A Theory of Pseudo-Wealth[1]

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Abstract

This chapter presents a theory of pseudo-wealth that can account for two important situations that arise in recession times: (i) There are often large changes in the state of the economy with no commensurate changes in the state variables that describe it; and (ii) There are often persistent booms where (for plausible preferences) aggregate consumption seems excessive, beyond levels that are consistent with the feasibility constraints, or persistent busts with underutilization of the factors of production of the economy. With heterogeneous beliefs and a market for exploiting those differences in beliefs, pseudo-wealth will be created—i.e. the sum of expected wealth of all the individuals will be larger than what it is feasible for the society. Under some conditions, those perceptions will lead to higher spending than in a world with common beliefs. If those differences in beliefs disappear, pseudo-wealth will disappear, leading to adjustments in behavior that amplify the initial decrease in expected wealth.

We also show that completing markets can lead to ambiguous results in terms of welfare. They can induce creation of pseudo-wealth that makes everyone better off ex-ante (that is, everyone's ex ante expected utility is increased), but that can lead to lower levels of production in every period—as agents wish to work less when they feel wealthier, and the adjustments that follow the disappearance of pseudo-wealth will also lead to lower levels of production.

Finally, the chapter elaborates on the idea that macroeconomic adjustments may be destabilizing. Policies that diminish wage flexibility but have positive distributive effects could enhance the performance of the economy.

More generally, this chapter describes the main intuitions of the results obtained in an agenda developed in Guzman and Stiglitz (2014, 2015).

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1. Introduction

Recent events in the US and Europe have witnessed the limitations of conventional macroeconomic models to predict and explain large economic recessions and crises, and to provide guidance for policies that attempt to resolve them.

This chapter describes an agenda (that includes Stiglitz (2015), Guzman and Stiglitz (2014, 2015)) that addresses two important puzzles faced by conventional macro models. Firstly, they are incapable of explaining situations in which there are large changes in the state of the economy with no commensurate changes in the state variables that describe it. Secondly, they cannot explain situations that involve persistent underutilization of the factors of production of the economy, a typical feature of crisis times.

These issues are not simply theoretical curiosities, but they have important implications for policy guidance. A model that cannot account for persistent subutilization of factors of production will overestimate the speed of recovery from a crisis (a typical feature of the Fed forecasting models, and of IMF models as well[2]).

The key premise of our theory is that individuals may have differences in beliefs, and these differences can be economically exploited through markets. We assume there exists a market for bets that makes it possible. The betting model can be thought of as a metaphor that depicts a general situation in which trade leads to expected gains from differences in priors. In equilibrium, agents will engage in betting that leverages the side of the distribution of beliefs that each of them perceives as relatively more likely. Because each agent believes that on average he is going to win, the betting leads to a perception of a higher aggregate wealth –wealth that is not consistent with the societal feasibility locus; and this has implications on agents' economic decisions. The "excess" wealth is what we define as pseudo-wealth. If those differences in beliefs disappear or cannot be exploited anymore (due, for example, to a shock to priors that eliminates any initial difference), pseudo-wealth will disappear, leading to adjustments in behavior that will amplify the initial decrease in expected wealth, with macroeconomic consequences.

The source of the disparity in beliefs is not important for our analysis. What is important is that we refer to events rarely occur, over which it is not sensible to think that all the individuals share the same beliefs on the likelihood of their occurrence. As our theory wants to show that is possible to have changes in the state of the macroeconomy that go

[2] Although in the case of the IMF models the overestimation of the speed of recovery may be explained by other factors. On the consistently flawed forecasts of the Fed on the US recovery from the 2008 financial crisis and of the IMF on the European economies in recession, see Guzman (2014, pp.35-40).

beyond changes in the state variables of the economy, we assume that the "rare event" does not affect any fundamental, i.e. it has no initial effect on the real capacity of production of the economy—an event that we define as a sunspot. Our theory shows that the destruction of pseudo-wealth associated with its realization not only will lead to ex-post suboptimal intertemporal paths of consumption, but it will also lead to destruction of real wealth.

An important result of our theory is that completing markets may lead to an economy that produces less in every period—but that according to the standard Pareto efficiency notion may still be efficient. This "contradiction" raises important questions in terms of welfare analysis. Should a market that only allows for speculation based on differences of beliefs, hence possibly increasing everyone's ex-ante expected utility but diminishing the level of output of the economy (and hence the level of ex-post expected utility for a utilitarian social welfare function), be allowed? The answer will depend on the criteria we use for welfare analysis.

Finally, our theory highlights the important role of "natural" adjustments. After a shock that destroys aggregate pseudo-wealth, the natural adjustments of the economy lead to further reductions in expected wealth and lower aggregate demand, worsening the macroeconomic state. Our model shows that under some conditions the equilibrium with flexible wages is associated with lower production and aggregate labor income than the equilibrium with (somewhat) rigid wages. Wage rigidities could have distributive effects that positively impact on the demand for goods, reactivating the economy. This will generally be the case when demand effects are large—particularly when they dominate over substitution effects.

