How the "Fundamental Monetary Constraint" disrupts a closed economy.

Ralph Hiesey, May 14, 2024

An important cause of periodic recessions/depressions that also can drive a closed economy to income and wealth inequality, using logic already well understood for international trade.

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Section1: Introduction: Defines "Fundamental Monetary Constraint." Preview of some consequences to be covered in more detail in sections 2-5

The Fundamental Monetary Constraint: Everyone who uses money understands that you can't buy more value in products or services than the money you've earned. You can only buy an equal or lesser amount. That's the constraint. No matter how many great products and services have been produced that people would like to buy, they won't be sold if people don't have enough "money." This is pretty obvious to anyone who has ever used money, but it is remarkable that this is not accounted for by the math most macroeconomists use, who analyze the factors that influence GDP in economy.

The "Fundamental Monetary Constraint" has become a bigger problem as economies have become more efficient, with a "trade imbalance," meaning the total amount of money required to buy all the stuff produced in one year is significantly more than the total income per year of those who want to buy it. The only way such goods can all be sold is if some buyers spend their previously saved money, or use their credit card to increase their debt. If not enough people are employed, or if wages are too low this implies higher personal debt, lower GDP and

greater economic stress for more people in an economy. This has become especially evident since the 1980's.

This view was well understood a century ago with international trade. What became obvious over time was that when countries traded with each other, "net exporting" countries would gradually accumulate more cash, gold or reserves which exact amount was transferred from the "net importing" countries. This practice was often even thought to be a good thing by "mercantilists," who encouraged countries to export more goods than they imported to make their country richer—but which unfortunately made the importing countries poorer, and eventually even the exporting countries lost customers that imported their goods.

What is generally unrealized even now is that essentially the identical process, with similar bad result is occurring now within **single countries having nothing to do with their trade with other countries.** You might ask how can a trade imbalance possibly happen in a country that does not trade with another country? Excellent question!

Here's an economic story to illustrate the problem: Imagine an economy with one giant mega supplier: the Mighty Amazoom Corporation with massive manufacturing and service locations throughout the country. They are so big that they can supply almost every possible product and service for everyone in the entire economy. They have incredible capital with super modern production robots that run 24 hours per day. They only require 20% of the population to produce all needed goods/services. Another 5% of citizens make a small amount of other services. No one else is needed to produce what is needed by everyone.

That sounds great. Economists should be delighted by such great economic efficiency. Only 25% of the population needs to work. So what's the big problem? The problem is that seventy five percent of the population has no job and no income! The British call these people redundant. But how can those plentiful goods/services get purchased? Only 30% of people have jobs and income. How could Mighty Amazoom possibly sell more than 30% of its potential output when the Monetary Constraint is such an important reality? Such an economy would have under performing GDP, with many citizens unsuccessfully seeking jobs to pay for stuff. It is even difficult to see how such an economy could possibly function. Section 5 of this essay will show that other helpful economic institutions have spontaneously developed to partially compensate for this kind of problem.

An equivalent way to describe the same problem is to understand that there are two separate reasons jobs are needed in an economy:

- 1. Jobs are needed to produce products and services that everyone needs.
- 2. Jobs are needed for people to get income to buy products and services that they need.

The economic problem that makes distribution difficult: There is nothing that guarantees that #1 is equal to #2.

This is no fantasy for contemporary economies. We already have some creeping contemporary examples such as Amazon and Walmart who have driven many out of small businesses, although

they are doing just what under capitalism they are supposed to do. Automobile and electronic production employ many fewer workers to produce much more goods/services than 50 years ago. In the US some manufacturing has been moved to China and Mexico. As the number of needed workers becomes smaller, wage competition for fewer jobs drive wages lower, which has been even more obvious since the 1980's.

This creates great differences in income, and ability to save money. It gives some hint for why today 50% of the US population owns a tiny 2% of the total wealth. And how a tiny 2% of the population owns 50% of the wealth.

This wasn't a problem in the US in 1790 when 90% of the population of the US was employed busy producing only agriculture. Now only 1% live on farms, but 100% of people need to eat, which is one reason why this problem is much more evident now.

One reason I am critical of contemporary macroeconomics is that the "Monetary Constraint" is not recognized in the math to show how it affects GDP. The question about where economic demand money comes from is mostly ignored--except when J.M. Keynes recognized this as necessary to fix a struggling economy--but with quite a bit of controversy and push back from some economists. Money is just assumed to be magically available in whatever amount is needed to purchase, so long as lots of goods/services are available to be purchased.

A strong motivation for writing this is to demonstrate that despite institutions (to be described in Section 5) that have historically evolved to reduce this problem, there is still much evidence that, because it is not widely recognized by economists, distribution of goods, and often lack of demand is still are being negatively affected by the "Monetary Constraint." I want to put this economic problem in clearer view so better economic policies can be developed. J. M. Keynes was one who recognized the need for extra money for consumers to fix an economy when it sank into recession or depression.

Where this essay is going next.

The rest of **section 1** gives a preview of what is coming in sections 2-5.

Section 2 will explain the well known problem with unbalanced international trade between countries.

