

Currency Patents — The Anticipated Bust of an Economy

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The effect of fluctuations in the value of a currency is a matter for serious thought. Patents are heralded to be the future of the world, providing stepping stones to a better future. But the effect of holding a patent on a currency is a problem that has not yet come to the fore. This paper is an attempt to bring out the possible impact of patents held on various components of currencies – ‘currency patents’ on the value and operation of the currencies in which they are incorporated. The paper is based on the current trends of economies and general behaviour of market and highlights why exactly an economic breakdown can occur because of currency patents.

Keywords: Patents, currency, economy, Patent regime, TRIPS Agreement, compulsory license

Inventions, they say, are a boon for humankind. Combine them with money and they can kill an economy. Currency; used in today’s world synonymously with money, actually is only that money which is in actual use as a medium of exchange. This means it is technically the most important cornerstone of an economy and the fact that a currency can appreciate and depreciate and can particularly decide how an economy fares.

There are several factors which influence working of a currency and its impact on the economy. Right from internal trading to exports, from banking regulations to mergers and acquisitions of business assets, from the bulls and bears of the stock markets to the humdrum speeches of politicians, practically everything has a role to play, big or small, in the working of a currency. So, it is also not a surprise that intellectual property also holds a stake in swaying the pendulum of a currency. In fact, patents have long been held to be a separate currency as far as business enterprises go, as they have immense impact on the eventual valuation of a particular establishment. More the patents, stronger and more saleable they are, and have more trading value in the market.

But what happens, when the patents start encompassing currency itself? The need for the same varies from the age old requirement of anti-counterfeiting to extending the lifetime of a coin or note to more sophisticated security measures. What happens when the very money we hold in our hand in

the form of a coin or a paper note or in the bank account in electronic form is patented? Patents make an object more valuable. The craziness of the situation is only the tip of the iceberg, when we land up with the situation of currency itself becoming more valuable than it actually is? Another perspective will be: What happens when the patents granting monopoly, monopolize currency? Who regulates such patents and what can be the possible repercussions of the impact?

Such a plethora of questions will definitely plague the IP regime once currency patents start taking a front-seat in the patent regime. This paper is an attempt to highlight a few issues which can possibly arise and analyse them in the light of economic turbulence that may be caused as a result.

The paper provides a background on what currency patents actually are and how they came into existence and their real need in today’s world. It also encapsulates what kinds of currency patents can possibly exist and lists out a variety already granted and being considered around the globe for grant of monopoly regime. Also discussed is the patent regime as postulated by TRIPS across the world in different nations to analyse whether at all; there is any bar to the grant of currency patents and if not, how a particular nation can approach them, given their important economic nature. Further illustrated is what effect currency patents can possibly have on a particular currency and further, what this could mean for a particular economy as a whole. It also encompasses an attempt to deal with the listed

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problems which being of a grave and superlative scale has the ability to wreak havoc on a particular financial system.

What are Currency Patents?

Currency coins and notes have various steps of manufacture and an assortment of methods of manufacture. Every coin and currency has some product imbued within it which is patented, thus making the whole currency dependant on the patent. A tentative list¹ of what all a currency patent can possible cover is:

Engraving

Production of currency is not an easy or simple task, but one that involves over 65 separate and distinct steps in the production process. Money begins with the hand-engraved piece of soft steel, known as a master-die. Separate portions of the design, such as the portrait, the vignette, the ornamentation, and the lettering are hand-cut by the engravers. All these are done to ensure that reproduction of the currency is extremely difficult. Therefore any patent obtained on these particular arrangements of master-die² as well as the steel used for the master-die is an example of a ‘currency patent’.

Printing/Minting

The printing of notes requires special paper or plastic which is also a subject matter of patent. Most countries currently have the paper already patented.³ The current patent holder for providing paper for the US government is Crane & Co, which has supplied banknote paper to the Bureau of Engraving and Printing for the printing of US currency since 1879.⁴ Similar is the case with coins where the alloy metals⁵ used for the coins are of special properties which have also been patented. The ink used for printing is also of a special variety, usually compatible with security measures like UV light readability. The science and art of currency manufacturing and printing also includes production steps in the creation of banknotes, from design and origination, to papermaking, printing and security feature integration.

Security Features

Every coin and currency note in the world today is embedded with security technology to prevent forgery and counterfeiting. The security measures range from advanced security threads⁶, watermarks⁷, security fibres⁶, to optically-active elements⁸ which are all subject matter of patents.

