Ca' Foscari
University
of Venice

Master's Degree programme

in Language and
Management to China (D.M.
270/2004)

Final Thesis

The Yuan Exchange rate and Firms

How the Chinese exchange rate
can influence strategic entering
into the Chinese market

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Academic Year
2016 / 2017

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Abstract

中国人民币汇率跟企业的关系。

随着时代的进步，国与国的距离拉近，各国间政府，经济，文化等方面的常常交流，全球化已经到了。 外贸经济的地位越来越紧要，作用也越来越强大，外贸经济的角色也越来越重要，而汇率作为不同国家货币之间地兑换比率，发挥巨大的调整作用。近年来，中国对外贸易顺差不断扩大，外汇储备急剧增加，给中国的经济均衡发展和政策制定带来很大压力。同时，中国巨额的贸易顺差也带来了美国、欧洲等国家地区的责难，因为对人民币的低估，才使得中国出口大幅度增加，并导致了这些国家对外贸易的大量逆差。这个情况带来了的结果：从 2002 年以来，国际社会要求升值的压力待续不断。同样随着经济全球化的发展趋势人民币不断升值，人民币汇率与国际贸易问题引起了社会的关注。在 2005 年，国际贸易中人民币汇率形成机制进行了重大调整，国际贸易中人民币汇率从此进入了升值阶段，截至目前人民币对起源汇率已经升值达到约 20%。同样通过汇率的变化会通过连个环节给已过进出口贸易带来影响: 首先汇率变化影响的是进出口商品的价格，进出口价格的变化继而会影响到进出口量的变化，从而影响到贸易额和贸易差额。也正是因为汇率对国际贸易造成了很大的影响，现在如何正确处理汇率因素与贸易之间的关系是一个非常普遍研究的社会问题。我们通过研究汇率因素与国际贸易之间的相关性，既而希望帮助欧洲公司控制汇率风险，提高适应浮动汇率机制的水平，这样让欧洲公司得到总体经济最大的交易。

首先，我们应该介绍汇率因素是什么。国际贸易相关性汇率（也被称之为汇价）：以国家货币换另一国货币之间的比率，在国家经济的方面成为重要的价格体现之一。由于每个国家有自己的货币，并且一个国家的货币有不同的名称和币值，因此，一个国家的货币对其他国家的货币需要规定的兑换率。汇率可以分为两种：第一个是名义汇率，第二个是实际汇率。名义汇率会随着外汇市场上供求的关系而变化，其实并不能体现国与国之间货币的真实价值（这个汇率也被称为双边汇率）。实际汇率是在名义汇率的基础上，经过严格的推算，反映两个国家价格水平的真实情况而得出的。这种汇率对各国进出口贸易影响非常大，也体现出国家之间商品的真实相对价格水平，相应地汇率变动反映了各国进出口贸易的变动情况。

汇率也对国际价格与国内价有很大的关系，在很大程度上规定了国际贸易货物与劳务的相对价格。总体上说，中国不断深入建设社会主义市场经济体制，并且不断拓展对外贸易，所以研究汇率因素与国际贸易的关系具有重要的社会意义。从两个方面我们可以分析汇率下降与国际贸易的影响：中国货币的下降有两个结果：第一个是汇率下降，对外国生产的进口商品产生进口贸易的影响。如果中国汇率降低，汇率降低会造成中国的货币对外币贬值。这样，外币价格折算成中国货币会提高中国货币价值减，少进口量。这将降低进口了产品在中国市场上的竞争力; 第二个是汇率下降，对中国生产的用于国际

贸易的出口产品产生的出口贸易的影响。在这个方面上，其原材料的选择会真直接响到生产的成本。不同的条件，汇率下降对出口商品货币价格影响也不同。如果一个公司的出口商品之间使用中国原材料，一旦中国货币升值，原材料价格会随着降低，所以生产成本也降低。如果中国货币保持稳定,中国原材料的价格以及生产成本没有变化，同样出口产品的中国货币价格也没有变化，这样一旦将中国货币价格折算成外币就可以增加出口量。但是如果中国货币贬值，会提高国内原材料价格与生产成本，这样会增加出口商品的中国货币价格。

汇率的变动也让收入随之变化。如果一个国家的货币贬值，使得出口商品价格降低，进而刺激了其他国家消费者的购买需求，这个国家的出口量大大增加，促进了国家的对外贸易发展，本国居民收入水平也进一步提高。同时，在居民收入水平增加的情况下，居民的购买力增强，对国外商品的进口相应增加。这样，如果本国进口需要的增长率小于出口率，那么本国的对外贸易收支情况是正向发展。反之，既有相反的结果。

人民币升值的结果可能很多：汇率变动的一个结果是价格水平的变化，在国家货币贬值的情况下，对外出口商品的价格相对便宜，这样国外消费者对该国商品购买较多，结果是供需失衡，整体提高了国内的产品价格水平。由于通货膨胀，如果在国内要求不够，出口量会平衡这个国家的经济景气，同时对外贸易收支顺差，让这个国家汇率和央行的储备增加，国内物价大大上涨，商品的整体价格水平也提升起来了。当然，如果人民币升值，相对提升中国进口商品的购买力，这样进口商品价格便宜。同样使得中国在石油，天然气等领域商品的进口依存度较高，这些领域不但增强了产品的竞争力而且提高了相关的经济效益。同样对于对中国居民来说，国外产品的价格便宜，他们的购买力增强了，整体中国居民的生活水平大大提升。

当中国的企业创新能力不强，它们需要新设备等等，在人民币升值的状态下，企业需要进口新技术，使新设备的购买力增强，这个新设备让企业竞争力与盈利能力大大增强。并且，由于中国顺差的增加速度太快了，以及这个情况让许多贸易国与中国的贸易往来摩擦加大，如果人民币升值可以改善了这种情况，因为中国进口会增加，这样可以使得贸易顺利额降低，从而中国产品价格倾销诉讼议案一步减少、进而建立健康的贸易关系。最后一个好处是使得企业再拓展国外业务的成本降低、推动了企业去国外学习、这样能充分有效地利用全球资源，并且会提高中国经济的品牌影响力。但是人民币的升值还有弊端：随着人民币的升值，出口商品的价格也提高，从而使得国外消费者对中国产品的要求量减少。由于中国大部分企业是服装业，制造业等，如果产品附加值低出口压力大大增加。如果出口企业业务量减少，进而使得用工需要降低，员工面临较大的就业压力。最后对于外资来说，人民币的升值使得外商在中国的投资成本相应提高，这样外商在中国的投资积极性降低，中国外资的竞争力会加大。

通过以上分析，汇率下降会减少进口，增加出口，其中基本调节机制主要是受到进出口价格变化的影响。在汇率上升与国际贸易的关系的关系上，如果我们研究出口价格的变化机制，我们可以进行探讨汇率上升与国际贸易的相关性，这样我们可以得出两个研究表明：第一个是汇率上升对进口贸易的影响；第二个是汇率上升对出口贸易的影响。

关于第一个方面，我们可以说国外汇率的变动不会真的影响到进口商品的外贸价格，所以我们可以观察进口商品的价格会随着中国汇率的上涨而降低，并且会增加进口量。关于第二个方面，我们可以说生产成本在一定程度上取决于源材料来源，所以如果中国货币贬值，将会提升出口商品的外币价格，这样减少出口。综合以上，汇率对出口价格的差别源于行业利润率，国际签约以及贸易障碍。通过我们的学习，我们获得重要的结果：由于人民币有效汇率的变化对中国进出口商品价格的影响是很显著的，尤其是出口，很容易的理解，为什么面对中国的巨额贸易顺利，美国以及其他国家会一直对人民币施加升值的压力，因为他们希望国际贸易中人民币规律的大幅度升值，大大降低中国出口产品的价格竞争力，从而降低中国的出口规模。同时，这个结果也可以解释，为什么中国政府长期以来非常慎重地对待人民币升值问题，一直强调国际贸易中人民币汇率调整的主动性和可控性，由于汇率变化对进出口价格的传递低于出口价格，人民币升值可能对进口的影响不大，而对中国的出口产生较大不利影响。

看到这些结果，我们可以理解为什么目前大部分国家，其中包括中国，都是利用降低汇率的方法，以增加出口量，减少进口量来改变贸易逆差现象，保证良好的国际收支情况。因此在改变国际收支中，汇率的降低会影响到国际收支的改善程度。在探讨汇率因素与国际贸易关系的过程中，没有综合考虑出口补贴，进出口关税等因素产生的影响。最重要的结果是汇率的变动需要考虑国际贸易的影响，还需要综合考虑到国际收支通货膨胀，经济增长率，货币供应量，银行利率，信息资源，心理情况等多项因素。汇率变动的作用是多方面的，主要体现在每个国家生产经济活动中，改善国际收支，保持国家经济平稳，拉动消费水平方面等。如果一个公司希望去中国生产或者向中国出口，它应该对这些方面有更好的理解，这样可以了解去中国的最好方法，并且可以了解如果去中国做生意有没有价值。总而言之， 如果一个公司希望去中国发展，它需要全方面考虑各方面的因素的带来影响，确定这个国家的汇率是否合理等因素。

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"Ci sono due errori che si possono fare

lungo la via verso la verità...

non andare fino in fondo, e non iniziare."

Confucio

Ai miei genitori,

Ai miei amici, vicini e lontani,

A mia sorella.

Grazie.

Introduction

When we talk about China now, we talk about the second major economy in the world but what is more important is that China had reached this goal in less than 40 years. In 90's, Chinese economic strategy was mainly characterized by two aspects: capital collection and the growth of export. This process begun with the death of Mao Tsedong and the modernization program of Deng Xiaoping. With Deng Xiaoping, new free market areas were introduced and some special economic zones were created. The purpose was to make China an open market, open principally to foreign investors. The intention was to create a more open economy, but to maintain the typical socialist control of Chinese society. Chinese's growth data are impressing: from 1978 to 1985 China tripled its income per capita. Above all, in the past China was a closed and isolated country that thanks to the gradual opening to foreign investments started to expand its international relationships. Development was so successful that from 1978 to 1999, China attracted 1/3 of world's investments and its trade reached levels never seen before in the country. In past 20 years China had a growth rate close to 9 %, its income per capita in 2008 was more than 1/5 of USA's one. China's incredible growth was defined "the Chinese miracle" and this is the result of what is called the "Chinese model" based on 8 principles[1]. Now, after this development phase that is still going on in the country, the world has a new China, with German, Japanese or Italian car, with skyscrapers, with American fast-food and European distributors. China is now the third producer of technology in the world and every year it doubles its import volume of raw materials. Even fashion is becoming one of the most important economic sector in modern China. It's clear, China is becoming one of the most industrialized and rich countries of the world, even if in the last years its development has lightly slowed (the Chinese growth rate has reduced from 7,9 % in 2012 to 6,7 % in 2016). In the last years China has tried to invest in the internal capital expenditure, to build a consumption-based economy and to create an internal

[1] This 8 principles are: 1) scientific and technological sustainability, following the Marxist principle according to which production forces affect production relation, and socialism's primary objective is to liberalize and to develop production forces; 2) guide the production, in order to increase people life standards; 3)first public property then the national property, in the view that now private property is allowed, but the public one is still more important; 4) the distribution of richness, and for this reason the distribution of work to all the population; 5) a state-guided economy, 6) quick and high performance development; 7) a structural balanced development; 8) an open market as objective, open to commerce and to investment. (https://giulemanidallacina.wordpress.com/2017/01/08/otto-principi-fondamentali-della-politica-economica-cinese-contemporanea/)

demand that can sustain the production. But, even though China made progress in leaps and bounds, it's not a Market Economy yet, and its economy can, in different ways, still affect some other great economies, such as the USA, and competitors in the world.

One important step in Chinese rise toward success has been its entering into the WTO. This acceptance into one of the most important international organization signed that China has finally become one of the BIG, and economically speaking it's real! China is now one of the country that can decide on the future of global economy, or at least this was the aim of the entering the WTO. The admission of China into the WTO has been granted under conditions, but it helped the country to reach important goals on the resource reallocation field and on internal growth, due for example to comparative advantage, the expansion of foreign trade and the attraction of foreign investments. Whit the expression "particular conditions" we mean that in 2001 China could enter into the WTO even if its economy was not a complete market economy and for this reason it had some restrictions. Not being a complete market economy means that in Chinese economy the state had (and still has even if less than in the past) the role of distribution of goods and resources, but the most important element is that prices of goods are not defined by demand and supply (this is what happens in a market economy) but by the state. For this reason, Chinese's commercial practices were limited by anti-dumping regulation, while the WTO members and commission were waiting for China to transform its economy into a market one.[2] In the meanwhile, under WTO regulation the only way to understand if China's was dumping or not was, and maybe still is, comparing its prices with the same good's prices in another country. When China accepted this condition for its entrance in the WTO, members and WTO commission believed that China could become a market economy in just 15 years. After this period, the neo-member would have been defined as a Market economy but Chinese government's expectation were not respected, because its economy still has a series of incongruence with what can be defined a Market Economy[3]. Even if it's true that from 2001 something has changed in China's economy, for example in the agricultural sector where tariffs on several products have been reduced and some markets (such as rice and cotton or even the bank and telecommunication sectors) have been opened, China still must work to

[2] In fifteen years, the People's Republic of China's was expected to realize a series of reform in order to open its economy to the free competition model but major economic sectors, such as finance, banks or energy, are still heavily controlled by the Chinese government, and Chinese's five-years plans are even more intense.
[3] On this matter, discussions are still opened, since that the Chinese government believed that after 15 years China would have obtained the MES as an automatic process

make its economy a complete market economy. It's clear that the WTO entrance helped China in reaching important goals but at the same time this decision had impacted the economy of other competing countries. One of the reason for which WTO members don't want to give to China a MES status is also the great consequences of this decision. To declare that China is a market economy would mean the end of anti-dumping practices that now limits Chinese export toward other countries, so this would mean a doubled presence of Chinese products on our national market, and probably it would let to the closing of several non-Chinese companies.

The most important issue of this thesis is without a doubt Chinese monetary policy and the value of the Chinese yuan (元), or renminbi (人民币) as Chinese use to call it. As we will explain later, the value of a currency can influence the productivity, investments and trade of a country, and, therefore, can have influence also on a country long-term growth rate. It will be also clear how a fixed exchange rate can be more affecting than a flexible one; a fixed exchange rate can reduce the uncertainty, but it has more risks in terms of economic stabilization. The Chinese exchange rate has been for a long time one of the most highlighted topic of the world, especially because in the past the Chinese government had centralized all the operation of exchange of the Chinese renminbi out of the country, in order to stop the rising inflation. After this period, the Chinese government decided to peg the currency to the US dollar at an exchange rate of 8.3 RMB per dollar (1997-2005) but this created an unexpected shock for the entire economy. The Chinese RMB has been accused several times to be undervalued[4], so in 2005 the Chinese government accepted to revalue its currency with the crawling peg system[5]. This system allowed the government to peg the currency no more to the US dollar but to a basket of foreign currencies and to guarantee to the RMB the possibility to move between fixed limits: this in order to have no big changes in the long-term[6]. The Chinese monetary policy had created a commercial deficit with many countries, firstly with the USA. In fact, since that the Chinese yuan have been for a long time undervalued, and that its value it's still very low comparing to the other currencies, this has

[4] The policy adopted by the Chinese government from 1997 to 2005 allowed to the country the use of fixed exchange rate. An undervalued currency, undervalued if we consider the value that it would have if it was allowed to flow, created the right condition to obtain and to keep an important price advantage in export.
[5] A crawling peg system let the currency free to float within a range of rates, in practice is an intermediate exchange rate regime. Usually it is the best solution when a currency is characterized by high volatility or when there is the possibility of high devaluation of a currency (http://www.investopedia.com/terms/c/crawlingpeg.asp)
[6] Even though from 2005 the yuan had revalued of 22%, for a lot of country the situation hasn't changed. According to statistics, the People's Bank of China assigned a paltry value to the currencies included in the basket, and it is essentially still pegged to the US $.

created a trade imbalance that heavily favors China (Chinese export to USA are much higher than the USA export in China, $324 billion China export to USA in 2014 vs $113 billion USA export to China). On commercial deficit/surplus between countries, literature has been arguing for a long time: at first the problem seemed to be the fixed exchange rate system under the Bretton Woods agreement, and the only solution was thought to be a flexible exchange rate system, but now the problem is maybe more extended than in the Bretton Woods' period. So maybe the flexible exchange rate is not a solution to commercial imbalance. What it's more surprising is that the Chinese yuan exchange is so low, while the country growth rate is still so high[7]. Import and export have a strict connection with exchange rate, so the opposite trend in these two related elements is not so natural. What we want to understand is why Chinese government does not allow its currency to freely move? And why a currency devalues/revalues? Since that international economies have tied each other by commerce and capital flows, this means that a country's economic conditions influence the currency value, but that also the currency value influence country's economic condition, then economic condition of a country can affect another country's economic condition, in a sort of vicious circle. For economic conditions, we mean import/export situation, capital flow, internal demand and the country-system. This is China's field of improvement. But there's more: monetary policy (of course), interest rates, the inflation rate and the public debt, all these factors influence the currency value. We will explain how and how strong is the influence of this factor on Chinese RMB value.

What can be more interesting is what can happen if China revalues and what if devalues. Each situation can have different consequences. The Chinese market it's now so important for the world economy that all countries are, in a certain way, involved in this matter, and that each of the two possibility has some bad or good consequences, especially for export and import in China. This analysis can be useful to give an important reflection point for European companies that want to be present in Chinese market. Understanding how the Chinese value can impact cross border trade is a matter of interests, especially for policymakers and investors. The value of RMB has impact on international trade, especially on trade surplus with the USA. From the studied we had found out a money revaluation increases the possibility of an export market exit for Chinese or foreign companies that

[7] Since that Chinese growth is based on export, and we know that if in an economy the export heavily grows compared to import, as a consequence there will be an increase in export's revenues and in national currency demand, that should bring the national currency to a higher value (and vice versa), even if it's not the only factor that influence a currency exchange rate.

produce in China, reduces the possibility of export market survival and decreases the chance of export market entry. During a period of exchange rate appreciation, high productivity firms, are more likely to enter and survive in export market. For private-owned company, young and non-eastern firms, an exchange rate appreciation decreases the likelihood of export market entering and increase the exit. Talking about depreciation, if the yuan devaluates, it can increase the possibility of market entry for export companies since that export price will be lower, and this will increase demand for export products. Import volume will be reduced, since that prices will be higher, and this can affect production cost of firms that produce in China but import raw materials from foreign markets. Exchange rate affects at the same time also import, both prices and volume. How? And How an exchange rate can influence the strategic entering of a firm into the Chinese market? What we will try to do is explain in details mechanisms that lies behind exchange rate movements and what these movement can cause, in order to help European companies that want to have a presence in China to have a complete overview of the Chinese market, to help them making more aware decisions.

Chapter 1 - The exchange rate and monetary policy: a brief introduction

The exchange rate of a currency can heavily affect the real economy: a country current account, its competitivity and its aggregate demand, they all depends on exchange rate. Therefore, it is fundamental to know the mechanisms and the variables that affect a currency trend, starting from the monetary policy. When we talk about exchange rate, we have also to introduce the market of exchange rate, that can be important for investors or company that need to buy some foreign currencies for business purposes. So, what is the Foreign exchange market? The foreign exchange market (forex) is the market in which currencies are exchanged and it is composed of monetary transaction, but it's not a physical place. The forex is the biggest market of the world, in terms of value of transactions and it includes transaction between bank institutions, speculators, governments and central banks. There is a large variety of actors that intervenes on the forex. It is an over the counter market (OTC), this means that there's not one single market of reference and that transactions are not standardized. This is the most important characteristic of the forex, that make it reach the maximum diffusion both from geographical that accessibility point of view. At first, only major banks of the world could deal on the forex, but with the new technologies, also small actors can enter the forex in order to make affairs. Once we have explained were currencies are exchanged, we can introduce the most important factors that affect the exchange rate: monetary policy and the parity conditions.

1.1 What is a monetary policy?

As we already said, monetary policy is one of the most important affecting factors of the exchange rate. The monetary policy, with the income and balance policy, is part of the instruments that constitute the economic policy of a government. This economic policy usually has 4 main objectives:

- Income increase;
- Occupation development;
- Price stability;
- Balance of payments.

In few words, the monetary policy is the set of decision taken by policymakers, in order to reach objectives in terms of currency and in terms of a country economic situation. With policymakers, we mean the central bank of a country (for Europe is the BCE, for China is the People Bank of China), currency board or other regulatory committees that determines the size and rate of growth of the money supply. The monetary policy is different from the fiscal policy: the monetary policy affects the currency, while the fiscal policy one affects the real economy of a country. To affect the currency, anyway, can have a series of different meanings. First, it can mean "affect the value of currency". There is no institute that can directly decide the currency value, since that it always depends on another term of comparison (gold or dominant currencies). But what central banks can do is to affect the currency price. Inflation (that is the increase in prices) cannot be free to grow. It does not be too high nor too low. In the first case, population will lose their purchasing power, in the second case, the economy will stop, due to a too dangerous vicious circle. To control the inflation, monetary policy (so the government) has different instruments. The most used one is the price of money. Central banks can decide the cost of lending money to commercial banks, that then will lend to families or companies. If the interest rate is high, less banks will ask for money, so there will be less money in circulation. In the opposite situation, if interest rate is low, more banks will ask for money and there will be an increase on the quantity of money in circulation. When borrowing is cheap, firms will take on more debt to invest, consumers will make larger and long-term purchases and savers will have more incentive to invest their money in stocks or other assets rather that in saving accounts, and these conditions will let to an economy expansion. The quantity of money is an important parameter. For the quantity theory of money, this is directly proportional to inflation[8].

The monetary policy concerns the control of a particular currency in circulation and that currency's interest rates. To understand (and if possible to foresee) monetary policy interventions is important because these interventions affect financial actors' decisions and the entire financial system's stability. The interest rate instrument it's important also in another situation: the credit crunch. When commercial banks are not willing to lend to families and company, one possible solution can be to increase their liquidity. The interest rate instrument is a basic one. Other very strong and influential central banks, such as the Fed, has more instruments, also called open market operations. One of these instruments,

[8] This means that if there is the need of higher prices, interest rates will increase, if there is the need of lower prices, interest rates will decrease.

that is an unconventional one, is the Quantitative Easing, thanks to which central banks can issue how much quantity of money as it wants. This instrument consists in the purchase of varying financial assets from commercial banks. Purpose of the QE is to raise the price of securities and to increase total money supply. Credit easing is a related unconventional monetary policy tool, involving the purchase of private-sector assets to boost liquidity. Another tool is the communication, in order to ease markets' worries about policy changes: an example is a promise not to raise interest rates for 2 quarters. Generally speaking, measures that aim to increase the quantity of money are called expansive monetary policies and their objectives are: lower the unemployment, boost private-sector borrowing and consumer spending, in order to stimulate the economic growth. The opposite ones are called contractionary monetary policies and its primary objective is to control inflation but also: slow economic growth, increase unemployment and depress borrowing and spending by consumer and businesses[9]. Another monetary policy instrument that the central bank has is to decide the amount of money that banks are required to keep in the vault (bank reserves).

1.2 The exchange rate

To better understand what we are going to talk about we must make a brief introduction on what is the exchange rate, how does it work and which are the external factors that affect it.

Exchange rates define the prices of currencies. We can define the exchange rate as the price of a currency in terms of another currency, this means that it explains the value relations between two currencies[10]. In an open economy, the exchange rate is the variable that changes in order to reach the contemporaneous balance of monetary and value market. When an exchange rate increases, this means that the domestic currency value increases, and so we have an appreciation of the currency (and vice versa)[11]. On the Forex market, we have two kind of exchange rate transactions: one is the spot transaction and the other is the forward transaction. The spot transaction implies that the exchange of bank deposit is realized in 2 days, the forward transaction implies that the exchange of bank deposit will be

[9] An example is the Fed's intervention in early 1980s: in order to curb inflation of 15%, the Fed raised its benchmark interest rates to 20%. This sudden change resulted in a recession, but also controlled the inflation.

[10] Unicredit, (s.d.). Glossario: http://www.unicreditbanca.it/it/glossario/index.php?idc=759

[11] The volume quotation system is a convention, while in other countries the exchange rate is measured with the price quotation system (e.g. 0.68 euro per dollar). In this second situation, when the exchange rate increases, this means that the currency has a depreciation: if the exchange rate from 0.68 euro turns to 1 euro per dollar, this means that the euro lost is value, so has a depreciation, in comparison with the dollar.

realized on a specific future date as written in the contract (can be 30, 90 or 180 days). Each of this transaction has its own exchange rate value. It's superficial to say that an exchange rate should imply that 2 or more countries (or business partners that work in different countries) are making exchanges one between another. Most of exchange rate regimes needs the agreement between related countries.

The exchange rate is one of the most important components of a country's economic policy and it has a great impact on internal and external dynamics. How the applied economic policy is and how the central bank manages the exchange rate affects the exchange rate regime of a country or of a geographical area. In the past, the world has seen a series of different exchange rate regime, that ranges between the fixed exchange rate model and the flexible (or fluctuant) exchange rate regime, trying even different hybrid models that were built and used according to a country specific needs. In the XIX century, the *gold standard* was the rule: every country's government fixed the gold value in terms of national currency, and this was the price at which people can exchange that given currency for gold. In this period, the quantity of money was connected to the quantity of gold that the government held. This gold standard was a sort of monetary union, based on gold fixed prices, on convertibility of currencies and on the complete coverage of money offer by the gold reserves. In the gold standard era, economies automatically adjust to any disequilibrium due to disequilibrium in the balance of payments. So, it's clear: the biggest advantage of the gold standard system was the strict relationship between gold and money on circulation (government could not freely issue stock of money, and this limited the pressure on inflation). But the gold standard had also a big disadvantage: since that no country has an independent monetary policy, interests rate cannot be used independently in order to contrast economic shocks. The results of this period were that countries were subject to long period of recession or economic boost, so economists realized that having a fixed exchange rate does not mean having fixed real exchange rates and that in a monetary union in which the monetary policy is undervalued, the fiscal policy has the biggest importance.

After this period, countries decide to adopt the dollar standard (or Bretton Woods agreement). In this period, each country pegged it currency against US dollar. The biggest difference with the gold standard was the absence of the 100% coverage of national money stock. In this period, there were no limits for central banks, that can issue as much money as they wanted. This possibility stopped the automatic adjustment mechanism that

characterized the gold standard period and in this situation speculators[12] were free to act. To solve this problem, politicians decided to make illegal private capital flows (because perfect mobility implied interest rate parity). The other consequence of the dollar standard was the inflation, due to a big deficit in the US balance of payments. The pure flexibility of exchange rate implies that exchange markets constantly adjust themselves, without the use of value reserves.

According to the different exchange rate policy, the monetary authority of the country (or area) has a different role. In a country with a fixed exchange rate, the monetary authority (that in this case must control the supply of currency) has the role to maintain the exchange rate fixed, using a monetary policy in opposition with market trends. For example, the Central bank must issue liquidity in local currency if there is an appreciation trend, or on the contrary it must reduce the supply of nominal currency retiring liquidity and selling currency's reserves if there is a depreciation trend. If we are instead in a country with a flexible exchange rate, the central bank is free to intervene in any moment, so consequently, it can manage a monetary policy that can respond to short-term productivity shocks. This is the main difference between the fixed and the flexible exchange rate regime. Of course, a hybrid model has both the fixed and the flexible characteristics: the exchange rate is free to move between limits, if a currency is pegged against another, this can be easily changed more times, depreciations and appreciations can be introduced in order to solve problems in country's economy.

Looking at the past, we can affirm that a correct exchange rate regime, related to the period and to the geographic area, can be a fundamental decision for a country development. "No single currency regime is right for all countries or at all times" is what Jeffrey A. Frankel said in order to explain how important is the decision of the exchange rate regime, since that the choice of an exchange rate regime should depend on specific circumstances in which the country is. This also explain how each exchange rate policy can be the right one for each country in different period[13]. This is just to say that there is not an exchange rate policy that

[12] With the Bretton Woods Agreement, if countries had a deficit in the balance of payments this means that they were losing money but the governments were free to issue new money, and in this way the money stock returned to the normal level. If the deficit will be lasting for long time, the government finished it foreign value reserves, and the only solution was a currency devaluation. So, speculator can intervene: if a country had a deficit, they were sure of a currency devaluation, and their pressure on currency only anticipated the currency future devaluation.

[13] Frankel, J. A. (September 1999). No Single Currency Regime is Right for All Countries or At All Times. Essays in International Finance, no. 215, Princeton: Princeton University Press.

is better than another but that the economic policy of a country should be decided in accord with a country specific needs and situations.

1.3 The determinants of exchange rate

We said that the exchange rate is the price of a currency in terms of another currency but we know that this price is not always the same. There are a series of determinants that make this price become higher (appreciate) or lower (depreciate) and these determinants are all related to the relationship between two countries. In fact, the exchange rate is expressed as a comparison of 2 currencies, so it is relative to economic conditions of these two countries. These determinants of the exchange rate are: the balance of payments, public debt, differential in inflations, terms of trade, differential in interest rates, political stability and economic growth. Let's define each more in details.

A. The balance of payments

It's also called Current-account, and it explains the balance of trade between a country and its trading partners. In this way all the payments between the two countries (goods, services, interest and dividends) are taken into consideration. With the word "trade" we mean business transactions. It's better to be broad in the "transaction" definition, since that the balance of payments includes each kind of economic transactions that take place between a domestic and a foreigner actor. The balance of payments can be divided in 3 sections:

- Current account: in which goods and services flows are included (import and export);
- Financial account: in which financial activities flows are included (financial capital);
- Capital account: in which specific activities flows, in particular not market activities as trademarks or copyright, are included.

In the long-term equilibrium, in each country there is an internal (full occupation) and an external balance. This means that the balance of payments is in equilibrium. In this case, the money offer is constant, and the same is for the value reserves that the central banks holds and for interest rates.

Now let's make an example, taking into consideration China and European Union: Chinese population decides to import more European products than usual, so the EU has an increase in export in the short-term. For this reason, the EU's aggregate demand increases.

China, instead, will have a deficit in the balance of payments and an eventual recession. This should provoke an automatic adjustment. When a country has a deficit with another country, this means that the first country is spending more on foreign trade than it is earning, so probably it is borrowing capital from foreign sources to make up the deficit, and this creates more deficit. To be clear, in this situation China needs more foreign currency than it receives through exports and it supplies more local currency than foreigners demand for its products. When there is a too high demand for foreign currency, the local currency's exchange rate decreases (or it should, considered the specific case of China). If the government is unable to adjust the situation, domestic goods will become too cheap for foreigners and foreign assets will become too expensive for domestic interests. On the other side, Europe records a positive balance of payments, that leads to an increase of value reserves and, as a consequence, the general level of prices increases making European product less competitive. So, the positive situation in the balance of payments will reduce and the situation should return at the starting point, so in the balance situation. This was a reaction very common in the gold standard era, even if we do not have the clear evidence that the gold standard system was the reason of these automatic adjustments. It's clear that these adjustments were not immediate, but that the speed of adjustments is strictly connected to the speed at which national salaries and prices adjust themselves.