Section 3 defines a unique, seemingly undiscovered important economic number describing "trade imbalance," for a single economy. To my knowledge this is the first time its importance has been described. The value will always be between 0 and 100. If everyone in an economy spends the exact equal amount as their income, that will define a completely balanced economy with the number for that economy imbalance will be 0. This does **not** mean that everyone has the same income. What this analysis will demonstrate is that when this number is not in ideal balance, and the number is above zero, GDP will likely be reduced.

Sections 4 and 5 will describe how government and other economic policies need to be altered to get "trade balance" to move closer to 0 in order to improve economic GDP, and get supply of

goods/services in an economy in better balance with demand, and also reduce income inequality. **Section 5** describes eight economic institutions that have already historically spontaneously developed, motivated by the obvious need to improve trade balance--even in a closed economy.

To make this easier for economists to understand, the argument in Sections 2-4 of this essay is structured using logic identical to what is already commonly used to explain problems caused for countries with international trade when trade among countries is imbalanced. The benefit is that the exact problem has already been understood and solved with international trade over 100 years ago. I will define what it means to measure "trade imbalance" within a closed economy, and how it creates income/wealth inequality.

1. Explains why four characteristics historically accompany recessions or depressions within a closed economy:

- •Slowdown of GDP which is not explained by lack of ability to produce goods/services.
- •Extra unsold goods for sale that have often been described as a "glut of unsold goods."
- •Unemployed workers causing income inequality.
- •Reduced GDP often described by some as being caused by under consumption. Others describe the same phenomenon as over production.

In addition--this essay supplies important logic to economists who need to understand and explain to the public and politicians:

- 2. Why taxation must be concentrated on those with high savings to improve economy for everyone--not only because it seems more "fair." This will be explained as moving an economy into better "balance." Provides solid logic for why "trickle down" is such bad policy for everyone—even the rich—in an economy.
- 3. Why deficit fiscal spending that increases public debt should not necessarily be considered reckless policy, but is almost always benefits an economy (with guidelines for optimal amount). Explains the wisdom of deficit public spending which although it does increase public debt, which increases debt interest paid by taxpayers, it also provides an opportunity for private citizens to save. For good reason (explained in Section 5, Method4) this debt has increased in the US every single year (except year 2000) since at least 1955. This logic is much more solidly numerically based than those MMT (Modern Monetary Theory) promoters who attempt to explain the benefit of deficit government spending. Gives economist Keynes a better basis than invoking "lack of consumer confidence" to show more specifically what can cause the "low aggregate demand" that he realized could cause an economy to weaken. An appropriate amount of deficit spending may move an economy into better balance.

- .4. Why government transfer payments, such as for Social Security and Medicare are not just "unfortunate government expense burdens that we cannot afford" but usually increase economic benefit and GDP when carefully spent and not done to excess. This benefit, if not overdone, can be explained as putting the economy into better balance.
- 5. Why any economy using money to exchange goods/services tends to cause cash wealth inequality when some agents provide goods/services with much more money value than they consume. This is the first part of the inequality story. The second phase which further develops much worse inequality is well explained by economists Amir Sufi, Atif Mian and Ludwig Straub in these papers:" The Saving Glut of the Rich " and "Indebted Demand" Quarterly Journal of Economics, November 2021. Indeed, what they describe as "indebted demand" can be described as an attempt to put the economy in better balance--though which they would likely agree is not a particularly good long term way to do it..
- 6. Why economic "growth" is often so necessary. It is NOT because we need more stuff! Higher productivity can have an economic negative. As productivity increases within an economy, by definition fewer hours per worker are required for the same GDP output. Therefore some workers become, as the British say, redundant. To maintain aggregate demand the economy must find new jobs to provide income that will enable laid off workers to consume what they formerly did, plus value of the new goods/services provided from the new jobs that needed to be created. When productivity becomes more efficient, "growth" in GDP must occur not because more goods/services are needed, but rather to produce more jobs to maintain the income for workers that allows all goods/services to continue to be distributed and consumed. I would suggest that this would be an excellent topic for economists to analyze and try to find solutions to allow greater productivity without needing to produce more stuff. Some institutions that have already evolved historically are listed in Section 5.

Section 2: International Trade Analysis: How trade imbalance has already been shown by economists to negatively affect international trade because of the Fundamental Monetary Constraint.

It is well known that imbalance of international trade can over time force reduction of trade.

Within international trade, when a country imports more than it exports to other countries it gradually experiences loss of reserves or "money" which historically could be gold, that gradually gets transferred to other countries that export more than they import. Over time, this gradually makes it difficult for the country that imports more to further import goods/services, because it gradually reduces their reserves or "money" or gold that the importing nation needs to purchase imported goods/services from other countries. At the same time exporting countries begin to lose customers when importers have insufficient money to purchase more goods/services from exporters. That is usually hardest on the importing country, but the exporting country also experiences a lack of demand for their exports which reduces their GDP. So both countries lose when this continues.

Mercantilism: In the sixteenth to eighteenth centuries some countries had a policy of deliberately exporting more products/services than they imported, with the purpose of building up higher reserves of money, which would make it easier to enable them to import goods. This was called mercantilism, which especially in the seventeenth century was considered by many economists to be the best way to build wealth for a country. However, this policy caused the countries who were importing more than exporting to lose reserves, which would eventually shut them from the possibilities of importing from excess exporting countries. As this problem was better understood, mercantilism became out of fashion, and considered unworkable international trading policy because it eventually began to discourage international trade for both exporting and importing countries, and in some cases increased conflict among nations. This essay will describe in Section 3 how a closed economy, with no international trade, can have a parallel kind of problematic imbalance.

