore.

3. Monetary unions, monetary union trilemma, Padoa-Schioppa inconsistent quartet

Economic integration

"In general, this integration may take five main forms, which (in order of increasing degree of integration) are:

1) A preferential trading club, which is an agreement between two or more countries to reduce tariffs and other restrictions on imports from one to the other; each member, however, retains complete freedom to impose different tariffs and other restrictions on imports from non-member countries.

2) A free-trade area (or association), in which the partner countries abolish tariffs and other restrictions on imports from one to the other, while retaining complete freedom over their commercial policies towards the rest of the world.

3) A customs union, which, in addition to the provisions of the free-trade area, establishes a common external tariff schedule on all imports from non-member countries.

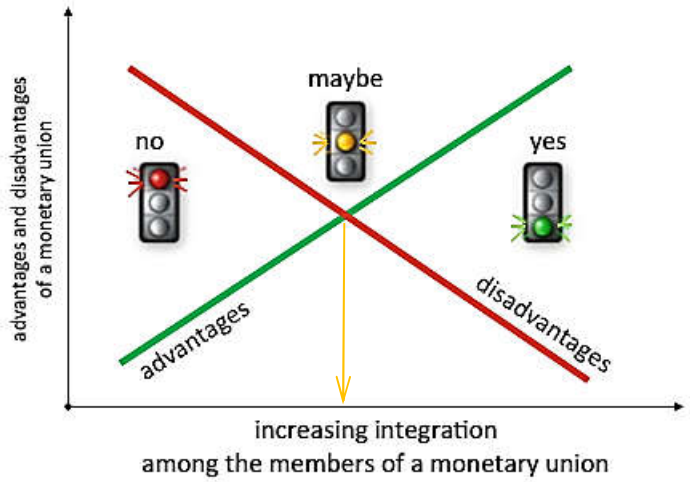
4) A common market, in which the countries, in addition to the provisions of the customs union, allow free movement of all factors of production among themselves.

5) An economic union, in which the partner countries, in addition to the provisions of the common market, proceed to unify their economic policies."

Gandolfo, Giancarlo (1987): *International economics I*, Springer.

Elementary model of monetary union creation

The figure on the right (taken from Herger, 2019) describes a model explaining when it pays to create a monetary union. The fundamental variable is the degree of integration (economic, social, cultural, etc.) between the potential members of the union.



On the one hand, the benefits and advantages of forming the union (the green line) tend to increase with the degree of integration: more integration, more advantages of forming a monetary union. On the other hand, the costs and disadvantages of creating the union (the red line) tend to decrease with the degree of integration: more integration, fewer disadvantages of forming a monetary union.

According to this model, a single currency would be adopted when a degree of integration is reached where the advantages outweigh the disadvantages (where the yellow arrow marks: beyond that point the level of integration is enough to justify currency integration).

Nils Herger (2019): *Understanding central banks*, Springer.

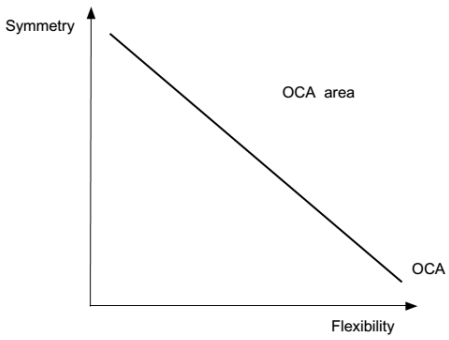
The basic theory of monetary unions

"The conditions that are needed to make a monetary union among candidate Member States attractive can be summarized by three concepts: Symmetry (of shocks); Flexibility; Integration.

Countries in a monetary union should experience macroeconomic shocks that are sufficiently correlated with those experienced in the rest of the union (*symmetry*).

These countries should have sufficient *flexibility* in the labour markets to be able to adjust to asymmetric shocks once they are in the union.

Finally they should have a sufficient degree of trade *integration* with the members of the union so as to generate benefits of using the same currency."



"Figure 1 [on the left] presents the minimal combinations of symmetry and flexibility that are needed to form an optimal currency area by the downward-sloping OCA [optimal currency area] line. Points on the OCA line define combinations of symmetry and flexibility for which the costs and the benefits of a monetary union just balance. It is negatively sloped because a declining degree of symmetry (which raises the costs) necessitates an increasing flexibility. To the right of the OCA line, the degree of flexibility is sufficiently large given the degree of symmetry to ensure that the benefits of the union exceed the costs. To the left of the OCA line, there is insufficient flexibility for any given level of symmetry.