One of the primary reasons for need of currency patents is counterfeiting. Crooks have been copying money ever since its invention. Ancient gold coins were faked by filling them with lead; counterfeits as simple as a slug were used to defeat older vending machines; and these days fake money is made using printing presses or laser printers.⁹

One of the ways that the governments have tried to combat counterfeited coins and notes is to use distinctive paper. Standard paper, like the kind used in a copy machine, is composed of wood cellulose bound together with starch-based glue. Paper used in currency is composed of cotton or linen fabric that has been beaten and cooked to create fine fibres. The process causes the fibres to interlock naturally without requirement of a starch binding material which makes for a very strong, high quality paper. Paper used for currency has other additions, such as tiny red and blue fibres and a plastic/metallic strip embedded in it for not only distinctiveness but security device compatibility to check the authenticity of the currency.

Why need Currency Patents at all?

Currency patents are unavoidable in the coming scenario. This is primarily on account of the increase in the manner in which counterfeit currencies are proliferating. The inclusion of patented articles in the currency helps the currency become more secure and hence, is being increasingly used in the production and manufacture of the currencies all across the globe.

The following illustration helps understand the situation better:

When a currency is being manufactured, there are two kinds of value that are of importance— the assigned value— i.e. the value that is allocated to it by the currency printing agency (a) and the actual value— i.e. the value of the components in the market taken together (b).

Now, there can be three situations:

- 1 (b)>(a). In this case, the currency utterly fails, since the currency will be treated more as a commodity of value than as a medium of exchange. No threat of counterfeiting.
- 2 (b)=(a). A suitable proposition which ensures that the currency can be used the way it is meant to be. However, it is a dicey balance to maintain, since the value of the materials making up the currency is hardly ever constant. Very low threat of counterfeiting.

- 3 (b) < (a). This is the best proposition for a currency manufacturer, where the probability of the currency being used as an item of value diminishes to nearly zero. Currently, preferred over the globe. However, as seen leads to the huge problem of counterfeiting.

Thus, it can be easily inferred that the only currency that can sustain itself as a medium of exchange in the long run is one whose assigned value is higher than that of its actual value. Since, it also simultaneously gives birth to the problem of counterfeiting; a practical solution is to incorporate technologies in the currencies which make it difficult to counterfeit. Hence, importance of currency patents comes into being.

Patent Regime

The current patent regime as followed by the countries world over does not put a bar on currency patents. The only requirements that need be fulfilled as per the general guidelines laid down in Article 27(1) of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) are that any product or process in all fields of technology are valid, provided that they are novel, involve an inventive step and are capable of industrial application. Patent rights being available to all fields of technology indiscriminately, there is no express ban provided in TRIPS which bars the grant of a patent on currency.

Patents have actually been granted on various components of a currency over the world especially in US, EU and Canada. Observing various provisions of what cannot be patented in patent regimes of countries like Germany (Article 1 (2) and 1(3) of the German Patent Law), Japan [Article 32 of Japan Patent Law) and India (Article 3 of Patent Act), it is a foregone conclusion that, on an express scale patents on currency cannot be barred.

The only ground for rejection can be on public morality, which is usually present in all patent laws, on the pretext that if currency is patented it can cause irrevocable harm to the economy of the country.

According to Article 27(2) of the TRIPS, that allows inventions to be barred from patentability if preventing commercial exploitation of the subject matter is necessary to protect public policy or morality. However, TRIPS also states that this exclusion is not satisfied by the mere fact that exploitation of an invention will be in violation of a national law. TRIPS does not provide additional

guidance on the definition of public order or morality other than to indicate that it may involve the following broad categories- protecting human, animal or plant life, protecting health, and avoiding serious prejudice to the environment.

This provision stands as a potentially large barrier to mainly patenting new types of biotechnology as patenting biotechnology raises issues of morality even in countries where patenting of biotechnology is allowed. Similar provisions have been utilized, or noted as capable of being utilized, to deny patents on transgenic plants and animals as well as isolated gene sequences. However, interpretation of what constitutes public policy or morality in the context of patenting biotechnology has been elusive. This exception requires that the violation of public order or morality be the result of commercial exploitation. This may pose some interpretative difficulty as commercial use or exploitation is not required to be disclosed in a patent application and may not be known. Accordingly although a patent office is charged with determining whether commercial exploitation of an invention would violate these undefined terms, the necessary information may not be available at the time of examination to enable educated decision.

