as Mercantilism).[6] In terms of measurement, however, In the 1700's most of the world trade was very small and on commodities: agricultural products, process food such as vegetable and animal oils, furs, etc. So, it is not surprising that the definition of external adjustment concentrated on the balance of exports and imports of goods only. On that instance, the definition of the Trade Balance arises, and a definition of sustainability indicating that the value of exports has to be equal to the value of imports comes naturally from it. So, very early, the definition of external balance implied a balance in trade. *And with this new definition, the world was a happy place; we were sure we had found a nice and useful definition of external sustainability; and we could move on to do other important things like invading countries and spying on others.*

After some time, however, it became clear that just concentrating on exports and imports of goods was not enough. Cities and countries that seem very "healthy" had massive trade deficits – like Antwerp; a vibrant financial center that was running a large trade deficit – hence, it was clear that something had to be wrong with the definition of external sustainability. *Soon it was realized that a source of income was unaccounted for: Services!* So, a city that exported financial services could be healthy, but running a negative balance of trade in goods. Today, the exact same thing is true in the city of Boston. What goods do we export? not a single one! The trade balance in goods is extremely negative. We do not export goods; we export bads... lawyers, doctors, financial services, and yes, education (which is not as bad as the other three). We also produce horrible baseball teams with arrogant and entitled players, and myopic ignorant and irresponsible management. We are the world expert at this, by the way. In any case, in Boston the trade balance of goods is extremely negative, but it is financed by the export of services. In the mid 1850's the world changed the definition of external sustainability to include not only goods but services. Still today we compute – in every country – the trade balance of goods (for historical reasons and for the entertainment of reporters) but we also compute "goods and services" which is far more meaningful. *And with this new definition, the world was a happy place again; finally, we were sure we had found a nice and useful definition of external sustainability; and we could move on to do other important things like invading countries and spying on others.*

The period of the gold standard saw an unprecedented increase in international trade, and also international financial transactions. During that time several seemingly "healthy" economies run massive trade balance deficits (of goods and services). *Soon it was realized that a source of income was unaccounted: Factor Payments!* For instance, interest payments, dividends, remittances, etc. are all sources of income of a country that are not related to the export of goods or services. The gold standard ended with massive crises between 1880 and 1910, and it was interrupted by the world wars. In 1945, the Bretton Woods institutions (IMF and WB) were created to support the international monetary system, to encourage free trade, and to offer corrective measures for international imbalances. The response was, therefore, the creation of the modern system behind the balance of payments and the current account. Ahhh! The Current Account! which Ricardo Hausmann clearly defined to human kind as the account that is current. The current account includes the trade balance of goods, the trade balance of services, and the income accounts (interest payments, dividends, transfers, and remittances). *And with this new definition, the world was a happy place again; finally, we were sure we had found a nice and useful definition of external sustainability; and we could move on to do other important things like invading countries and spying on others; and now with aviation as a fully developed industry we could also throw some bombs.*

In fact, we were really happy for a while. The intuition behind the external accounts had a marvelous internal consistency — not only from the practical point of view, but also from the theoretical one. Every source of international income is a source of funds and it was counted as positive, and every use of those funds was accounted as negative in the Balance of Payments. A deficit has to be financed either by borrowing (a use), running savings down or selling international assets (another use), or by running the central bank reserves down (another use). When the borrowing reaches an upper bound, or the savings and/or reserves are zero, the country is unsustainable and needs to change its behavior. This definition had a tremendous

[6] And in fact, in our discussion of the BBNN it will become clear why accumulating surpluses forever is not necessarily a good thing; but let's continue

expectations.

The second explanation is exactly the one in which sources of income were unaccounted in the current account. There are several economists that offer different reasons why those sources of income existed, and how we should have accounted for them. Most explanations are based on capital gains unreported or unaccounted. In the end, these papers offer not only an explanation why the discrepancy exists, but also produced alternative procedures for accounting international transactions to determine whether or not the US was sustainable. This literature was interesting in the sense that different people using the exact same data and similar reasoning found completely opposite answers to the question of whether the US was or not sustainable.

The third explanation is very similar in the sense that the US has particular production and set of assets that allows it to earn additional income. However, this explanation is based not on something not reported but on the type of assets that the US can issue. Some of the explanations assumed that the assets in the US had particularly benevolent properties that other countries cannot reproduce. This explanation assume that the US debt, for example, is safer and a better asset than the Chinese debt – or the Japanese debt for that matter. This is about the "quality" of the assets and not about a particular capital gain. If the US assets have this additional quality the assets earn a premium over the exact same asset class issued by other countries. This additional source of income could finance US consumption. By the way, most of the papers thought the US was sustainable (*ooops...*).

Finally, the fourth explanation was the default: the US is simply unsustainable. These literature was extremely active – and thanks to the 2008 crisis I think the answer was loudly announced. It was good because we wrote hundreds of papers before the crisis, and now we are writing thousands more explaining *why we were wrong, and why we were actually not wrong but right, but something completely unanticipated screwed up our beautifully constructed theories. So, please continue reading our previous models because we are sure they could conceivably might be correct in a fictitious and maybe irrelevant world but for sure it might happen again - or maybe not.*

8.1.2 NN: Internal Equilibrium

Having derived the equilibrium in the external accounts, we now devote attention to the internal accounts. However, it should be completely anticipated that the NN is going to be a downward sloping curve. Why? because any model in economics that respects itself has two schedules, a downward and an upward sloping curves.

The internal market refers to how the economy uses the factors of production. In general we usually talk about the labor market. However, we could perfectly talk about energy, human capital, water, etc. For the moment we will keep the discussion on labor market issues because it is the most important factor. However, I hope that the intuitions are clear enough, and easy enough, that analyzing the situation thinking about a different factor of production becomes straight forward.

What means that the "labor market is in equilibrium"? Does this mean that unemployment is zero? In fact the economic definition of labor market equilibrium has very little to do with the number of people looking for a job (the unemployed) and much more with the wages collected by those individuals just recently employed. This is not an easy intuition. So, instead of defining the equilibrium, let me start by defining the two situations of disequilibrium: *Unemployment and Overheating.*

Imagine the economy is in a situation of *unemployment*; which is mostly where the US has been since 2008. Assume our main problem is that we are interested in hiring a person to type URL's for the Billion Prices Project (the project in which Alberto and I have been working on for ages). This is a tedious and horrific job! I mean, working with us is already an ordeal; and this is even worse when you think the person will be typing hundreds of thousands of URL's. In any case, if we are in a situation of unemployment,