B. Public Debt

The public debt is how much a country owes to lenders outside itself. These lenders can be individuals, businesses and other government. Why this public debt exists? A country can create a large-scale deficit for the public sector and governmental funding. It's true, these activities can stimulate the economy of a country but how many investors are likely to be attracted by a country with a large public deficits and debts? So why country should create a large public debt? The answer is quite easy: if a country has a large public debt, this means that there is a high inflation in the country that will help to pay the debt with a cheaper real currency in the future. In a country with a large debt, foreigner can be worried, because they can believe that the country can go on default on its obligations, so they can sell their own securities denominated in that country currency if there is a big risk of default. If we are in a very bad situation, a government that has a very large public debt can print more money in order to pay part of the debt, but we know that more money on the market means a rising inflations. Therefore, if a country is not able to service its deficit through selling domestic bonds, increasing the money supply etc. this means that it needs to increase the supply of

securities on sale to foreigners (for example selling at lower prices). In addition, if the debts are used in order to finance consumption, it should be repaid by future generation with a reduction of consumption; if it is used to invest in long-term projects, future generation will benefit of it.

So, the country's public debt is an important determinant of the national currency's exchange rate. We can introduce the example of the USA, that has the biggest public debt of the world, but the USA example is a different story: it's true, USA liabilities are mainly short-term liabilities and has low interest rates, while their foreign activities have high performance, but since that USA are in a certain way the world bank because they issue liquid liabilities that are used to finance long-term projects with higher risks and performances, this will not impact on USA economic conditions.

C. Differential in inflations

When a country presents a very low inflation rate, it generally has also a rising currency value. As a consequence, its purchasing power increases relative to other country, because its currency is stronger than other. We have some examples of countries with low inflation (Japan, Switzerland and more recently USA and Canada). When a country has instead a higher inflation, its currency depreciates in relation to the currencies of its trading partners, losing its purchasing power. This situation usually comprehends also higher interest rates.
The differential in inflation is connected to the PPP, that is the theoretical behavior of exchange rate. When we are making comparison between different countries economic behavior, we analyze the Purchasing Power Parity. The PPP says that the currency with the higher inflation rate will depreciate relative to the country with the lower inflation rate. So, as we already said, higher inflation in a country means that national goods have a higher price than foreign goods, and the more the inflation increases the more the country is expensive. The relationship between inflation and exchange rate holds in long term view, and it's an important element if there's need to forecast long-run exchange rate movement.

D. Terms of trade

Terms of trade is related to current accounts and the balance of payments. It is a ratio comparing export prices to import prices[14]. When a country sees its export prices heavily increasing, compared to import prices, this means that terms of trade are improving in a

[14] http://www.investopedia.com/articles/basics/04/050704.asp#ixzz4l0p0BiTe

favorable way, so on the international market there is a higher demand for the country's exports. Higher exports mean more revenues for the country and higher demands for the country's currency (so as a consequence, the currency's value should increase). In the opposite situation (export increases less than import), this means that terms of trade are not so favorable, because the country import is higher than export, and this will reflect in exchange rate, so the currency's value will decrease in relation to its trading partners.

E. Differential in interest rate

As it's easy to understand, inflation, exchange rate and interest rates are heavily correlated. Central banks can manipulate interest rates in order to influence both inflation and exchange rates. In this way, the central bank will change interest rates impact on inflation and currency values. But how interest rates influence inflations and currency values? If a country has high interest rates, these interest rates offer to investors a high return, if compared to other countries. This will attract foreign capital, and we know that a high foreign capital inflow will influence currency value and make the exchange rate increase. If the inflation in the country is very high compared to other countries, it will reduce the impact of high interest rate[15]. Of course, there is an opposite result in the opposite situation, this means that low interest rates will make the exchange rate to decrease.

F. Political stability and economic performance

When an investor is looking for a foreign market in which enter, one of the first factors that he examines is the political situation of the country (this means if the government is stable, if there are any election soon or if the government has a big support from the people etc.) and then he examines the economic performance of the country. A country with strong economic performance will be more attractive for an investor who wants to invest its capital in that country's market. A country with both these positive attributes will attract more investment funds than a country with higher political and economic risk[16]. An example is the recent history of the United States. In fact, recently U.S government and consumer debt has increased heavily but the Federal Reserve has maintained interest rates near zero in order to stimulate U.S. economy. This didn't stop the appreciation of the U.S. dollar ($) that enjoyed favorable exchange rate compared to other countries' currencies. This happened because, as

[15] Other additional factors are needed to drive the currency down.
[16] An example is political turmoil that can cause a loss of confidence in a currency and a movement of capital to the currencies.

we said, the U.S. is the reserve currency for much of the world and, most of all, because the U.S. dollar is still perceived as the safest currency of the world.

There is no theoretical reason that explains in which direction an exchange rate moves in case political situation of a country changes. It's usually recorded that a political turmoil relates to depreciation of currency, but this turmoil can also provoke the opposite effect[17]. According to J. Jerome Lim, an increase in contemporaneous political risk would make more likely a change in rate regimes especially in developed countries, while in developing countries, both present and past political situation can be effective. In addition, after the Asian financial crisis in 1997, currency traders in emerging countries are now more likely to consider also political risk into their economic decisions[18].

The exchange rate is important for international trade, but it can also affect one daily life. A stronger national currency makes import cheaper, and this can reduce inflation and lower the cost of living. This means that people can spend more, and can buy more, so this stimulates internal consumption and, even if this depends on the trend of the country, a stronger value can also let you to save more money, and this can give to people the sense of a better quality of life. It's clear that, in the opposite condition, import prices are higher, people standard of living lowers, especially because imported good now have a higher price. As a consequence, people can buy less goods. A weaker currency also create inflation. That in the long-term can reduce people purchasing power. Let's make a specific example. Talking about gas and dollar (two of the most important matter nowadays) we have observed that when the dollar increases its value, the gas price falls. This is because more of 70% of the price of gas depends on oil prices, and all oil contracts are sold in U.S. dollars and even the Saudi Arabi, the first oil producer of the world, has pegged its currency to the dollar. This means that when the value of dollar rises, also the currency of the Saudi Arabia (called riyal) rises, and so Saudi Arabia imports are cheaper and the country can afford to sell oil at lower price. In the opposite condition, Saudi Arabia and the other OPEC nations must charge more for oil in order to receive the same revenue, so prices of oil, and as a consequence of gas, increases.

[17] For example, make investors to buy that country's currency because they expect that this turmoil can lead to dollarizing of the currency at a higher rate that the present one. (Political risk and the exchange rate: an exploration with a regime switching model, Jamus Jerom Lim, 2003).

[18] Political risk and the exchange rate: an exploration with a regime switching model, Jamus Jerom Lim

Another field that is affected by exchange rate is jobs. When a country has a strong currency, its export lowers, because foreign products has lower prices compared to national ones, and this process slows the economy. This creates a stronger currency that can provokes the outsourcing of job, in order to reduce production costs. Many companies move their production in other countries because to produce in their home country will cost more[19]. Stronger currencies can also impact on companies that do not export goods, but that just compete in national market. Since that with a stronger currency import goods are cheaper, national companies cannot compete with import goods' prices, and it's clear that national consumer will buy less expensive products, so national companies should lower their prices to be competitive but this can affect companies' profitability.[20] All these consequences can affect population's life standards, and consequences are bigger if we expand our analysis.

1.4 Parity conditions and the definition of exchange rate

We have seen which are the determinant factors that affect the exchange rate. Different exchange rate means different inflations, interest rates, and other conditions, and this means that to invest in a specific country will be more profitable that to invest in another. When there is no difference in profitability between the same investments in any countries this means that the FOREX is on balance. Balance of the market is exactly depending on different expected profitability rate. In few words, when we are on integrated market, similar financial investment profits should be the same when re expressed in the same currency (Interest rate parity). This means that the uncovered interest parity lets the profitability of deposits in one currency will be equal to the profitability of deposits in another currency plus the expected exchange rate variations. FOREX market is on balance only when the uncovered interest parity holds. We make an example with dollars and euro. If a deposit in dollars has an annual profitability of 10 % and a deposit in euro has an annual profitability of 7 % investors will have no preferences in holding deposits in one currency more than in another one only if the dollar is expected to depreciate of 3%, because these deposits, even if in two different currencies, has (or will have in the future) the same profitability. On the contrary, if the dollar is expected to depreciate of 1 %, investors will be more likely to invest in dollars' deposit, because this will be more profitable than the euro one and investors that have euro deposit

[19] A stronger currency means that salaries are more expensive, instead produce abroad will be more convenient because it will cost less, since that workers' salaries are paid in a relatively weaker currency.
[20] This happens if the country's economy heavily depends on export.

will try to exchange these deposits with some dollars' deposit, and as a consequence, this situation will create an excess of demand in dollars and an excess of supply in euro.

Another important consideration that we can made is the relationship between money, interest rate and exchange rate. In few words, the balance on monetary market is equal to the intersection between the real supply of money and the money demand. This means that, if a country adopts an expansive policy, and print a lot of money, this let the supply of money increase, and an increasing supply of money creates a reduction in that country interest rate, and this will let to a depreciation of the currency (in the opposite situation we have the opposite result). This analysis is just a short-term analysis. If we consider the long-term, we should consider that prices and salaries (perfectly flexible) adjust themselves till a full employment balance. Prices level depends on money supply, interest rate and productivity. Where all other conditions are the same, an increase in money supply creates an increase of prices level, but since that more money on circulation means lower value of the currency a stable increase in money supply provokes a proportional depreciation of national currency compared to foreign countries, this means an increase in the exchange rate, since that is a price (RMB/US$ 6.8 → RMB/US$ 7.25)

If we put together the short-term analysis and the long-term analysis we can explain more heavily how exchange rate reacts to monetary shock, and, in this way, we can better explain how exchange rates are volatile, more than prices, if we assume that in short-term prices are fixed and that in the long-term these prices are flexible. We also assume that financial actors had rational expectations. Talking about the short-term, we have to consider that the money supply affects the exchange rate expectations. Since that this expansion is long-lasting, economic actors expect that in the long-run, all prices, exchange rate included, proportionally rise. In this case, a currency's depreciation will be higher than a depreciation without expectations. This effect, called overshooting, is due to prices rigidity. In the long-run, prices become to rise, following the increase in money supply. Since that the variation of prices is proportional to the money, real money supply will come back to the original level, and at the same time also the interest rate will come back to its initial level. What follows is a new monetary market balance.

1.5 The purchase power parity and exchange rate

The relationship between the exchange rate and price levels comes from a simple arbitration relationship: the "law of one price". This law holds only in particular conditions, for example

when there are no transportation costs, no barriers etc., and this rule implies that in internationally integrated markets, the same goods should have the same price (if expressed in a common value) in different market. This rule can be applied only to one good. But what can be more useful for us is to compare a basket of goods in different countries, and this concerns the Purchase Parity Power. Let's try to explain it. The Purchase Power Parity (PPP) implies that 2 identical basket goods exist but these baskets are sold in different countries. According to the PPP, and if the PPP holds, these two baskets of good have the same price if they are expressed in a common value. If we follow these conditions, the exchange rate between two currencies is the relationship between price level in the two countries[21]:

$$S = \frac{P_1}{P_2}$$

Where:

"S" represents exchange rate of currency 1 to currency 2

"P_1" represents the cost of good "x" in currency 1

"P_2" represents the cost of good "x" in currency 2

This means that, an increase in purchasing power of a currency reflects, in a proportional way, appreciation of the currency (and vice versa). It's better to remember that in countries with a high inflation, the depreciation of their currency on monetary market is higher. In the PPP, the variations in the nominal exchange rate is equal to the differential between the two countries inflation. The PPP can also be considered as an ex post instrument that help us to make international comparisons. The subtle idea is that nominal exchange rate on financial market are determined by logics that do not take into consideration the effective purchasing power of the considered currencies. This implies that results coming from comparison between countries based on the conversion of countries elements into a unique currency by using the nominal exchange rate are not so reliable. The only solution is to convert the monetary elements but not using the nominal exchange rate

[21] The real exchange rate is calculated by converting currency from a country to another at first, and then purchasing the same goods in the second country, whereas the PPP is the ratio of the price of goods in each country.

(so the exchange rate quoted on financial market) but an exchange rate that can respect the one price law. This is the logic subtle the *BigMac index* calculated by "the economists", that considers the BigMac as a bucket of goods produced in the same way all over the world, and for this reason it should have the same intrinsic value all over the world[22]. In practice, exchanges based on PPP are calculated with most sophisticated technics, that take into consideration: 1) the fact that in any economic system a quantity of different goods is produced and exchanged; 2) the fact that often the same good has a different importance for consumer of different countries. Above all, is very difficult to demonstrate the PPP, because a high international difference in countries preferences, consumption models, and registration of price levels exists. What can be useful is making a monetary approach to exchange rate using the PPP. The monetary approach implies that factors that do not influence money supply and demand are not fundamental. This is also a long-term theory. With the long-term theory, we can admit that prices are flexible and that they can immediately adjust themselves in order to respect the PPP. In long-term, the exchange rate between two currencies is completely determined by relative money supply and demand of these two currencies. The interest rate and the production level have indirect effects on money supply:

- An increase in money supply (yuan) creates an increase in prices (Chinese) and so, due to PPP an increase in exchange rate (depreciation of yuan) [RMB/US$ 6.8 → RMB/US$ 7.25];
- An increase in interest rate (Chinese) make the yuan depreciates. This happens because an increase in interest rate in Chinese yuan deposit reduces a real money demand in another currency, and to keep the market on balance, it's needed an increase of price level. Due to PPP, if the price in yuan increases, the yuan depreciates.
- An increase in production creates an appreciation of the currency (or should, looking at yuan), since that the real money demand increase in China and this creates a reduction in prices and the consequent reduction of exchange rate in order to hold the PPP [RMB/US$ 7.25 → RMB/US$ 6.8].

Compared to the UIP (uncovered interest parity rate), what happens here is the opposite: an increase in internal exchange rate creates a currency depreciation. This can be explained by the Fisher's effect. The Fisher's effect says that, ceteris paribus, an increase of expected inflation rate of a country causes the same increase in the interest rate of that

[22] http://www.economist.com/topics/big-mac-index. Track global burger-based exchange-rates over time with the interactive Big Mac index (updated July 13th 2017). http://www.economist.com/content/big-mac-index

deposits in national currency[23]. This means that an increase in the difference of rates implies that the expected internal inflation should be higher than outside the country, causing a depreciation in exchange rate in the long-term. On the contrary, in short run, where we have fixed prices, the exchange rate can increase only if the money supply decrease.

According to the PPP, we can also define the real exchange rate between two countries as general rule that resumes goods' prices and services of a country compared to another[24]. When we talk about the exchange rate, what we are used to analyze is the "real exchange rate", that is a measure of the exchange rate that also take into consideration goods' prices and so can be defined not only as the relative price between two currencies, but as the relative price between two buckets of goods. This means that an economic actor buys foreign currency to improve its goods' exchanges. An example is an importer that buys dollars in order to buy raw materials or finished goods or a tourist that buy euros in order to finance its holidays. The real exchange rate increases when internal prices increase, when the exchange rate revaluates or when external prices decrease. In all these situations, for economical actors that live in the reference country is more convenient to buy foreign goods instead of national goods. We will have the opposite result in the opposite situation[25]. If, instead, we just consider the trade goods (so import and export goods) we will obtain a measure of competition, also called *terms of trade,* that is the ratio of export prices to import prices. From an economic actor's prospective an increase in terms of trade has the same results of a real exchange rate increase (this means loss of competitivity, less convenience in national goods and vice versa).

Formally, the real exchange rate is the relationship between the general level of foreign prices (Europe) expressed in terms of domestic value (yuan) and the general level of domestic price (China).

[23] R$ - R€ = πeUS – πeEU ? http://utenti.dea.univpm.it/presbitero/POLEC.html

[24] The other definition of the exchange rate as the relationship between two countries' prices is the nominal exchange rate.

[25] We have to note that the real exchange rate and the nominal exchange rate has opposite trends. A devaluation in the exchange rates determines an increase in nominal exchange rate and a decrease (ceteris paribus) in the real exchange rate.

$$e'_t = e_t \times \frac{P_f}{P_h}$$

P_f foreign price level

P_h Home price level

e_t nominal exchange rate at time t

e'_t real exchange rate at time t

The real exchange rate is the measure of competitivity of a country, and with competitivity we mean the capability of a country to export domestic products on foreign markets; a depreciation in real exchange rate will result in an increase of price competitivity.[26]Long term conditions depends on supply and demand conditions of both two countries; in particular we can see that an increase in the demand of USA products all over the world causes a long-term appreciation in dollars compared to euro, and at the same time, a reduction in relative demand for Euro product causes, in $ terms, an increase of European goods' competitivity[27]. Moreover, a relative expansion in USA production causes a depreciation in real exchange rate in dollars compared to euro. At this point we need to introduce also the Samuelson-Balassa effect. This effect says that: "a country that has an increase in commercial goods field more important than other countries will have an appreciation of the currency[28]". This will explain why rich countries, with higher productivity in commercial goods field tends to have higher prices in non-commercial goods and so higher price levels.

[26] The relationship between the reals exchange rate and the competitivity is much more complex. On one hand, it's possible that real shocks can alter exchange reasons (defined as the ratio between export and import prices); on the other hand, we need to consider that competitivity is a multilateral concept, while the exchange rate is a bilateral concept.

[27] This is what should happen also to Chinese yuan, but we still don't' see this situation because of its monetary policy decisions.

[28] This happens because with flexible work of tradable and not tradable goods producers, an increase in productivity of tradable goods creates an increase in incomes that has to be common to both two sectors (due to work mobility). As a consequence, in order to cover new costs, the not tradable goods' sector has to increase its prices, increase that will not be present in tradable goods sector due to increased productivity's benefits. Since the real exchange rate can be expressed as the difference between tradable and not tradable goods' prices, the increase in the productivity provokes a decrease in the real exchange rate (so an appreciation of currency).

1.6 Money supply and demand: how they determine the exchange rate

As we already said, the demand-supply framework can help us to predict the next period's exchange rate, or at least its direction, so if the currency will depreciate or appreciate against another currency. The demand-supply model of exchange rate determination implies that the equilibrium exchange rate changes if the determinants of the demand and supply change. So, which are these factors that affect the demand and supply of currency? These factors are variable that affect the macro-economic zone of which we are talking about (e.g. the Euro-zone or China) that will influence the euro-yuan exchange rate, and they are the same factors that influence the exchange rate (inflation rate, growth rate, interest rate and government restrictions) and is easy to understand why. In the demand-model supply, we can divide these factors into two areas, depending on the effect that they have on exchange rate. Inflation rate and growth rate are considered trade-related factors, so when one of these two factors changes, it has consequences on trade between the two countries (Europe and China). The interest rate is a portfolio flow-related factor, and this means that when one country's interest rate changes, also the attractiveness of euro – and yuan denominated securities - changes for European and Chinese investors. Government restriction is related to both these 2 areas, because their effects depend on the nature of the restrictions. It's important to remember that changes in these factors do not have to be actual changes that we are observing right now. If market actors have expectations regarding these factors, they will act on markets now, and they will produce the same results as if these changes were actually happening.

In conclusion, we have two frameworks to determines the equilibrium interest rate: one is the loanable funds framework, that use the supply and demand for bonds in order to determines the equilibrium interest rate. The other is the framework developed by John Maynard Keynes[29], known as the liquidity preference framework. This framework uses the demand and supply of money in order to determine the equilibrium interest rates. Keynes assumes that there are two kinds of assets used by people to store their wealth: money and bonds. So, in his view, total wealth in the economy is equal to total money plus total bond

[29] **John Maynard Keynes** (5 June 1883 – 21 April 1946), was a British economist whose ideas fundamentally changed the theory and practice of macroeconomics and the economic policies of governments. He built on and greatly refined earlier work on the causes of business cycles, and is widely considered to be one of the most influential economists of the 20th century and the founder of modern macroeconomics. His ideas are the basis for the school of thought known as Keynesian economics and its various offshoots. (https://en.wikipedia.org/wiki/John_Maynard_Keynes)

present in the economy. The total amount of money and bonds that people want to demand and hold must be equal to the amount of wealth, since that people cannot buy more that the resources that they have. This means that if the market of money is in equilibrium (is equal to 0) also the bond market is in equilibrium. This means that, if the loanable funds framework can be used to determine the interest rate, also the liquidity preference framework can be used for the same purpose, even if it implicitly ignores effects that comes from interest rates that arise from changes in the expected returns of, for example, houses. Since that with money Keynes means both currency and checking account deposits, is implied that in this view money has zero returns rate, while bonds have an interest rate equal to *i*. When the interest rate increases, the expected return on money decreases (due to the expected returns on bond) and this caused a fall in the demand of money. But what can really affect the demand and the supply for money?

1.6.1 What affects the demand for money

In Keynes's view, two are the most important reasons that can explain changes in demand for money: income and price-level. For income effect, we mean that people's wealth increase and so there is an expansion of the economy and an increase in income. When this happens, we have two possibilities: the first is that people want to hold more money as a store of value; the second is that people want to carry out more transaction using money, because the more they invest, the more they will hold money. So, an increase of income causes an increase of the demand for money. For price-level effect we mean that people consider money that they hold in terms of goods and services that they can buy with their money (real terms). When price-level rises, the value of the same quantity of money changes, meaning that now people can buy less goods and services with that amount of money. Consequently, people want to hold a greater nominal quantity of money. The conclusion is that a rise in the price level causes the demand for money to increase.

Summarizing, the demand for money is affected by several factors (level of income, interest rates and inflation). The way in which these factors affect money is explained with 3 motives for demanding money:

- <u>Transactions motive</u> arises from the fact that most transactions involve the exchange of money[30]. This means that, when people want to make transactions, they need money, so they

[30] https://www.cliffsnotes.com/study-guides/economics/money-and-banking/the-demand-for-money

will demand more money. And this is strictly related to income rises (more money, more investment for even more money). So, when the GDP rises, the transaction demand for money rises too.

- Precautionary motive arises when people has uncertainty towards the future, so they need money to prevent unexpected expenses and for this reason they demand more money.
- Speculative motive since that money is an asset, the demand for money depends on its rate of return and opportunity costs. Holding money can have an opportunity cost, that is the interest rate earned by lending or investing one's money holdings. This speculative motive arises when people think that holding money is less risky than the alternative of lending the money or investing it in assets.

1.6.2 What affect the supply of money

Let's give first a brief definition of money supply. Money supply is the entire stock of a currency and other liquid instruments circulating in a country's economy in a particular time. Also referred to as money stock, it includes safe assets (e.g. cash, coins) and saving accounts that businesses and individuals can use to make payments[31].

One of the most important element in changes of supply of money is the policy of that country's central bank. If the government decides to adopt an expansionary monetary policy, this means that there will be more money in circulation on the market[32]. Now it's better to explain how changes in supply of money can affect the equilibrium interest rate. The liquidity framework leads to one simple conclusion: increases in the money supply leads to decreases of interest rates. But let's start from the beginning. The first effect is, again, the income effect. To increase money supply has an expansionary influence on the economy, so it raises national income. This means that the income effect of an increase in the money supply is a rise in interest rates, because of the higher level of income. The second effect is the price-level effect, again. If money supply increases, also the overall price level can rise. The effect is the increase in interest rates. The last effect is the expected-inflation effect. The rising price level due to an increase of money supply can affect also interests rates by affecting the expected inflation rate. This means that an increase in money supply can make people expect

[31] http://www.investopedia.com/terms/m/moneysupply.asp

[32] It's very important to remember that an increase in money supply causes a decrease in interest rates, so many times governments adopt money expansionary policy in order to drive down interest rates. Milton Friedman raised a strong criticism to this conclusion. He agrees with the liquidity effect of this framework but he also thinks that increases in money supply rarely leave all other elements at the same level, and this means that other effects on the economy can affect the interest rate rises or falls down. In conclusion, the liquidity effect it's not always true.

an increase in price level and cause the same effect of an increase in price-level. The opposite happens in the opposite situations. So, as we have seen, only the liquidity effects make the interest rate falls, the other two factors related to interest rate, make the latter to rise when the money rises. In general, the liquidity effect has immediate results because an increase in money supply immediately causes a decrease in interest rate. The other effects need more time to generate some effects because the effects (rise in price and income) are not so immediate. The last effect (the expected-inflation one) can be slow and fast, and this depend on how quickly people adjust their expectations. It's important that policymakers learn three important lessons: if governments need an interest rate to fall, an increase in money supply is the best solution, if the liquidity effect is the dominant in the economy system. If the expectation of inflation adjusts rapidly and other effects are stronger than the liquidity one, the best solution is a decrease in money growth. If, instead, the expectation of inflation adjusts slowly, but other effects are still stronger than the liquidity one, governments have to decide if they want that the increase or decrease of money growth's effect happens in short or long-run.

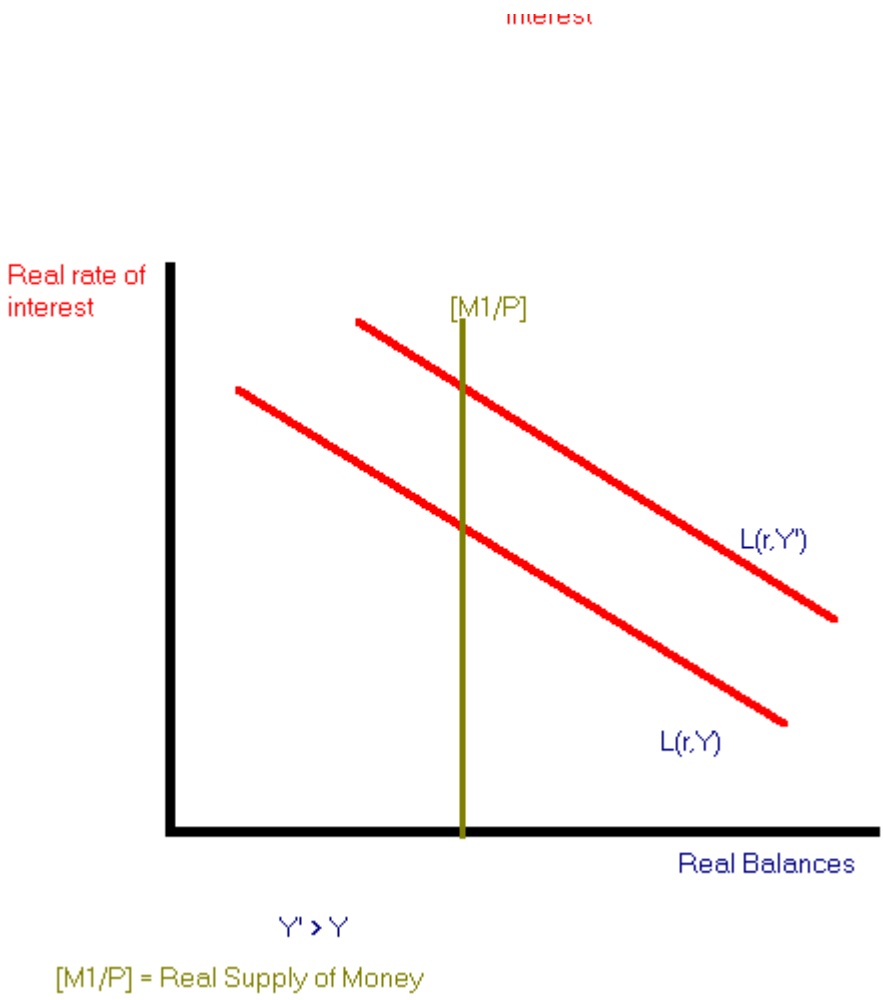


Figure 1 The Keynesian liquidity preference framework. Source: https://ctaar.rutgers.edu/gag/NOTES/macnotes8.html

1.7 How to choose exchange rate policy

One of the most ancient question in international economics is: which is the best choice for the exchange rate regime? After 1970s, when the Bretton Woods Agreement broke down, and with the new adoption of the Second Amendment to the IMF's Articles of Agreement[33], each country can now decide its own exchange rate regime. Since that now, no country is obligated to peg their exchange rates in a system overseen by the IMF, countries need a basis on which built their decision for exchange rate policy. In 1999, 2003 and 2009 the IMF has produced three major analytical studies on countries' choices of exchange rate regime, that now can be considering the most important empirical literature on the matter. With these reviews, the IMF want to inform countries on effects that an exchange rate regime can have

[33] Available at https://www.imf.org/external/pubs/ft/aa/

on their macroeconomic performance (inflation, growth, susceptibility to crises) and help the reach of an international monetary system's balance.

In these last 20 years, the preferred exchange rate regime has heavily evolved, especially for developing countries. In 1990s. the preferred exchange rate regime was to peg the currency to a stronger currency, as an anchor (usually the US $ or the deutsche mark). This choice was very popular in countries that were trying to transform their controlled economy into a market economy (like China), and that were trying to stabilize their economy after the first step of price liberation. But, the 1990s also seen a series of capital account crises in emerging market countries with the consequential discovery of the fragility of fixed exchange rate regime. So, in 1999 IMF reviewed these experiences, and this helped to understand that simple pegs were not sufficient to resist to crisis, and that maybe an "hard" pegs (ex-monetary unions) or leave the currency free to float according to market conditions can be better solutions. This is the so-called bipolar prescription, born for emerging market and developing countries, but also adopted by various advanced economies. Some countries choose one of the two solutions, others tried to manage both[34].

On 2003, the IMF published a new review, using a *de* facto classification of exchange rate regimes[35]. This classification was made more on the real behavior of the exchange rate and not on formal commitment of the central bank. The results of this review were that pegged exchange rates benefits on inflation or growth rate were too little to emerging countries that adopt this policy. Since that emerging or developing countries statistically were more used to have currency or financial crisis, the best solution for these countries was to leave the exchange rate free to float. However, few central banks cannot be indifferent to the value of their currency, and this is easy to understand: when a currency value declines, authorities think about the consequences that this can have on inflation and borrowers that borrowed in foreign currency[36]; if, instead, a currency appreciates, goods and services that the country exports and produces lose their competitivity. This changes in the value of a currency is particular important for emerging or developing countries, but it does not be underestimated also in developed countries. The most complete review on exchange rate regimes is the review that analyzed IMF member countries between 1980 and 2006. This *de*

[34] "Countries in the euro bloc have a hard peg (a currency union) with other members of the bloc, but the euro itself floats against third currencies". (http://www.imf.org/external/pubs/ft/fandd/2009/12/ghosh.htm)
[35] http://www.imf.org/external/pubs/ft/fandd/2009/12/ghosh.htm
[36] If a borrower has borrowed in foreign currency, a depreciation of the currency means that the debt is more expensive to service.

iure and *de facto* classification is the most exhaustive on the impact of exchange rate on a series of variable, among which the monetary and fiscal policy, inflation, crisis susceptibility etc. The results of this review are:

ADVANTAGES:

- Pegged exchange rate regimes: for developing countries, creates the best inflation performance[37]. This benefits partly come from the credibility of the central bank: if the central bank affirms (and then demonstrate that it's able to) to maintain the parity, the country will enjoy inflation benefits. Usually pegged regimes are associated with lower inflation, lower rate volatility and greater trade openness, but they are also more likely to have exchange rate overvaluation, that affect competitiveness and growth performance.
- Intermediate exchange rate regimes[38] create the best growth performance. With an intermediate regime, countries have the best performance, with faster per capita output growth. These regimes are the best balanced.
- Free to float exchange rate regimes: are characterized by less risk for overvaluation, but it creates higher inflation. higher volatility and difficulties for trade integration.