One important way to resolve trade imbalance for international trade is for "exporting" countries to invest their extra funds in the "importing" countries—which has two desirable effects, at least from the point of view of economic theory: (1) Investment transfers money to the importing country which enables them to continue to buy products from an exporting country. (2) It also may allow importing countries to purchase capital for investment hopefully to enable them to improve their production capability and therefore achieve better trade balance.

However there is a possible disadvantage to the importing country—because for this benefit they must usually pay interest on the invested capital, which to be beneficial such investment must result in a greater longer term advantage than the disadvantage of paying interest cost. If improperly invested, it can result in less longer term wealth. That would be particularly destructive if the imported money were spent only for consumption goods from other exporting countries, for which there is not a future return. (The US is the unusual exception because of the ease with which it can print US dollars!) I will explain why this same disadvantage can also occur in a closed economy.

One remedy with international trade is possible if the currency exchange value between two types of money is allowed to adjust between the two countries. Users of money of the net importing country can reduce the value of their money when they exchange it with money of the net exporting country, which will tend to equalize the value of trade between them. It is well worth noting that this advantage was eliminated when the Euro was adopted as the common currency for European nations. This has been regarded by many economists as being a weakness, or "mistake" that has caused difficulties making the Euro work as common currency to balance trade among many European countries. This puts different countries into one monetary straitjacket that disallows them from adjusting currency exchange rate to balance trade among countries. And of course this is not a method that could ever be used among citizens within one economy to resolve imbalances within that country, since everyone uses the same money.

Section 3: What does it mean to have a trade imbalance in a closed economy?

It is remarkable that this problem has been so well recognized with respect to international trade, but completely overlooked within just one (possibly closed) economy. Individual people in a single economy have a similar relationship among themselves as do "countries" with other countries with which they trade. Within a closed economy every individual will typically both "import" (purchase) and "export" (sell) products/service/labor with others inside their own economy. But for any individual it would be unusual for that person to purchase ("import") exactly the same value that they sell in goods/labor ("export") over some time, such as one year—which makes imbalance the most likely case. It is important to the analysis to see that just as in the international case, within a closed economy the increase of money gained by the net "exporters" (producers) is exactly equal to the decrease of money to net "importers" (consumers.) In other words, "saving" among agents is a zero sum game--exactly as it is with imbalanced international trade between two countries. That's just the way money works. We're assuming now that the central bank doesn't print any additional money. And if they do, it doesn't usually go to "normal" people, it goes to banks or the rich. Although during Covid, amazingly and unusually, some of it did actually go to "normal," and poorer people.

Virtually no conventional academic economists seem to be aware that "fundamental money constraint" also means that that trade imbalance within a closed economy damages an economy. It is a likely common cause of past recessions/depressions--especially ones that cannot be explained by some difficulty in production. Similar to what happens in badly imbalanced international trade, the people who are "importers" gradually have reduced money/savings, which money goes to the "exporters." As importers' savings decline, they are able to spend less, and "exporters" have more savings which they did not need to spend, resulting in less total demand for production and services, thus reducing GDP for the entire economy. It also explains what is now being called by some in the present world economy "secular stagnation" similar to what was experienced in the 1930's. It also likely explains the reason why the periods during both the 1930's depression and the economy after 2008 were accompanied by high wealth inequality. Happening within a country this could eventually result in class warfare or even civil revolutions such as experienced by France in the late 1700's.

A light mathematical discussion will show how a trade imbalance between net producers (exporters) and net consumers (importers) can reduce GDP for everyone: I will in the beginning assume that all exchanges of goods/services are negotiated ONLY by exchange of money although no modern useful economy could completely impose that strict condition. I will show why imposing that condition won't work for a realistic economy, especially where some agents produce much more than they consume. In Section 5 I will relax that assumption and introduce necessary additional methods that have historically developed in economies that allow some goods/services to be distributed within an economy without direct exchange of money.

When money is the only means of trading goods/services, every person in a closed economy must fall into one of two distinct groups: (1) those who are "net exporters" who produce more value of goods/services than they purchase and spend, and (2) the remaining who are "net importers" who produce less value than they purchase and spend. If we take the value that one agent produces in goods/services/wages during one year, and subtract the value that same person spends in that year, we can define a net quantity for that person which describes how much more value they produced ("exported"), than they spent ("imported") for one year. "Individual excess

product" will be positive for net exporters/savers in an economy and negative for net importers/dissavers in the same economy. This measure is what is equivalent to what is called a "current account" in international trade.