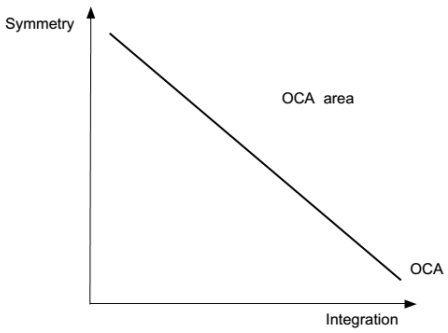


Figure 2 [on the right] presents the minimal combinations ofsymmetry and integration that are needed to form an optimal currency area. The OCA line represents the combinations of symmetry and integration among groups of countries for which the cost and benefits of a monetary union just balance.

It is downward sloping for the following reason. A decline in symmetry raises the costs of a monetary union. These costs are mainly macroeconomic in nature. Integration is a source of benefits of a monetary union, i.e., the greater the degree of integration the more the member countries benefit from the efficiency gains of a monetary union. Thus, the additional (macroeconomic) costs produced by less symmetry can be compensated by the additional (microeconomic) benefits produced by more integration. Points to the right of the OCA line represent groupings of countries for which the benefits of a monetary union exceed its costs.

The presumption of many economists at the end of the 1980s was that the EU countries should be located to the left of the OCA lines in Figures 1 and 2, i.e., given the degree of integration achieved in the EU there was still too much asymmetry and too little flexibility for the EU to form a monetary union whose benefits would exceed the costs."

De Grauwe, Paul (2018): *Economics of Monetary Union*, Twelfth edition, Oxford University Press.

Monetary union theories: Mundell I and Mundell II

"Mundell I is the traditional theory of optimal currency areas (OCA) pioneered by Mundell (1961) in the early 1960s and further elaborated by McKinnon (1963), Kenen (1969) and others. The OCA theory determines the conditions that countries should satisfy to make a monetary union attractive, i.e. to ensure that the benefits of the monetary union exceed its costs. This theory has been used most often to analyse whether countries should join a monetary union. It can also be used to study the conditions in which existing members of a monetary union will want to leave the union."

"In the world of Mundell II joining a monetary union should not be seen as a cost arising from the loss of the exchange rate as an adjustment mechanism, but as a benefit of eliminating a source of asymmetric shocks. For most countries, the exchange rate does not provide a degree of freedom but uses up a degree of freedom in their economic policy since they have to stabilize this asset price (…) The view expressed by Mundell II is based on the idea that foreign exchange markets are not efficient and should not be trusted to guide countries towards macroeconomic equilibrium. There is a second insight in Mundell II. This is that only in a monetary union can capital markets be fully integrated so that they can be used as an insurance mechanism against asymmetric shocks (…).

When countries remain outside a monetary union they cannot hope to profit from insurance against asymmetric shocks provided by capital markets in the rest of the world. The reason is that the large and variable exchange risk premia prevent these capital markets from providing insurance against asymmetric shocks. Thus the world of Mundell II is one in which countries that stay outside a monetary union will have to deal with large asymmetric shocks that arise from the instability of international capital flows. In addition, these countries' ability to insure against traditional asymmetric shocks is severely restricted when they stay outside a monetary union. With such an analysis it should not be surprising that Mundell II became a major promoter of monetary union in large parts of the world, and in particular in Europe."

De Grauwe, Paul (2006): "What have we learnt about monetary integration since the Maastricht Treaty?", Journal of Common Market Studies 44(4), 711-730.

European monetary union (EMU)

"The issue of European integration was framed by theoretical analyses most of which were undertaken as part of the orthodoxy of Optimum Currency Areas. The traditional OCA theory holds that in a monetary union of countries which meet certain criteria, namely a minimum level of convergence, less developed economies are expanding faster than developed ones. As a result, there is convergence of the levels of per capita income with the one of developed economies, namely real convergence. The arguments of this theory received strong criticism, thus giving rise to the endogenous OCA theory, according to which these criteria can be met ex post."

"Convergence, according to the endogenous growth theory is not the norm but the exception. Yet in particular these authors support that trade integration can possibly lead to an increase in the specialization of each country (…) and consequently to greater sensitivity towards a shock in the industrial sector, leading to more asymmetric business cycles (…) They also conclude that the creation of the EMU is easily justified ex-post. This conclusion is also supported by the argument of

the endogenous nature of financial integration (…) The overall conclusion is that the monetary union can strengthen trade integration and the synchronization of business cycles. Thus according to the theory of endogeneity, a process of structural transformations renders the member states more capable of satisfying the criteria of optimization ex-post."

"The anticipated benefits from the creation of an OCA, which must outbalance the relative cost, concern the reinforcement of internal and external equilibria and must facilitate the response to shocks. The main benefits include the elimination of the uncertainty involved in the exchange rate fluctuations – as trade between the members of the OCA and specialization are reinforced and scale economies are created – and the elimination of transaction costs and exchange rate risks."