The scope of this exception may be limited by prior interpretations of similar terms, albeit in contexts other than TRIPS, or even patent law. In particular, prior WTO dispute panels have examined and interpreted the meaning of 'necessary' and 'morality' under the General Agreement of trade and Tariffs (GATT). In that context, it has been found that the term 'necessary' requires objectively justifiable measures and that there be no alternative measure available. In addition it has been suggested that the definition of public order can be derived from case law by the European Court of Justice. This may however be unhelpful as there are no such cases interpreting public order in the context of patentability.¹⁰ Thus, use of 'public policy/morality' to prevent patenting of currency patents is quite improbable and liable to be challenged as the ambit of this exception clause is not yet clear.

However, any rejection based on the existing monopoly of the government agencies which mint and print currencies is baseless, as improvements in technologies cannot be refused merely because the said field is largely a domain of the public enterprises.

Options with Government

There are two options that remain with the government agencies, one is to block patents by passing secrecy directions quoting national security and the other is to allow the grant of the patents and then, adopt the methodology of compulsory licensing, such that the brunt of paying the royalty of the patented currencies falls on the government. This was a viable solution and maybe, still is, to a certain extent, with the limited number of patents and companies investing in currency patents.

‘Secrecy directions’ are basically used by the governments to protect their states from patents which have potential of being a threat to the public order and security if disclosed. Though, such directions are not specifically provided in the TRIPS as minimum standards, yet they are implemented by most countries to protect their own national security.

The term ‘compulsory license’ is used to describe a number of mechanisms for non-voluntary authorizations to use patents. The most important global norm for the use of compulsory licenses is Article 31 of the TRIPS Agreement, which addresses uses ‘of a patent without authorization of the right holder, including use by the government or third parties authorized by the government.’ The TRIPS Agreement specifies some grounds for the granting of compulsory licenses but does not restrict possible grounds to those actually cited. In contrast, the Agreement is quite specific with respect to the *conditions* to be met should a compulsory license be granted. These conditions include: the requirement - in certain cases - that a license be voluntarily requested before being granted on compulsory terms, non-exclusivity, and an adequate remuneration to the patent holder. Other TRIPS provisions that are important are Articles 1, 6, 7, 8, 31 bis, 40 and 44, as well as the provisions of the 2001 Doha Declaration on TRIPS and Public Health. Contrary to many popular news reports and statements by misinformed government officials and industry lobbyists, the WTO rules are quite liberal in terms of the grounds for granting compulsory licenses. There are no limitations on the scope of disease. Indeed, there is no requirement that compulsory licenses be limited to cases involving health care problems at all.

The relevant positions of secrecy directions and compulsory licensing in different countries are discussed below:

US

35 U.S.C. 181-188 provides the Invention Secrecy Act of 1951 along with regulations from 37 Code of Federal Regulations part 5. These are mostly brought into effect to protect national security where such invention if disclosed may be detrimental to the national security. However, sections are limited to the fields of defence and atomic energy. Reading economic security would be a too far fetched approach as per this section, which clearly provides no secrecy directions for any other class of inventions.

28 USC 1498 provides for use of patents or copyrights, when the use is by or for the government. Under this statute, the US government does not have to seek a license or negotiate for use of a patent or copyright. Any federal employee can use or authorize the use of a patent or a copyright. The right owner is entitled to compensation, but cannot enjoin the government or a third party authorized by the government, to prevent the use. Any contractor, subcontractor, person, firm, or corporation who receives authorization from the federal government to use patents or copyrights is construed as use by the federal government, and cannot be sued for infringement.

In 2001, DHHS Secretary Tommy Thompson used the threat to use 28 USC 1498 to authorize imports of generic ciprofloxacin, for stockpiles against a possible anthrax attack.¹¹ In 2005, the US Department of Justice cited its right to use patents in 28 USC 1498 when it opposed injunctive relief for infringement of the patents relating to the Blackberry email services supplied to both the government and private firms that used the Blackberry device to communicate with the government.¹²

In a November 2005 Congressional Hearing, DHHS Secretary Michael Levitt testified before the House of Representatives that he had effectively required the patent owners for Tamiflu (Roche/Gilead) to invest in US manufacturing facilities for the product, so that the United States government would have access to Tamiflu if confronted with an avian flu pandemic.¹³

In 2007, the US Supreme Court was petitioned to hear an appeal of *Zoltek Corp v US*¹⁴. Zoltek has a US patent on a process for making material used in F-22 fighter jets, but the US imports the product from an unlicensed foreign manufacturer without paying royalties to Zoltek. The United States argued that it may, in effect, have a royalty-free compulsory license

for government use of the product because the patented process is carried out in a foreign country, meaning that the patent holder is not entitled to 'reasonable and entire compensation' under 28 USC 1498.