Another important number \$C in a closed economy can be defined by adding up all net exporters' accounts together, (=\$C). This is defined as the total internal trade imbalance positive number for all the "exporters" lumped together in the entire economy. If all agents trade using only money in a closed economy, the net importers, or dissavers also have a similar total internal trade imbalance = (-\$C). Because of how money is defined as explained in the description of the Fundamental Monetary Constraint near the beginning of this essay, the dissavers' negative number must be equal in magnitude to the savers' positive number. "Exporters" gain (=\$C) in savings. Importers lose (=\$C) in savings. This works the same as current account for international trade. The equivalent statement in international trade is that the amount by which any net exporting country increases their reserves/money is exactly the amount that all the other countries that are their trading partners together lose from them in reserves/money. We could also evaluate the severity of the imbalance by dividing \$C by the GDP: \$C/GDP

If \$C is zero, that would be the simplest -that would mean that every single person would have purchased in value exactly what he/she earned, with no one having either saved or dissaved. (Of course this doesn't mean everyone's amount earned was the same.) But if (\$C) is positive, then all the exporters (savers) would have produced a total of (\$C) more in value of goods/services than they consumed. Where did those extra (\$C) goods/services go? They went to the importers (dissavers) who would have spent a value exactly (\$C) more, which must have come from money the dissavers had previously saved. This would be no problem for the net positive exporters (savers), but there is the possibility that some of the importers (dissavers) could run out of savings--and therefore would not be able to purchase some of the excess product/services that the exporters had to sell. If that happened it could be bad not only for the importers, but also for some of the net producers who would have been left with extra inventory they didn't sell, and also with reduced income.

How an imbalance could force GDP below optimal: When some importers run out of savings and are unable to purchase all the exporters' extra goods/services, then an imbalance could reduce potential GDP in a closed economy.

Section 4: More details about how a badly imbalanced Closed Economy can fail because of the Fundamental Monetary Constraint.

SUMMARY: For hundreds of years it has been known that countries that have an imbalance of trade in goods/services (without compensating investment exchange in a Capital account) will develop an imbalance of money--the net exporting country will gain money wealth exactly equal to what the net importer loses. The greater the trade imbalance, the more rapidly will that happen. What surprisingly seems not to have been noticed today, and what this analysis has shown is that exactly the same thing happens among single agents in a closed economy, when an imbalance of goods is exchanged with

money. Just like the international case: The "exporters" that sell more than they buy get richer. And simultaneously the "importers" that buy more than they sell get poorer by exactly the same amount as the rich get richer. And the greater the value of imbalance (\$C) per unit time the faster it will happen. The **Fundamental Monetary Constraint** constrains the average total amount of money that all agents together can save-- or dissave is zero. Some individuals will increase their money, and some will decrease money, but for group together the total amount will not change.

Some may question that last sentence, because as everyone knows, total money in an economy changes when the Fed "prints or unprints" money--however the only people who can increase or decrease total cash in an economy are bankers or apparently rich bondholders. The Monetary Constraint constrains a normal (non rich) group of people to hold a fixed total amount of cash to buy or sell goods/services. Some may think credit is like extra money--true--but credit granted and received always nets to zero, so credit does not by itself change the total money for a group of "normal" agents that only use money or credit to trade goods/services.

The analysis so far has assumed that **only** money exchange is used to exchange goods/services. But fortunately there are other economic institutions, such as banks, that have developed that can make things better. In Section 5 I will describe additional **mechanisms besides money exchange that have historically evolved to compensate for such imbalance.** With the restriction I have assumed above that all money is obtained only by selling goods or services, the "imbalance" cannot be less than zero. However, as will be seen in Section 5, with some institutions described there, it is possible for \$C unbalance to become negative, however very unlikely today, which is an opposite imbalance that could encourage undesirable over demand and inflation.

Since total internal trade imbalance (\$C) could have a strong effect on an economy, it should be seen why it is a number that should be an important one to measure (by the Fed) and know, as well as being familiar with ways to counterbalance such imbalance. Even if its value is not known exactly it is still important to realize that such an important number exists—for the similar reason that "current account" is vital to know about when speaking of international trade.

Trade imbalance among agents within one economy easily explains one cause for how historically repeatedly occurring "recessions" or "depressions" occur within a closed economy. Economists were frequently particularly puzzled by historical economic events marked by slowdowns in GDP that would happen seemingly for no obvious reason. What was so puzzling was that they occurred not with *shortages* of goods for sale. In fact these episodes were often accompanied by what were called "general gluts" of a wide variety of goods. These were mysterious events for economists because it was generally believed that economies could fail only if there were insufficient production of goods/services, not an excess. Often these events were described as an economy that would unexpectedly develop a lack of aggregate demand. Or such events were sometimes equivalently described as caused by "overproduction." During such "recessions" there was *desire* for such goods from part of the population that had insufficient money to purchase them, who I'm suggesting were the "importers." Interestingly, despite the obvious recurrence of such actual economic events some

economists said such events couldn't possibly happen; because they didn't fit their theory about how a capitalistic economy was supposed to work. Also, sometimes people called "supply siders" will mistakenly insist that what is needed is more supply, or even tax cuts to the rich, rather than seeing that the problem is caused by there being some in an imbalanced economy who lack sufficient income to purchase the supply that is already available. As will be described soon, the economist Keynes realized that one way to help this situation is for government to tax and then purchase goods/services to increase demand for product/services. However, although Keynes understood a way to fix the problem, he apparently did not understand the above analysis that showed how lack of balance caused by the "Fundamental Monetary Constraint" could have <u>caused</u> the lack of aggregate demand. He attributed lack of demand only to something he called "lack of consumer confidence." **One way to test the hypothesis given in this essay** would be to track \$C in an economy, which the Fed's master statisticians could probably do. Strong evidence for its correctness would be if a positive value of \$C imbalance was found to be strongly correlated with recessions.