DISADVANTAGES

- Rigid or semi-rigid policies limits the use of other macroeconomic policies[39].
- Rigid exchange rate policies also limit countercyclical fiscal policy (e.g. cutting taxes). One of the most probable reason is that capital flows are related to business cycle in developing countries. We know that an expansionary policy can lead to loss of confidence, that hurts the viability of the peg. This means that a pegged regime is less able to respond to macroeconomic shocks.
- Rigid or semi-rigid policies are more likely to experience currency and financial crises (e.g. debt crises, banking crisis etc.). This does not mean that under floating regimes these situations are not likely to happen, but only that more crisis susceptibility is associated with rigid exchange rate regimes.

[37] Exception: when the peg is undervalued, and the country cannot offset the growth of money and so accumulation of foreign money translate into excessive monetary growth, the inflation benefit from peg is not recorded. (http://www.imf.org/external/pubs/ft/fandd/2009/12/ghosh.htm)

[38] Intermediate exchange rate regimes: when a country maintain relatively rigid exchange rate, but this exchange rate it's not formally pegged to any anchor.

[39] This is the "impossible trinity" of maintaining at the same time a pegged exchange rate, a sovereign monetary policy and an open capital account.
(http://www.imf.org/external/pubs/ft/fandd/2009/12/ghosh.htm)

- Rigid or semi-rigid policy does not allow timely adjustment. This is because the exchange rate cannot freely float to adjust itself to economic shocks, so deficits have greater impact on economic activity. The same is for surplus side, but surplus, if it lasts for long time, can affect all international monetary system.

This study tries to lay down a guideline for countries that need to choose an exchange rate policy on their economic objectives and on their economic actual situation. The IMF wanted to bring balance to the debate over exchange rate policies, help in the decision of which is the most appropriate exchange rate regime and provide empirical results for a better-informed choice.

1.8 Fixed exchange rate policy: advantages and disadvantage

A fixed exchange rate policy implies that the exchange rate is constant at the same level, or that can float between a maximum and minimum range (and in this case, it is called an intermediate exchange rate). If needed, monetary authorities can intervene in order to bring the exchange rate back to the prefixed level or in order to maintain the pre-established level[40]. Most important reasons to adopt this exchange rate policy are:

A. Organized monetary policy and attention to long-term objective;
B. Reduction of exchange rate floatation;
C. Increase in international trade and investments;
D. Economic policies coordinated between different nations;
E. No need to use monetary policy to create fake growth.

Fixed exchange rate need an organized monetary policy and it is a solution to the inflationary bias trap. When countries have the complete control on money supply, they could create inflationary spiral to reach politically short-term objectives, without considering the economic long-term consequences. Pegging the currency to a stronger one or to a basket of currencies is a strictly rigid monetary policy. The principal advantage of a fixed exchange rate policy is the international trade and investment expansion. A flexible exchange rate create uncertainty in importer and exporter in terms of prices: how much money I will receive? I much I have to pay? Since that people are likely to be hostile to risks, this uncertainty reduces transactions. In a system in which the currency value is fixed (or can float only into a fixed restricted range), the exchange risk does not exist and this would

[40] Petreski, M. (2004). To Fix or to Float: Pros and Cons for the Different Regimes. Economist.

increase volume of trade and investments between countries in that precise area. If different countries have a fixed exchange rate between each other, they are also obliged to use coordinated economic policies, and in this way, they do not have to worry about free-riders[41] that just try to obtain personal benefits without considering the consequences on the other countries. Above all, the fact that they cannot use monetary policy eliminates the bad habits of communicate fake economic cycles and short-term production results, so this implies that the country's growth is based on price stability and so it's real.

Obviously, there are also disadvantages in fixed exchange rate policy. One is that, with this policy, country's industries are more exposed to foreign competition and if the country is passing through an economic transition phase, it will not be able to create key sector for the country[42]. Therefore, in a country with a fixed exchange rate policy the *Infant Industry Protection*[43] is fundamental for specific sectors. A fixed exchange rate policy can make longer the process of relative price adjustment and cause speculative attacks[44] that can create, in emerging countries, the *fear to float*[45] that in the end let the country to exit the fixed exchange rate regime due to a strong decrease in foreign investment and in capital inflows[46]. Moreover, the unique monetary policy creates differences between countries determined by real factors and not monetary factors. This explains why in a country with a fixed exchange rate policy is also needed a redistribution of resources between different countries, in order to eliminate the distances and to create a more integrated value area. One example of fixed exchange rate system is that one between state that signed the ERM II agreement, signed in order to create an integrated market that is not mined by excessive fluctuations of exchange rate, even with countries that do not have the euro as currency but that are into the European Union. This agreement's objective is to assure economic stability and of currency stability. There are similar agreements, for example the "Eastern Caribbean Currency Union", "West

[41] Opportunistic behavior, that consist in joining benefits of a service for which other have worked. (Rosen,H.S(2007). Scienza delle finanze. Milano:McGraw-Hill).
[42] Drabek, Z &. Brada (December 1998). Exchange Rate Regimes and the Stability of Trade Policy in Transition Economies. Journal of Comparative Economics
[43] It's a protection for industries that in first development step need an internal protection in order to avoid the predatory competition. This protection is made through duties or other entrance obstacle and this because it's impossible to use economy of scale for a first step industry. So, this protection is used toward new economic sector in order to let these new industries develop, for country's long-term benefits.
[44] A speculative attack is represented by a huge capital outflows from a country by the selling of huge quantity of national currency. Sometimes countries are able to defend themselves from speculative attacks by increasing interest rates and by a restrictive fiscal policy.
[45] Huang, H. & Malhotra,P. (2004). Exchange Rate Regimes and Economic Growth: Evidence from developing Asian and Advanced European Economies. IMF Working paper series
[46] Calvo, G. A.-F. (2004). On the Empirics of Sudden Stops: The Relevance of Balance-Sheet Effects. Federal Reserve Bank of San Francisco.

African Economic and Monetary Union" or the "Central African Economic and Monetary Community", that are seeking to create a monetary stability between a lot of transition countries, in order to reach an economic development. Monetary stability assures that there is less risk of a devaluation that reduce strong capital outflows, and in addition a low inflation guarantees price stability and trade expansion.

In the end, a complete dollarization[47] reduces the exchange risk for foreign investors in country of reference. These elements allow the country that fixed its exchange rate to gain credibility and to expand its commerce and foreign investment in its territory, two fundamentals conditions for economic development. This analysis can explain why transition economies are the economies that nowadays more than other countries adopt a fixed exchange rate policy.

1.9 A flexible exchange rate policy: advantages and disadvantages

Economic literature accepts flexible exchange rate policies because of 3 important elements[48]:

1 – Sovereign Monetary policy

2 - Symmetry

3 - The ability of auto-stabilize exchange rate.

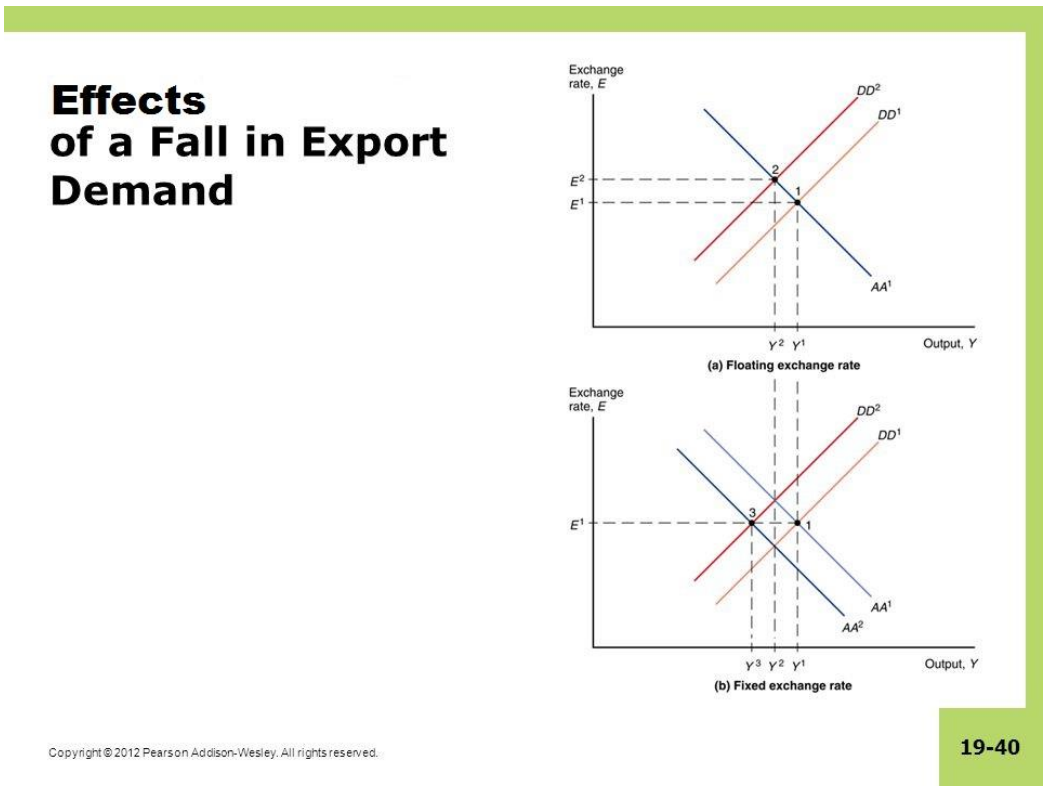
Concerning sovereign monetary policy, (and we intend the country central bank autonomy), this is obviously the most important advantage in a free to float exchange rate system. In this situation, the central bank does not have the role of decide money supply, in order to keep the exchange rate to the fixed level, and this allows the bank to use currency in order to contrast short term shocks. Moreover, an independent monetary policy let the central bank free to choose its inflation rate, that is no more imported from the country with which the currency is pegged (this inflation liberty is one of the most important elements that the Bretton Woods system lacked), since that in a fixed exchange rate regime the reference currency is the only that can control monetary policy and the only function of the currency is to keep the exchange rate to the level fixed with the reference country.

[47] A dollarization is when a country, both officially or unofficially, decides to use a different country's currency as legal tender for conducting transaction, in order to receive benefits of greater stability in the value of a foreign country over a country's domestic currency.

[48] Krugman, P. R. & Obstfeld M. (2007). Economia Internazionale. Pearson Addison Wesley.

The second point, the symmetry, is stipulated in contrast with the fixed exchange rate regime. In a fixed exchange rate regime, there are many asymmetries between countries because countries decide the role of a leading currency[49], but compared to other currencies, leading currencies' economical characteristics are heavily superior. This is because in a fixed exchange rate system, the reference currency has a fundamental role, since that currency demand from other countries will be stable thanks to the increase/decrease money supply mechanism, that implies the reserves conservation in the dominant currency.

The third point concern the ability of exchange rate to guarantee gradual changes that make easy for different kind of economies to deal with economic conditions changes. A fixed exchange rate, on the contrary, make more likely speculative attacks, since that the exchange rate has no more a stabilizing function but is always under depreciation or appreciation pressures, due to structural changes in the country's economy. The last observation is that, from a macro-economic point of view, a market shock has worst consequences in a fixed exchange rate system, since that in this case there is also a natural depreciation trend. Let's make an example. The economic shock that we will take into consideration is the fall in export demand.



[49] Us Dollar in the Bretton Wood System, German Mark in the SME.

Figure 2: The effects of a Fall in export Demand: flexible vs floating exchange rate (http://slideplayer.com/slide/4725180/)

A flexible exchange regime it's able to partially compensate this shock, thanks to the increase in export due to the nominal exchange rate depreciation (from E^1 to E^2) and so, in the short-term a depreciation also in the real exchange rate. In a fixed exchange rate system, instead, since that the exchange rate has to be the same all the time, the central bank must respond to a similar shock market with a restrictive monetary policy (from AA^1 to AA^2) to avoid the exchange rate increase and to keep the prefixed exchange rate level E^1 that provoke a stronger recession in the short-term (from Y^1 to Y^3). The most important critics against floating exchange rate system regard the uncertainty and the difficulty to project investment plan, because of the high variability of the exchange rate that, sometimes and with bad expectation can inhibit international trade and investments[50]. Even if there are some coverage mechanisms for the exchange rate flexibility, these have high costs. Anyway, the incessant floatation of exchange rate makes the unbalance more intense rather that provide adjustments[51].

Generally speaking, in order to make trade easier, the more different economies have integrated one another the more relative exchange rates are fixed between the integration areas. Usually, countries of big dimension (such as Brazil, Australia, Canada) or countries with a long international trade tradition (UK, Japan, Switzerland) have this exchange rate system, since that they do not need to reassure foreign investor on unexpected exchange rate falls. When we talk about the Latin American countries situation is different: they tried to use a fixed exchange rate system with unhappy results (Currency Board Crisis, 2001, Argentina) and now they prefer to reduce the possibility of speculative attack and adopt a floating exchange rate policy (such as Chile and Mexico). The political instability and internal tensions exerted a series of strong pressures on these economies, and this made difficult to maintain economy stability conditions, and for these reasons markets respond to these shocks with speculative mechanisms that allow their currencies to devaluate. But we can see a similar situation in countries that has a limited flexible exchange rate system. In these countries, the most important objective is to control currency variations, but they need to have a floating exchange rate system due to their economic conditions. In these economies

[50] Frankel, J. (1999) No Single Currency Regime is Right for All Countries or All Times. NBER Working Paper, 7338, p.1-41.
[51] Cooper, R. Toward a Common Currency. International Finance, 3(2), p.287-308.

is important to directly control the money supply, that following the impossible trinity theorem [52] should keep a flexible exchange rate system since that capital flows are liberalized[53].

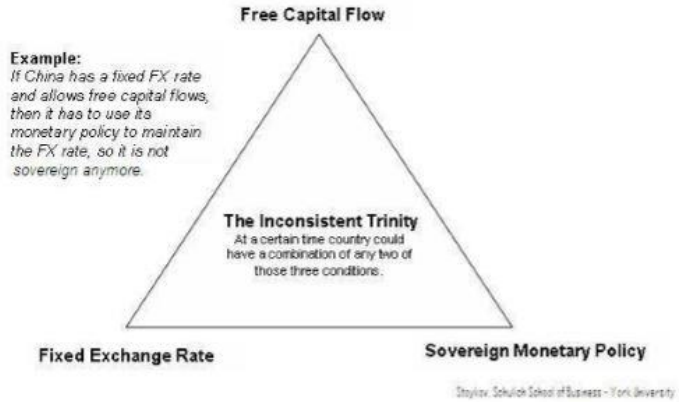


Figure 3: The impossible trinity theorem. Source: Inconsistent Trinity Autor: Hristo Stoykov, MBA Schulich School of Business - York University, Toronto

The impossible trinity theorem explains that, as we already said, when a country chooses a triangle's side, it must renounce to institutional characters of the opposite vertex. So, flexible exchange rate countries have a sovereign monetary policy and free capital flows, but, in this way, they renounce to exchange rate stability. On the other hand, fixed exchange rate countries renounce to sovereign monetary policy, but has exchange rate stability and free capital flows. The last option in the middle-way, in which countries can benefit from sovereign monetary policy and exchange rate stability, but they must limit international capital flows, as China did for a long time. In this specific case, the interests rate is no more determined on international market but by internal economic forces, since that the economy is a closed economy, and in this way, it's possible to have also a sovereign monetary policy[54].

1.10 Fixed vs Flexible

We can try to analyze these two kinds of monetary regimes from 3 principal characteristics: the ability to react to economic shocks, the volatility and the financial rigor:

[52] The impossible trinity theorem underlines the impossibility to reach financial integration (so make free capital flows), sovereign monetary policy and exchange rate stability all in the same time. Since that these three conditions cannot be reach together, one have to be left, with trade barriers for example.

[53] Mankiw, N. G. (2009). Macroeconomia. Bologna: Zanichelli.

[54] Mankiw, N. G. (2009). Macroeconomia. Bologna: Zanichelli.

A) The ability to react to economic shocks: with economic shocks, we mean, for example, a big increase in oil price, that will affect the real exchange rate and not the nominal exchange rate, that instead is affected when different inflation rates are present. In a nominal fixed exchange rate, countries with a positive inflation rate will lose competitivity on international market, and in this situation a fixed exchange rate system cannot provide solutions to this problem. If a series of devaluation are needed, this will make the government lose its credibility and the economy can have big problems. In the long term, a flexible exchange rate regime can cause a slow but constant depreciation of currency, make the PPP holds and cancel the inflation differential with other countries. In this case, if a country is a great importer of oil, it will have recorded a huge deficit in the balance of payments, and speculative attack will have been sure. In a fixed exchange rate, the increase in oil price will have make countries have a meeting in order to establish new exchange rate parities in order to determine the right changes to exchange rates. The conclusion is that in this situation the best solution is a flexible exchange rate system.

B) The volatility: it would seem clear that a high volatility is present only in flexible exchange rate, but the question is: is this a negative characteristic? First, it is not so obvious that a fixed exchange rate system has less uncertainty than a flexible one. What is sure is that volatility is not a completely negative matter: economic shocks do not depend on exchange rate regimes, even if a flexible exchange rate makes them more possible, but they can also react in a better way to these shocks. In addition is that flexible exchange rate can have more volatility than a fixed one, but that can be possible that in a country with a fixed exchange rate, the other macroeconomics variables, for example interests rate, are volatile.

C) Financial rigor: a flexible exchange rate system allows different countries to have different inflation rates. In the long-term, exchange rate of high-inflation countries will devaluate in order to keep constant the purchasing power of currencies. This means that flexible exchange rate does not limit the possibility of a country to use an expansionary monetary policy, making difficult a financial rigor. Instead, with a fixed exchange rate system, if a country has a high inflation, it loses its competitivity and so it must adopt a restrictive monetary policy in order to make its inflation to reach the normal level. But a financial rigor can be reached also if the government publicly declare its commitment to maintain a credible monetary policy.

1.11 The real exchange rate and economic growth

We have been talking in general about different consequences of the exchange rate on import, export, income, price level and of course economic growth. As we said, the exchange rate and the decision of which exchange rate regime is better to adopt has a center role in the emerging countries development stage. Politicians and economists have different opinions on the effect of the exchange rate on the growth of a country. Economists believe that the exchange rate is an endogenous variable that is strictly connected to a country growth process but they rarely believed that the exchange rate is a driver of growth in the long-term. Politicians, instead, are firmly convinced that a lower exchange rate can strongly impact the country growth process.

In economics literature, economists are used to believe that nominal variables had not relationship with the long-term growth of a country. On this matter, Goldstein[55] supports the natural exchange rate theory, according to which the best macro-economic policy is the middle-term price stability[56]. Usually, the most common theory is that an exchange rate policy that keep the currency value very low creates inflation without any effects on real monetary growth of the country in the long-term. But this is not the only theory. Levy-Yeyati[57] and Sturzenegger[58] think that there is a weak but existing relationship between the exchange rate and economic growth. A fixed exchange rate between two currencies leads to less uncertainty and to an internal lower interest rate, and this creates the fertile environment on which built an economic development. At the same time, the fixed exchange rate is not able to automatically stabilize itself during recession periods but it calls for a protectionist behavior. This creates prices distortion and problem of resources allocation in

[55] Morris Goldstein was born 1944 and he is one of the most important personality in finance, especially in the exchange rate and IMF field. He is a Peterson institution for international economics nonresident senior fellow and he has held several senior staff positions at the International Monetary Fund (1970–94), including Deputy Director of its Research Department (1987–94). From 1994 to 2010, he held the Dennis Weatherstone Senior Fellow position at the Peterson Institute. He had written extensively on international economic policy and on international capital markets (https://piie.com/experts/senior-research-staff/morris-goldstein).

[56] Goldstein, M. (2002) Managed Floating Plus. Washington DC: Institute for International, Economics, Policy Analyses in International Economics.

[57] Eduardo Levy Yeyati, born in 1965 is an Argentine economist and author and one of the founding partner at Elypsis, an economic research firm, founded in 2011.

[58] Federico Sturzenegger, born in 1966, is chairman of the central bank of Argentina. He co-introduced the DARK MATTER, that is the invisible assets that explain the difference between official estimates of the current account and estimates based on the actual return net financial position (https://en.wikipedia.org/wiki/Federico_Sturzenegger).

the economy[59]. Garofalo analyses the relationship between the fixed exchange rate and the economic growth, and his conclusion is that a fixed exchange rate makes investments to grow, but that a flexible exchange rate assures a quicker growth in terms of productivity[60]. Nilsson K. and Nilsson L. analyzed the impact of the exchange rate on countries export. They sustain that the exchange rate is the *spiritus movens* of a developing country's economic growth[61]. The economic literature usually prefers the fixed exchange rate to the flexible one: the reason is that a fixed exchange rate reduce floatation risks and so attracts more investment and helps the country trade to growth (even if further studies revealed that a fixed exchange rate is not so relevant in a country long-term growth). What we need to understand is also that investors are not only influenced by the exchange rate policy of a country, but also on real factors.

All these studies seem to reach the same conclusions: the exchange rate does influence a country productivity, investment and trade, and so, as a consequence, exchange rate does matter in terms of a country's long-term growth rate. It's also clear that a fixed exchange rate, that reduces uncertainty, has a stronger influence on these elements, even if a fixed exchange rate is riskier than a flexible one in terms of economic stabilization. It's better to remember that this variable (the exchange rate) has a limited impact, so it can be considered as one of the factors that affect the economic growth of a country[62]. In empirical evidences, we have different results: different studies reveal that the exchange rate system has a limited impact on key macroeconomics variables. According to Gosh's results, that analyzed 145 countries member of the IMF from 1960 to 1990, countries with a flexible exchange rate has better performances in terms of real GDP growth (1,7 % growth rate for countries with a flexible exchange rate, only 1,4% in countries with a fixed exchange rate). Exceptionally, the greater growth rate is recorded in countries with an intermediate exchange rate regime (soft peg or managed float). In empirical studies, countries with a *de jure* and *de facto* flexible exchange rates has worse performances than countries that had a pegged exchange rate. This is the clear example of the existence of the "fear to float".

[59] Levy-Yeyati, E. and Sturzenegger, F. (2002) To Float or to Fix: Evidence on the Impact of Exchange Rate Regimes on Growth. American Economic Review, 12(2), p.1-49.
[60] Garofalo, P. (2005) Exchange Rate Regimes and Economic Performance: The Italian Experience. Banca D'Italia Quaderni dell'ufficio Ricerche Storiche, 10, p.1-50.
[61] Nilsson, K. and Nilsson, L. (2000) Exchange Rate Regimes and Export Performance of Developing Countries. Blackwell Publishers, 2000, p.331-349.
[62] Petreski M., Exchange-Rate Regime and Economic Growth: A Review of the Theoretical and Empirical Literature, 2009.

According to Huang and Malhorta, in developing countries the exchange rate has greater effect of the economic development than in advanced countries, where other factors have greater importance[63]. All this analysis and studies do not give to us one clear solution to the question "which is the best exchange rate regime?" since that results are contrasting and not statistically significative.

Talking about China, that is the main matter of this thesis, nowadays it's common opinion that one of the most factor that implemented the Chinese development in the last 20 years has been the exchange rate regimes. Without any doubt, there are also a lot of other factors that impacted the Chinese development model, but it's clearly evident that the exchange rate in this country had the biggest impact. It's clear that there are not equivalent countries, and this also explains the contrasting results of empirical analysis: morphological, political, economic and social differences make each country unique and it's impossible to generalize the influence of the exchange rate on a country economic growth, since that this will be dependent on a series of variables. Some countries (without consider if they are developing or developed countries) can have greater benefits from some economic policies than other countries, and this is the reason why is better to understand which exchange rate regimes is better for which country. The economic policy is not the solution to any situation, but it has to be balanced to the situation in order to support a durable growth without economic cycle fluctuations. The People Bank of China understood the importance of the exchange rate in its country, especially in terms of export growth, and even if someone thought that the Chinese behavior is unfair and irregular, this hastened the country economic development. It's important also to consider that, together with the exchange rate policy, also the policy control on capital flows plays an important role in this process. The entire world, first among other the USA, always criticized the "Chinese Giant" in terms of economic policy rigidity, sometimes accusing China of manipulation of the currency. It's pretty clear that China used a predatory policy, but how much this policy affected the U.S.A economy it's not clear nor even demonstrated that it does.

1.11.1 The ECB working paper

One of the most recent analysis on the impact of exchange rate regimes on economic growth is the working paper of the European Central Bank. In 2016, the European Central Bank

[63] Huang, H. and Malhotra, P. (2004) Exchange Rate Regimes and Economic Growth: Evidence from developing Asian and Advanced European Economies. IMF Working paper series, p.1-32.

made a working paper in which they analyze exactly this matter and how the exchange rate can affect the economic growth per capita from a medium-term perspective. The main objective of this working paper was to identify any movements in the real exchange rate, movement there are not driven by country-specific growth shocks. We will try to report their results and to make some conclusions.

The key question of this working paper is to understand if a weak currency, or any policy which has the effect as a net subsidy to the tradable sector, impacts the economic growth in a durable manner[64]. The principle element analyzed is the per capita real GDP growth, since that this is one of the most important matter for politicians. The ECB working paper was based on previous literature, first among everything the Rodrik's analysis[65]. In Rodrik's view "a sustained real depreciation increases the relative profitability of investing in tradable and acts in a second-best fashion to alleviate the economic costs of these distortions[66]". The major problem in this analysis is: is the exchange rate an exogenous policy instruments or not? This matter is something on which economists are still trying to find an answer. It's clear, there is a positive correlation between growth and exchange rate, as the Balassa- Samuelson effect demonstrates[67]. Summarizing, the main purpose of the ECB working paper is "to address the problem of reverse casualty between exchange rates and growth by applying instrumental variables estimates[68]". The main results of this working paper are two: the first is that there is a "positive (negative) effect of the real depreciation (appreciation) on real per capita growth over five-year average periods[69]", The second is that this effect is not the same in developing and developed countries. The effect that they found is stronger in developing countries and, also, in country with a pegging crawl exchange rate, but results also show a symmetry between appreciation and depreciation. In conclusion, we can affirm that the exchange rate does matter for growth in developing countries.

[64] ECB working paper 1921, June 2016. Authors: Maurizio Michael Habib, Elitza Mileva, Livio Stracca.
[65] In Rodrik's analysis "the biggest finding was that an undervalued real exchange rate predicts stronger growth, especially in developing countries, due to the fact that tradable economic activities suffer from institutional and market failure." The exchange rate and Economic growth, Dani Rodrik, Harvard Univesity, 2008.
[66] ECB working paper 1921, June 2016. Authors: Maurizio Michael Habib, Elitza Mileva, Livio Stracca, pag 4.
[67] The Balassa-Samuelson effect says that countries with high productivity growth, have at the same time also high wage growth, that leads to higher real exchange rates. This means that an increase in wages in the tradable goods sector for an emerging economy will also causes an increase in wages in services sector. This, clearly, causes an increase in inflation, and the speed of the inflation rates depend on the speed of the country's growth.
[68] ECB working paper 1921, June 2016. Authors: Maurizio Michael Habib, Elitza Mileva, Livio Stracca.
[69] ECB working paper 1921, June 2016. Authors: Maurizio Michael Habib, Elitza Mileva, Livio Stracca, page 11.

After this brief introduction and explanation or variables that affect the exchange rate, how does the exchange rate regime can be decisive for a country's development, how does it affect the economy of a country, we will try to deeply analyze the Chinese exchange rate. We will try to explain how Chinese exchange rate determinants works, and how the Chinese exchange rate helped the country to grow. We will also try to make general consideration on effect of the Chinese exchange rate on export and import, analyzing some economists working paper, trying to give some guidelines for companies that want to control the Chinese performance in order to move or to export to China.

Chapter 2 - China's exchange rate

As we already said, China's is now one of the most important economy of the world, with its incredible growth rate and its trade surplus that continues to create some tensions with its major trading partners. Common idea is that the responsibility of these two major issues is the China's exchange rate regime. Chinese exchange rate policy has been, and still is, an important matter of discussion all over the world, especially in these last years. Moreover, China's integration into the world economy helped Chinese population increase their living standards, this means that now Chinese people are not so poor as in the past, and in addition Chinese integration into the world economy also helped the expansion of international trade; in fact, the majority of multinational firms coming from different countries wanted and still want to enter in China in order to benefit from Chinese's low cost of production (especially manufacturing companies). There are now numerous economists that have contrasting opinions on Chinese exchange rate: some argue that China should allow its exchange rate to appreciate and to freely float, others instead believe that the yuan appreciation and liberalization can have negative impact on China's and international economy. Let's discover if these two opinions are true or false.

2.1 From fixed peg to crawling peg: brief history of Chinese exchange rate

In order to better understand the Chinese exchange rate problem, we must briefly explain how this country's exchange rate has evolved during time. The Chinese yuan is the Chinese official currency from the birth of the People's Republic of China in 1° December 1948. From 1949, the government decided to stop the rising inflation centralizing all foreign exchange market operations. Officially, from 1949 to 1952 China experienced the "National economy recovery period". This means that the Chinese government started to encourage exports and to limit imports, trying to maintain a sort of balance between the two business activities. The yuan exchange rate at that time was not a key matter for the government, so in this period the RMB suffered of recurring and important fluctuations. From 1953 to 1980 there was the Chinese "control economy period". We can split this period in 2: the first, from 1953 to 1972 is the interval in which the Chinese government decided to adopt a fixed exchange rate system. The aim behind this decision was to promote Chinese growth, but only a fixed exchange rate was insufficient to grant a rapid expansion of Chinese economy. For this reason, from 1973 to 1980, the Chinese exchange rate was anchored to a foreign currency's basket, but also in this period the Chinese yuan value was affected by deep fluctuations and it was highly overvalued. From 1981 to 1994 China had always a dual exchange system. This

means that there were two exchange rates: one is the fixed exchange rate system used by the government, and one is a "market-based" exchange rate system. This latter exchange rate system was used by importers and exporters in the "swap market". It's important to remember that in this period the access to this "swap market[70]" was really restricted and this caused the born of a black market for foreign exchange. The important thing to highlight is that these two rates were highly different (e.g. in 1993 the official RMB/$ rate was 5.70 RMB, instead on the swap market the exchange rate was equal to 8.70 RMB). This dual system was always criticized by a lot of countries, especially the USA since that this system places restrictions on foreign imports. In 1994 in China there was the unification of this dual system at an initial rate of 8.70 yuan per dollar, and in 1997 there was a little revaluation of the RMB (8.28 RMB per dollar) that was maintained constant till 2005. Even if the RMB became convertible for trade purposes, it still was unconvertible for investment purposes. So, from 1994 to 2005 the Chinese government decided to peg its currency to US $ at 8.28 RMB per $ rate, and this decision created reactions in the US government and in the entire world economy. This peg seems to have one mainly purpose: to promote a stable environment for foreign trade and investment in China (such as many other developing countries had already done). The PBOC maintained this peg by buying dollar-denominated assets (especially USA debt). If Chinese government printed 3 billion of yuan, the PBC bought the same amount of US denominated assets, in order to eliminate the excess of demand (or supply by selling) of yuan, so will reach a new equilibrium. This is the reason why the RMB/US$ rates varied so little for so long time, even if Chinese economic conditions changed, putting pressure on yuan for revaluation. If China had a floating exchange rate system, the demand for the two countries' goods would determine the RMB/US$ exchange rate. RMB was many times accused of being undervalued, so finally in 2005 the Chinese government decided to revalue its currency using the crawling peg[71] regime[72]. From 1994 to 2005, the Chinese government had an exchange rate system that allowed the country to have a fixed

[70] For swap market, we mean government-sanctioned foreign exchange centers. These allow a limited amount of trade in foreign exchange, even if the central government often intervened in order to prevent the RMB appreciating beyond. Source: U.S. Department of State, Country Reports on Economic Policy and Trade Practices, February 1990, p. 253

[71] The crawling peg it's a system according to with a currency is strictly connected to an anchor currency or to a basket of currencies, defining a devaluation rate more all less known. This system is a sort of compromise between fixed and flexible exchange rate system since that on one hand the central bank has to intervene in case the exchange rate exceeds the prefixed level, and on the other hand it's possible to maintain the external balance, since that a major flexibility is granted.