"… the abandonment of Keynesian principles and the adoption of the monetarist Maastricht criteria (…) gave rise to strong concerns about the sustainability of the EMU. Ignoring the heterogeneity of member states of the union and imposing uniform rules of economic policy (…) created internal and external imbalances in the member states. These imbalances were reinforced by the global financial and economic crisis both within the EMU, and in the majority of the new EU members, creating debt crises and sovereign default risks. The European institutions have not provided an effective collective solution to the problem of the debt crisis. It was this gap that, within the framework of globalization, allowed dependence of problematic EU countries on international financial markets on high cost."

Makris, Georgios (2015): "Optimum currency area theory, nominal and real convergence controversies and the European experience after the recent global economic crisis", in Karasavvoglou, A.; Ongan, S.; Polychronidou, P.; eds.: *EU crisis and the role of the periphery*, Springer.

Grubel, Herbert (2006): "The economics of monetary unions: Traditional and new", in *Regional Economic Integration: Research in Global Strategic Management, Volume 12*, pp. 55–75.

"The most distinctive feature of the European Monetary Union (EMU) is its uniqueness. It is impossible to find a single case since the beginning of the Industrial Revolution where a number of independent, sovereign states have created a *complete* monetary union with a common currency, central bank, monetary and exchange rate policies without first establishing a *political* union!"

"A political union becomes essential, therefore, if the constituent countries/regions are to be able: (a) to share similar values and goals; and (b) to mobilize their resources for the provision of public goods that benefit the whole union. It is also needed for creating the common institutions without which it is virtually impossible to pursue with consistency the objectives and policies that, by keeping regional and personal inequalities within socially acceptable limits, make it possible for the whole union to work towards the same goals without coercion."

"The greatest danger confronting the EMU in its present form is that economic stagnation in member countries, and the restrictions imposed on the ability of national governments to prevent it, are raising serious doubts about its long-term viability. Inflation apart, the European Central Bank shows little sensitivity to the economic problems of member countries (…) Economic and social inequalities within the eurozone are greater than in any of its member states. What is more, they are

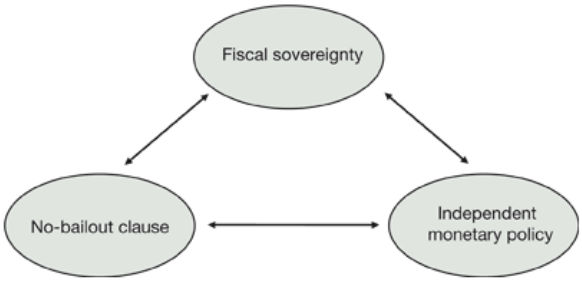
increasing (…) For the socio-economic benefits of such a union to outweigh the costs, it is imperative for the countries to create an institutional framework that ensures long-term improvement (…) in the economic security and welfare of *all* member states."

Panić, Milivoje (2011): *Globalization: A threat to international cooperation and peace?*, Palgrave Macmillan.

Trilemma of a monetary union

The eurozone crisis (https://en.wikipedia.org/wiki/Euro_area_crisis) illustrates Beck and Prinz's (2012) trilemma of a monetary union.

"… the key elements of the new impossible trinity are as follows:



- The first element is fiscal sovereignty, i.e. the ability to choose the level of debt and the size of the current budget deficit exclusively on a national level (…)
- The second element is the independent monetary policy of a supranational central bank within the monetary union. As a consequence, countries cannot accommodate their fiscal policy with an adequate monetary policy. In a sense, monetary policy in a currency union is a one-size-fits-all approach (…)
- The third element is the commitment not to bail out heavily indebted member countries of the union (…) A no-bailout clause implies that there will be different interest rates paid on sovereign debt within the monetary union as a consequence of the risks these debts provide for the respective investors. As long as the bond markets assume that there will be no bailout whatsoever, they will demand different risk premiums according to country-specific risks."

The trilemma can be justified in these terms:

"… if the regulatory framework of the monetary union contains a bailout clause, there will be a certain potential for moral hazard, i.e. countries accumulating large amounts of sovereign debt, expecting that they will be bailed out by the union. Such behaviour will sooner or later surely destroy the foundation of the monetary union. As a consequence, a bailout clause requires restrictions on national sovereignty with respect to the budget which, in turn, means a loss of fiscal sovereignty. On the other hand, as long as there is a no-bailout rule which is strictly enforced no matter what happens, national fiscal sovereignty can be guaranteed. Put differently, it is impossible to ensure national fiscal sovereignty without a strictly enforced no-bailout clause."

Beck, Hanno; Aloys Prinz (2012): "The trilemma of a monetary union", https://www.intereconomics.eu/contents/year/2012/number/1/article/the-trilemma-of-a-monetary-union-another-impossible-trinity.html

Padoa-Schioppa's inconsistent quartet

The open economy trilemma asserts a financial impossibility: under free international mobility of capital (no capital control), if it is not possible for an economy to control at the same time the foreign price of its currency (the nominal exchange rate) and its domestic price (the nominal interest rate).