Here are four observed characteristics that are classical signs of recessions/depressions observed historically that were formerly difficult to explain. They demonstrated that some portion of the population seemed to lack money required to purchase goods they wanted:

- Business would be observed to generally slow for no obvious reason.
- They were accompanied not by goods shortage, but by a "general glut" of unsold goods.
- Unemployment would increase because aggregate demand was weak.
- Not everyone found it difficult to buy goods. Some had plenty of cash for as much as they desired to purchase.

These symptoms are easily explained by the lack of demand caused by "trade imbalance" implied by the "Fundamental Monetary Constraint." This analysis would predict that \$C is correlated with recessions/depressions. If a subset of people in the economy known as the "importers" ran short of money because of an overly large total internal trade imbalance over a period of time, the extra goods became unaffordable. The "exporters" had possession of the money that the "importers" needed to purchase such goods.

But it is true that economist Keynes already explained why recessions happen and how to fix them. His explanation was that such recessions/depressions were caused by "reduced aggregate demand" in an economy--an explanation perfectly good for predicting the recession attributes I cited. Keynes' only explanation for this reduced demand was that there was a reduction in "consumer confidence" for which he apparently had no other explanation. I'm suggesting that the failure of "consumer confidence" could be explained by my hypothesis that gradual poor balance of trade between "exporters" and "importers" had caused low confidence for the subset of "importers" simply because they began to run low on spendable money which had been transferred to "exporters." "Low confidence" likely did not occur for all consumers, but mainly with the subset who were the "importers" in the economy--some of those who may have been unemployed for a while because of the imbalance of trade. This hypothesis could be proven or disproven if we had real time information about trade imbalance (\$C) within a country. It suggests that recessions/depressions could be predicted by an increase over time of a

trade imbalance (\$C). Another reason to prefer this view is that "consumer confidence," according to the <u>Investopedia</u> website, has been more commonly observed as a lagging indicator of unemployment, suggesting that it is likely to have been caused by some earlier event-- which could be caused by an ongoing trade imbalance. To my knowledge, the Fed does not try to measure this--but they get close by their (recent) measurements of *Distributional Financial Accounts* of wealth. Possibly all they need to do is add to this very useful data to include income values for their four wealth categories (0-50%, 50-90%, 90-99%, 99-100%).

Does mercantilism exist within a closed economy? Although mercantilism has been for two centuries understood as bad policy for international trade, the corresponding attitude in a closed domestic economy is usually exactly the opposite: the belief is expressed by economists and moralists that saving, by producing more than consuming, is highly praised, which leads only to virtuous outcomes, without understanding the negative consequence of the Fundamental Monetary Constraint that has been well recognized as a problem caused by imbalanced international trade. For some, belief in the undeniable virtue of saving as a spur to investment has been apparently more than enough reason to reject the logic being expressed in this essay. An example: British economist John Hobson, who expressed a view similar to what is expressed in this essay, found strong opposition from economists to his thesis that excessive saving could result in reduced economic performance. Near the end of his life in 1938 he wrote his final book with the wry title "Confessions of an Economic Heretic." My personal confession is that knowing his fate I have avoided saying there is a problem with "too much saving"--but it is true that another way to describe those who consume much less than they produce is to use the "s" word: savers.

"Lazy bums?" The methods to be listed below will be some that have been used to compensate for internal trade imbalance. If the economy does not provide sufficient compensation for an imbalance of \$C, that *requires* some in the economy to dissave. Some in the economy who have wealth may think that those who don't save must be "lazy bums." Perhaps so, but if there is insufficient compensation for a high \$C imbalance, it will be impossible for everyone to save. Perhaps blame the savers for saving too much. However bad macroeconomic policy, by not using more effectively some of the methods to compensate described in Section 5 below, would likely be a more useful target for their criticism.

Problem for our economy: Robots: Production equipment such as robots have taken the place of workers for much production work. Fewer people run the robots, reducing worker employment. Some people mistakenly believe that more college education is needed for redundant workers so a similar number of workers will be able to run the robots and will thus increase their income. But the whole point of using the robots is to produce the same output with fewer people, tending to increase profit per worker, which tends to increase the value of unbalance +C. Production engineers help to produce goods more efficiently, often meaning using fewer people to produce the same output, increasing internal economic trade imbalance. Macroeconomists frequently tout "higher productivity" without understanding its possible negative effect on income distribution. Walmart and Amazon are recent real life contemporary examples.

Problem for our economy: Shifting to cheaper production labor in China and

Mexico. Another recent cause is that much high labor intensive production has been moved out of the US to reduce labor cost, which further decreases the number of domestic workers having well paid jobs. So with lower labor cost, pay for management increases—while redundant and unemployed workers become in higher supply which reduces worker pay—increasing the economic imbalance +**C** within the US economy--while possibly increasing income thus slightly reducing +**C** in China or Mexico.

Section 5: Eight Additional Economic institutions which have historically evolved to help economies compensate for the problem caused by the Fundamental Monetary Constraint.