[72] http://chineseculture.about.com/od/thechinesegovernment/a/RMB.htm

exchange rate. An undervalued currency (undervalued compared to the level at which it would be if it was free to float) created the best condition to gain and maintain a competitive advantage in price export. Even though China in last years has tried to make its internal consumption to grow, the Chinese's economy it's still heavily connected to external demand. For this reason, Chinese authorities did not want the transition from a fixed exchange rate to a flexible exchange rate, because with the latter the currency should be free to revalue, as the global economy, in particular the USA, wants. "China is not like other big economies. It follows a mercantilist policy, maintaining a balance of payments surplus artificially high. In a recessionary world, this policy can be defined as a predatory policy" (Paul Krugman, Chinese New Year, 2009, New York Times). The basis on which Krugman built his declarations is the production costs advantage that China has compared to its main competitors in the world, due to an undervalued exchange rate if we look at China's economy conditions. This is obviously translated into a high commercial surplus. Under a flexible exchange rate system, the high inflow of US $ will let the Chinese Yuan to revalue, but since that Chinese government control private investors capital inflows, buying US $ and using them in other commercial operation, this adds a lot of dollar to Chinese foreign reserves[73].

In 2005 Chinese currency policy was modified. The Chinese government announced that the Yuan exchange rate would become "adjustable based on market supply and demand with reference to exchange rate movements of currencies in a basket". This basket was composed by the dollar, the yen the euro and few other currencies, or at least this is what we know, since that the basket composition was never publicly revealed. As the PBOC president Zhou stated: "the basket to which the yuan is anchored should be composed by currencies of countries with which China has relationship, in terms of international trade, foreign debts and foreign direct investments, and each currency weight should be coherent with the proportional importance that these countries have in the Chinese imaginary." This policy, to anchor the RMB to a basket of currencies, should have increase the stability and flexibility of exchange rate, reducing the external pressure on a revaluation of the yuan. Within this period, the yuan was allowed to fluctuate by up to 0.3% on a daily basis against the basket. From this point, we can see a slow appreciation of the RMB (in 2008 the dollar-RMB exchange rate was 6.83[74]). The Chinese exchange rate was no more a pegged exchange rate

[73] Krugman, P. (2009, Dicembre 31). Chinese New Year. New York Times .
[74] China's Currency Policy: An Analysis of the Economic Issue, Wayne M. Morrison Marc, Labonte, 2013.

policy. But now China experienced a "managed float" exchange rate: the yuan was allowed to float according to market forces, but government still control and restrict the market appreciation through market intervention. When the Chinese government saw that the 2009 global crisis[75] was causing a decrease in global demand for Chinese products, it decided to stop the appreciation of the yuan until 2010. Based on economic condition, in 2010 the PBC decided to restart to allow the Chinese yuan to float, but it excluded any one-time revaluation that will hurt factories that are not able to promptly adjust to this exchange rate changes. The yuan was gradually allowed to float more and more, till reaching a maximum of 2% band within the currency can move on any single day in March 2014[76]. In 2015 the government announce that it would consider also the previous day's trading in the establishment of the currency rate, meaning that now the yuan rate would effectively consider the market influence. The PBOC also stated that the currency would be determined by "demand and supply conditions in the foreign exchange markets and the movement of major currencies[77]". What have not changed are the strict rules for individuals and banks holding foreign currency. Moreover, the yuan is not yet fully convertible. If an investor wants to exchange its national currency for yuan, he needs to exchange with the PBOC, that has Chinese's foreign reserves. Beside this, the yuan it's still printed by government for individuals, companies and banks' uses[78]. Even if China in the past has used its foreign reserves to influence its currency's value, it still has one of the biggest foreign reserve of the world. Chinese central banks have now other instrument to intervene on currency value, such as the derivative contracts[79]. These instruments allow the central banks to intervene on currency value, but the bank does not have to sell immediately its foreign supplies. This situation is still the actual one, and even if China now has a partially market- based exchange rate, this still does not compensate the trade imbalance and does not allow the reduction of Chinese surplus.

[75] According to Chinese data, the 2009 global crisis caused the closing of thousands of export-oriented factories.
[76] https://www.fxcm.com/insights/how-does-china-control-exchange-rates/.
[77] http://www.chinamission.be/eng/fyrjh/t1288276.htm.
[78] http://blogs.wsj.com/marketbeat/2010/06/21/how-china-manages-its-currency-an-explanation-for-humans/.
[79] A derivative is considered to be an instrument used for investment via contract. Its value is based upon the value of another assets, typically referred to as the underlying asset. In simple words, a derivative contract is an agreement that allows the possibility to purchase or sell some other financial instrument (e.g. options, forwards, swaps etc.) https://www.fxcm.com/insights/what-is-a-derivative/.

2.2 Analysis of the Chinese exchange rate

In the previous chapter, we have analyzed the general rules under which the exchange rate of a currency goes up and down, and we have lied down a list of factors affecting the exchange rate of a currency. Generally speaking, each specific condition leads to specific results, but as we will see soon, this highly depends on the monetary policy of a country and on the government behavior. In this section, we will try to analyze the already mentioned affecting factors in relation with the Chinese exchange rate.

2.2.1 Balance of payments

We already said that the balance of payments or current account explains the balance of trade between a country and its trading partners, and for trade we refer to any transaction between two individuals there are situated in two different countries. This obviously means that the exchange rate is not only a ratio between two currencies prices, but that it also affects imports and export prices (= terms of trade) and should be affected by import and exports volume. When we consider the balance of payments in the short-term, we are merely considering a sustainable payments balance. What it's also important is to consider the correlation between the exchange rate and the flows in the balance of payments. As Yingfeng Xu reported in his working paper, and as we can see from the graph (Figure 4), in 2000 there was a deep connection between Chinese export and its real exchange rate, even if in the central and the final part of the graph we can see a momentum of contrasting trends for the two elements.

There is a theory that explained how depreciation of a currency it's positively connected to an exports expansion. This theory is true if we assume that in our economy of reference we have sticky prices. As a result, in this economy a change in the exchange rate has impact on terms of trade. It's easy, as exports become more profitable than import, exports expand and imports contract. We have different result in an economy with flexible prices. If goods prices are more linked to world price, the effect of a change in exchange rate will be small. This means that, since that an appreciation in exchange rate in China is connected to an expansion in exports, Chinese goods' prices are becoming more strictly connected to world prices. But this is not the only explanation: another reason can be the increase in export incentives (e.g. tax rebates introduced after 1994). Talking about imports, we can see that there is no a sign of clear correlation between exchange rate and imports

(figure 5). As Xu explained, "the simple correlation coefficients may not reflect the true nature of elasticity of imports to exchange rate[80]", maybe because of other variables.

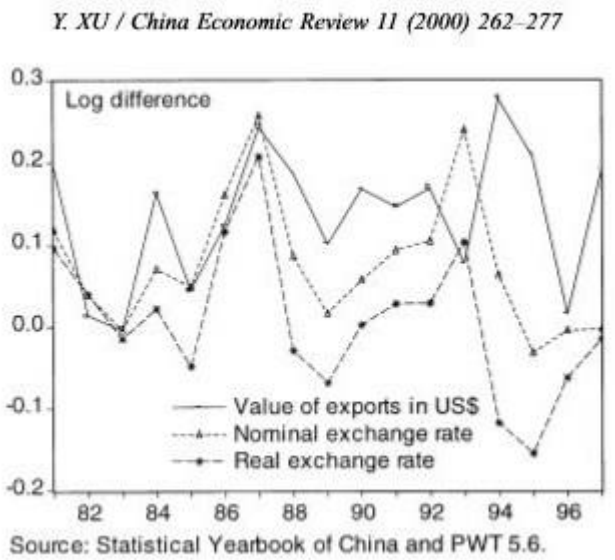


Figure 4: Export growth and depreciation

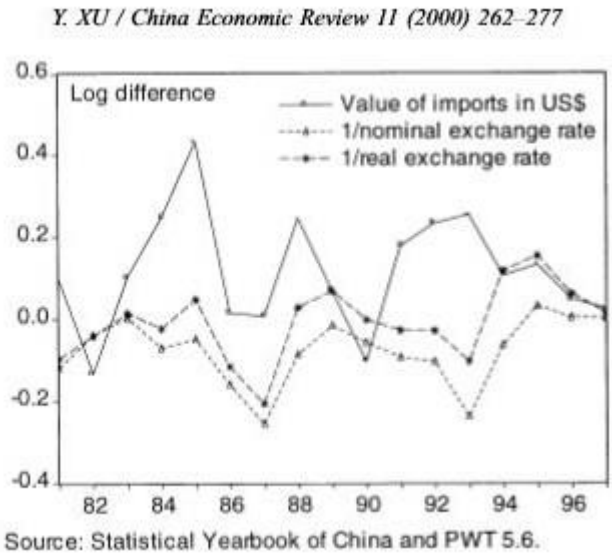


Figure 5: Import growth and appreciation

Making more recent considerations, China's current account surplus in the first quarter of 2017 reached 18.4 billion dollars, less than the previous quarter and quite the half of the same period in the last year[81]. In 2016 the surplus hit USD 196.4 billion in the year. The

[80] China's exchange rate policy, Yingfeng Xu, University of Alberta, Canada, August 2000.
[81] https://tradingeconomics.com/china/current-account.

biggest surplus is recorded in trade in goods, while we have a deficit in trade of services. All these data on Chinese balance of payments should imply an obvious result: if China has a surplus in balance of payments, this means that it receives more money compared to money that China spends, and this, in theory should lead to a currency appreciation. But what we have seen in last years, it's a stable exchange rate, with just few oscillation, but without the expected appreciation that it's linked to its balance of payments surplus.

As we know, a balance of payments surplus arises when there is an excess in supply of national currency on the private Forex at the official fixed exchange rate. In order to solve the excess of supply, the central bank will intervene on the Forex and buy foreign reserves. This means that official reserve transactions can show rising or falling foreign reserves and so suggest a balance of payments deficit or surplus. This means that, since that China has a Balance of payments (BOP) surplus, it should buy foreign currency, in particular US $. Why US$? Because the USA are China's major trading partner, and the majority of Chinese exported good are directed to USA. This means that USA supply a lot of Chinese yuan to buy Chinese goods, and if China does not buy US $, the US$ value would increase, and the same will do the Chinese yuan. But if foreign currency reserves of a countries increase, also the exchange rate should increase. So how can the government let the exchange rate be stable? What the Chinese government does is buying US $ and then investing this $ in US bonds, to the extent that now China is the second greatest possessor of US bonds, after Japan. In a flexible exchange rate system, the balance of payments should reach automatically its equilibrium, and the time that it used to reach this equilibrium depends on price flexibility. If the government wants to reduce fluctuation in short term, it has three possibilities: 1) use the foreign reserve of the central bank; 2) foreign loan; 3) increase interest rates. If a country wants to maintain its exchange rate fixed in the long run it has, again, 3 instruments (if the pressure is on depreciation of the currency): 1) monetary or fiscal policy that aims to reduce the demand; 2) money offer policy; 3) control on imports and agreements on exchange. As the State Administration of Foreign Exchange (SAFE) explained, in 2016 China had "one surplus and one deficit, namely, surplus under the current account and deficit under the capital and financial account (excluding reserve assets)[82]". Moreover, China has a surplus in traded goods of 494.1 billion of USD. Since that China has a so high surplus in trade of goods,

[82]http://www.safe.gov.cn/wps/portal/!ut/p/c4/04_SB8K8xLLM9MSSzPy8xBz9CP0os3gPZxdnX293QwN_f0tXA08zR9PgYGd3Yx8fE_2CbEdFAM9sw9Y!/?WCM_GLOBAL_CONTEXT=/wps/wcm/connect/safe_web_store/state+administration+of+foreign+exchange/safe+news/8745f40040e4efe9a137f55034516df6.

that means that it exports more than it imports, it means that Chinese value reserves are increasing, and this should imply a general increase in level prices, and as a consequence a loss in Chinese goods' competitivity. But in 2016 we can also see a great cross-border capital outflows, since that Chinese market players continued to increase their holding for external assets. What allows China to maintain a quite stable exchange rate is that the surplus in trade in goods (so in current account) is balanced by a deficit in capital and fiscal account. Chinese government is trying to make the RMB exchange rate more elastic, or at least is what they say.

In the past, Chinese BOP had specific characteristics. First of all, this country had a surplus both on the current account and on capital account. In a normal situation, these double surpluses were not so common and they should not last for a long time, since that they are fundamentally self-contradictory. A normal current account surplus indicates a positive gap between savings and investments, and this should imply that this country is a lender on international financial markets, recording thus a capital account deficit[83]. In this way, the surplus of savings should be redirected outside for investment opportunities. We can also look at China's BOP surplus in another way, with the standard accounting identity. This identity stated that the current account balance (CA), the capital and financial account balance (KA) errors and omissions (EO) and the change in foreign exchange reserves (ΔRES) must be zero.

$$CA + KA + EO + \Delta RES = 0$$

If the state does not intervene in this process, the normal situation according to this equation is that CA= -KA.

[83]The sustainability of China's exchange rate policy and capital account liberalization, Lorenzo Cappiello and Gianluigi Ferrucci, Occasional Paper series No 82/March 2008..

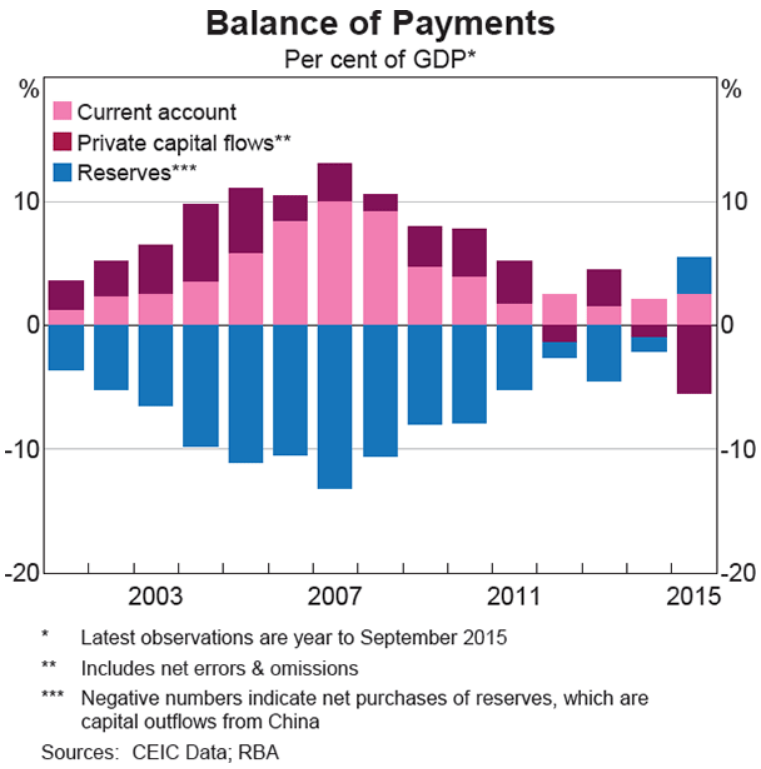


Figure 6: Chinese Balance of payments. Source Ceic Data.

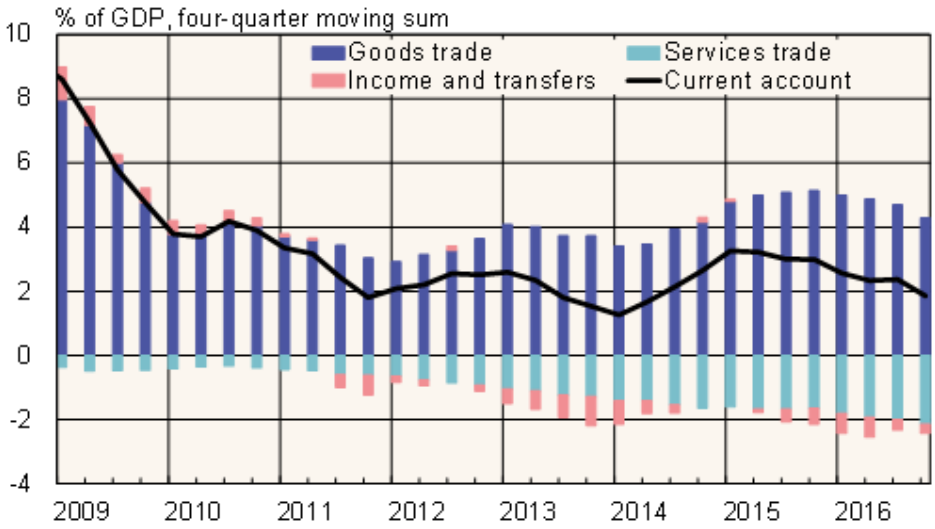


Figure 7:China's main current account categories, 2009–2016 (% of GDP). Source: Macrobond and BOFIT.

As we can see from the graph (figure 6), in last years, China had recorded a positive current account but it also started to sell its reserves, and probably, the fact that the foreign reserve is not increasing help the government to maintain a stable exchange rate. But when we talk about China the situation is always under evolution.

According to our researches, in the first quarter of 2017 Chinese recorded a financial account surplus, and this surplus have to be reconducted to more rational outbound investment and increase in the flows of foreign investment. The strictest inspections on cross-border merger and acquisitions and so an enhanced regulation is now having effects. According to Guan Tao, former head of the international Payments Department of the State Administration of foreign exchange, "foreign reserve will face little pressure to drop in the second half of 2017, because the central bank does not need to use too much reserves to stabilize the exchange rate of yuan[84]". The exchange rate in China, that is a managed float exchange rate, if not managed in the good way can provoke heavy consequences, to the extent that if China tries to manipulate its exchange rate it can stimulate protectionist behavior in its major trading partner, so the best way is to improve social safety net and create a more market-based and robust financial system, in this way China will attract more FDI without manipulate its exchange rate, and it can continue to grow. One of the most evident signal of China management of exchange rate, in order to understand exchange rate movement, is, as we have seen, the balance of payments.

2.2.2 Public Debt

As we already said, a deficit for the public sector and governmental funding can stimulate a country's economy, but it can also discourage investors to make business in this country. The most important reason why it's good to have a large public debt is the higher inflation caused by the public debt. Since that a large inflation causes a depreciation in real currency in the future, this means that the debt will be repaid with a cheaper currency. But it's good to remember also that the better situation for having public debt is to invest in long-term investment, because if the public debt is used for financing consumption, it will cause problem for future generation. After this brief recap, we can start to analyze China's public debt situation.

As we already said, national debt has a definite impact on the foreign exchange rate. If a country is perceived to have a high national debt and do not demonstrate to have the capabilities to repay this debt, this can have a negative impact. In this last years, China is suffering from rising debt and slowing economic growth. Since the global-crisis of 2009, China's companies (state-owned one) and local governments, started to borrow in order to build cities and infrastructures and to enhance financial markets. These investments and

[84] http://www.chinadaily.com.cn/business/2017-06/29/content_29937685.htm.

spending caused a domestic debt, especially caused by inefficient state-owned companies. In 2016 China's debt was about the 170% of GDP, according to the bank of International Settlements. If China does not demonstrate to be able to repay its debt, investors can stop to invest in China, creating a decrease in capital inflows, a deficit in financial account and this has an influence on exchange rate. The Chinese government is trying to solve this situation, introducing a series of measures to tackle local government debt and bad bank loans. Since that China's local government revenues comes from land sales and government financing platform (LGFPs), that historically are unstable and unsustainable, local government had to seek more reliable revenue sources to reduce debt accumulation.

Another important component of Chinese private debt is household debt, that had tripled by the end of 2013. We cannot do not mention the shadow banking[85], that is growing because of constraint of liquidity in the credit market and for the high demand for higher-yield investment financial products. Of course, China is just trying to fix the situation, but gradually, in order to keep high its economic growth, and this because if China act too quickly can cause a financial crisis. According to some economists, among these the Chinese economists Chi Lo and BNP Paribas, it's not so possible that Chinese government decides to suddenly cut its debt to GDP ratio, because it will bring more difficulties than benefits. In

[85] The system composed by market, institution and intermediaries that promote and sell bank services without respect related regulations. A sort of black financial market.

2017 the government debt was near the 55% of GDP, but a bank bailout can make this debt reach the 90% of GDP.

China can resolve its debt problem imposing restriction on what local governments can borrow, or allowing companies with negative performance to collapse, slowing the rate of investment and accepting slower GDP growth. What Beijing is doing is, instead, hoping that with major stimulus Chinese economy can continue to grow and exit this problem, as it

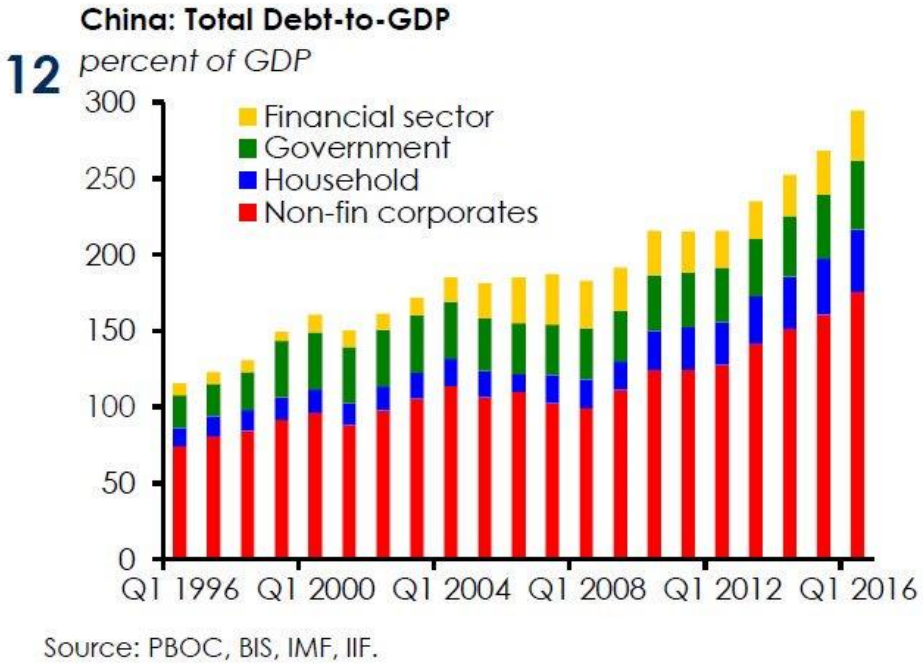


Figure 8: Chinese total Debt-to-GDP

already did in the past. But when this happened, at the beginning of 2000, China successfully entered the WTO, so its growth was pushed by export and budgets can balance themselves. According to some economists, the big amount of Chinese assets can prevent from a Chinese default. But even Chinese foreign reserves, that in these last years are decreasing maybe because Chinese government is trying to reduce its debt problems, are not without an end. Nevertheless, even if China has a growing public debt, due to its expansion in credit and to State-owned enterprises' low performance, in investors imaginary there is still a florid future for Chinese economy, that is continuing to grow, and for this reason this does not impact the capital inflows yet, maybe because other economic conditions are still better in China that in other countries, or maybe it's due to fiscal regulation that the Chinese government is trying to apply, and so this does not affect the exchange rate. And maybe it's better in this way.

2.2.3 Differential in inflations

As we have already said, and according to the PPP theory, the exchange rate is the ratio of the price levels in two countries. In a certain period, these 2 currencies are determined by the difference in purchasing power, that also represent both price levels. The difference in purchasing power represents a period of exchange rate changes, taking into consideration inflation. Different economists find out a positive relationship between inflation and depreciation: Zada, in 2010 for example, found out that in Pakistan, a depreciation of local currency was connected to higher inflation. Starting from this year Chinese inflation has a great decrease, and then start to increase gradually, till reaching the 1.5 % of inflation in April of this year.

In recent years, Chinese inflation has been growing: in June, China's Consumer Price Index[86] increased of 1.5% while the Producer Price Index[87] rose of 5.5%, in line with previsions. Some economists believe that this inflation period can be the driver for China recovery momentum, others expect the PPI inflation to moderate in the next future. The problem with inflation in China is easy: an inflationary period causes an increase in the cost of living, and so this need to be followed by an increase in worker wages, otherwise Chinese population will see their purchasing power disrupted, and will begin to protest for better wages. Better wages mean increasing cost of production and this will let Chinese goods price increases. Higher prices, and so higher rate of inflation, mean a loss of competitivity, internationally speaking, and this can mean lower export and a decrease in currency value.

[86] The CPI is a measure of the weighted average prices of a basket of consumer goods and services. In order to have this measure, we take prices changes for each item in the predetermined basket and averaging them. Changes in the CPI result in changes in the cost of living

[87] Measures changes in selling price of domestic customer for their output over a stated period.

Inflation can also have a negative effect on investment and output, since that it can causes an increase in interest rates. So, China can obtain the opposite of what is seeking for.

Figure 9: Chinese Inflation Rate. Source: tradingeconomics.com

The inflation can be explained by the sum that moneylenders can loan: central bank has been trying to stop this trend, asking banks to hold prerequisites, but it's not enough. One of the biggest cause for inflation in China is the expansionary monetary policies and rising wages, that caused a by cost-push inflation (since that costs for firm increase, firms are forced to raise prices in order to cover the costs). There are solutions available? Yes. One is subsidizing business, help companies that in this way can reduce their costs of production, encouraging lower product prices and stopping inflation, but with this solution, the government can increase its debt, and so suffer a big loss. Another possibility is appreciation of the currency: if China has a stronger currency, raw material will cost less, prices of production are not pushed to increase and this reduces prices of goods. In order to appreciate its currency, the central bank should buy yuan and in this way, will increase the demand for its currency. But a stronger currency maybe can encourage import, since that foreign goods will cost less, and maybe can decrease the attractiveness for FDI. Each solution has pros and contra.

Once explained which are the causes of high inflation in China we can try to compare Chinese inflation with USA and the Eurozone one, and we can try to forecast changes in exchange rate. We have explained that the differential in inflation is strictly connected to the PPP, and that in the long-run it can affect the exchange rate. Inflation does not only matter for internal consumption, but also for international trade. Let's make an example. In June of

this year inflation in China was 1.5% (is a rising inflation since that in April was 1.2% and that at the beginning of the year it was 0.8%), while in the USA the inflation is 1.6 % (and in this case, is a decreasing inflation, since that at January inflation was 2.7 %). If we compare the 2 inflation rates, it's clear that USA's inflation and Chinese one are very similar, so in the long term we can expect a stable exchange rate, since that differential in inflation is so low, there should be no pressure on currencies for appreciation or depreciation. The most impressive thing is that even if for the past 15 years Chinese inflation has been similar to the US one, the yuan appreciated against the US$ by about 37%, so Chinese prices suffer an increase, and as a consequence, Chinese see a loss of competitivity of its goods. But China is still growing with a percentage of around 7% a year and the PBOC has more or less $4 trillion of reserves. And this are the most important elements that explain that for long time the Chinese yuan will be a solid currency. But since that China has a managed exchange rate, it's important to understand also the Chinese government decision.

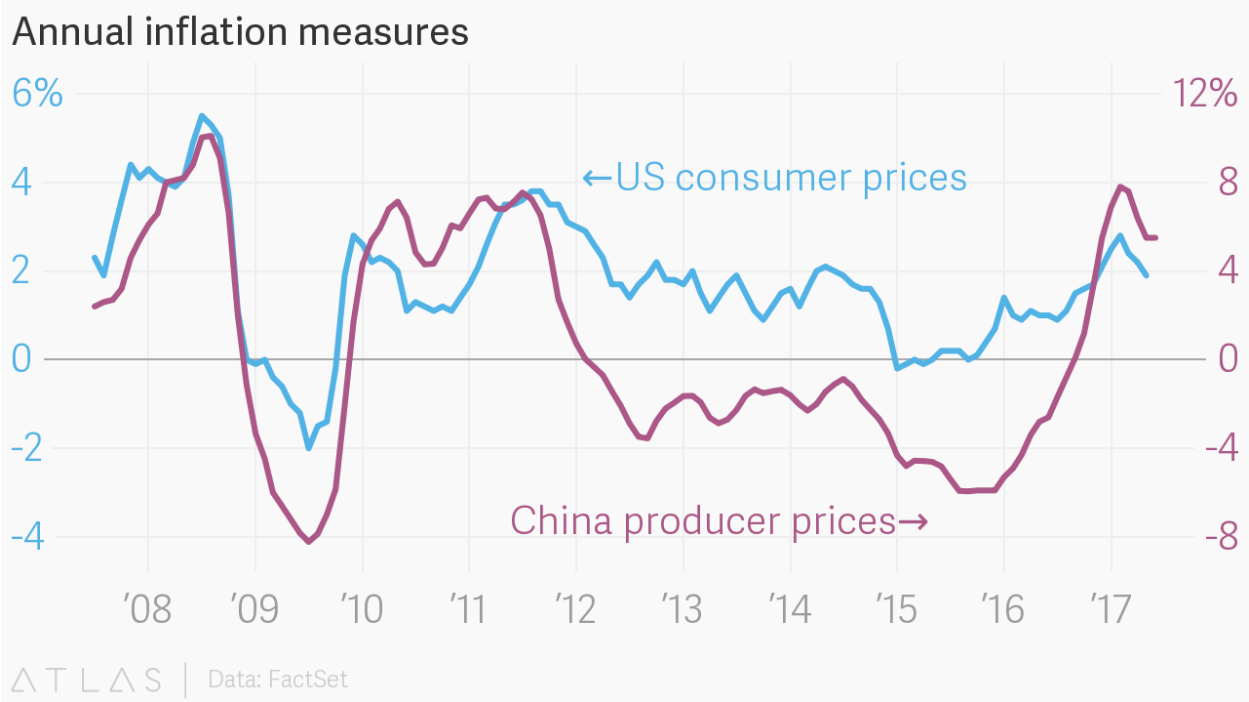


Figure 10: Chinese PPI and Us CPI

If we compare with the Euro zone, even if the comparison it's more complex because inflation here is a ratio of all eurozone countries, we can see that in Europe the inflation is 1.3%, so according to the PPP theory, we should have a depreciation of Chinese RMB against Euro, that instead should become stronger, due to differential on inflation there will be little pressure for one of the two currencies on appreciation and/or depreciation. For long time,

Chinese government has tried to shift inflation from food and tradable goods to houses, making real estate prices incredibly to increase, because an increase in tradable goods will mean a loss of competitivity. Since that China has its growth mostly based on export, an increase in its tradable goods is not desirable. But forecast sees an increasing inflation rate, so the Chinese government has to find a solution to this rising inflation. It's also clear that inflation is strictly connected to interest rate, as we will see in the following paragraphs.