Tommaso Padoa-Schioppa suggested, in 1982, a variant of the open economy trilemma. In this variant, four apparently desirable goals (the inconsistent quartet, *quartetto inconciliabile*) cannot be simultaneously achieved. According to Padoa-Schioppa, a group of countries (such as the eurozone members) cannot have

T. Padoa-Schioppa

- free trade (trade integration),
- international capital mobility (financial integration),
- independent domestic monetary policies (monetary sovereignty) and
- fixed exchange rates (exchange rate stability).

The open economy trilemma is framed in a bilateral context: just two countries are involved. When more countries are involved, nothing prevents that each one solves the trilemma differently. For instance, with three countries, 1, 2 and 3 could become financially integrated, 1 set a fixed exchange with 2 (and give up monetary independence), 2 choose the domestic interest rate (and care nothing about exchange rate stability) and 3 establish a fixed exchange rate with 1.

What could lead some countries to opt for exchange rate stability? One reason is to facilitate trade flows with the country with whose currency establish the peg. In this case, it is natural for trade integration to be mutual: a country lowering trade barriers with another would expect reciprocity.

The European Economic Community (EEC, the European Union antecedent) was born as a set of trading agreements. The road to a common market (and an economic union) means adopting eventually a full commercial integration. In that context, Padoa-Schioppa suggested the existence of an inconsistent quartet ('*quartetto inconciliabile*'): the impossibility for a group of countries of having at the same time

- financial integration of the group;
- commercial integration of the group (free trade, free mobility of goods);
- a fixed exchange rate regime within the group; and
- sovereign monetary policy for each member of the group.

At the begining of the 1990s, the EEC became the European Common Market: members adopted financial integration and free trade. Padoa-Schioppa's (1982) analysis pointed out that, in the presence of financial and commercial integration, all the Common Market members should make the same choice between exchange rate stability and monetary independence.

The justification runs as follows. If exchange rate volatility is allowed, some countries might take competitive advantage over the rest by manipulating the exchange rate, and thus tensions would arise that could endanger the stability, and even the existence, of the common market agreement. As a result, exchange rate stability within the group appeared necessary for the viability of a common market project. By the open economy trilemma, all the members of the group had to abandon monetary sovereignty. Summing up, the European Common Market demanded a

European Central Bank and, as the embodiment of fixed and irrevocable exchange rates, a new supranational currency: the euro.

The eurozone (the set of countries that have adopted the euro) involves a two-fold decision regarding the open economy trilemma and the quartet. On the one hand, with respect to themselves, eurozone members have chosen

- common market (free mobility of goods, services, capital, people, inputs);
- common currency (permanently fixed exchange rates: 1 EUR = 1936.27 ITL; 1 EUR = 166.386 ESP; 1 EUR = 1.95583 DEM; 1 EUR = 6,55957 FRF…); and
- supranational monetary policy determined by a central bank common to all the members.

Simultaneously, as a group of countries, the eurozone has chosen, against the rest of the world

- financial integration;
- floating exchange rates; and
- independent monetary policy (as dictated by the European Central Bank).

The eurozone haa solved the monetary tensions and conflicts associated with a deeper financial integration by 'moving upward' (towards global governance); that is, by supranacionalizing money. The other approach (supported by extreme liberalism positions) involves privatizing money ('moving downward' by strengthening the role of the private sector in monetary management; private cryptocurrencies, such as bitcoin, illustrate this approach).

These two strategies are in line with the two basic ways of organizing economic activity: cooperation and competition. Padoa-Schioppa supported cooperation and supranationalism to address some economic policy issues (for instance, the adjustment of trade imbalances and the global stabilization of exchange rates). There are economic activities and prices too important at a global scale to be left 'in the hands of the market'[7]. At the same time, by contrast, he adopted the subsidiarity principle: to leave the execution of policies to the competent and most descentralized (and close to the citizen) authorities.

Padoa-Schioppa, T. (1982) "Capital Mobility: Why is the Treaty Not Implemented?" in T. Padoa-Schioppa (1994): *The Road to Monetary Union in Europe*, Oxford: Clarendon Press, pp. 26-43.

Bini Smaghi, Lorenzo (2011): "Tommaso Padoa-Schioppa: Economist, policymaker, citizen in search of European unity", Speech given at the European University Institute, Fiesole, 28 January 2011. https://www.ecb.europa.eu/press/key/date/2011/html/sp110128.en.html

[7] In Padoa-Schioppa's words: "When an unsustainable process 'comes to an end', variations in prices and quantities are of a magnitude and drama incomparably greater than one sees in the healthy conduct of economic life on a daily basis".