Here is a list of economic methods that have historically developed to compensate the imbalance. In this section 5 we relax the condition that all money exchanges between agents happen only by exchanging goods/services. Each example here shows a method of transferring goods/services without requiring an equal transfer of money value between agents. I know!! some of these may sound suspiciously like (eeeeeek!) socialism!! But they are necessary for successful transfer of goods/services when some agents produce much more than they consume. Ideally to effectively transfer goods/services, all methods in total would compensate the value +\$C of imbalance. If the compensating amount is less than that amount, aggregate demand could be weak. If there were overcompensation, possibly pushing \$C to a negative number, that would increase aggregate demand beyond supply and risk over demand with possible inflation.

Method 1: Government taxes and spending for public services: An important purpose of taxes is to pay for needed public services that are more efficiently provided by a government single payer than would be practical to be provided by individual private funds. For accomplishing only this purpose it does not matter from which group: exporters or importers that such taxes are collected—or to whom they are distributed; at best, political decisions about who to tax are made with some consideration of "fairness." Or at worst, by considerations based on how much particular citizens promise to contribute to political campaigns.

However, the other function emphasized in this essay is that government taxes can usefully also provide rebalance of trade in an economy to maximize distribution of goods/services. To serve this purpose taxes must come from "exporters" or savers that when spent on public products/services will be able to rebalance an accumulated **total internal trade imbalance** that will allow flow of goods/services to importers. A problem for using only this method to *completely* rebalance an imbalance of \$C, is that taxes must be collected from "exporters" in the same total amount \$C. To accomplish this task *completely* using no other method would be extremely unlikely because that would require a tax *equal* to the total of "savings" accumulated by all exporters which would then leave no money left for the "exporters" to keep as "savings." Fortunately other methods exist that will be described, using the loanable funds market that enables "exporters" to add to their savings that earn interest. Taxing "importers" will usefully supply money to purchase public goods, but be of negative benefit to achieving trade balance since such tax will decrease importers' ability to purchase goods needed to help achieve the objective of balancing trade. **One of the very worst tax policies possible** is to reduce taxes

on the wealthy, which would likely increase savings made by the "exporters" who even before they are taxed do not even purchase enough goods to make up for the excess they produce.

Method 2: Increase pay of "importers" An example could be laws that establish higher minimum rates of pay, which would benefit almost always non savers. The total amount of additional pay in the economy gained by importers would reduce **\$C** by that amount of additional pay.

Method 3: Government transfer payments: Transfer payments that take money and transfer it directly to citizens is another effective means to accomplish rebalance. Three important methods in the US are Social Security, Medicare and Medicaid. The US payroll tax is unfortunately a regressive flat tax that is quite high at 15.3% on income that is taken from people with incomes from as low as \$400/year to those with income less than \$140,000/year, therefore a lot comes from importers, not exporters. That tax is immediately distributed to one of two places. (1)Most of the tax goes to Social Security and Medicare recipients—which likely gets transferred to recipients who spend it rather than save it, which would have a positive balancing effect. (2) The rest of the tax (if any is left) goes to purchase Treasury Bonds (via the S.S. Trust fund) that always immediately pay for government expenses. Therefore this sources money from many "importers" and some "exporters" and then it is spent for government expenses which compensate for some trade imbalance. The amount that this method can compensate for \$C of imbalance is the total amount that is collected from exporters minus importers. As said before, any tax collected from "importers" reduces their ability to even compensate for what the importers have produced, so will negatively count as compensating for the trade imbalance. If the 15% tax were to be extended to all income above \$140,000, including investment income, that would likely be more beneficial for reducing the \$C number by placing this high tax on more likely "exporters" with high incomes, which could benefit the entire economy—both exporters and importers.

Method 3.5: Earned Income Tax Credit: The earned income tax credit shifts US income taxes in the US from 31 million "importer/dissavers" to many other "exporter/savers" by reducing taxes on those with low income who are very likely to spend all of their income. The total value of such credit for 2022 was \$64B. So that the corrective value \$C resulting from that is likely \$65B minus the marginal part of that additional tax that had to be collected from "importers. Many may view this as a burden produced by those who are under producing workers. However this essay show why it increases GDP since likely most of the \$65B of money credit will be spent by "importers" rather than saved.

Method 4: Government spending by increasing public debt. Fiscal policy: Government can obtain revenue by selling Treasury bonds mostly to "exporters" in the economy. The money is spent on government operations which creates economic demand nearly dollar for dollar that will compensate for total internal trade imbalance. This is a beneficial method because the revenue comes mostly from "exporters" looking to save their cash money as Treasury bonds. Unlike the "government tax" described in Method 1 above, this is a way of obtaining funds from "exporters" that allows them to feel like they are simultaneously keeping possession of their wealth as their "savings" but saving in form of a Treasury Bond earning interest instead of holding cash.