2.2.4 Terms of trade

As explained in the first chapter, terms of trade compare import and export price of a country. An increase in terms of trade means that prices of export are increasing higher that import prices. This means that will be a fall in export and an increase in quantity of imports. So, an increase in terms of trade will result in a decrease in export, and so it will make the current account get worst. This relationship is based on the Marshall-Lerner condition[88], that holds only if demand for import and export is elastic. Usually, in short-term, demand is inelastic and in long-term is more elastic, so according to this data, we can observe that in short-term an increase in terms of trade will worsen the current account, but improves it in long-term. If we have a decrease in balance of trade this can impact the terms of trade. A negative balance of trade means that a country import is higher that its export, and this means that a lot of national currency is leaving the country. More supply of a currency and the consequent lower demand will provoke a devaluation of currency, that will lead to cheaper export and more expensive imports. And this is exactly a deterioration in terms of trade. In last years, Chinese exports is still growing, even if it has a slight slowdown respect to previous years, maybe due to rising inflation.

Terms of trade is strictly connected to the current account and surplus in the balance of payments. Historically, China has always exported more than imported, for different reason: the low value of Chinese RMB make difficult for Chinese people to import from foreign countries, because the price of foreign goods will be too high. For the same reason, and also due to low costs of production, Chinese export has always been one of the strongest point of Chinese fast development. But if it's true that terms of trade affect exchange rate, it's real also the contrary. If Chinese RMB value is falling down, we expect an increase in the price of imports, because Chinese companies have to pay more to buy foreign products. In the opposite situation, when foreign currency is falling down, this will mean that China is able to

[88] http://www.economicshelp.org/blog/68/trade/balance-of-trade-and-terms-of-trade/.

buy more products with the same amount of money. After 1949, with all reforms that aim to open Chinese economy, the agricultural sector, that still is one important element of Chinese internal economy, have been surpassed by manufacturing sector, and export has become one of the first element of Chinese economy. Since that the RMB has a so low value, Chinese goods have always been very cheap for foreign countries, and now that China has created a demand in foreign countries of Chinese product, this is meant to continue for a long time. Usually, under a free to float exchange rate, a surplus in export should increase the value of national currencies, since that it implies a higher demand for Chinese currency and this will add pressure on the exchange rate. Since that China has for a long time a pegged exchange rate, and also now it has a managed free to float exchange rate, this make difficult for the exchange rate to freely increase. A managed floating exchange rate means, as we already explained, that the value of the currency can move between predetermined limits, and that government is free to intervene in case it wants to change the value of its currency. This is what happened. The Chinese government always tried to maintain a stable and low exchange rate, and mostly of the time it tried to maintain it to a low value in order to stimulate Chinese growth. How? They used all the money that they received from export to buy foreign government securities. For China, the most attractive government securities have been for long time US securities: since that Chinese RMB was pegged to US$, and that the biggest Chinese trading partners is the USA, if the US$ does not decrease, the Chinese yuan does not increase. Behind this maniacal interest for US bonds, we can also see a political interest. Becoming one of the biggest owner of US state debts, China has an important instrument against the biggest economy in the world, because if China starts selling all US securities, this will provoke a heavy crisis for the USA. Moreover, an increase in foreign reserves put pressure for appreciation on currencies, so in this way, Chinese government maintain stable the foreign reserves and also a stable RMB exchange rate. Now trade surplus is slowing down, and import is rising more than export (that is falling in steel and gasoline). Imports have been rising most of all because of iron and other commodities request that are needed for the long-term construction wanted by the Chinese government, that is now trying to stimulate public expenditure in long-term project and an internal consumption on both tradable and not tradable goods. If we compare Chinese and US term of trade we can see a difference: US terms of trade are getting worst, and this indicates that a country need to export more, in order to purchase the same amount of imports. As we said, terms of trade that get worst means that price of import are going up, while price of export are going down, and this will affect the

balance of trade and the value of US $ that in fact is going down if compared with Euro and Chinese RMB. Instead, Chinese terms of trade is getting better, and this indicates that for each unity of Chinese export, China can purchase more units of imported goods. An increase in terms of trade means that export prices are increasing, and this means more money that comes into the country, and this increases the purchase power of Chinese exporter, people and firms.

In conclusion, an increase in terms of trade can have a positive effect on domestic inflation, making import prices falling in comparison with export prices. But an increase in terms of trade can also have a negative effect, if export prices rise too much this can cause a sudden decrease in the volume of export, and this can erode the balance of payment. At same time, is true also the opposite, that a decrease in terms of trade means that import is more expensive than export, and this means a reduction in Chinese purchasing power, so a reduction in import or an increase in capital outflows, that will lead to a reduction of foreign reserves and to a bigger circulation of Chinese RMB on market and this, as we explained, can have positive or negative consequences.

2.2.5 Differential in interest rate

As we already said, interest rate, exchange rate and inflation are strictly connected. Moreover, one of the most important elements of a country central banks' monetary policy are interest rates. For interest rates, we mean the interest that result in buying an asset in a determined currency for a stated period of time. If I buy an asset that costs 100 US$ at an interest rate of 3% at month, in 3 month I will have a revenue of 3% on the initial amount.

But for interests rate we can also mean interest rate on loans (how much I have to pay back to financial institutions that gives money to me). So, it's easy to understand why high interest rate on investments will attract more foreign investors or can be used as a tighten monetary policy. But at the same time, it's easy to understand why interest rate will affect exchange rate: since that high interest rate will attract more investors, this means that there is an increase in capital inflows, this will let central bank's foreign reserves increase and this will put pressure for increase also on the exchange rate. At the same time, an increase in interest in long-terms loan will reduce money in circulation, so more supply and less demand, and this will lead to a currency devaluation.

In China when we talk about interest rate, of course we talk about PBOC interest rate, because Chinese banks' rate is based on PBOC interest rate. The Chinese central bank has complete autonomy on its monetary policy and it sets the interest rates also for commercial banks. In addition, it has a lot of influence over the rates which have to be paid in the market for loan and mortgage and the interest paid on savings[89]. Now Chinese interest rate on loan are equal to 4.35 % (one-year lending interest) and if we compare with US interest rate (1.25%) and UK (0.25%) we can affirm that are slightly high. In last years, Chinese government is trying to increase its ST interest rate probably because they "wanted to stop the heavy capital outflows and they are trying to control risk to the financial system[90]". According to Naoto Saito, chief economic researcher at the Daiwa Institute of Research in Tokyo, "this increase can be an intent to control a real estate bubble or can aim to arresting the yuan's depreciation"[91]. This moves from Chinese central bank seem the expression of a tight monetary policy, harder of that one of 2013, when Chinese inflation was very high and the yuan was under appreciation pressure. Now, inflation is not so high and yuan has depreciation pressure: China already has huge capital outflows and maybe a tighten monetary policy is not to favorable, since that higher interest rates for loan can imply less demand for money, and so cause a depreciation also in the currency value. But higher

[89] http://www.global-rates.com/interest-rates/central-banks/central-bank-china/pbc-interest-rate.aspx.
[90] http://www.reuters.com/article/us-china-economy-rates-idUSKBN15I09G.

[91] http://www.reuters.com/article/us-china-economy-rates-idUSKBN15I09G.

interest rate on investment, instead, can provoke enthusiasm in investors, that can be more interested to go in China and invest, since that it will be more convenient for them.

Seen that in last years the government decide to invest in public infrastructure increasing the public debt, maybe this is for real an attempt to create a stimulus for Chinese economic growth and stopping the depreciation of the yuan, because if it reaches a too low value will make difficult for the government to repay its public debt and cause a recession.

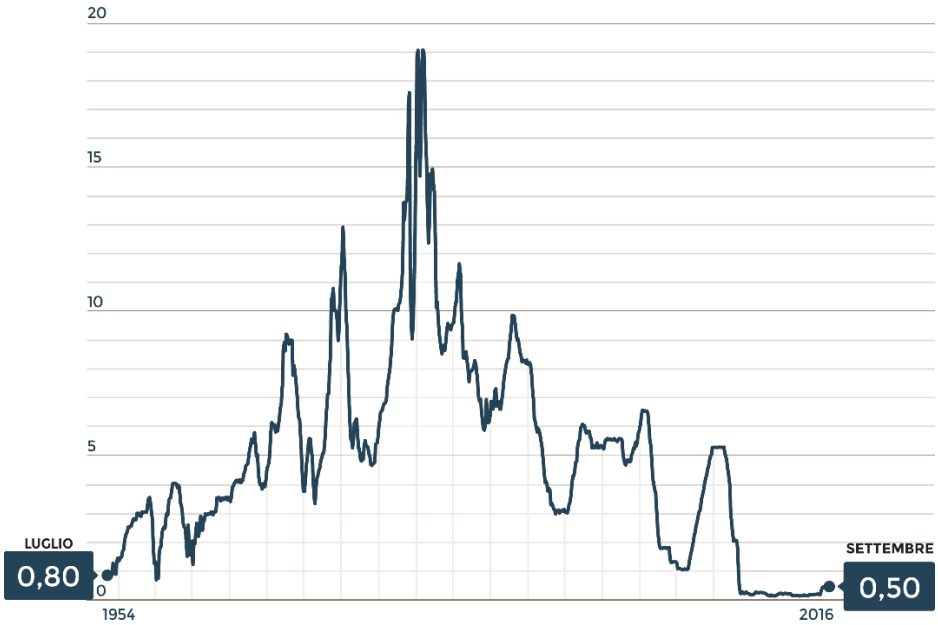


Figure 11: Fed interest rates from 1954 to 2016. Source: http://www.ilsole24ore.com/art/finanza-e-mercati/2016-09-21/fed-slitta-ancora-stretta-usa-tassi-ma-arrivera-presto-193708.shtml?uuid=ADOKVsOB

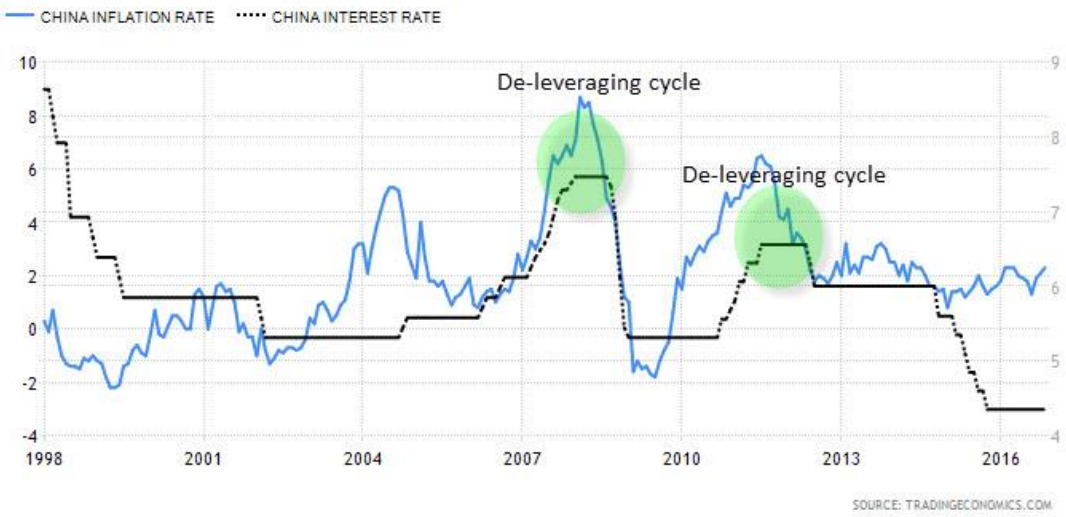


Figure 12: China inflation rate and interest rate correlation. Source: http://www.ino.com/blog/2016/12/china-2017-more-boom-before-the-bust/

When we talk about interest rate in China, we cannot exclude the Fed interest, because Chinese and US economy are highly linked. Often, Chinese increase or decrease in interest rate it's just a response to Fed decision. As we already said, differential in inflation between two countries is an important factor to understand because higher return in interest rate will attract more money, more investors and more capital. Since that USA is the biggest trading and economic partner of China, and since that US economy is the biggest and maybe the safest in the world, it's clear that higher return in interest rate in US securities will make investors, and in particular Chinese investors, to transfer their money in US market. This causes a huge capital outflow for China, and inflow for the USA.

In the last year, US interest rate have been growing, even if at a reasonable rate, and this causes a big capital outflows in China. This is why Chinese central bank has decided to increase its interest rates, in order to stop capital outflows and to make Chinese investors invest in their country. We know that big capital outflows will let to a decrease in currency value, and a too low value of the RMB will let impossible for China to repay its debit. During last year Chinese bond market has increased, becoming the third largest bond market of the world, but it's interest rate did not followed the market expansion. In addition, Chinese bond's risks are more and more increasing, without the equivalent in return, so it's clear which is the reason of all these capital outflows. If the Chinese government it's no able to demonstrate that Chinese economy and currency are strong and on the way of recovery, this can have severe consequences. Another important thing relevant in interest rate are

expectations. If investors expect that Chinese interest rate will increase to the extent that will be more profitable that the US ones, they will start to invest in Chinese securities, leading the interest rate to rise for real. Now should be clear how interest rate can impact on exchange rate, how differential in interest rate (between two countries) are important, especially if countries are strictly connected, and why is better to understand this process and to monitor market expectation.

2.2.6 Political and economic stability

As we have earlier explained, one factor that can strongly influence the exchange rate is the political risk, both in short, medium and long term. If a country is in a period of political instability, the problem is to understand the future of that specific country: which government can guide the country in the future? Which decision this new or old government will take? And how these decisions can impact the economy? Because it's clear, a big part of economic success is due to government and monetary and economic policy of a country. Political uncertainty makes also difficult to understand the future value of an asset, especially if the currency will lose its power and its value.

It's also important to mention investors: if investors have no positive expectations and clear information of a country's political and economic future, it's difficult that economic actors will invest in that country's market. It's clear that this is not US situation, at least before Trump's election. Before the Trump era, the USA were always considered as a "Safe Heavens[92]" because it's "neutral" and it's the safest economy of the world, and this will assure a stable future. But with Trump's election the stability of the USA had been reconsidered, no one knew what to expect from this change of direction, and this had a strong impact on political stability of different countries, especially countries that had a strong connection with the US economy, and this means also on China. China has always been a country with a great political stability since 1949. The Communist party has always been the leader in China, without change of ideals and direction of the party, and China always tried to be in good relationship with other big countries. But in 2017 some elements have changed. Trumps

[92] http://www.onlineforex.net/macro/political-risk/.

election put on economic situation big doubts[93], five of the seven members of the Politburo[94] are near to retirement and, as Franklin Allen, an UK professor of finance and economics said: "The party Congress and the Trump issue are two big question marks for Chinese economy in 2017[95]". And this is partly true (we have seen a Trump effect before he starting to really govern, when he threatened to impose more than 45% of tariffs on Chinese export to US this create a shock on market) but when the world realized that he would never do something so dramatic, the situation has reached again its balance. One of the most important effect of Trump's election have been the decrease in Chinese foreign reserves, that we know can have and had an impact on exchange rate.

Another important element that can affect exchange rate is economic performance: Chinese economic growth has been slightly slowing down in these latest periods, and even if it's still an economy that it's growing, this does not mean that it does not present risks. It's clear that, economic uncertainty, like political uncertainty, can affect investors decisions, performance of firms and as a consequence the economic performance of a country. When we talk about economic uncertainty we need to introduce US and Euro zone relationship with China. If Us and its new president decides to impose tariffs on Chinese export this can have deep consequences, but not only for China. A lot of American manufacturing companies are based in China, due to low cost of labor, and finished product are sold as they are Chinese export. This means that a lot of American products, that now have a big diffusion and a big share of market in US market, especially because their low cost, will disappear from US market due to US tariffs. A lot of "American" firms will be no more able to survive, and probably they will need to move their production to other countries, were the cost of production is even lower. Higher costs, will let to higher prices, and this probably will reduce Americans purchasing power.

The same is for European market. The eurozone is the second largest economic partner of China, and too heavy changes in relationship with China, in changes in products

[93] Remember that China first commercial partner are the United States, first of all for export reason. Trump's election created shock because Trump, that always said that China's manipulation of currency hart USA economy, wanted to impose higher duty fees on Chinese import product, in order to reduce the volume of Chinese product imported in USA. And this would have cause big troubles for China.

[94] The central Politburo of the Communist Party of China (Political Bureau of the CPC central committee 中央局 Zhongyanju) is a group of 25 people who oversee the Communist Party of China. Members of the Politburo usually also hold position in Chinese government or in regional committee.

[95] http://knowledge.wharton.upenn.edu/article/china-2017-stability-not-growth-goal/.

or in relationship with the government will cause severe consequences. Another matter that can be included into the political instability of China is the relationship with WTO. Is good to know that China want that WTO and WTO members recognize to it the Market Economy Status. If this happen, it will result in the end of WTO antidumping practices, and will make easier China's economic transaction, and especially without conditioned prices. But this will affect US and especially Eurozone economies, which will see their national firms close down because unable to compete with Chinese products and low prices.

The last question is the Korean one: with the Korean crisis now, the US government is trying to push China to adopt a more rigid behavior, or US will impose higher fees for Chinese products, and this because the north-Korean government has strong relationship with the Chinese one. The Korean question is an important matter for Chinese government. North-Korea is one of the biggest economic partner of Chinese firms and, even if the communist party has some pressure tools on Korean leader, it is not trying with all its efforts. From an economic point of view, how does benefit to China a new Korean regime that has an US influence? When we talk about political and economic situation nothing is fixed, there's no evidence or rule on how political stability and economic performance can influence the exchange rate, but if an investor need to evaluate a market in which invest money or in which base its manufacturing factory he cannot forgot these two factors.

2.3 The Chinese Yuan international role compared to other currencies

Now that we have explained in detail how the Chinese exchange rate works, we can try to make a comparison with the other major currencies, US Dollar, Euro and Yen, in order to understand differences in mechanism, and difference in the future of these currencies. But let start from the beginning. In 2001 the euro was introduced into the market, and its international role has exponentially grown during these years, becoming the second world currency. In 2009, the Chinese yuan started to be promoted as an international currency that could be used for international settlement, because the Chinese government started to reduce the control over the yuan movement, especially thanks to the offshore market in Hong Kong. With the European crisis that caused instability, and the influence that this crisis had on the Chinese yuan, hindering the yuan internationalization, the Us dollar continued to be the safest currency of the world. The problem is that these currencies has some uncertainties that can have a strong effect on the market and that can lead to strong

consequences. But each currency is different, so let's try to understand how these currencies' future can change.

The euro, thanks to the stability of its central bank, is the most important element of the European economy stability, and had been the stabilizing element for a lot of central and eastern countries that wanted to join the European Community. At the beginning of its life, the Euro was at first considered one of the successor of the US dollar, and many countries started to buy the Euro as a reserve currency, because they really believed in the Euro future. Some economists argue that governance structure is not adequate. At first this governance was a loose compromise between national and supranational competencies. In practice, the monetary policy was decided by the European bank, but fiscal and structural policy are national determined, and this means that each country can have its own fiscal policy, and these policies can differ a lot each other. In order to grantee more fiscal cohesion into the European community, needed because of the debt crisis, the government introduced the Six Pack reform and later the ECB established crisis resolution mechanisms but this does not solve the problem of decentralized fiscal policies. If the Euro want to regain an international credibility it has to reach a major alignment of fiscal and governance policies. Another important problem with Euro is the public debt: it is a community, but each country has its own public debt. It's true, the total European debt is not bigger that the Us one, but it is less liquid, and this limit the Euro possibility to act as a reserve currency. A possible solution is to reach great capital market integration and more liquidity, this will let the Euro to be internationally stronger. In order to make the euro more internationally important, the European government should be able to recover its economic growth, reduce competitiveness difference between different European countries and expand its border in order to increase its sphere of influence. Now the Euro, except these uncertainties, is one of the most stable currencies, also compared to the US dollar, and this is especially due to the new president of USA, since that as we have said, the exchange rate, and so the role and importance of a currency, is also influenced by political situation and expectation that a national government creates in investors.

Talking about the Dollar situation, that's no doubt that the Dollar is the most important currency, internationally speaking. The majority of international trade

transaction are made in US Dollar[96], often even if none of the two countries has the US dollar as national currency, and for long time in the past the US dollar has been the currency to which all other currencies were pegged. Now there are some factors that can influence the international role of the US dollar. One of this is its fiscal position. For long time, US securities have been considered as the safest bond of the world, but now it seems that growing US liabilities will expand the US deficit, and a bigger public deficit will undermine market trust in the ability of US capability of recover, and this will reduce attractiveness of US securities, so reduce US dollar strength. Another important factor, that it's now the most known in the world, is the trade deficit. We have been talking for so long that US now is importing more that it's exporting especially with Asiatic (and in particular with China) countries. There is also a growing Asiatic interest in US bond, due to the fact that one of the most important element in developing economies is parking their export revenues in a stable and liquid currency and this creates a surplus in capital inflows that results in a matching deficit in the current account. If US government is not able to restore this deficit, this will let to a loss of credibility and, since that now the Chinese yuan is gaining importance, if other currencies emerge as currency reserve, this can deeply impact the US dollar international role. For the US dollar role, we have to spend two minutes also on US political situation. It's true. the USA had always been on the central scene of international conflict or resolution, but now Trump is doing more: the Russia gate, the tension with North Korea, the more and more instable support that he received from the government, all these factors have an effect on the US dollar future. Moreover, while the US international situation is becoming more complex and the oil prices are slowing down, Asiatic banks importance is becoming more and more predominant and the US PIL still has a hesitant recover. And think if Trump wants to turn US foreign policy into a protectionist one. We have to said that the US policy has a great impact on emerging economies, so also on China's economy: US monetary policy can cause volatilities around the world and an US expansionary monetary policy can bring inflation on all emerging countries strictly connected to US economy. These factors can have strong impact on US dollar situation.

[96] The dollar accounts is for 84.9 % of global foreign exchange transaction in 2010 (Bank for International Settlements (2010)): Report on global foreign exchange market activity in 2010, available at: http://www.bis.org/publ/rpfxf10t.pdf.) and it continues to be chosen on financial markets, where it makes up 61% of global central bank reserves (International Monetary Fund (2011): Currency Composition of Official Foreign Exchange Reserves (COFER) database (accessible at: http://www.imf.org/external/np/sta/cofer/eng/index.htm)) and 39 % of all internationally held bonds (Bank for International Settlements (2012): International debt securities by type, sector and currency (accessible at: http://www.bis.org/statistics/secstats.htm)).

Now let's focus on the Yuan. In last decades, the Chinese government has been trying to promote the yuan as an international currency, allowing foreign investors to trade in its mainland or in the Hong Kong offshore market. It also issued some RMB-denominated bonds (or DLM Sum Bonds) in 2007 but the yuan international role it's still limited, because of 3 important factors: Chinese economic growth model, financial market development and capital account liberalization. Talking about the first point, we know that China's growth has always been sustained by its huge export volume and investment growth (especially in US bonds), but it is not sustained by internal consumption and this hurt the Chinese development, especially where there is global crisis that make international trade slow down. A more domestic demand-driven growth model will mean a reduction in Chinese trade surplus and will let to an expansion in the Yuan international liquidity. The financial market in China now is not very developed: all banks are state-owned and largely dependent from the PBOC, lending and interest rate are decided by the government in order to stimulate economy or to maintain a stable yuan and support export, capital account is largely closed. The growing local government debts can jeopardize Chinese financial stability and economic growth only if the Chinese government is not able to switch its interest rate into market-driven interest rate, that will allow market to set more efficient financial investment prices and a stronger financial sector will also absorb liquidity (both domestic and international). Capital account maybe is the biggest problem: It's true, with the creation of an offshore market in Hong Kong Chinese government started an opening plan, but how much the Chinese government will be able to liberalize its capital account? It's true, capital account liberalization is one of the objectives declared by the Chinese government but the recent slowing down of Chinese growth is shifting the market sentiment about RMB appreciation. Will the promised liberalization of Chinese capital account really boosts the use of the RMB?

Talking about the Japanese Yen, instead, in 2017 we have seen a revaluation of this currency due to a series of factor, among which are an increase in the country PIL, the inflation rate close to 0,20%, interest rates that are almost null and a public deficit higher that the 250%. All these factors contribute to make the Japanese economy be considered a stable one, and the Yen revaluation is used as a safe deposit. If the Yen revaluation is good for foreign investors, is not the same for Japanese economy, that suffers of slow growth rate. The difficult situation between USA and North Korea highly influence the Yen value, because the uncertainty concerning US dollar lead investors in Japanese market, that is considered as a safe harbor. Being a safe haven currency means being a strong value that investors

considered to be a protection asset during economic crisis, and so when they don't know what to buy. In this case, Japanese is believed to maintain its value, or to be stronger, at least the economy would experience a speculative bubble caused by an excess of money demand. Japanese Yen is considered a safe haven currency because it's a big creditor, with a huge workforce and it's the leader in electronic, mechanic and technologic components sector. Moreover, 90% of the Japanese debt is in Japanese people hand, so there is no risk of speculative attack on Japanese debt.

All these uncertainties and differences between these currencies interact each other in a dynamic way, because consequences of policies that are chosen in a regional optic have international consequences. Past policies have contributed to create the US-China and Eurozone imbalances. The first imbalance is due to the strict connection of Us and Chinese economy: export growth and reserve accumulation in China has expanded the demand for US dollar liquidity, compounded by the crisis of 2008. The continuous demand for US government debt has allowed the US to expand its debt and deficit without experiencing a corresponding rise in debt and service costs. The European situation is similar to the US-Chinese imbalances, but at a regional scale. The problem in Europe has been difference in fiscal and economic policies: because of these differences we had some region with high wage growth and low productivity, resulting in a loss of competitiveness and this create big imbalances between different zones of the European Area. This reduction of political cohesion in the Eurozone and different investment opportunities in the periphery led to market reassessments and higher borrowing costs for countries with already a difficult situation. The Chinese government still has to understand if it's better to have a strong value or a weak value and the Japanese government shivers when US government balance is not so stable. What China can learn from the Japanese experience is that a devaluation not always gives the desired results. There is a theory behind the statement: "weaker currency will lead to higher export volume", and this theory is based on demand and supply theory. But the Japanese history give to us a practical lesson: in 2012, the Japanese Yen devalued against the US $ and Chinese Yuan of about 35% and it devalued of about 25% against the euro, but in terms of export volume, Japanese did not see any changes. This can explain that export is not only drove by exchange rate, but also by global demand, protectionist measures etc. Since that the volume of export did not increase, but price of Japanese goods reduced, this leads to an economic crisis in Japan: what Japanese firms earned before the devaluation now is reduced, because of the lower value of the Yen and in addition, Japanese people have to

spend more to import foreign goods, and this means that Japanese purchasing power have been reduced. Also, because is not so automatic the process of substitution [97], especially if foreign product has not valuable substitutes in the internal economy. This can help the Chinese government on rethinking about the yuan devaluation, but a revaluation of yuan is more desirable? It's a complex question and in the end, what will be the future of international trade?

Figure 13: Euro, Us Dollar, Yuan and Yen exchange rate. Source http://worldtoday.altervista.org/andamento-delle-valute-falso-mito-della-svalutazione-dello-yuan-cinese/

2.4 Appreciation of the Chinese currency: pro e contra

Even if the RMB from 2005-2007 is considered a more flexible currency, and in fact it is more flexible compared to the past conditions, it is still considered a too weak currency, if compared to the value that is should have considering the economic characteristics of the People Republic of China. It's clear, now that the Chinese economy has great influence on the world economy, the decision to keep a weak (or strong) yuan, can have strong consequences.

[97] The substitution effect implies that since that import products prices are higher, consumer will begin to use national product (https://keynesblog.com/2015/12/22/la-lezione-giapponese-sulla-svalutazione/).

A RMB revaluation, that is what all countries are calling for, can have important benefits at global and national level. A so weak currency creates some unbalances in Chinese government fixed output volume, this will create a higher sum compared to that one that was prefixed and will create a surplus of demand and an overheating of economy. A "colder" economy will have benefits especially in occupation sector.

Due to 2008/09 crisis, the Chinese economy suffered a little loss, and Chinese export reduced by 40% in one year, even if in 2010 the situation comes again to an excess of demand, confirmed by no enough workers and by a gradual increase in house prices[98]. As we already said, a too weak currency creates excess reserves problems, even if in these years, Chinese reserves have becoming to reduce due to country's increasing public debt. We also know that Chinese is the second owner of US treasury bill, after Japan, and this Treasury Bills has very low interest rates[99], while foreign investors in China ask for higher interest rates, higher compared to interest that China receives from US treasury bills. The revaluation of yuan in 2005 seems driven by a fiscal quasi-deficit and now there is for the Chinese economy the need to make the yuan a market determined currency. Like all big economy, the Chinese government need to have some economic tools that help its national economy to reach prefixed macro-economic objectives. China always solved the absence of these tools with capital control, but this control of foreign inflow has a limited validity: the more the country is integrated into the global economy the more is difficult to block international capital inflows[100]. The Chinese government says that it's favorable to a Yuan appreciation but it's clear that a stronger RMB has also some negative effects: having a strong value, in a context in which we have low flexibility of prices, means that Chinese population can buy more thing for a lower price, so all goods that are produced out of China will become more convenient for Chinese population. But there is always the counterpart: for companies that produce in China the effect is the opposite; their products will cost more than before, and considering that various manufacturing firms in China are European or American subsidiaries, this will hurt the world economy. Higher RMB value will let to less productivity, less revenues,

[98] Evenett, S. J. (2010). The US-Sino Currency Dispute: New Insights from Economics, Politics and Law. London: CEPR.

[99] The Us Treasury bill, together with other American obligations are considered on global market the most solvent and liquid obligations. These characteristics of these bills make these obligations revenues its lower than the common ones. But since that from past years there is the downgrade possibility from some rating agency (Standard & Poor, Mooody's) on solvency of US debt, this started to create doubts on low cost maintenance.

[100] Evenett, S. J. (2010). The US-Sino Currency Dispute: New Insights from Economics, Politics and Law. London: CEPR.

reduction of work and firms that close down[101]. Most of all, Chinese economy is mostly based on export, and Chinese government try to limit import product, in the view of a development of an internal consumption of Chinese product. A strong value, means cheaper import and less interest for national products: in conclusion, is not so desirable for the Chinese government. The manufacturing sector in China (specialized in production of towels, fabric, clothes, furniture, leather) it's the second in terms of export volume, after the technological one.