This shows that in the interest of the nation whether, social or defence, the US government has not backed from using the power of compulsory licensing and essentially blocking the rights of the patentee. Since, the language of the section does not mention as to what kinds of inventions can be licensed, any invention, the government feels that the patent is or cannot be exercised for the interest of the public by the patentee; can be blocked by means of compulsory licensing, which technically can also include currency patents, since these can cause huge damage to an economy.

UK

Section 23 is designed to give the Government a chance to inspect patent applications before publication in order to identify any invention that could be relevant to public security or defence. Section 23 must be read in conjunction with the 'secrecy directions provisions' in Section 22. These enable the Comptroller to give directions prohibiting or restricting publication of information in a patent application which could prejudice the defence of the realm or public safety. The Official Secrets Act 1911 contains other restrictions in relation to inventions of a 'military nature'. It is a crime to communicate directly or indirectly to any foreign power, or in any other manner prejudicial to the State's safety or interests, any 'sketch, plan, model, article, note document or information which relates to munitions of war'. This could include a patent application.

Similar problems as with US also arise here as the section is limited to security measures relating to defence. However, an expansive reading of the section could be held to include the economic distresses caused due to the issue of a patent, since an economic crisis would, in fact jeopardise the security of the country.

Compulsory licensing dealt with in Section 48 of the UK Patents Act, 1977, does not deal with the conditions, where public interest is being harmed. Still, if the state so wishes, it can invoke the Crown Use Provisions provided under Section 55 and 59, acquiring the particular invention for its own personal use or for emergency conditions, thus, effectively blocking the patent. Compulsory licences of a special

kind are dealt Patents (Compulsory Licensing and Supplementary Protection Certificates) Regulations 2007. However, the same are restricted to a compulsory licence granted under Regulation (EC) No 816/2006 of the European Parliament and of the Council of 17 May 2006 on compulsory licensing of patents relating to the manufacture of pharmaceutical products for export to countries with public health problems.

This shows that compulsory licensing can be invoked for public health problems. The same can be extended under the plenary powers of Crown Use to currency patents citing economic security as the reason.

India

India has similar provisions regarding secrecy directions under Section 35 of the Patents Act, 1970, which relate to defence purposes exclusively, which cannot be used for currency patents as well as that of compulsory licensing where a situation of national emergency can be cited under Section 92 to compulsorily acquire the said patent, which gives the state freedom to block patents even for an economic crisis.

Now, as a very far fetched assumption, if the currency patents actually cause an economic crisis or pose a threat to actually do so, then the respective countries have the option to block all currency patents or withhold the same by means of compulsory licensing. However, as more and more competing patents come into existence, it becomes a difficult proposition for the government to block all patents of a particular *Genre* with only the apprehension that they may cause economic turbulence. The patent system was designed as an incentive mechanism for the creation of new, economically valuable knowledge and as a knowledge-dissemination mechanism to help distribute innovations. Nonetheless, if such blanket bans are imposed on the public use of such patents, the patent system will become an end in itself and that patent system will be working against the original aim of promoting innovation and knowledge distribution and could become barriers to follow-up research, since none of the developments of currency patents would ever be available to the common public and hence, the inventors as well.

Also, with more and more currency patents coming up to deal with various security measures against counterfeiting, it would indeed be very difficult to

pick and choose which patent to incorporate in the currencies. Also, with the predicted revival of private coinage agencies around the bend, the competition for currency production is bound to escalate, with more and more threats to the management of the pressures of currency patents.