But doesn't this backfire later? It might seem that such bonds, when "paid back" at the end of the term would reverse the benefit just cited—which if that ever happened would be a serious defect with this method. That seeming drawback has been mostly successfully avoided by making (nominal) Treasury debt always increase—so in effect the debt amount never goes down, because there are always new purchasers of such debt seeking for a place for their "savings" that is sufficient to more than "roll over" Treasury debt which reaches the end of its term. The nominal total value of US debt has never gone down since at least 1955, except for an extremely small amount in year 2000 so that using this beneficial Ponzi scheme in practice permanently transforms cash "savings" from exporters back as spendable public cash money. But the total amount borrowed has gone up for 60 years, and being over 100% of GDP cannot ever realistically be paid back which makes it close to a Ponzi scheme. However in this case it is completely for public benefit, and where no one is ever likely to complain about not getting their money back--because the Fed can print the money--although there is no guarantee that those dollars will be worth as much.

But what about interest on public debt? It is true that interest paid tends to go back to the "savers", which would make this "Method 4" less effective. But even the interest paid has historically been attenuated by managing enough inflation in the economy to approximately match the interest, so it is borrowed at virtually zero real interest rate. This has been described by some as "financial repression."

Is financial repression a good thing? "Financial repression" has been the denigrating label that has been used to describe government policy to keep government bond real interest rates low. According to the website "Investopedia":

"The [financial repression] concept was first introduced in 1973 by Stanford economists Edward S. Shaw and Ronald I. McKinnon to disparage government policies that suppressed economic growth in emerging markets.......A government steals growth from the economy with subtle tools like zero interest rates and inflationary policies to knock down its own debts."

However the analysis in this essay shows how this so called "repression" benefits an economy by reducing interest rates on government debt. It takes no difficult economic analysis to see that such policy reduces the flow of money from Treasury bond interest paid by less wealthy taxpayers to the more wealthy individuals who can afford to buy Treasury bonds. Contrary to claims that it "steals growth," if such interest savings are used to reduce taxes mainly to "importers" it allows them to increase their after tax income, without reducing government expenditures, resulting in increased GDP. Here is a graph showing nominal public debt in the US since 1965. It shows that this method has soaked up over \$25T of past cash savings since 1965 that has been converted by savers to non transactional Treasury debt, never to be paid back. Method 5 is an identical process for which private debt has the same ability to reduce internal imbalance. https://fred.stlouisfed.org/series/GFDEBTN

Why perpetual bonds are useful: An historical example from the UK that avoided the "backfire" of having to pay debt back were perpetual bonds, called "Consols" that never needed to be paid back.

Method 5: Financial markets historically developed that allowed exporters to lend money to "importers" through credit, such as "loanable funds market." Exporters likely have extra money. Importers lack it. So it is useful, and not surprising to see how a market for credit naturally gets created caused by an economic imbalance—with exporters wanting to loan to importers. Thus Method 4 above is actually a subset within this larger category Method 5. Method 4 described how public debt is a means of converting "cash" to a form of credit, called a Treasury bond. Similarly, financial markets, such as banks and bonds developed so that an exporter can "save" or "loan" money to a bank—which is an asset he/she holds as subsequent wealth—The logic is the same as for public bonds, except the money is used for private instead of the public spending part of GDP. Or exporters can save their cash money with a bank savings account which will then be loaned to others becoming credit to spend. This is the method that resembles what international trading countries often do to resolve their trade imbalance, by which an "exporting" country loans funds to an "importing" one. In the case of a closed economy, the "loanable fund market" within the country is used. In a closed economy money can both originate from one person who is "saving" and end up with another person who spends into the same economy. Each dollar that is loaned to be spent compensates for one dollar of imbalance **\$C**.

The general term "loanable funds" is an essential way to allow people to save far more massive amounts of money than would be possible if cash money were the only method of saving. It is important to see the significant difference from holding an IOU for loaned funds and "holding actual money," although either can be considered a person's "wealth." As one person loans his money to another, the money is able to be re-used, which is not possible when someone saves cash to hold or hoard for the future, which shows the advantage to an economy of saving by loanable funds, rather than cash. Using loanable funds, very limited savings of "basic cash" has been converted over time to a huge pile of interest paying public and private bonds that essentially never gets paid back, especially if some inflation is built into the economy to reduce the burden of high debt. The FRED graph on their website—"All sectors; Debt securities and loans" shows total public and private debt in the US from the 1950's to the present: In 1950 it had nominal value of \$389B but now is equal to \$90T, virtually for all recent time a monotonically rising number. https://fred.stlouisfed.org/series/TCMDO

This immense total can be viewed as a record of accumulated past savings that have been converted over seventy years' saving of cash, never having been returned, now fossilized unto to a huge pile of bonds and other means of paper debt that represent in value nothing more tangible than a promise to pay money eventually—that is way too huge to actually ever be "paid back." It burdens taxpayers with interest expense which represents an income stream from those of low wealth to others of high wealth. Just one recent book about the problem caused by such immense debt has been written by economists Amir Sufi and Atif Mian in 2014 entitled **House of Debt.**

The flip side of the act of loaning is described by economist Richard Koo—When high amounts of loanable funds are paid back to the "exporters," this reverses the loan process, and is what Richard Koo describes as causing a "balance sheet recession" which causes an economy to go into a downturn—having the opposite effect as the loans had when they were being generated.