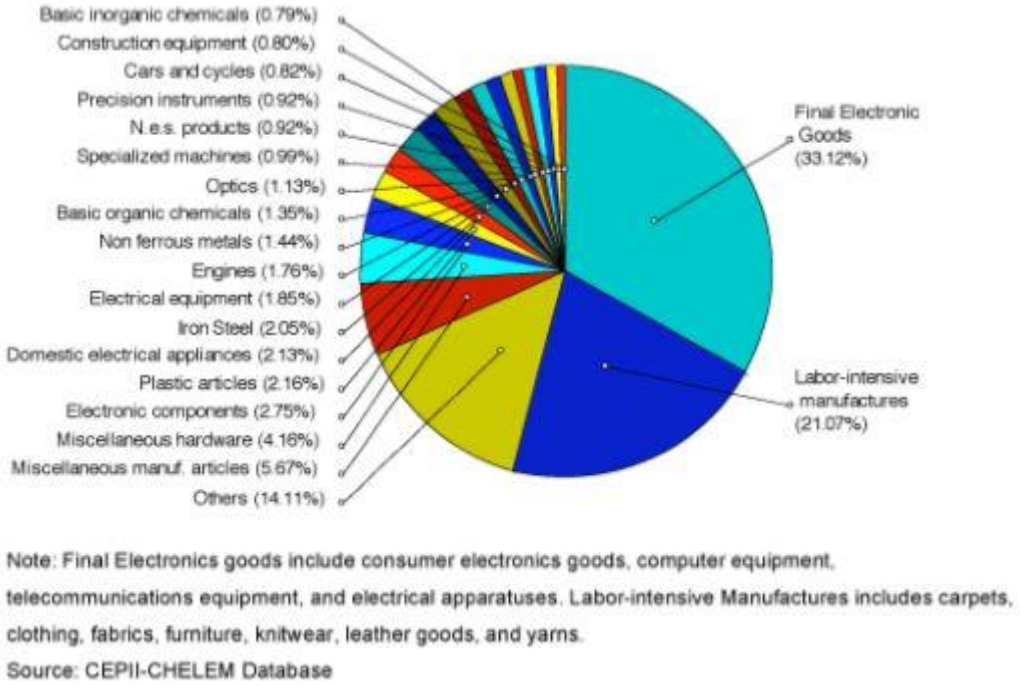


Figure 14: Chinese export categories. Source: CEPII-CHELEM Database

According to some studies, an increase in Yuan value will impact the export of high concentration manufacturing companies, and this means clothes and shoes industry, on which Chinese now has one of the most important role, globally speaking. But nevertheless, an appreciation of Chinese currency is still desirable, because of the excessive surplus on Chinese balance of payments. The appreciation in 2005 of 20% against the US $ happened in the same moment in which there was also a depreciation against EURO of 35%, causing deep influences on European manufacturing exports in global markets[102]. According to Balassa-Samuelson relation, we can see if a currency should be revalued or devalued on the basis of

[101] Ito, T. (2008) "Influence of the Renminbi on Exchange Rate Policies of Other Asian Currencies", in M. Goldstein and N.R. Lardy (eds), Debating China's Exchange Rate Policy. Washington: Institute for International Economics, 239-258. (T., 2008).
[102] The Effect of Exchange Rate Changes on China's Labor-Intensive Manufacturing Exports, Willem Thorbecke, George Mason University and RIETI & Hanjiang Zhang, University of Texas, September 2008.

PPP. Even if a PPP analysis is difficult to conduct, Subramanian find out that in 2010 the RMB had been devalued of 30%, only on the bases of Balassa-Samuelson relation[103]. With a weaker Yuan, all imported goods have now a higher price, and if the country in question has not the needed raw material (for example in China there's no presence of oil) we can see a rapid increase of prices of produced good. The exporter firms, that are also European or American ones, can experience a boom of production and economic growth, since that their products will be more convenient on international market. Moreover, a weak currency means that Chinese people have no money to buy foreign products, so there is the need to produce needed goods internally, this creates work and economic growth.

2.5 Moving toward a more flexible exchange rate regime

According to a series of studies, most of them conducted by Eichengreen on countries that left fixed exchange rate for a more flexible one, a country can success in make its exchange rate more flexible by replacing the exchange rate anchor by a monetary policy that has low inflation, but at the same time greater discipline and transparency of fiscal policy should be granted by institutional reforms. For China, a more flexible exchange rate is important in order to be able to respond to economic shocks. What is still important in China is capital control: we have seen how now China is experiencing a high capital outflow trend, and one of the most needed reforms in China are reforms on financial system, that is still too weak, and on capital control. According to Blanchard and Giavazzi, the PBOC should remove capital control asymmetrically and should improve the ability of individual to insure against educational, health and retirement risk in order to reduce high household saving raters and temper potential social unrest[104] .

China now is trying to make investment, but no more in manufacturing, that already reach a high level of development, this time on services. In recent years China tried to modernize its economy and its monetary policy, to the extent that the PBOC itself describes as China had "shaved off mountain peaks and filled valley[105]" in managing liquidity. This is just to explain that the modernization of China monetary policy had been and still is a monumental project. In the past 20 years, the PBOC only had 2 principal objectives: to define the quantity of money, and not the price of money, and to define how much inflows of foreign

[103] Subramanian, Arvind (2010), "New PPP-Based Estimates of Renminbi Undervaluation and Policy Implications", Policy Brief 10-8, Peterson Institute for International Economics: Washington DC, April.
[104] China's Exchange rate policy: a survey of the literature, Robert Lafrance, Discussion paper 2008-5.
[105] Pboc's 2017 Second Quarter China Monetary Policy Execution Report of August 11th.

cash could enter China in order to generate new money. Now China is becoming more and more similar to developed countries, and its market is becoming closer to the standard of developed markets, showing a transition toward a complex economy. As we already said, the PBOC started with interest rates, that are always been secondary for Chinese market, since that usually in China regulators used quotas in order to decide how much banks lent and to decide their deposit and lending rates.

When a country has a small financial system, and has to move away from a planned economy, these methods can survive, because targets can be needed. But when a country financial system become bigger (like Chinese one) these targets lose their importance. Now that on the financial market there is more competition for deposits and loans, with a large bond market and even more non-bank lenders and new investment options, the situation is more complex and objectives are changed. For this reason, from 2015 Chinese banks are more or less free to set their own lending or deposit rates, and Chinese central banks also eliminated fixed loan-to-deposit ratios. This does not mean more freedom, because it just substitutes former controls with new forms of control. What Chinese central bank did is to create an anchor for China's financial system, that should be similar to benchmark short-term interest rates in USA and Europe: this anchor is the seven-day "repo" rate (the bond-repurchase rate at which it lends to banks). To cap rates and the upper bound, the PBOC now accepts a wider range of collateral, that worked well in 2015. The IMF analyzed the Chinese monetary policy, and on its annual review of China's economy it announced that Chinese monetary policy is more and more similar to a standard interest-rate-based one.

Figure 15: Chinese new anchor: interest rates. Source: the economist .com

In the same moment, in order to compensate financial system modernization, in 2013 the Chinese government has introduced short-term liquidity operation, medium-term lending facilities and other lending facilities, which lead to a huge injection of cash at different rates. In this last two years, Chinese foreign reserves were consuming and this increased pressure on domestic liquidity since that China had relied on issuing new yuan to buy dollars streaming in. After these changes, and a series of tools used by the PBOC, such as open-market position, medium-term facilities or supplementary lending, Chinese central bank was more able to manage cash levels every day. It's clear that these two changes are now still

incomplete. In China, we still have state owned banks and companies that rely on government support in case they have any problem, and the PBOC is trying to continue to use administrative controls to influence lenders. China's best move was the crunch on capital control that does not let the money growth fuel capital outflows. In conclusion, when we talk about changes on Chinese monetary policy, the government have to be cautious and slow, gradual and careful, a concept that is strange when we talk about China, actually is definitely the contrary of what usually happens: all other changes that took place and still take place in China usually are quick, sudden and deep. But a quick and sudden change in financial sector, and especially in capital control regulations, can highly impact Chinese economic situation, as we will explain later.

Chapter 3 - The Chinese RMB and strategic opportunities for EU firms

As we have already said, Chinese economy is the second largest economy in the world, and with its entry into the World Trade Organization in 2001, now its important economy conditions are a matter of interest for all countries involved in such international organization. The WTO primary objective is to provide regulations for international trade, and to protect some countries that lies in difficult period. It's obvious that when we talk about international trade we cannot avoid talking about exchange rate, because trades are made in currencies, most of them are made in US $ and European Euro because these are reserve currencies[106], but also the yuan is becoming more and more important, and we know that monetary policy, the value of the currency and fiscal policy can play an important role in making the currency more international. In addition, the exchange rate can be very relevant when we talk about conditions for foreign investment in a country: beside production cost and labor work, when a company decide to start a business in a foreign country it has to consider also the exchange rate, since that when a manufacturing subsidiary is based in a foreign country, usually that product produced in a foreign then it is exported from that country, like national export, to the rest of the world, so the currency value does matter, especially in companies with very competitive production costs. In international debate, the relationship between trade and currencies have always been one of the principal object of discussion for this reason. What we are aiming to do in this chapter is to analyze connection between exchange rate and international trade, reporting some evidence from economists and experts' reports that studied how firms respond to exchange rate changes, how does this influences export and import volume and how an appreciation or devaluation of exchange rate can be seen by Chinese firms, and as a consequence by European and US firms that produce in China. All these considerations are helpful to understand which is the best entry mode in China for EU manufacturing companies.

3.1 Exchange rate and international trade

As we already said, there is a strong connection between exchange rate and international trade and in past years, a lot of economists and specialists had tried to analyze how the

[106] A reserve currency is a currency that is held in significant quantities by governments and institutions as part of their foreign exchange reserves. These kind of currencies are usually used in international transactions, international investment and all aspects of the global economy.

uncertainty related to exchange rate can reduce the incentives to trade internationally. It's clear that this matter has become more important when exchange rate began to fluctuate more, and when policymakers began to believe that international imbalances were caused by exchange rates fluctuations. In fact, we know that exchange rate can influence the allocation of domestic absorption, labor market and internal and external price stability to the extent that exchange rate fluctuations can influence national accounts.

Companies are subjected to three exchange rate risks: transaction and translation exposure, that are considered direct influence, and economic exposure, that is considered indirect exposure. The first two exposure are easy to explain: the transaction exposure is the exposure depending on international trade, if exchange rate change the value of my money I will pay more for import? Or I will receive less money? The translation risk is when firms set import/export prices in foreign currencies, and changes in that currencies causes changes in costs and revenues of the firm. These two exposures are the only against which is possible to hedge. The economic exposure it's more complicated, since that it will impact market value of a company and is caused by unexpected currency fluctuations on a company's future cashflows. It's the more complicated to calculate and hedging solution are not useful because changes that affect these fluctuations are unexpected, so we will focus on the first two exposures.

After the increased volatility of different currencies was introduced into the international community, so after the breakdown of the Bretton Woods Agreement, the trading community started to worry about the exchange rate changes and the GATT asked the IMF to examine the effect of exchange rate on trade. As the IMF study of 1984 explained, influence of exchange rate on trade can be different: The real exchange rate[107] (RER) can influence the incentive to allocate resources, obviously between tradable and non-tradable sectors. In addition, we also know that the RER is the measure of competitiveness of a country. This first study reported a series of influence of exchange rate on international trade. Some results are: "sustained misalignment of exchange rate that reflected inflation or cost differentials sent incorrect price signals that alter international trade flows; how misalignment can destabilize levels of protection against foreign competition provided by price-based trade restrictions etc."[108]. Before this study, there were already some researches

[107] That, as we already explained is the relative price of tradable to non-tradable products
[108] Document WT/GC/444.

on exchange rate and trade relationship, for example the working paper made by Clark in 1973 who wanted to report and analyze a hypothetical case of a firm. In brief, Clark assumed that this firm was working under perfectly competitive conditions, and that it produced only one product for export purpose. He considered that the firms received its revenue in foreign exchange, so its revenues strongly depend on exchange rate. Consider that in this model currency hedging opportunities were limited. Since that in the study was supposed that no adjustment to external conditions of level of production was available, what Clark seen is that the uncertainty in exchange rate condition is equal to the uncertainty of future income of the company, so what the company have to do is stabilize a level of trade that can be sustainable also with strong exchange rate, this means that the level of export should sustain the survival of the company also in case the foreign currency would have suffered from strong devaluation. One method for the company is to stabilize its marginal revenues in order that these exceed its marginal costs; in this way, it will compensate the exchange risk that the company bears. In this situation, in conclusion, we can observe that greater volatility results in a reduction of output, in order to reduce a reduction of exposure to exchange risk. This negative connection between exchange rate and trade was the most popular in 1970s and 1980s. Remember that these conclusions were true only in perfect competition conditions, in a company in which the invoice currency has a large role, with large aversion of risk and with no hedging solution. It's clear that one of the most important element is the aversion to risk: as De Grauwe said in 1988, and as a series of different works explained, the effect of increased volatility does not affect a company that is risk-neutral.

Starting from the Grauwe's model[109], a series of specialists found out a positive relationship between exchange rate volatility and trade, even if only for company that were enough flexible to adjust their production to exchange rate changes and that are able to re-allocate their product in different market. What is also very important in the connection between exchange rate and trade is the availability of financial hedging[110] that helps to

[109] In the model developed by De Grauwe, the exchange rate variability affects the risk-averse companies in two ways: with an income effect, because the expected reduced utility derived from higher uncertainty of profits makes the company to increase its sale abroad, and with a substitution effect, because higher uncertainty on exchange rate that instead will make the company to reduce its trade. The highest is the risk-aversion level, the more probable is the income effect.

[110] When we talk about hedging is like we are talking about an insurance policy. To hedge, in simple words, is something that you buy in order to reduce the risk of the asset that you want to protect. Of course it's not free, so even if it can reduce your risk, it can also reduce you gains. In financial world there are different hedging method: diversification, this means invest in different assets, one with rising risk, the other without risk, in order to reduce

reduce the uncertainty generated by fluctuation of nominal exchange rate: one example are perfect forward markets that neutralize the effect of exchange rate volatility but this market creates losers and winners. Obviously, this hedging contracts are not available in all markets (for example the Chinese Yuan is a nonconvertible currency and in this case what can be used is a Non-Deliverable Forward [111]) and they have different results for different firms. According to Obstfeld and Rogoff the risk-adverse firms will hedge against exchange rate risk, but this hedging decision will increase export prices and this will affect output and consumption. It's important to remember also that high exchange rate uncertainty can influence the decision to enter or exit a specific market. In order to understand really how the exchange rate impact trade flows, we need to analyze a series of specific factors that determine export and import volume. According to the IMF study, there is a negative correlation between exchange rate and reporting results of that study: "if exchange rates were to rise by one standard deviation in the sample, trade would fall by 7%". We also have to say that different companies react in different ways, and this is proved by the IMF study that explains that a company that produces heterogenous product is more affect by exchange rate if compared to a company that produce only one kind of standard product. But we can also demonstrate, as Bacchetta and Van Wincoop did in 2000, that different causes of exchange rate changes can be compensated in different ways: for example, if there is a monetary stimulus in one country that lead to depreciation, this would not impact trade because, if on one hand there is a reduction in imports, on the other hand it increases the domestic demand linked to the monetary stimulus that can increase imports, and this will offset the exchange rate movements.

As we have largely explained, exchange rate can move from its original equilibrium principally for two reasons: currency manipulation (so the intervention of government to alter the RER) or for unexpected effect of macroeconomic policies that were made in order to reach domestic objectives. Exchange rate movement have also different impact if we considered them in different period of time: exchange rate has no long-term impact, because in long-term period usually prices can adjust to changes and markets have no distortion. In

certain risk. But we also have some financial instruments known as derivatives, among which the two most common are options and futures. (http://www.investopedia.com/articles/basics/03/080103.asp)

[111] A non-deliverable Forward (NDF) is a short-term forward contract in a nonconvertible currency against a freely traded currency, where the profit or loss at the settlement date is calculated by taking the difference between the agreed upon the exchange rate and the spot rate at that time of settlement, for an agree upon notional amount of funds. The gains or loss are in the freely traded currency. (http://www.investopedia.com/terms/n/ndf.asp)

the short-term we have different results, because prices can need time to adjust to changes, and this affects the allocation of tradable and non-tradable resources. But it's clear that this depends on trade conditions: if a company sets its price in domestic currency and there is a devaluation, this make the prices of good decrease compared to foreign countries and this can boost export and reduce imports. In the opposite situation, the effect will be the contrary, and this will let to import restrictions in order to stimulate internal consumption and to not make reduce the export volume. As some experts have demonstrated, the best situation to make a country develop is with an undervalued currency (as Rodrik (2008) and Berg and Miao (2010) demonstrated) that can have positive effect on country's growth performance. Instead, according to Razin and Collins in 1999 or Gala in 2008 and others, an overvalued currency has negative effect on productivity and export.

An undervaluation of the currency reduces the economic costs of market distortions because it boosts export activities but it can also provide wrong information to economic agents, and we know that reliable information is very important in financial market, because fake information can alter the expectation of economic agents and lead to economic shocks. We can report some studies: for example Fang et al in 2006 studied the effect of the exchange rate depreciation on export, in relationship to Malaysia, Philippines, Indonesia, Japan, Singapore, Chinese Taipei, Republic of Korea and Thailand economies and they discovered that in this countries, or at least in the majority of these countries, a depreciation encouraged exports, but it's not directly linked to export growth, since that in a depreciation period there is the exchange risk that offset the effect on the export. According to the J-curve effect[112] when a currency suffers from depreciation of the RER, usually it is linked to a deterioration of trade balance in S-T. Since that companies' export and import are established in advance, the value of pre-established level of imports rises in terms of domestic products, and this leads to an initial fall in the current account. If at the same time export increases, firms need to develop new production techniques, but this will need some time. Since that now import products prices are higher, companies can offset this effect by using local products that are substitutes of the imported one, but also this passage need time, since that in this case the national firms should adjust their capacity, even if the company wanted to reach foreign consumers.

[112] A J-curve demonstration is a representation of any value that at first falls and than recover itself to the extent that become bigger that the start.

According to the study of OECD[113] on the impact of exchange rate in trade between the 3 most important world economy, USA, Europe and China, considering the aggregate demand, results are confusing: sometimes it seems to have a positive impact, other times it seems to have a negative impact and results shows that the best impact is on agricultural goods rather than on manufactured goods, probably because the agricultural producer can more easy change suppliers than manufacturing one, since that the first producer is more homogeneous than the other. Always according to that study, the US-China trade balance is more affected by exchange rate than the European-Chinese one: the model based on this study demonstrate that "an hypothetical 10% depreciation of the US dollar would have implied an increase in the US agricultural trade surplus of around US dollar 5 billion and a decrease of the manufacturing trade deficit of about $ 30 billion[114]", while the study based on European-Chinese area would be less affected: "a 10% depreciation of the euro would only reduce the euro-zone trade deficit towards China by 9 billion euros[115]". The explanation can be found in the composition of the trade areas, since that the demand of traded goods in China is not so elastic in price. If we instead think about the US-euro zone, a "10% depreciation of the euro would result in 20 billion euros increase in the existing trade surplus of the eurozone[116]."

According to another paper by the OECD, small economies are more affected by exchange rate changes, for example, New Zealand and Chile need to bear the full adjustment of exchange rate changes, because they have less diversified production and export base; in addition, domestic producers are less and so they are not able to substitute import goods. A concrete example is "a depreciation of 10% of the Chilean Peso can have different impact depending on the trading partner and on the sectors concerned, imports from China and Euro-zone are less affected than imports from USA. While a 10% appreciation of the Peso has a large impact on Chile's export to China, since that Chile is a large producer of extractive products and China really needs to import that kind of product and that this kind of product's price are very inelastic[117]". Exchange rate effect can depend on many fundamentals, such as the price elasticity of traded products, the country's factor, the pricing strategy of importers

[113] OECD ((2001 (a)), To what extent do exchange rates and their volatility affect trade. TAD/TC/WP (2010) 21 rev.1.
[114] OECD ((2001 (a)) TAD/TC/WP (2010) 21 rev.1.
[115] OECD ((2001 (a)), TAD/TC/WP (2010) 21 rev.1.
[116] OECD ((2001 (a)), TAD/TC/WP (2010) 21 rev.1.
[117] OECD ((2001 (a)), TAD/TC/WP (2010) 21 rev.1.

etc. According to Berman studies developed in 2009, fixed export costs imply a selection process with which only top performer companies can survive, even if the depreciation affect different countries[118], and this explain how exchange rate movement effect can evolve over the time. According to Zhao e Xing, one MNC that outsources its production can avoid appreciation effect in that country simply moving the production to the next economy with an undervalued currency or that is now suffering from a depreciation of the currency. But this will have at the same time some effect: the first one is the decision by the MNC to repatriate to the higher cost country, depending on the fact that the appreciation narrow or not the wage gap, and the second is that the overall cost of production and structure would increase[119].

Another important analysis is that one made by the IMF in 2011 that explain the effect on a large set of country for Chinese RMB revaluation. According to that report, an appreciation of the Chinese currency would lead to lower output in China and lower Chinese demand for intermediate goods from other Asian countries, and this will lead to a suboptimal equilibrium. But a RMB appreciation would also create benefit for producers in Japan, Republic of Korea etc. even if it can hurt intermediate producer of Asia[120]. Trying to give more specific result, we can say that different effects of exchange rate movements can be seen in different sectors, even if the strongest is in export of differentiated goods.

Bahmani-Oskouuee and Heferty examined the US-Japan trade and using the disaggregated data for 117 Japanese industries, they discover that in the S-T some industries are influenced by exchange rate volatility, while other gave ambiguous results. In L-T trade-shares of most industries instead were relatively unaffected by exchange rate uncertainty, while other firms experienced a shift in their proportion of overall trade[121].

In conclusion we can summarize that, after the breakdown of the Bretton Woods system, with the increase of exchange rate volatility, a lot of experts decided to analyze the

[118] Berman, Nicolas, Philippe Martin and Thierry Mayer (2009): How do different exporters react to exchange rate changes? Theory, empirics and aggregate implications. CEPR discussion paper 7493, center for European Policy Research.
[119] Zhao, Laixun and Yuqing Xing (2006), Global Production and Currency devalluation, Review of international economics 14 (May):202-211.
[120] IMF (2011) People's Republic of China: spillover report for the 2011 Article IV consultation and selected issues. Country report no 11/193.
[121] Bahmani-Oskooee, Mohen and Scott Hegerty (2008), exchange rate risk and US-Japan trade: evidence from industry level data. Journal of Japanese and international economies, 22:518-534.

impact of exchange rate on international trade. The results conduct to some conclusion: exporting companies are more affecting that domestic firms by exchange rate fluctuations, even if a series of factor can reduce their sensitivity to exchange rate movements, for example hedging instruments or imported inputs, the possibility of invoicing in domestic currency etc. All these studies have demonstrated that the connection between currency level and trade is very complex and that when the market is free from distortion, a misalignment of the currency does not last for long-time and does not have L-T effect. In the S-T, movements in nominal exchange rate, instead, can affect international trade flows.

3.2 Firms exchange rate exposure – Country and firm factors

As now should be clear enough, after the breakdown of the Bretton Woods Era, exchange rate began to move because of currencies increased volatilities, and the exchange rate question gain the attention of the international financial markets. From that moment, the majority of international firms, as well as various countries' government, try to analyze the exchange rate exposure, in order to understand firms' elements that can be more or less connected with exchange rate exposure. These researches are divided in two major area of interests: the first one regards country factors, this means which element of a country can or cannot influence the exposure to exchange rate volatility, while the second one is about the kind of market in which the firms are active, so weather the firms is in a developed or emerging market. It's obvious that all researches that have been conducted regard international firms that do business in international scenarios, and so have to deal with exchange rate problems.

One of the latest analysis conducted on this matter is the one of the IMF and the American College of Greece, in 2017[122] that tried to measure how exchange rate changes can affect a firm's activity. Before this last research, exchange rate exposure has been deeply analyzed but there is no empirical evidence that explains how these exchange rate exposure is important economically speaking, and this is what Professor G. Gatopoulos wanted to do. If we consider the exchange rate changes only from a theoretical point of view, results explain that these changes affect stock returns[123] . A lot of experts tried in the past to examine

[122] Explaining Firms' exchange rate exposure: the role of Country factors, Georgios Gatopoulos, American college of Greece and IMF, January 2017.

[123] This affection is due to the variation in the firm's expected cash flow or to the variation of the cost of capital that is used to pay these cash flows etc. (Georgios Gatopoulos, pag 3, January 2017.).

firm's exposure to exchange rate: Adler and Dumas in 1984[124] highlighted the importance of exposure to exchange rate changes for an international firm, Bodnar and Gentry in 1993[125] explained how each industry respond in different ways to exchange rate changes while Griffin and Stulz in 2001[126] explained how competition framework can influence firm's exposure. What all these studies have highlighted is that there are a series of variables that affect the firms' exposure to exchange rate changes: how much a firm uses foreign debt, how much a firm uses foreign currency derivatives and pass-through to prices. Talking about emerging markets, in 2006 Dominguez and Tesar discovered that emerging firms have a negative exposure to local depreciation[127]. Since that the most recent research on firm's exposure to exchange rate is the one developed by the American college of Greece and the IMF, we will try to explain what they found out, in order to use this new information for analyze then the Chinese exchange rate in relationship with exporting and importing companies.

The first things that we need to specify is which firms does this study analyze. The first element that the company needed to have in order to be analyzed was to have an international orientation[128], and so they need to have their presence in more than one country. At the end, they found 1.129 firms from 56 different countries. Another important element is to determine exchange rate factor that need to be used in the examination. Even if there were many options, for example firm specific exchange rate in order to calculate how much foreign activities respond to exchange rate changes[129] or to use each firm's home market, exchange rate between home country and traders, in this study the nominal effective exchange rate was used, and this means "a country specific trade related weighted average of bilateral exchange rate [...]and so, an increase in these study of the effective exchange rate corresponds to an appreciation of the domestic currency, that correspond to higher domestic prices and relative costs, meaning a reduction of country's international competitiveness[130]".

[124] Adler, M., Dumas, B., 1984. Exposure to currency risk: definition and measurement.
[125] Exchange rate exposure and industry characteristics: evidence from Canada, Japan and the USA, Gordon Bodnar and William Gentry, Journal of international money and finance, 1993, vol. 12, issue 1, 29-45.
[126] International competition and exchange rate shocks: a cross-country Industry analysis of stock returns. John M. Griffin and René M. Stulz, *The Review of Financial Studies*, Volume 14, Issue 1, 1 January 2001, Pages 215–241.
[127] Dominguez K. And L. Tesar, 2006, exchange rate exposure, Journal of international economics vol 68, 188-218.
[128] In order to have a fair classification of an "international orientation", the criterion used was to focus on firms that had a valid American Depositary Receipt program, that is a certificate traded in the US which represents ownership in the ordinary share of a non-US firms.
[129] Khoo A., 1994, Estimation of Foreign exchange exposure: an application to mining companies in Australia. Journal of international Money and Finance, vol. 13, 342-363.
[130] Georgios Gatopoulos, page 3, January 2017.

Even if this "deterioration" should not be considered has a sign of failure but of success, it's clear that it can mine firm's ability to survive. We have to be honest and explain that there are some problems even with this effective exchange rate, since that it can leads to an underestimation of the true exchange rate exposure of the firm. This study focuses its attention on Forex turnover and on the availability of financial market instruments, that can affect the firm's exchange rate exposure, and another very important element is the degree of financial development of a market. With financial development of a market we mean the amounts of debt securities, international bonds and notes that are available on the market. Analyzing these data, the experts found out that "the lower is the ratio between international over domestic bonds in a given country, the higher is the degree of the country's financial developments" or at least, should be. And this point can be of particular interest, since that we have already explained how Chinese financial market should be forward develop. Another important element are some variables related to the balance of payments and country's total exports and imports of goods and services (that can also be calculated as the Openness variable), that again can be strictly connected to Chinese situation. Last but not least country factor is the government's ability to stabilize its currency, more relevant for emerging markets. Instead, the firm's specific variables used in this study were first of all the amount of foreign sales of a firm and this means also the size of a firm, the firm's leverage ratio, so how many debts the firm has and if they are local or foreign debts, and the industry that were analyzed were of 6 types: industrial, utilities, transportation, banks, insurances and other financials[131].

Results of this study explain how country factor can influence the firm's exposure to exchange rate in two ways: in a direct way, that refers to the impact of exchange rate on the firm's value, and in an indirect one, that refers to the interaction between market's exchange rate exposure and the firm's sensitivity to market movements. The direct line is the most important in case of firms with a high international exposure. The most important result is that firms with a very high rate of foreign sales usually have low or even negative exposure, so they are not very affected by domestic currency's appreciation, even if in developed market the exposure increases due to foreign sales, because in developed markets foreign sales are not made in order to complete a hedging strategy, while in emerging market seem to decrease exposure and play a hedging role. When instead the study takes into

[131]Georgios Gatopuolos, already mentioned study, 2017, page 15.

consideration the firms size, they found out that big size firms in developing country are negatively affected by domestic currency's appreciation and the contrary is in emerging countries. The exposure, instead, seems to increase in any markets.

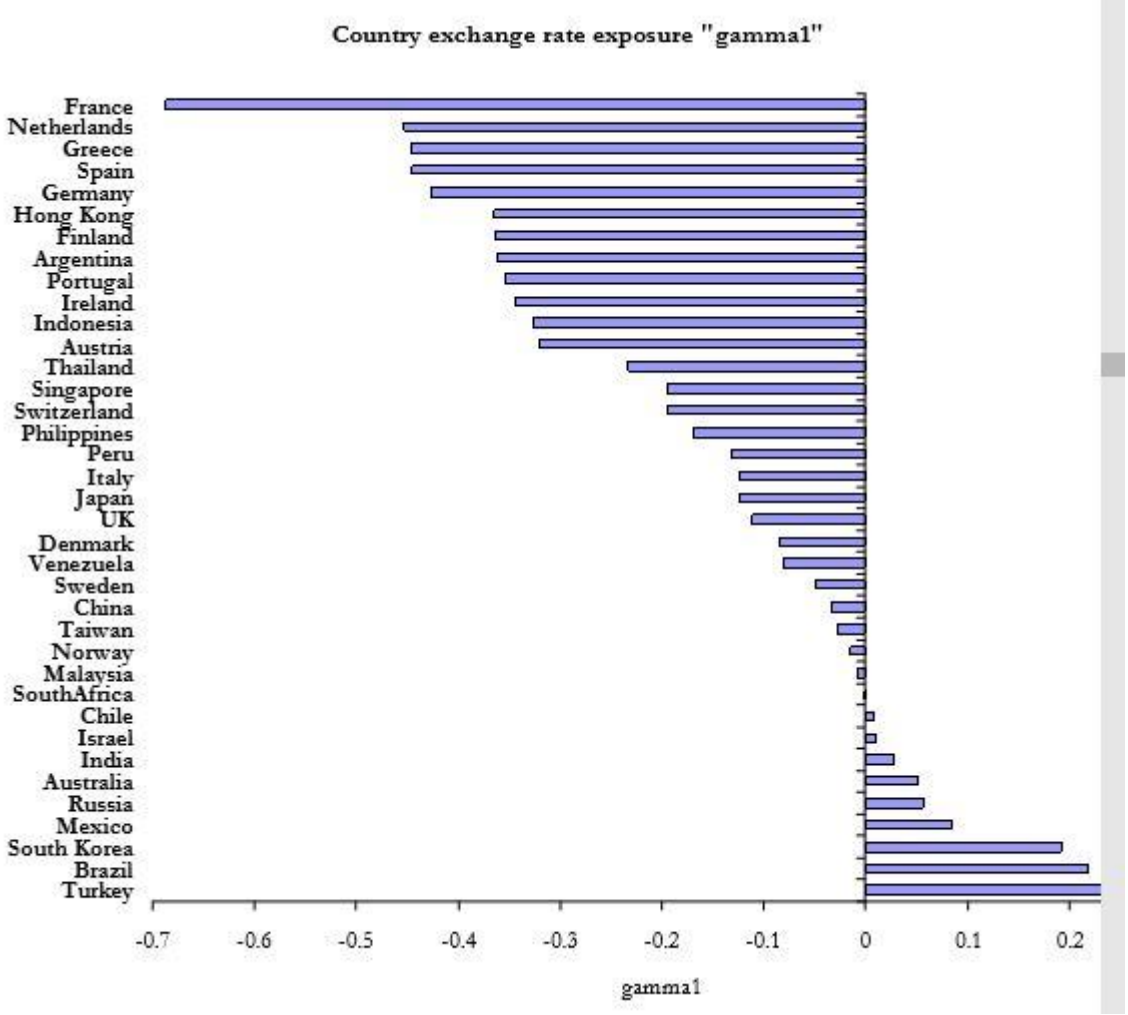


Figure 16: Different country's overall exposure. Source Explaining Firms' exchange rate exposure, the role of country factors.