Ultimately, when the current regime fails to encompass the growth of currency patents, the economy will have to come face-to-face with the reality of currency patents affecting the very working of an economy. The trend of the change is very apparent from the following excerpt regarding the US currency agency, Bureau of Engraving and Printing.¹⁵

GAO-05-368 Currency Paper Procurement

A subsidiary of the current supplier holds patents for manufacturing the security thread used to deter counterfeiting. This thread is inserted into all US currency denominations greater than \$2. According to a Bureau of Engraving and Printing (BEP) official, the current supplier (Crane & Co) approached BEP with the idea for the security thread in the mid-1980s, and BEP encouraged this company to develop the thread, but BEP neither entered into a research and development contract to help fund the effort, nor did it attempt to negotiate rights to that technology or technical data, according to another BEP official. Because the government did not obtain royalty-free data rights to, or fund the development of the security thread, it does not have any rights to the associated technical data and must pay for any use of the thread. The price BEP currently pays for currency paper includes the cost of royalty payments. For the 2003 contract, these payments totalled \$663,000¹⁶ over 4 years. According to the current supplier, these royalty payments will end in December 2006. As a result, beginning with the next currency paper contract- which BEP expects to award at the end of 2010- BEP will not have to pay royalties for the use of the current security thread or negotiate a license to provide the thread to a second supplier. In addition, to avoid a recurrence of this situation, BEP plans to purchase, for an undetermined price, royalty-free rights to any new anti-counterfeiting features that it obtains in the future from any sources. Properly

written, such an agreement could enable BEP to incorporate new technology at its discretion and allow currency paper contractors to use that technology in manufacturing paper to meet the government's requirements. In addition, BEP included a special provision in the 2003 currency paper contract stating that BEP will not incorporate any new anti-counterfeiting feature into US currency paper unless it has negotiated an exclusive license to the feature.

In 1998 that BEP actually ordered more paper than it estimated during some years. As a result, BEP paid a higher unit cost for the paper, because the price was based on the estimated amount, and therefore the contractor's fixed costs were spread over fewer units than BEP purchased. If BEP had accurately estimated the quantity of paper it ordered, the contractor's fixed costs would have been spread over more units, resulting in a lower per-unit price. Since 1999, BEP's currency paper orders have remained inconsistent, but this inconsistency has not yet adversely affected BEP's prices. Specifically, for 4 of the last 6 years, BEP's orders were at or below the estimates the contractor used in setting its price, and therefore the orders should not have resulted in a higher price for currency paper. However, in fiscal years 2003 and 2004, BEP's actual orders were considerably higher than the minimum quantities estimated in the contract. In fiscal year 2003, the minimum quantity was 151 million sheets, and BEP ordered almost 280 million sheets; and in fiscal year 2004, the minimum quantity was 203 million sheets, and BEP ordered 296 million sheets. Although BEP's order amounts exceeded the minimum quantities, the price BEP paid for currency paper was not adversely affected because of the pricing approach used by the contractor in the 2003 contract. However, the problem could recur with high severity and only drafting skills might not be enough then.

The above illustration clearly highlights the dilemma that the US government agency is facing with regards to currency patents already. The current attempts to curb the problems of new patents by using the bullying authority of exclusive licenses can last only as long as the government monopoly in this field exists.

Is Privatization an Option?

Economists till now, have almost universally tended to support governments' traditional coinage 'prerogative,' claiming that private mints would tend to issue inferior and irregular coins. They often appeal to Gresham's law, according to which bad coins will tend to drive good coins out of circulation. But Gresham's law is more properly understood as explaining what tends to happen when governments *do* monopolize coinage while trying to force the public to accept bad (debased or lightweight) coins.¹⁷

Far from giving effect to Gresham's law, the private coinage usually will have the opposite effect, with mints producing inferior coins being forced out of business by their more reputable rivals. The private coinage episode that followed the discovery of gold in California is a relatively well-known instance of this.¹⁸

A less well-known episode took place during the first, critical decades of Great Britain's industrial revolution. The Royal Mint struck hardly any copper or silver coins after 1775, and so left British industry without decent official money with which to pay workers, who typically made less than 15 shillings a week. In 1787 a major industrialist began issuing his own copper pennies and halfpence, and soon a private coinage industry consisting of more than 20 independent mints, most of which had been started by former metal button makers located in Birmingham, was supplying most of Great Britain's small change.¹⁹

The general advantages of privatization also apply very aptly to the current scenario.

- Privatization places the risk in the hands of business or private enterprise— The risk of counterfeiting can be met more strongly by the private entities, since it places an onus on the company to maintain the quality of the currency being produced.
- Private enterprise is more responsive to innovation— Will allow more and more security devices to be used and incorporated within the currencies. Different enterprises can incorporate different sets of inventions as long as they conform to a general standard set down by the government. The standards used by different entities can be listed in a database with the government.
- Privatization leads to lower prices and greater supply— Prices of acquiring the patents which has to be borne by the government currently can easily be handled by the private companies.