If interest rates are too high, it is usually assumed that loanable funds are likely to be in low demand, slowing an economy. However if interest rates are too low, they are then likely to be in low supply: If interest rates are zero, there is no motivation for savers to loan funds. Those with cash may then want to hold money with zero credit risk, rather than holding loanable funds. This demonstrates how interest rates very near zero can unexpectedly slow an economy, causing what Keynes called a "liquidity trap," or which I would describe as a large amount of money held with low monetary velocity, which would tend to reduce aggregate demand. This likely happened to slow the economy in the 1930's. The three reference graphs below from the Fed show how lower interest rates killed monetary velocity, showing that much cash was likely held as wealth rather than being used for transactions that generate GDP. When interest rates went virtually to zero far more cash money was being held even as the Fed attempted to rapidly increase the money supply. As soon as the Fed generated more cash, this cash was likely held as "savings" because of the loss of any interest reward to loan it, which kept it from being used by borrowers to stimulate GDP. However it did provide an actual economic experiment that invalidated Milton Friedman's claim that monetary quantity was the only factor that has ever caused inflation. Particularly note in these graphs what happened when interest rates rapidly fell both in 2008 and 2020. Velocity rapidly declined at the same time showing that with very low interest money was being held rather than being invested or lent..

.US M1 Monetary supply: https://fred.stlouisfed.org/series/M1SL

US M1 Monetary velocity: https://fred.stlouisfed.org/series/M1V

US Ten Year Treasury interest rate: https://fred.stlouisfed.org/series/FEDFUNDS

The amount of M1 money supply limits the amount that can possibly be saved as M1 cash. In 2015 total M1 money supply was about \$3T. Unlike holding M1 money as savings, there is no defined total limit for how much "loanable funds" can be created and saved. That number in 2015 was about \$40T, but can rise as high as there are people confident and brave enough to loan to borrowers who can be trusted not to default. It's beyond the scope of this essay to fully discuss the economic problem that such major wealth can cause—but it is obvious that the interest burden on the economy can rise, which is a flow of interest money mostly from borrowers that are likely "importers" borrowing from savers that are "exporters." This encourages wealth inequality to constantly rise. The problem that this debt causes is well explained by Amir Sufi, Atif Mian and Ludwig Straub in these papers: "The Saving Glut of the Rich" and "Indebted demand". Quarterly Journal of Economics, November 2021.

Method 6: Increase GDP by increasing production of new goods/services targeted to exporters. Create new jobs to produce new products/services to sell to "exporters" that can maintain GDP by moving money from "exporters" to "importers." This is why economic "growth" is necessary for an economy. It is not because the economy has need for more stuff. Production of more stuff is necessary to provide jobs, and thus generate spending money for the redundant workers so they can continue to purchase what they were spending before, plus the new output they are producing with their new jobs.

Method 7: Persons default on credit debt: Default on debt amount of \$D will decrease imbalance by the amount \$D. However, if the creditor is judged "too big to fail," the Fed may decide to print money for the default amount for the creditor. This will improve the monetary wealth of the creditor by \$D. The amount of "credit" will be converted to "cash" which will increase the money supply by the amount of the default.

Method 8: Agents can give gifts of products/services to others: For example several agents can combine into one family to act as one agent. One family member earning sufficient money can distribute goods/services to support others in the family. Charities funded by people who earn enough income can provide necessary products/services to others who can not afford to pay.

Loanable Funds Debt is Exporters' long term record of savings: This essay claims that total national loanable debt savings added in one year are what drive total public and private debt higher. The following graph of combined private and public debt shows that the sum of such debt has always constantly risen, which is why these methods are effective for rebalancing. Every year total debt increases by the amount of cash wealth that has been converted to loanable funds in that year. The following link shows total US debt, public and private. https://fred.stlouisfed.org/series/ASTDSL

There are (at least!) two possible reactions to seeing this graph:

- 1. Most who believe they are the "responsible" economic commentators and even many economists that do not understand the implication of "The fundamental monetary constraint": PUBLIC DEBT BAD!! WE'RE ON THE ROAD TO FINANCIAL RUIN! Three times US GDP!! \$30T we need to pay back! \$100,000 for every person-man, woman and child in America!
- 2. But a second, I would claim an even more responsible view: virtually none has EVER been paid back. The only time was a very small amount during the Clinton administration--which just convinced President GWB that there was extra spending money that could allow him to give a tax cut to the wealthy--which immediately made the public debt resume its customary and necessary increase. Those who understand the implication of "The fundamental monetary constraint" can see this as a useful Ponzi scheme that has managed to last for over 70 years. It has distributed an extra \$30T of public goods--while likely increasing GDP by \$30T over 70 years. It shows how savers have felt that they have "saved" wealth in the form of Treasury Bonds over years while that money simultaneously paid for \$30T public goods/services. Savers as a whole never bothered or seemed to care about getting their cash back. People, similar to Trump, seem to feel pride about how high their wealth is--which is so much that they apparently have had no need or desire to spend faster than others decided to purchase new Treasuries. It has been a method of successfully distributing public goods/services that have been produced by individuals who have produced much more than they consume--meaning more than they needed to spend--which otherwise would not have allowed goods/services to be distributed--thus increasing over time \$30T more total GDP.

A question I have for economists: Isn't it a little out of date now to think that "scarcity" of goods/services is the main problem for economics to solve? Any trip to Walmart or Sears or

Amazon since probably even the 1930's should have dispelled that notion—except for the period after Covid 19 which was a very unusual recent event causing slightly reduced supply.