Talking about firm leverage, results show that the more a firm has debt, the more is negatively affect by domestic appreciation in developed market, but in emerging countries, the more a firm have debt, the more is positively affected by domestic appreciation. This is probably explained by the fact that in emerging country, if firms have debt usually they are foreign debts. In term of revenues and profitability, the more a company is profitable and well-working the more is positively affected by domestic currency appreciation, and this results on a decrease in the magnitude of exposure. Now let's analyze country's factors: talking about financial instruments, the more a company use foreign exchange instruments,

the less is the exposure in any markets, and this is particularly helpful for emerging markets, where the economic success is very important. Last two points: domestic financial markets and trade balance. The study reveals that the more financial markets is developed the less is the exchange rate exposure, and this obviously explain why the Chinese government is working on the opening and the development of financial markets and financial market instruments. For the second point, the trade balance, results explain that the more a country's trade balance improves, the more firms will tend to be negatively affected by appreciation of the domestic currency and that current account absolute size increase firms' exposure in absolute terms, both deficit or surplus. This gives some explanation to why Chinese government should try to rebalance its current account, both for exchange rate exposure of the firms, since that firms in country with large current accounts tend to be more sensitive to exchange rate changes, that for international trade equilibrium.

Summarizing all these results, we can understand that usually developed market, and so companies that operate in this kind of markets are negatively affected by a domestic effective exchange rate appreciation, while firms in emerging markets, even if they change behavior during time, seem to have positive return when their country's currency appreciate. Foreign currency instruments decrease exposure for all firms and their use is of particular interest among emerging markets, while the financial market development is very important for developed country's firms.

3.2.1 Export response to exchange rate fluctuations

Now let's try to analyze in details export and import responses, taking into consideration also international unbalance that these responses can cause or resolve. The value of Chinese currency has its impact on the global trade, the biggest evidence is the huge trade surplus with the USA, and this should be clear to anyone one.

After Chinese entered the WTO in 2001, the Chinese export grew in impressive terms and this export boom aggravate the situation with the US economy. A lot of experts tried to understand if a Chinese RMB revaluation could or could not reduce this trade surplus[132] but results were not so encouraging. We have understood that Chinese exchange rate can and does influence international trade in terms of good's prices, inflations, production costs, PPI etc. but how exchange rate fluctuations influence export in China? What are the elements

[132] Some of these experts are Krugman in 2010 or Bergstein in the same year.

that a company that wanted to delocalize its production in China and then export to Europe or other market have to observe in order to avoid a business fail? We have tried to understand these information from a working paper, developed by Hongbin Li, Hong Ma and Yuan Xu[133], that analyze how Chinese exports companies are affected by exchange rate fluctuations according to firm-data of the Census of Chinese exporters from 2000 to 2007, focusing only on manufacturing companies. Results from this analysis shows that for Chinese exporters, a RMB revaluation cam have two consequences: moderate impact on volume elasticity and almost complete Exchange Rate Pass Through[134] (ERPT). To be more precise: "a 10% appreciation of the Chinese yuan reduce export volume by 2.2 to 4.2 percent, and reduces export price (denominated in RMB) by less than 0.5 percent"[135]. These results show how an increase in the Chinese currency value would not reduce China's trade surplus, at least not how much it should. What is more interesting in this study is that different characteristic of different firms can give birth to different reactions. One element is productivity of the company: "more productive firms price more to market, and this means that have lower ERPT and lower volume responses"[136]. In addition, ERPT is influenced also by import intensity, distribution costs and income level of destination countries, characteristics that are all different from firm to firm. More specifically, they analyze at first import intensity: for import intensity, we mean how many foreign contents are included into Chinese export, so if the manufacturing company imports component or raw material from foreign countries. Since that in China 40% of export is composed by imported inputs, that can be also import of intermediate inputs, results show that the more imported inputs a firm need, the more it is responsive to exchange rate. The heterogeneity question matters also in this study, because the more the import is intense the less is the response in quantity. Regarding distribution costs, if they are not denominated in importer's currency, results show how high distribution costs results in lower export quantity and higher price and that

[133] Hongbin Li is Director of the China Program at the Stanford Center for International Development. Hong Ma, School of economics and management, Tsinghua University of Beijing. Yuan Xu is an Assistant Professor of Economics at the School of Economics and Management, Tsinghua University.

[134] The exchange rate pass through is a measure of how responsive international prices are to changes in exchange rate. Formally, it is the elasticity of local-currency import price compared to the local-currency price of foreign currency, and usually it is denominated as the percentage change, in the local currency, of import prices respect to a 1% change in the exchange rate between the exporting and importing countries. ERPT can affect retail and consumer prices, and it is also related to the law of one price and PPP. When it is high the transmission of inflation between countries is high.

[135] How do exchange rate movements affect Chinese exports? A firm level investigation, Hongbin Li, Hong Ma, Yuan Xu, School of economics and management, Tsinghua university.

[136] Hongbin Li, Hong Ma, Yuan Xu, School of economics and management, Tsinghua university.

final consumer goods imply more distribution costs, while intermediate inputs imply less distribution costs. Considering that pass through is higher for exporter during appreciation and that foreign-owned exporters pass-through more, exchange rate fluctuations can influence firm decision to enter or exit the Chinese market, but does not influence so much foreign-owned volume of exports. Chinese exporters, instead, are more responsive in modify their export volume ("with a 10% appreciation of RMB export price drops by 0.35% and export volume drops by 2.26%"[137]). On this point, does not matter if the firm is a multi or single product firms, results substantially does not change. Hong Ma and his collaborators however find out that product heterogeneity affects firm responses to exchange rate fluctuations, since that the more productivity is higher, the more the price is higher. These results are in line with other studied conducted in the past, but there are also studies that find a low ERPT into import and consumer price. In particular the study conducted by Campa and Goldberg in 2005, that analyzed data from the US and OECD countries, considering also distributions cost in the destination market. What it's very interesting in this study is the result that shows how export price for good that need to be exported to non-OECD countries is less responsive that good that are made for OECD countries, suggesting a relationship between exchange rate responsiveness and destination places (that differs in income level). In contrast, results show that quantity responsiveness for export to non-OECD countries is higher than for OECD ones. Hong ma and his colleagues' results are in line with Campa and Goldberg's results.

The most important thing that we have understood from the analysis of this study is how the exchange rate can influence firm exit/entering into the Chinese market. Results say that: "exchange rate appreciation reduces the probability of firm export in all specification [...]. A 10% appreciation reduced the probability of new entry by 0.6% and the probability to continuing in the export market by 1.1%"[138]. These elements can be of relevance if a manufacturing company is planning to delocalize its production to China, in order to benefit from production cost, or because it wants to follow one of its major client, because they help

[137] Hongbin Li, Hong Ma, Yuan Xu, "How do exchange rate movement affect Chinese export?", School of economics and management, Tsinghua university.
[138] Hongbin Li, Hong Ma, Yuan Xu, "How do exchange rate movement affect Chinese export?", School of economics and management, Tsinghua university.

to understand if this can be the right choice, if the company conditions are appropriate or not. And this is what we will try to do at the end of this chapter.

3.2.1 Import response to exchange rate fluctuations

After having examined how export firms react to changes in exchange rate, we have find out that also import influences a firm's success. The firm that we are talking about is a foreign manufacturing company, that decide to delocalize its production in China and need to import some intermediate inputs for production of good that than can be sold in Chinese domestic market or exported again toward the origin country. So, what we need to do now is to understand if also import can suffer the influence of exchange rate changes.

There are some studies that show how the ERPT to import prices has decreased in last years for developed countries, such as the Dong's research of 2012 that shows how US export and import are less affected by changes in exchange rate and one reasons are actual companies' pricing behavior and global trade characteristics. In order to better understand this matter, we have analyzed another working paper, made by Yao Amber Li, Juanyi Jenny Xu and Chen Carol Zhu[139], who tried to analyze what are the effects of exchange rate changes and to what extent effects in exchange rate can affect importing firms. Previous studies on this matter gave different results: first researches' results show how an appreciation of the Chinese yuan would increase Chinese import, but successive studies have different results: Cheung Chinn and Fuji in 2010 demonstrated how the US-China exchange rate elasticity differs from the standard model developed. This research was conducted because previous results were confusing, and contrasting each other, so Hong Kong professors tried to give more specific and precise data. In fact, the research that we analyzed uses disaggregate firm-data (this means on transaction level) in order to have more accurate data, and to understand how firms really react to these changes. The model that they developed suggest that with a currency appreciation in China, more firm can start to import from abroad and that the variety of import increases, due to fixed cost of importing that implies a higher marginal profit for each imported good. So, an appreciation of currency means more importing firms and more various imported goods. Obviously, results are different if we

[139] All of them are professors at the department of economics and faculty associate of the institute for emerging market studies (iems), Hong Kong university of science and technology.

consider S-T or L-T: in short-term, we find a ERPT incomplete (only 15% of exchange rate fluctuations influences import prices), while in the long-term the ERPT is near to 50%.

According to the different type of the firm we can have some differences. The firms analyzed in this study obviously engage in the global value chain and are processing-trade firms, so usually these firms are purely manufacturing and use imported inputs provided by foreign partners or can be firms that import intermediate inputs and produce final products to export. In the first case, exchange rate fluctuations, and here we are talking about depreciation, affects only slightly input costs, since that intermediate input goods are provided by foreign partners; but in the case in which we consider a company that imports intermediate inputs, exchange rate fluctuations will have more effect. In addition, since that final products have to be exported, this company will have also marketing and distribution costs with its foreign partner, and this can hinder the company survival. More precise results show how "for OECD companies […] is more likely for firms to overcome fixed costs and to import from abroad when the domestic currency appreciates"[140]. And is also true that when domestic currency appreciates is difficult to see firms that exit the import market. As the study says: in the L-T and S-T, even if with different magnitude, a 10% RMB appreciation improve the probability of firm entry and reduce exit for company that import from OECD countries. This study also analyzes the correlation between US dollar and RMB, and results show that if the RMB appreciate against the USD there is more probability of market entry and less of market exit. According to the study, it's also clear that an appreciation in local currency make import prices decrease, and this is what lead to more product imported and more different products. Important is to highlight that the study also report the difficulty for companies in rising export prices during appreciation period, while in the same period they can easily cut down export prices, suggesting that prices are more responsive to appreciation than depreciation of a currency.

The interesting part of this study is that it analyzed and reported results even on different Chinese exchange rate regime. Experts divide Chinese monetary policies in 3 regimes: during the first one, when the exchange rate was fixed, import value responses are the most obvious, in regime 2, when the RMB was pegged to USD, we can see less increase of import volume that even decreases in regime 3, when the exchange rate reform was officially

[140]Yao Amber Li, Junyi Jenny Xu, Chne Carol Zhao, "Import response to exchange rate fluctuations: a micro-level investigation, Hong Kong University of Science and Technology, 2015.

announced and the RMB start to be pegged to a basket of currencies. Results suggest that firms were more likely to adjust import value with the fixed exchange rate, in which they had no uncertainty and they can better predict exchange rate changes and so adjust their import value, while in phase 2 and 3 responsiveness is less. What it's important is that results also show that there is a lack of variation in the reaction of firms during different stages of the reform. "Continuing importers tend to adjust the product-country under both the expected and the confirmed expectation stages, from 2003 to 2006[141]". Moreover, from a L-T perspective, the only regime in which we can see responses to exchange rate is the fixed exchange rate period. Concerning ERPT to import price, we find slight elasticity in the short-term that rises in the long-term, suggesting that the ERPT effect to import price has and "accumulative effect". The most important result, and maybe the most foreseeable is that during a domestic currency appreciation period more companies participate and decide to enter import market, while one interesting and not so obvious result is that in the same period firms increase the variety and the quantity of imported goods, and this is what lead to the extreme rise in Chinese export in the period 2000-2006.

3.3 Strategic entry modes in Chinese Market for Eu firms

After the analysis of these two working papers, we have understood how the exchange rate can influence business of a firms that is based in China, both Chinese or foreign firms. In order to make our analysis useful, what we will try to understand which are advantages or disadvantages of a firm that want to go in China to produce, taking into account also the exchange rate factors. First of all, we will briefly analyze Chinese market attractiveness and barriers, and then we will try to understand which entry mode is the best one in China, from a manufacturing firm's point of view, and why.

3.3.1 Chinese market attractiveness and barriers

When we talk about a country attractiveness, there are no fixed results, because each country, especially developing countries, has its positive or negative characteristics, that highly depends on why companies engage international business. There are mainly 4 business scope according to which companies decide to become international: 1) to expand sales, because the national market is limited or there is an excess of capacity, or because national

[141] Yao Amber Li, Junyi Jenny Xu, Chne Carol Zhao, "Import response to exchange rate fluctuations: a micro-level investigation, Hong Kong University of Science and Technology, 2015.

market is saturated and sales are declining; 2) to acquire resources, because the destination country has lower costs, better or new products or is the most developed country in a specific technology; 3) to minimize risks, by smoothing sale and profits and to compensate a probable decline in national or other country's sales; 4) to exploit a strong brand or other kind of assets.

For long time, even if things can change quickly when we talk about China, the Chinese market has been one of the most attractive, because of its low cost of production, its dynamic environment, its impressive growth in infrastructure and technologies and its gradual opening of the regulatory environment. Now that the Chinese internal market is gradually growing and that even the government is trying to create an internal consumption rate, European and US firms are going to China non-only to produce and then export to other markets, but also to gain a slice of the huge Chinese market, even if this objective it's more complex to reach, due to Chinese consumer that are still not educated and due to market barriers, that are still present in the Chinese environment. From a Foreign Direct Investment[142] perspective we can individualize 6 factors that attract FDI in China:

1) Capital Availability: at the beginning of 2000s, FDI in China were more than FDI in the USA. Condition of the capital markets and general economic environment created and still create big opportunities for firms in China.
2) Competitiveness: Chinese market competitiveness depends on its development of infrastructure, labor and physical resource availability, its productivity forces and workforce skills, and, in last years, the development of the business value chain. Infrastructures are important because growing infrastructures mean growing facilities for the sale of goods and services, with roads, highways and bridges that provided sufficient safety for the transportation of goods. Productivity and workforce skill and availability are other 2 important elements in China: the productivity depends on the fact that workers in China has not the same right of all workers in the world, and this implies more working hours and lower wages, even if now the WTO is struggling in order to make Chinese workers to obtain their rights. Workforce skill and availability depend on 2 other elements: the workforce skill is derived from past years, during which many foreign companies have delocalized their production in

[142] A Foreign Direct Investment (FDI) represents capital invested in a country that provides manufacturing and service capabilities for both native consumer and world markets.

China, to the extent that workers began to learn how to do the job; the workforce availability depends on the fact that the Chinese population is always growing, even if we have seen a step backward with the one child policy, that now it's no more in force.

3) Regulatory environment: when a national government enacts and enforces rules and policies in favors of state entities and instead penalize private-owned firms, or vice-versa, this has obviously an impact on attractiveness of the country. Excessive regulation tends to block commercial activities and can discourage managers and employees, since that they will need more time to understand and comply with rule. In China, there are high-start-up costs, legal exposure and other problem that can lead investors to seek for other markets, maybe easier to access. In last years, the Chinese government is pushing towards Mergers and Acquisition industries, trying to relax restrictions in certain sectors, even if there are still sectors that are monopoly of the state or that cannot be acceded by foreign companies. One of the best way to enter Chinese market that partially resolves this "foreign company" status, is to create a Joint-venture with a Chinese partner, or to buy a Chinese company that already has is channel of distribution and knowledge of regulations.
4) Stability: stability, political and economic one, can increase a country attractiveness, since that stability represents the opportunity for a firm to grow and represent less risks. Social unrest and social turmoil are not so attractive for firms that are exploring the international scenario. Economic instability can also create hyperinflation that is not willing for companies. China had problem with violence, blackmail, counterfeit currency, all activities that can mine trade activities. For stability, we can also mean the stability of the currency, or the presence of financial hedging instruments that can add more safety to the economic environment.
5) Local Chinese market: population and market size are the biggest attractive elements of China, since that the bigger these two elements are, the more are the probabilities of success. As the Chinese economy continues to prosper, evolve and grow, more and more technologic and high-end companies can gain a slice of the market, such as luxury goods or engineering companies. Of course, economic growth and FDI are strictly connected, the more the region attract FDI, the more the country grows, and the more it grows, the more will attract FDI. This is why market size is one of the most

important elements of Chinese economy, because it has the largest growth opportunities of the world. At least for now.

6) Market openness: market openness is another important characteristic in deciding where to local a manufacturing subsidiary. If a market has important access to local and international market, this would attract more investors, because even if the Chinese market is an important and growing one it will not be enough to justify a FDI. Trade barriers can discourage investors, since that they increase the price of goods and make the product less competitive.

Table 6: Global CEO survey: Focus country performance by key competitiveness drivers

Selected country manufacturing competitiveness drivers	United States	Germany	Japan	South Korea	China	India
TALENT	89.5	97.4	88.7	64.9	55.5	51.5
INNOVATION POLICY AND INFRASTRUCTURE	98.7	93.9	87.8	65.4	47.1	32.8
COST COMPETITIVENESS	39.3	37.2	38.1	59.5	96.3	83.5
ENERGY POLICY	68.9	66.0	62.3	50.1	40.3	25.7
PHYSICAL INFRASTRUCTURE	90.8	100.0	89.9	69.2	55.7	10.0
LEGAL AND REGULATORY ENVIRONMENT	88.3	89.3	78.9	57.2	24.7	18.8

Most competitive — Least competitive

Source: Deloitte Touche Tohmatsu Limited and US Council on Competitiveness, 2016 Global Manufacturing Competitiveness Index

For all these elements, the Chinese market can be considered an attractive one, the only problem are the possible barriers that an investor can find: institutional restrictions to access in some sector, in which only local producer are admitted; workforce costs, that are rising now due to the intervention of the WTO that want to regulate working contract's for Chinese workers, since that now Chinese workers, more and more skilled and expert in their job, are starting to ask for better working conditions and wages; rising inflation in the country, that eliminates the Purchase Power of the local consumer (this reduces business opportunity of the factory because consumers have not power to buy, and so the factory see its sales in the national market decrease). Inflation can also make the cost of production to rise, if price in electricity, raw materials rises; exchange rate changes, both in devaluation and revaluation of the currency: we have seen how a devaluation can have negative impact if the foreign manufacturing firms based in China

need to import intermediate inputs from foreign country and the price is denominated in RMB, because this will let to higher cost, maybe also to higher sales, due to lower price of final products, but with a lower currency this means also less revenues, higher inflations and less purchasing power for Chinese customers; but we have also see how a revaluation can have consequences in the same directions, since that it implies lower costs in importing some intermediate inputs, but higher prices in export perspective, since that the currency become stronger, and this can lead to less revenues for firms that export their final products and a decreasing inflations, that it's not always a positive change because it can provoke a recession.

One of the most important connection that we can find between exchange rate and market attractiveness is the influence that exchange rate can have on the labor market. We need to remember that according to David Ricardo's comparative cost advantage theory[143], developed in 1817, a country does not need to have an absolute advantage (for example efficiency in production or the use of less labor factor) in the production of any commodity in international trade with another country to be beneficial for both countries. Since that a trade between two country take place only if both countries can have some benefits, relative advantages mean that the ratio of labor embodied in the two commodities differed between two countries; in this way, each country should have one commodity where the relative amount of labor embodied is less than the other country, so for the country worth to produce that commodities and to import the other, and this can be considered also if we took into consideration international firms that are aiming to delocalize their manufacturing firms in China. If going and produce in China and then export to other countries is more convenient that produce in Europe and sell in Europe, this is what the company will do. And one of the most important elements of production cost is obviously the labor costs, that can be influenced, as already said by exchange rate changes.

The Chinese labor market has been developing in last years, facing loss production or surplus in work offer. From the establishment of the People Republic of China, the government has invested in infrastructure in order to create working opportunities and to offer a work to all the population. According to researches, in 2005 Chinese working force constitutes the 60% of the entire population, but from 2008 the Chinese

[143] The principles of Political Economy and taxation, David Ricardo, 1817.

government decided to enforce a working conditions regulation, in order to grantee more rights and better working condition for Chinese workers. In last ten years Chinese workers' salary have been growing, overcoming the Brazilian and the Indian's ones, and this can affect Chinese market competitiveness. The increase in wages reflects the development and the growing experience of Chinese working force in manufacturing sector, since that unspecialized workers are usually hired in building sector, where in fact, salary's grow is much lower.

Now let's consider a probable appreciation of the Chinese yuan: the first reaction of exporters is to avoid increasing salaries, as Mckinnon already explained. If the appreciation is not predictable in a certain way, firms would not allow salaries grow too much because this would mine the survival of the company, so we will have a negative risk premium (WRP)[144], that is the lost increase in wages, that is equal to 0. McKinnon has developed a strict connection between exchange rate and working salaries, that can be explained by this equation:

$$\Delta W = E(\Delta PROD) + E(\Delta S) + WRP$$

W represent wages in China, PROD is the labor productivity, S is RMB/USD exchange rate and E is the expectations operator. $E(\Delta S) < 0$ reflects expected appreciations, while $E(\Delta PROD) > 0$ reflects high productivity grow[145]. If we have a certain appreciation rate, let's report the McKinnon example of 2.9 % per year, the WRP is equal to 0, because firms can let salaries grow, even if this salary's increase should be less than 2.9 %. On a balance deflation path, prices would fall 2.9 % while real wages grew as much as labor productivity. If the appreciation percentage is not certain, there is a negative risk premium that is higher than zero, but nobody can predict of how much. Concluding on McKinnon reflections, the expectation of exchange appreciation can eliminate the natural tendency for wage growth to balance the productivity growth, in China and in any other creditor countries that has a current-account surplus. From a mere manufacturing point of view, a negative risk premium equal and higher than zero is the most desirable situation, since that increasing wages means increasing costs of productions. According to Juan Sanchez, a senior economist at Federal Reserve Bank of St. Louis, there is a relationship between inflation and wage growth, with a

[144] The Unloved Dollar Standard: From Bretton Woods to the Rise of China, Ronald I. McKinnon, 2012.
[145] The Unloved Dollar Standard: From Bretton Woods to the Rise of China, Ronald I. McKinnon, 2012.

direct proportionality[146]. The highest minimum pay in China is now of 2.300 yuan (about 333$ and 295 euros), that records an increase of 5% compared to last year. Compared to previous increase rates, this last one is the smallest increase in eight years, since that in 2015 the increase was of 8,4% and that in 2014 the increase was near to 12.3%[147]. The possible reason for this slight decrease in wages growth can be the fact that companies begin to feel the burden of wages, and so the government is trying to compensate companies' burden and employee rights, trying to maintain the social stability and the economic growth at a rising rate. It's also real that in China we have divergent income levels, with some developed regions that record smaller increase in wages and less developed regions that have a more rapid growth, so investors should be careful in choosing the locations of their investment.

According to the Euler Hermes Economic Research[148], in 2017 China's market has some strengths and some weakness: most important strengths are the external surpluses, the large domestic market, the huge industrial bases and the increasing market orientation. China's weakness instead is a population there is older and older, lack of transparency in business, key sectors with overcapacity like steels and the erosion of competitiveness. In addition, the strict connection between inflation and wages growth suggest that investors should investigate the Chinese inflation before deciding to delocalize in China, and should keep an eye on exchange rate expectations, since that devaluation or revaluation of the currency have a consequent decreasing or increasing inflation.

3.3.2 Entry modes in China

As it's quite easy to understand, each industry has different business scope and requirement, and this presumes that each scope and each requirement has different suitable entry mode in a market. We have a lot of possibilities in terms of entry modes:

- Export: the safest and usually the first contact with a foreign market it's exporting, and this because it requires small investment and offers the potential for high profits gains. It also implies a need of longer time than other kind of entry mode to acquire a position into the market. It can be direct or indirect, through agent and distributors. If a company want to engage in export, should consider the exchange rate, both if it decides to denominate export in local currency or RMB,

[146] https://www.stlouisfed.org/on-the-economy/2015/november/relationship-between-wage-growth-inflation
[147] https://www.bna.com/china-wage-increases-n73014450562/.
[148] http://www.eulerhermes.com

since that usually export quantity and contracts are made with large advance. This is the perfect entry mode if the company has no manufacturing expertise and requires investment only in distribution;

- Licensing and Franchising: another low-cost entry mode, but that implies higher risk are Licensing and Franchising, that absolutely need that the owner of the Intellectual Property Right first register its IPR, in order to prevent some risks. Both these entry modes gave the right to another economic agent to use the owner's IPR for the payment of royalties. Licensing implies transfer of technology, trademarks and/or copyrights, franchising implies that the economic partner has the right to use the owner's trademark and business system. It's important to remember that both these entry model are dangerous in China because the probability of a IPR infringement, especially for manufacturing companies that had some competitive advantage technologies. Key sectors for franchising in China are Food & Beverage, Apparel etc. This is a good entry mode if the company need to facilitate product improvements necessary to enter foreign market.
- Representative office: since that to have a physical presence is always the better solution for a long-term strategy, companies can also choose a RO, that is a liaison office that cannot engage in profit-making activities but can only conduct market research, promote products etc. so this can be considered as an investment for a future more important investment. In China, this investment can have some problem in term of approval process from the Administration of Industry and Commerce, of recruitment of staff, and taxes that the RO need to pay even if it does not earn money.

The other branch of entry modes that companies can use are the famous FDI, that can be divided in:

- Partnerships: with one or more Chinese partner, is easy to establish, implies low risk because there are no fixed capital requirement and now there are more and more regulations in China that encourage M&A. This option can be an optimal one for firms of limited size that are looking for an easy start in China, and who does not care if they have unlimited liability and Chinese partners. In 2010, the Chinese government open the door to Foreign-investment partnership, allowed foreign investors to directly invest in partnership in China. It's clear that also this entry

mode has some problem: the first one is the problem of business scope, that sometime can be different among partners, but no one want to show its real hidden scope. Remember then that in a partnership management should be divided between partners, that have to agree on the internal structure of the company, the capital contribution and profits distribution.

- Wholly Foreign-owned enterprise: in this case, no Chinese partners are involved, and the owners can easily terminate this investment in case of failure. The control over IPR, HR and technology is higher than other investments but in this case the risk is higher, since that this kind of investment has a higher capital requirement. This is the best solution for Manufacturing or services companies that decide to go abroad, and even for commerce and distribution purpose. As already mentioned, according to the Wholly Foreign-owned Enterprise regulations in China: "foreign investors are permitted to set up a 100% foreign-owned enterprise in industries that are conducive to the development of China's economic benefits, and not prohibited or restricted by the China governments"[149]. Always according to Chinese low, the minimum registered capital for a single shareholder company (SHC) is RMB 100.000 and for a multiple SHC is RMB 30.000[150]. As we said, this is for manufacturing or service company, that before to engage in a WOFE need to analyze also the conditions and expectations on exchange rate, the inflation rate and the production costs to it related. Consider also that there are different zones where is convenient move the production in China, and some areas in which is not so convenient. Delocalize in China should be a worthwhile investment, and not a risking one.
- Equity Joint-Venture: implies one or more Chinese partner that allow the foreign participant to gain market knowledge, contacts and manufacturing capability from Chinese partners. This kind of investment require the sharing of IPR and need that the foreign participant has a key position in the administration board or he will fail to manage the J-V. According to Chinese law, the foreign part has to contribute at least at 25% of registered capital, even if in some industries the

[149] Prohibited sectors are established by "The 2007 Catalogue of Guidance to Foreign Investment" available at http://www.fdi.gov.cn/pub/FDI_EN/Laws/GeneralLawsandRegulations/MinisterialRulings/P020071121358108121219.pdf.

[150] "Ways to enter the Chinese market", EU SME centre publications, report 2, 27.05.2017, Beijing.

foreign part percentage cannot exceed the 49%. This investment can be a good choice for a close partnership or can be the only possibility in some sectors.

- Contractual Joint-Venture: like the equity J-V it implies Chinese and Foreign partners work together, and most of the terms are defined by the contract that the parties discuss. In this investment, there is no minimum investment made by the foreign party and contribution can be made in form of labor or property. We have two types of CJV: a pure one in which the contract does not create separate legal entity and the parties make their contributions to the project and bear the risk and profit of the investment directly; the second one is the hybrid CJV, where the contract creates separate legal entities and liability are usually limited to parties' contribution to the JV. Objective and restrictions are more or less the same of the other J-V.

3.3.4 The best entry mode for EU manufacturing firms.

According to economic theories, there is no fixed rule that suggests which is the best mode to enter a market, and this choice is more difficult if the company is planning to enter an emerging or developing market. The decision become even more complex when the company need to face a huge developing market such as the Chinese one, where everything, starting from regulations to monetary policy, changes in a so quick and sudden way. It's clear that before entering a new market, a firm needs to analyze the market in which it wants to enter, in order to understand which are business opportunities and if the risk of starting a new business in a new country is worthwhile or not.

This decision of entry modes depends on size and availability of resources of the company, the product that the company want to sell/produce[151], risks and advantages, the perfect moment in which make this important investment, business scope and if the company want to work alone or with partners. In our analysis, we cannot take into consideration all kind of firms with different business scope, but we will focus on manufacturing companies that internationalize themselves in China for two different business scopes: Expand sales and acquire resources. Both objective have one solution in common: localize production in China. Now that China is the second largest market on the

[151] Important thing when entering a new market is having marketing and strategical plan, analyze the market in order to understand if that market is ready for the product, and if there are in that country skilled workers that can produce that specific product.

world, a lot of companies look for access in the Chinese market, that is more and more interesting for a series of element: the huge and still growing population, the creation of a middle class, the rising of a more educated consumer, the opening of the market etc. But when a company is going to China to expand its sales, it has to consider a series of factor that can be problematic: first of all, the nature of its product: can the Chinese consumer understand my product? Do I need to adjust my product to Chinese tastes and habits? Do I need to educate the consumer to my product, though an efficient marketing strategy? All these elements contribute in the decision of going to China.

Usually, if the company does not have a big brand name, with a long history or does not have a standardize product, easy to adjust to the market or easy to be understood, reaching the Chinese customer is not so easy, even if there is a so large base. In the first case, if risks seem too big for an important investment, the best thing is to export to China. This entry mode is the less risky one and the best to test the product in a new market. Talking about China, even with export, success can be not so easy to achieve. What we need to consider when talking about China is the exchange rate, that is not completely forecastable and can have a huge impact on export results. In analyzing exchange rate impact on a EU company that exports to China, we need to analyze how the exchange rate can affect import "in" China. From a EU company that want to export in China, the most desirable situation is a currency appreciation: with currency appreciation, the RMB become stronger, and this means that Chinese consumer and firms have more Purchasing Power, since that prices of imported good become lower, and so there is more demand for imported foreign goods. Moreover, a currency appreciation causes an increasing inflation, since that the aggregate demand will fall due to decreasing export demand and decreasing import prices. From studies that we analyzed a 10% RMB appreciation improves the probability of firm entry and reduce exit for company that import from OECD countries and in addition firms increase the variety and the quantity of imported goods. In China, we have seen appreciation of the currency, but from 2008 the currency has been fundamentally stable, with some pushes towards a depreciation more than an appreciation. If the RMB depreciates, the effect is the opposite, and import will become expensive and not worthwhile.