- Competition in privatization increases differentiation— With a large number of currencies in the market using various components and methods of manufacture, it becomes far difficult to counterfeit a currency, since first it has to be traced to a particular producer and even then knowing the exact techniques used by the producer would be difficult.

With the reasons for keeping away private coinage failing, it is, but a matter of time before the monopoly of the government in this regard fails.²⁰ This will inevitably pave a pathway for encouraging more currency patents, which will inevitably improve the functioning of currency both literally (higher durability) and figuratively (higher security).

Because of different private mints coming into existence with different currency notes or coins of the same denominations being produced in the market, notes/coins of the same denomination may have varying costs according to the patents used in the note/coin (products might keep to a set standard but competing coins/notes would be judged on their utility and actual value in which case the actual value of the currency becomes largely relevant).

Thus, the plain conclusion is that, the advent of currency patents cannot be denied in the market by the current means and methods in use. Whether these patents will be beneficial or disastrous to the economy is the question that plagues?

Impact of Currency Patents on Economy

Patents are a definite value-addition to any product. The query at hand is what impact, will a patent have on the value of a currency. The most apparent impact is that the whole system will experience a change in the manner in which currency is valued at present. More specifically, the actual value of a currency might go above the face value due to the additional value of the patents. The most important aspect of the situation becomes properly valuing the currency at a suitable exchange rate with respect to the patent valuation done. The same has to be done to determine at what rate, say a Rs 1 note or coin will sell at.

Amusingly, this might lead to a far more confusing situation. Take the instance where both metallic coin and paper versions exist for a particular denomination of currency. The valuation of the patents for different versions might come out to be different, thus, assigning different values to earlier equally valued

currencies. Another variation that might arise is the valuation of currencies of same face value using different patents with different value.

The ‘power’ on which the currency holds is called currency value. An immediate consequence of an unanticipated change in the currency value is redistribution: inflation lowers the real value of nominal assets and liabilities, and thereby redistributes wealth from lenders to borrowers and deflation results in a vice-versa outcome. There are exchange rates which are the price at which currencies can be exchanged against each other.

Thus, there are two levels on which the consequence may be felt; at an internal economic level (inflation and hyperinflation), and with respect to foreign currency (depreciation/appreciation).

Inflation

Inflation is a rise in general level of prices of goods and services in a given economy over a period of time. It may also refer to the rise in the prices of some more specific sets of goods or services. In either case, it is measured as the percentage rate of change of a price index.

The high rates of inflation are caused by high rate of growth of the rate of money supply changes in inflation are sometimes attributes mostly to changes in real demand for goods and services or fluctuation in available supplies (i.e. changes in search) and sometimes of value of currency as a result this affects the business performance as follows:

A small amount of inflation is generally viewed as having a positive effect on the economy. One reason for this is that it is difficult to renegotiate some prices, and particularly wages, downwards, so that with generally increasing prices it is easier for relative prices to adjust. Many prices are ‘sticky downward’ and tend to creep upward, so that efforts to attain a zero inflation rate (a constant price level) punish other sectors with falling prices, profits, and employment.²¹ This effect tends to keep an economy active in the short term by encouraging spending and borrowing and in the long term by encouraging business performance in investments.

High inflation, though, tends to reduce long-term capital formation of the business firm by hurting the incentive to save, and to effectively reduce long-term spending by making products of the business firm less affordable.

Thus, a minimal change in value of currency might lead to inflation, but this is true only till the extent the

actual value of the currency does not far exceed that of the face value. The limits of the same are to be set in accordance with the existing foreign currency (relatively stable) value exchange rates.

Inflation also gives central banks room to manoeuvre, since their primary tool for controlling the money supply and velocity of money is by setting the lowest interest rate in an economy - the discount rate at which banks can borrow from the central bank. Since borrowing at negative interest is generally ineffective, a positive inflation rate gives central bankers ‘ammunition’, as it is sometimes called, to stimulate the economy. As central banks are controlled by governments, there is also often political pressure to increase the money supply to pay government services, this has the added effect of creating inflation and decreasing the net money owed by the government in previously negotiated contractual agreements and in debt hence affecting economic performance

However, the above stated policy does not effectively work in case of appreciation of actual value of currency, as the regulation of the *quantity* of money in circulation is of less importance; rather the valuation or the *quality* of the currency is to be taken into account while setting the Bank rates or the Cash Reserve Ratio.

Hyperinflation

However, the main issue arises when the value of the currency far exceeds that assigned to it. The result can possibly lead to a situation largely similar to hyperinflation.

If inflation gets totally out of control (in the upward direction), it can grossly interfere with the normal working of the economy, thereby hurting the ability of the economy to supply. High inflation can cause many problems in relation to control and operate of economy as the face value of currency depreciates: It hurts people on fixed incomes (e.g. pensioners, students) by reducing their purchasing power. This has a significant effect on GDP, where by in one way or another reduces the consumer capacity for the economy products, leads to decrease in business revenue and profit affecting the economic decision and plans of the business firms.

Rising inflation can prompt economy to demand higher wages, under the circular logic that wages must keep up with inflation. In the case of collective bargaining, wages will be set as a factor of price expectations (PE). PE will be higher when inflation has an upward trend. This can cause a wage spiral.

If inflation is higher in one country than in its trading partners', and that country maintains fixed exchange rates, then the country's economy exporters will become more expensive abroad and it will tend towards current-account deficit. High inflation distorts relative prices. The pricing mechanism allows for the efficient allocation of resources and if prices are misaligned this will lead to an economically inefficient allocation of resources.

Hyperinflation has occurred previously on many occasions in various countries due to devaluation of the state currency, albeit due to different reasons, but leading to the same result; the currency had higher actual value than face value, leading people to use the money in different modes rather than as an accepted mode of exchange.

The most widely studied hyperinflation occurred in Germany after World War I. The ratio of the German price index in November 1923 to the price index in August 1922—just fifteen months earlier—was 1.02×10^{10} . This huge number amounts to a monthly inflation rate of 322 percent. On average, prices quadrupled each month during the sixteen months of hyperinflation. While the German hyperinflation is better known, a much larger hyperinflation occurred in Hungary after World War II. Between August 1945 and July 1946 the general level of prices rose at the astounding rate of over 19,000 percent per month, or 19 percent per day. Even these very large numbers understate the rates of inflation experienced during the worst days of the hyperinflations. In October 1923, German prices rose at the rate of 41 percent per day. And in July 1946, Hungarian prices more than tripled each day.²²

The recent examples of very high inflation have mostly occurred in Latin America. Argentina, Bolivia, Brazil, Chile, Peru, and Uruguay together experienced an average annual inflation rate of 121 percent between 1970 and 1987. One true hyperinflation occurred during this period. In Bolivia prices increased by 12,000 percent in 1985. In Peru in 1988, a near hyperinflation occurred as prices rose by about 2,000 percent for the year, or by 30 percent per month.²³

Hyperinflations have been usually caused by extremely rapid growth in the supply of paper money. This causes the face value of the currency to take a plunge and its scrap value becoming higher, meaning the currency losing its trading value as money.

However, this can happen also when the actual scrap value of the currency is above the face value

assigned to it. A comparative example which already exists with respect to coins is when the scrap value of the metals is more.

Coins are made of various materials which have intrinsic value as well. Until 1965, legal tender coins issued in the US were based on their melt value; for example, a 'silver dollar' contained one dollar's worth of silver, and a nickel contained 5 cents' worth of nickel and copper. The US went off the precious metals standard in 1965, making the 'dollar' the baseline value rather than making the dollar based on the price of silver. This caused many older coins to have increased metal value, which resulted in many coins from the early 1960's to be melted for resale at bullion value. That's how the term 'melt value' came about; this is the value of a coin melted down to a quantity of metal.²⁴

Today's coins are experiencing an interesting issue. Due to the market effects on the values of various metals, including nickel and copper, some coins again contain metal worth more than their face value.²⁵ During World War II, nickels were made of silver, because the metal nickel was important for war material. The collector price of many coins is much greater than the scrap price. The governments have tried to counter the same by declaring sale of coins as scrap metals illegal. A similar situation would arise with currency patents leading to hyperinflation.