In addition, when a company is planning to export to another country, it has always to understand commercial agreements and trade barriers that the destination country adopts. For long time China has been using a combination of export restraints, such as export

licensing, export duties et. On a series of raw material inputs where it is the world's largest producer. In 2013, China removed its export quotas and duties on a series of raw material inputs after a dispute settlement that the USA presented to the WTO and it's continuing to liberalize its import quotas[152]. At the end of 2016, all imported goods in China were subject to the nation's VAT of 13/17%. In addition, China has a consumption tax, that is imposed on companies and organizations who manufacture, sell and import taxable products (e.g. tobacco, luxury good, high-end products etc.)[153], this means that a company need to understand if import to China is a worthwhile investment, considering exchange rate, trade barrier and imports' taxes. If cost of export is too high, maybe is better to move to China the entire production process. If the currency is stable, the only thing a company has to do is to decide: export product or export production? Export the production requires big resources, so if we are talking about small companies, this is a too risky option, and the best thing is to wait the best moment to export in China, hope that this period lasts enough to create demand of that product in China and then, after the creation of a substantial demand, to expand the initial export with Licensing or franchising options. If, instead, we are talking about MNCs, to export production can be the best solution.

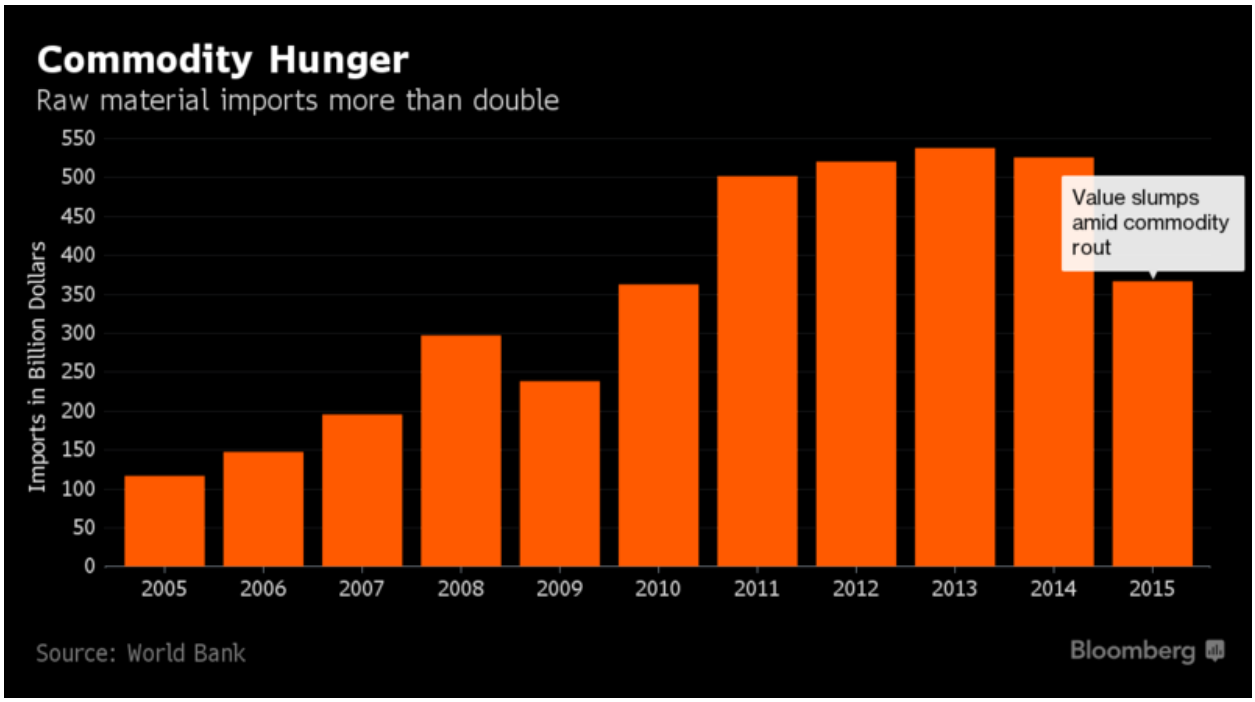


Figure 17: China's growing import of raw material: Source, World Bank.

[152] U.S. Government's National Trade Estimate Report on Foreign Trade Barriers, 2017.
[153] http://www.china-briefing.com/news/2016/12/06/import-export-taxes-and-duties-in-china.html.

China has always been an attractive market for its low cost of production: the first element that contribute to low cost of production is the big availability of workers. According to the law of supply and demand, if there are a lot of workers and not enough demand for low-wage workers, wages stay low. Since that now the majority of population is moving toward cities to have a better life, the availability of workers is doubled, but also company moving to China had doubled and considering the large government investment in infrastructure this increase working opportunities and low availability of skilled workers. Moreover, in the past China has never followed laws related to child labor or minimum wages, even if now situation is changing. According to the China Labour Bulletin, from 2009 to 2014 minimum wages have doubled in China. In the financial capital of Shanghai, where we can find the highest minimum wage in China, the monthly rate increased from 1.120 RMB (about 142 euros) in 2010 to 2190 yuan (about 279 euros) in 2016, even if in smaller and poorer provinces the monthly minimum wage is 1000 RMB (129 euros).

Figure 1: Source http://www.clb.org.hk/content/wages-and-employment

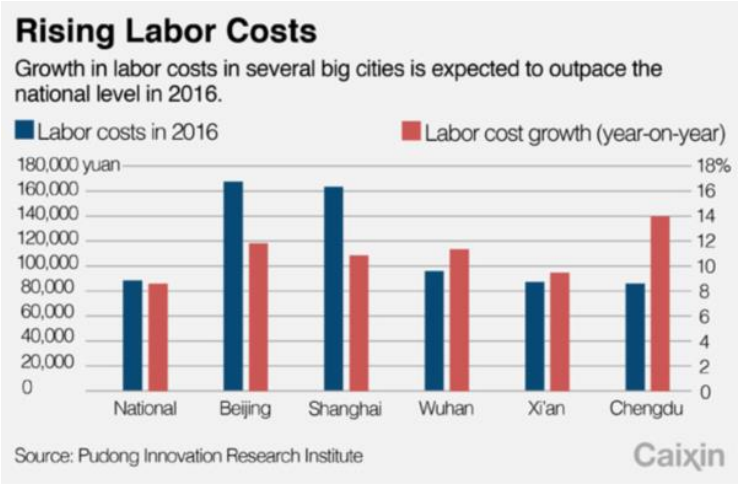


Figure 2: Rising Labor Costs in China. Source https://www.8020sourcing.com/2017predictions/

Compared to wages in Europe, where the average wage is of 1520 euros, work of labor in China really encourages manufacturing companies. It's also true that now the increase of minimum wages in China is slowing down, according to Chinese government policies, since that increase cost of production, included wages, would have discouraged foreign companies to enter the Chinese market. Obviously, a firm that produces abroad does not only consider cost of workers, but there are also other important elements to consider, for example network of suppliers, component manufacturers, distributors, government agencies and customers that all have an important role in production of goods through competition and cooperation.

Now, the business environment has evolved in China. An example is the city of Shenzhen, in the south of China, that is now a hub for electronic industry. This has developed a prosperous supply chain for manufacturing companies, with component manufacturers, low-cost workers, suppliers, customers and technicians. Continuing in our comparison between production in China and in EU, we can argue that in Europe, companies have properly to comply with certain basic guideline (child labor, health and safety norms, protection of the environment etc.), while in China factories not always follow these laws, and this results in child labor, that are underpaid, no health insurance, and other "unnecessary" costs.

Other important element are Taxes and Duties: from 1985 in China was enforced the export tax rebate policy, in order to boost the competitiveness of export by abolishing double

taxation on exported goods. Exported goods in China have 0% of value added tax, that is equal to VAT exemption. This law is valid for a series of products, among which agricultural products, imported equipment used in scientific research or teaching etc. In Europe, the minimum VAT rates should not be less than 15%, and then it's the European country to decide how much increase this minimum amount. In last years, higher land and energy cost are going to eliminate Chinese low cost of workers advantage. Even if the State Administration of Taxation explained that the overall tax revenues on import as a percentage of GDP are just 30% in China, that is lower than the average of 42.8% in developed countries, the World Bank estimates that China's total tax rate is much higher, near to 68%[154], but China is trying to tackle this problem with reform of the value-added tax system that will lower the government's portion of indirect taxes and making the tax-filling process simple for companies.

Another important element that we have to consider is that the Chinese government highly subsides its national companies, with economical aids or favorable policies. If the company that want to move its production to China has no competitive advantage in production process or costs, this can mine the survival of the future manufacturing companies, since that, ceteris paribus, thanks to government's help, Chinese company are more competitive in terms of prices. Including in the production costs there is also the choice of the area where to move the production: it's better to know that China's areas, as well as cities, are divided in different categories, called "*tiers*". These categories define the status of a geographical area, taking into consideration population size, economic activities and the strategical importance of that specific area. The best tiers for investment usually are the first 2 tiers: tiers 1 cities are the metropolitan areas, usually considered the first choice for investment and expansion opportunities since that they have the highest GDP and the best degree of market internationalization in China. Population in these cities is huge and usually these cities are directly managed by national government. Example are Shanghai, Beijing and Guanzhou. These tiers' cities usually are good for marketing and distribution investments, since that are very dynamic cities, with high-skilled workers and a good international orientation. In tiers 1, operating cost are higher, companies find sophisticated consumer and a market that in the L-T can be saturate, but there is a high availability of workers, even

[154] https://www.economist.com/news/finance-and-economics/21714400-creaky-tax-system-can-make-china-expensive-place-produce-things-chinas.

specialized one; tiers 2 has the same characteristics of tiers1 cities, but at a slightly lower level. In these tiers, manufacturing companies and industrial complexes find the right place where to develop, since that they have reasonable price for plants, standardized workers, lower expenses and good connection with distribution channels.

The last element to take into consideration when moving production to China is the currency issue, not only for the exchange rate changes that can influence, as we have already seen, the import of intermediate goods for factories producing in China or the export of finished goods produced in China. What we need to consider is also that different stages of the currency correspond to different inflation rates: in appreciation stage, the inflation is growing, while in the opposite situation the inflation is decreasing. Increasing inflation means increasing costs, in energy, in raw materials, in intermediate inputs etc. and as we already said, now there is a rising trend in inflation in China.

Figure 18: China CPI & PPI, Source: Business insider.

Due to its high debt burden[155], China is likely to let inflation run and could let exporting price increase in next years, says Jefferies Group LLC strategists, but is also true that opposite

[155] This is caused by the Chinese government that does not want State-owned company to fail and so continue to issue debts in order to save their operate

trends towards deflations remains strong. Deflation is not the perfect solution, since that it leads to lower prices, and in this situation more companies can enter in the market and as a consequence the competitivity is higher and leads to lower prices in the industry, and this will be the best solution for Chinese companies that can join from government subsidies. In addition, China's producer price index will weaken again, due to disinflationary pressures. Depreciation pressures on the Chinese RMB are helping exporters to maintain some margin in local-currency terms, even if they continue to sell their product in Dollars and this can slow transmission to export prices.

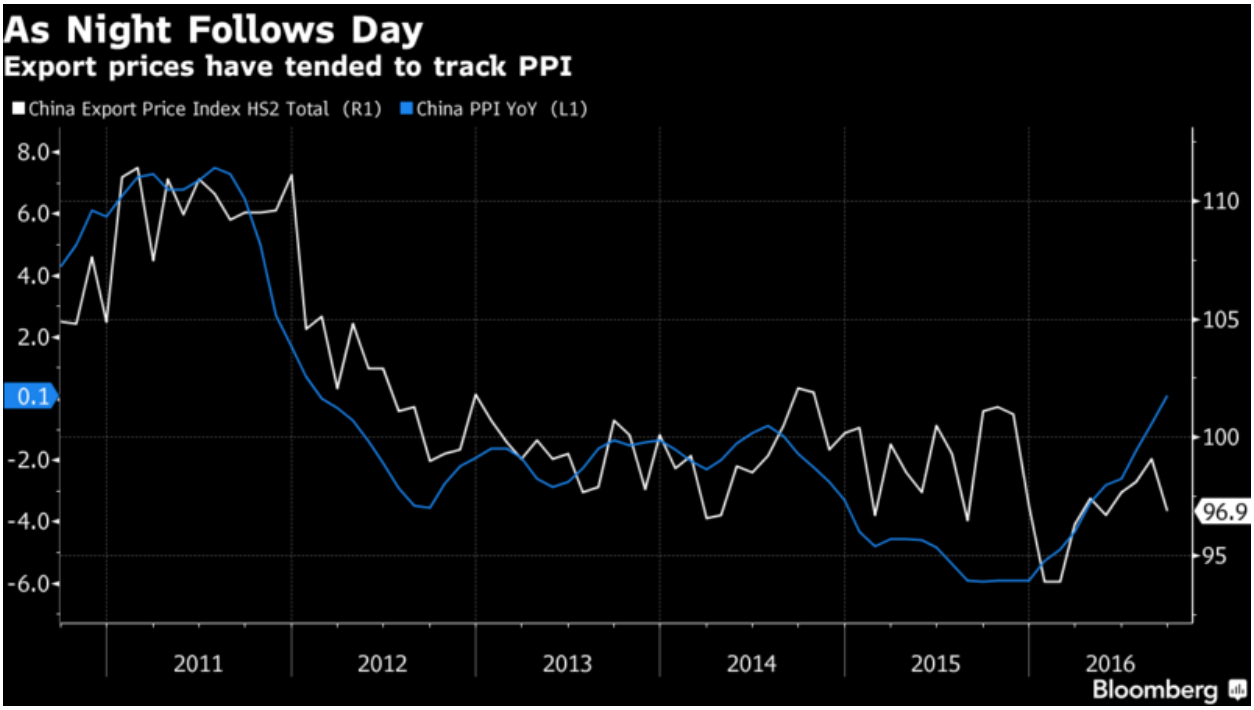


Figure 3: Source: https://www.bloomberg.com/news/articles/2016-10-30/china-s-factory-to-the-world-mulls-the-unthinkable-price-hikes

Companies can move their production in China with 3 principal options: Wholly-owned enterprise, a J-V and a contract manufacturing. We have already explained pros and contra of the first two method, let's explain the last one. A contract manufacturing enables the firms to have foreign sourcing, but without the final commitment. The foreign country firm stipulates a contract with a Chinese manufacturing firms for the production of its goods, and so reduces risks and maximize profits. Benefits of this contract are: cost saving, since that the firms do not have to pay for a facility or equipment needed in production, and does not need to invest in searching and training of workers. Companies can choose their manufacturing companies according to their core competencies, competencies that they can

lack in their home-market, but we have also some risk in this kind of investment: first of all, the lack of control over the production, that can lead to quality concerns and intellectual property loss. Moreover, relationships between different countries businessman is not always so easy, and the mother-company can also loss its flexibility and responsiveness to problem in production or to response to the market, not being directly present in that specific market. Consider that a company can move its production to China both to sell in Chinese market or to reduce its production costs and then sell again in European market. In this case, production costs as we have seen are higher in Europe than in China, and export costs (transportations, import taxes from China to Europe, antidumping regulations etc.) should not overcome costs that European firms have in producing and distributing in Europe, or there will be no advantages in delocalize production in China. In addition, as we have already explained China's very low costs are starting to rise. In this case, company should highly pay attention to the exchange rate influence on Chinese exporting firms. As we already said: "a 10% appreciation of the Chinese yuan reduces export volume by 2.2 to 4.2 percent, and reduces export price (denominated in RMB) by less than 0.5 percent", and the only way to avoid currency exchange impact for exporting companies is to price to market since that results shows how this practice leads to have lower ERPT and lower volume responses. Remember that also the quantity of imported intermediate goods matter is the evaluation of firm's exchange rate response.

3.3.5 Hedging solution in China.

Since that, as should be clear at this point, the exchange rate is an important factor in the survival of firms exporting or producing in China, and since that in 2015 the RMB became the world's fifth most trade currency, it's better to make a brief overview on hedging solution in China. With the expression hedging solution, we mean financial tools that help international firms to avoid currency risks. Currency risk exists when a company transacts in more than one currency: in this case, a change in exchange rate can cause costs to rise or revenues to fall. The particular condition of the Chinese RMB is that is the only currencies in the top five that is not freely convertible, but subject to foreign exchange controls, even though in past years we have seen increased volatility of this "special" currency. Usually, hedging instruments are contracts that economic actors sign with financial instrument in order to avoid currency fluctuations. The most common are the forward contract (a contract with which a company agrees to buy a pre-established amount of currency for a set price, so if in the future the currency price is lower, or higher, the company does not suffer from loss

or gain) and the option contract (that has more or less same characteristic of the forward contract but, in this case, the company has the option to choose if use or not the contract depending on the currency's fluctuation. Of course, this option has a higher cost, and can or cannot worth to buy it).

In China, the foreign currency control in recent years made difficult for financial institution to provide hedging instruments for different reasons. The first is the lack of liquidity in the offshore RMB market: if there's not a market for RMB outside China, how it is possible to create financial instruments based on selling and buying RMB? Changes have been seen in 2014, with the improvement to financial reforms in the Shanghai Free Trade Zone, that increased the ability to use offshore RMB in China, to the extent that the offshore RMB market has grown at impressive levels. These changes led to a development of RMB-denominated financial products and hedging instruments, provide by banks in Hong Kong, Singapore and Taiwan. China launched options on an equity index in 2015, with the intention to introduce also the possibility for foreign investors to trade directly in Chinese futures, and to introduce swaps contracts. On March 2017, China launched its first ever exchange-trade commodity options product. Beijing government is still cautious on this argument, saying that the "options market must ensure progress with stability and not simply pursue trading volume as a goal" as Fang Xinghai, vice chairman of the China Securities Regulatory Commission, said at the launched ceremony. According to our researches, China is trying to open its market to more financial instruments, in order to limits its currency volatilities' risks for trading companies and to boost revenues. But the government is still skeptical on this matter, and, maybe for the first time, changes will need more time that usually. A further financial opening will let a lot of foreign companies that now are too risky adverse enter into the Chinese market and make Chinese grow more and more. But will this introduction of financial markets mine Chinese economic stability? For now, we just have to wait the crucial turn.

3.3.6 Capital outflows: an unpredictable risk

When companies decide to move abroad or to make an investment outside their country, they usually prefer countries in which there is the freedom to move capital between any two countries in order to optimize their operations. But not always it's possible. History teach us that for long time a lot of countries used the capital control as key element of economic management, in order to mainly control capital outflows. This method was important during

the Bretton Woods system period, because capital controls is one of the most important element that grantees a fixed exchange rate. If a country decides to weak its capital control, fixed exchange rate can hardly survive, according to the "trilemma theory", free movement of capital cannot live with fixed exchange rate, or better, it can, but only if countries coordinate their monetary policies regardless domestic needs (like the EU). According the majority of economists, capital control is a damaging policy, that hind international trade and make hard for businesses to invest in foreign countries.

Capital control can be exercised in different forms: as the limitation of the ability of foreigners and residents to exchange a domestic currency for foreign currency and vice-versa (this is the most used and it's known as exchange control). This kind of capital control can be damaging because, usually, the official exchange rate differs considerably from market exchange rate and if residents are not allowed to obtain money, is difficult for foreign businesses to do business there. Consider also that if a company cannot exchange local currency for foreign currency, this can encourage the repatriation of profits. The repatriation of profits it's not a desirable condition, considering that the company makes profit in my national market but then invest in another one. Other forms of capital control are the financial transaction taxes, that can discourage short-term fluctuations in capital flows while permitting long-term FDI. Another common capital control form is the restriction on money inflows (impeding foreigners to invest in domestic assets) or outflows (impeding local companies to buy shares in overseas companies). What we have learned is that capital movements are important for exchange rate and for balance account of a country. China has always experienced a huge capital inflow, due to the big volume of foreign investment in the country. This big inflow let the value appreciate and monetary reserves grow, with the possibility to invest all this capital in foreign investment and maintain a stable exchange rate. In last years the situation has changed: China was experiencing the biggest capital outflows of all times, and this leads to pressure on devaluation on exchange rate, a reduction in monetary reserves, that instead are very important for Chinese government in order to repay China's public debt. For this reason, in 2016 the Chinese government imposed higher measures of capital control, by preventing the Chinese from buying from and investing in the rest of world. Some government restrictions were on currency-exchange transactions (cracking down on fake trade data), but also banks had some limitations: some banks could only pay for international transaction if they have balanced their books with a corresponding level of inflows. In trying to prevent capital outflows, the government is allowing banking to

lend binge, delaying serious efforts at deleveraging, but this also lead to some crazy increases in prices, such as real estate that are priced about $1000 per square foot in some cities.

In September, maybe also due to low value of US $, the government reached its goals: Chinese yuan this years appreciated of about 7%, an impressive result if we consider the record loss of 6% of last year. For this reason, the PBOC decided to cut-off burden on yuan-depreciation "bet", that imposed to Chinese Banks to have US$ deposits in the PBOC for the 20% of the value of the contract that the bank had with their clients; moreover, the PBOC also deleted the rule to have money reserves in mainland if they have yuan deposits in Hong Kong. Beijing also imposed a limit to acquisition in foreign countries or to irrational foreign investments but now this limitation is slightly becoming lighter. At first, when the government issued these measures, the yuan suffered a little depreciation, but then it starts to go up. Last year the balance of payments recorded a deficit in financial movement of 47 billion of dollars, now there is a positive balance of 16 billion dollars[156]. Now Chinese financial market is becoming an open one, but the problem is that one cannot foresee which are consequences of a capital control opening. Which consequences can we have from a more open capital market? If Chinese people or investors can move freely their money abroad, will China experience a huge capital outflows? We have two possibilities, and in this scenario, the Mexican case is one example: as we know, capital market liberalization lead capital market to a quick development. Liberalization in Mexico leads to a capitalization of stock market, that in 1985 was less than 1%, but in 2000 was near to 22%; this capitalization leads to an increase of PIL and pro-capita revenues. This explain how capital market opening can bring results to national economy, since that liberalization of capital market leads to large capital inflows, that can increase financial integration. But liberalization of capital can also can implies an excessive expansion of aggregate demand and have negative effects on the financial sectors. Another consequence can be overheating of the economy (that as we already said is caused by expansion of aggregate demand and inflationary pressures) that can wide current account deficits. But it can also provoke crisis. Do you remember the Italian situation at the end of '80s? With the liberalization of capital market in Italy, a lot of national capital flew out from the country. A huge capital outflow volume makes the national currency devaluate, decreasing effect of exports and increasing the cost of imports. This can seem a desirable opportunity for China, but consider that the Chinese yuan has already a low value,

[156] Di Donfrancesco Gianluca, "Pechino toglie i freni allo yuan", La stampa, 2017.

and that a too low value of the currency can make the country goes in recession. In addition, lack of capital impedes economic growth and may lead to lower living standards and less business opportunities. The real problem of this unforeseeable risk is that company are not able to fix their price if they are not sure of the exchange rate, since that a too low price will let companies to lose revenues and to close down, while a too high price will lead companies to lose selling opportunities and volume. If the Chinese government really want to liberalize the financial market, need to be very attractive to investors, offering high returns and being credible. A market that is not so trustable, with a high risk of default of companies, will cause a huge capital outflows, like the USA situation in 2000s[157]. The real problem with capital movements is that investors can move their capital immediately, without any huge consequences, while moving a real investment, like a manufacturing company, will be more difficult, if we considering all costs implied. One way to avoid risks included in liberalization of capital market is transparency, that improves investors' confidence, but we know that this in China has always been a problem, and this is what countries continue to ask for and pretend by Chinese company. Consider also that Chinese market does not offer financial instruments to avoid fluctuations' risks, and this will create more uncertainties in investors perspective. So, the question remains: what this liberalization will bring?

Conclusion

This thesis' purpose was to understand how worthwhile is going in China, which are advantages of delocalize production in China or to export to China, taking into consideration not only economic conditions of China, but also the exchange rate fluctuations and its influence on overall economic conditions. What we have learned is that the exchange rate has a lot of connection with other economic elements, among which interest rates, inflation rates, terms of trade etc. We have tried to explain how a company can analyze these elements in order to really understand if exchange rate conditions are favorable or not to firms' business scope.

Analyzing elements that influence exchange rate we have discovered a series of important elements that companies need to care about. that higher interest rate will attract more investors, and this will let the currency value to increase; that lower inflation (lower when compared to other countries) will make prices more competitive, and this will lead the

[157] Giorgio Stefano Bertinetti, "Quasi una guida nel mare dei cambi, pubblicazione nel giornale Contabilità", *Finanza e controllo* n 12, 2002.

currency to increase, since that will be an increase in export and a decrease in import, so as a consequence there will be more money inflows that outflows: in a perfect free-to-float situation the currency will then reach again it's equilibrium, after the increase of the currency, but this is not Chinese case, and it's clear just looking at Chinese balance of payment; and that a current account surplus, so when a country exports are higher that imports, cause higher currency value; last, we have seen that also the financial market environment is important, taxes, duties, hedging instruments and the degree of opening of the market: we have learned that a country that is opening its financial market can be a great opportunity but also a great and unpredictable risk, since that it can provoke a big capital outflow and so a devaluation of the currency, to the extent that the country can enter a recession period. We have tried to explain what stronger or weaker currency means: a stronger currency can make export to decrease and make the import to increase, since that import prices become lower that export, it will reduce the aggregate demand and will worsen the current account, while a weaker currency can improve country's export, so generate more work opportunities in the country, more occupation but population can lose its purchasing power and this can deteriorate Chinese population living standards. But the first thing that influence exchange rate is supply and demand for money, so if in the world there is a high demand for Chinese RMB, the value of the currency would increase (and vice versa), but we have also learned that Chinese yuan, does not follow this simple scheme, just because the government don't want the currency to appreciate because this will let Chinese export less competitive, and foreign import more convenient for Chinese consumer, even if now things are changing. This currency revaluation can stop the Chinese growth and provoke the closing of a series of Chinese companies, that mainly rely on export revenues. So, the Chinese government usually reduces the big demand for Chinese yuan by buying US$ denominated securities. Why US securities? Since that the USA are the biggest economic partner of Chinese companies, the big inflow of capital coming from USA means that USA has big outflows of capital, and this will let to a devaluation of the US $, that is not desirable for the Chinese government because this will let to a Chinese yuan appreciation and an increase of import of American goods. Therefore, if Chinese government buy US $ securities, it balances the big outflow due to export and maintain the situation at a stable level. Depreciation, on the other hand, is not so desirable, even for Chinese government, since that Chinese RMB value is already low, and a further devaluation can provoke an economic

recession, will reduce Chinese population purchase power and so the Chinese government's effort to create an internal consumption will be null.

It's true, an undervalued currencie does not encourage import, since that foreign products are very expensive, and this can help the government to create an internal consumption. In addition, a low currency encourages export, since that price of good are very low, but it also increases inflations, due to cost push inflation (when imported goods are more expensive) and a demand-pull inflation (where national goods are very attractive). In addition, rising inflation make cost of living higher, because companies are forced to increase their prices due to increasing prices of raw material, banks are forced to increase interest rates to maintain a profit margin and this means that marginal business will fail, causing unemployment and creating higher risks for overall economy. But at the same time also a deflation is not so desirable, because it pushes people to reduce debts, because in reals terms their becoming more expensive, and a deflation can cause an economic recession because it would stop the economy to grow and exit from a recession is always a hard task.

We now know Chinese economic conditions, and why the exchange rate does not move from its situation. We know that China has a so big surplus in current account, rising interest rate that wanted to reduce capital outflows, a huge public debt and decreasing foreign reserves, a rising inflation that can stimulate the economy but reduce the purchasing power of Chinese customer, etc. We have analyzed firms' reactions to exchange rate, and we have understood that if companies based in China export to other markets or import from other countries they need to care about exchange rate movements. Exporting firms are affecting from a rising currency, that make their product more expensive, and if they import intermediate input they also have to fear higher devaluation of the currency that increase firms' costs and again make their product more expensive. If we take into consideration import firms or European firms that want to export to China, it's clear that a rising currency is the most desirable situation, since that import will be encouraged, and so more companies decide to import from foreign countries and to sell in internal market, even if this is not the best situation in government's view.

In the last part of the thesis we have analyzed Chinese market attractiveness, in order to justify an investment in China. In this last chapter, we have understood that also inflation matters in our analysis, since that it causes increases in raw material prices, and increases in production costs and working costs. We have tried to understand which one is the best

place where to locate the companies and we have understood that the most important thing and the starting point to make all these decision is the business scope of the company. But we have tried to give some interesting advice and response to firms, that both want to export or delocalize in China. To decide which one is the best entry mode in China has a series of argument that need to be deeply analyzed, and usually each sector has different results in terms of precise data, due to elasticity of prices and costs. It's not easy to understand the market in China, and at the same time it's not easy to understand the RMB exchange rate fluctuations that can highly impact firm's revenues. In my opinion, the best way to move the production in China is toward a contractual manufacturing, even if in this option the company need to be very careful about of IRP and it implies a very specific choice of the manufacturing partner. Once the market has been educated to the product and sales in China are doing well, the company can also plan to invest in a WOE, bringing all its competitive advantage in production without the risks of some loss in IRP. If the first investment is instead a Wholly-owned firm, one of the most important decision is where to locate, and in my opinion tiers2 offer the best opportunities at best prince for manufacturing companies, due to lower cost of production and the high availability of standardized workers; then the company can decide to locate in tiers1 distribution and representative offices, that are more international and reactive, and where we can find more sophisticated consumers and more channels of distribution. If instead we are talking about small companies that are planning to sell in Chinese market, companies need to well evaluate the market, financial and regulatory conditions of Chinese environment and then decide how much and with which frequency start to export, and then, after some positive results, trying to expand its sales with other investment strategy. If the investment is to export sophisticated products that need to be understood or to export a business model, the best place where to locate are tiers1, where customers are more educated and workers are more likely to deal with marketing and developing products' difficulties.

It's clear that an investment in China should create benefits to the company, so the analysis of market and of revenues should be made in a comparative way, and result should be positive in Chinese's market hypothesis. We have seen that more international firms are less affected by exchange rate movements, because sometime, when very international firms move abroad, it's just as a hedging solution, and this means that they just want to diversify their business in order to compensate losses in one market with gains in another one. Talking about hedging solution, we need to remember that China now has low availability of hedging

instruments, so companies that are risk adverse should avoid expanding their business in China, because they can't protect themselves from exchange rate fluctuation, at least not completely for now. Consider also that now that China is trying to open its financial, market the Chinese market future is a big question mark, because no one can now the reaction of Chinese economic actors if they will become free to move their capital from China to any other market. China is the market that now offers the best opportunity, but is also the market that need the biggest research and towards which is needed to be well-informed. Regulations, monetary policy, trade restrictions, working regulations, geographical distribution of infrastructures, all these elements matter and can be the reason of success or of fail of a company. In my opinion, the most important thing on which be prepared still is the exchange rate matter, that may cause changes in future demand, cost structure, selling prices and changes in competitiveness, in other words is the only elements that is strictly connected with all other elements. In conclusion, it's better to be prepared if you want to enter, compete and be a winner in a such complicated, evolving and prosperous market as China.

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