What effects do hyperinflations have? One effect with serious consequences is the reallocation of wealth. Hyperinflations transfer wealth from the general public, which holds money, to the government, which issues money.²⁶ Hyperinflations also cause borrowers to gain at the expense of lenders when loan contracts are signed prior to the worst inflation. Hyperinflation reduces an economy's efficiency by driving agents away from monetary transactions and toward barter. In a normal economy great efficiency is gained by using money in exchange. During hyperinflations people prefer to be paid in commodities in order to avoid the inflation tax. If they are paid in money, they spend that money as quickly as possible. Hyperinflation is a wasteful game of 'hot potato' where individuals use up valuable resources trying to avoid holding on to paper money. This means that 'currency patents' would actually instead of giving the public higher purchasing power end up as a liability in the general public's hands. The currency will in fact, though being more valuable *per se*, because of lack of a fixed purchasing power assigned to it.

However, if the currency patents are properly valued, the situation might turn out to be quite reverse. With public obtaining more purchasing power than originally allotted, the economy will feel a severe crunch of supply of goods and services, which might lead to the eventual buckling of an economy.

Depreciation/Appreciation

Moving on to the second aspect of the impact on currency relative to other currencies, it is a well known fact that the value of a currency is also determined by how it fares against the other currencies of different countries. Simply put, it calculates the amount of foreign goods that a unit of domestic currency can purchase and vice-versa. A currency with higher power to buy foreign goods is said to be stronger than the corresponding country's currency. This leads to the fixing of exchange-rates between different countries.

Assuming that the internal market is able to overcome the problems highlighted in the previous sub-section posed by currency patents, it is safe to presume, that the 'patented currency' will have higher purchasing power leading to an appreciation with respect to other currencies.

If exchange rate is fixed, conversion of the foreign currency into local currency would increase country's money supply, and pressure from domestic demand would push up domestic prices. This would amount to an appreciation of the 'real' exchange rate- that is, a unit of foreign currency now buys fewer 'real' goods and services in the domestic economy than it did before. If the exchange rate is flexible, the increased supply of foreign currency would drive up the value of the domestic currency, which also implies an appreciation in the real exchange rate, in this case through a rise in the nominal exchange rate rather than in domestic prices. In both cases, real exchange rate appreciation weakens the competitiveness of the country's exports and, hence, causes its traditional export sector to shrink. This entire process is called the 'spending effect.'²⁷

At the same time, resources (capital and labour) would shift into the production of domestic nontrade goods to meet the increase in domestic demand and into the booming sector. Both of these transfers would shrink production in the now lagging traditional export sector. This is known as the 'resource movement effect.'²⁸

What is the actual impact when a currency appreciates all too suddenly, due to an unforeseen circumstance? The first is that exports are hurt. Most countries have economies based largely on exports that are competitive in global markets because of low prices. When those countries' currency gains value, they are no longer able to offer exports to the global market at the same low prices that they planned to. This may cause importers to look elsewhere to country's with lower valued currency and thus prices or to order less than they would have otherwise. The second impact of rapid currency appreciation is that it hurts the value of repatriated profits from a country's international economic activity. Currency appreciation at the home country means that money made elsewhere would not stretch as far in supporting the domestic economy.

A lot hinges on whether the newfound wealth is temporary or permanent. In countries that expect new resource discoveries to be depleted fairly rapidly, aid flows to be temporary, and terms of trade gains to be transitory, policymakers may want to protect the vulnerable sectors-possibly through foreign exchange intervention. However, since in this case, the appreciation is not due to a temporary phase in the economy²⁹, inevitable structural changes are required to ensure economic stability on the international scenario. Steps to boost productivity in the non-traded goods sector (possibly through privatization and restructuring) and invest in worker retraining are a few methods to rein in the negative effects of currency appreciation.

But with the actual effects of a currency patent based appreciation being unknown and fairly unpredictable, the measures to counter them can also be least anticipated. This is on top of a very dicey assumption, that an internal economy will first survive the turmoil presented before it. If it does not, then it is most likely, that the home currency will depreciate – fast!!!

Conclusion

Currency patents exist in this world today; there is no doubt about that. However, how far they can actually affect a currency is for a country's administration to decide. The paper merely theorizes what impact it could have on the currency and economy of not only that country but of the whole world, based on the current trends of the society, economy and the IP scenario. Nevertheless,

it could all turn true, if the governments and the currency producing government agencies do not address the issue within the next few years. Converting an impending bane into a boon is definitely a difficult task and would require an unprecedented amount of restructuring of the currency production field, if we are to avoid a complete economic breakdown.

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