The rest of the chapter is organized as follows. Section 2 presents the main premises of our theory. Section 3 distinguishes two cases of analysis, an endowment economy and a production economy, and presents the main results. Section 4 analyzes the welfare implications of those results. Section 5 studies the implications of the "natural" adjustments that follow a shock to expected wealth, and delves into policy implications. Section 6 concludes.

2. Premises of the theory

The main premise of our theory is the existence of heterogeneous agents. This heterogeneity takes the form of different beliefs over the occurrence of a sunspot—a rare event that affects no state variables of the economy.

Before the sunspot occurs, there are two possible states: sunspot (S) or no sunspot (O). The true probability of occurrence of state S is λ. Once the sunspot occurs, it cannot occur ever again. Figure 1 describes the space of states.

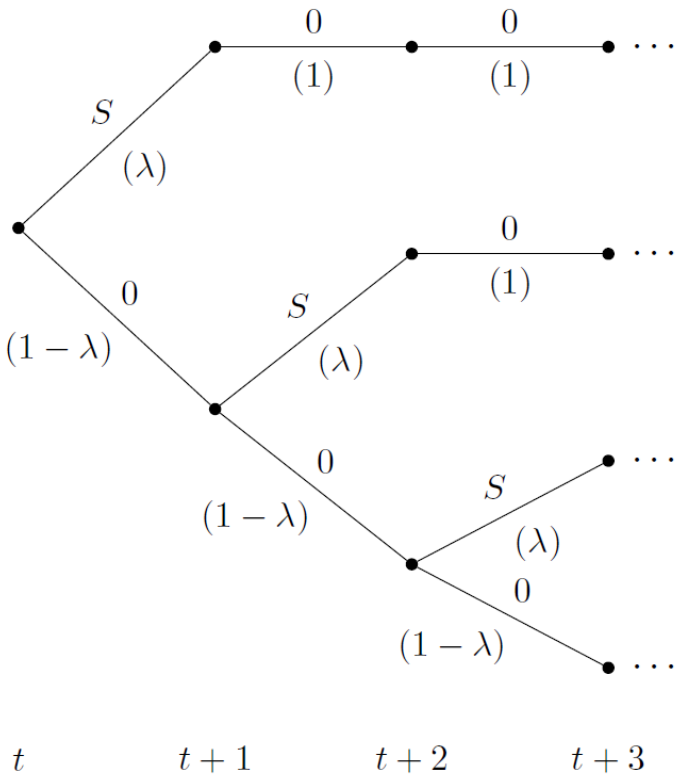

Figure 3.1: Space of states

The economy is populated by two forward-looking representative consumers (that in a version of the model are also workers), A and B, that differ in their beliefs over λ, such that $\lambda^A > \lambda^B$. Once the sunspot occurs, the difference in beliefs disappears, as everyone understands that the sunspot cannot occur again.

The difference in prior beliefs may be due to different reasons. It could arise due to differential access to information (which would be compatible with the assumption of rational expectations), or simply due to differences in the model agents use to analyze the world (which would be incompatible with the assumption of rational expectations). In both cases, posterior beliefs will be the same as prior beliefs. The reason is that as the sunspot occurs only once, there is nothing to learn from its no occurrence.

The mechanisms we describe are consistent with a "rare event" that can actually transform the capacity of production of the economy (like a structural transformation). We choose to assume that the event of interest takes the form of a sunspot because our goal is to show that it is possible, in equilibrium, to obtain changes in the state of the macro-economy with no commensurate changes in its fundamentals. The sunspot assumption simplifies the analysis: by leaving aside any possible change in the capacity of production of the

economy, it is clear that all the changes in the state of the macro-economy are the consequence of changes in possibilities of exploiting differences in priors.

The model features an infinitely lived small, open economy with perfect access to international credit markets, where default is ruled out by assumption. Debt is denominated in tradable goods. Finance is provided by foreign risk-neutral investors whose opportunity cost is the risk-free interest rate (that we assume it is constant).

There is a market for short-term bets over the realization of the sunspot. As consumer A is more optimistic than B about the likelihood of the sunspot, in equilibrium both agents will trade a bet that A wins if the sunspot occurs, while B wins if it doesn't.

Let p_t be the equilibrium price of the bet in period *t*, defined as the amount agent A pays to agent B for a bet that has a gross payoff of 1 in state S and 0 in state O. Each agent will expect a positive gain. Agent A expects to win $1 - p_t$ with probability λ^A and $-p_t$ with probability $1 - \lambda^A$ for each dollar (or good) she bets. Hence, the expected gain of agent A for betting in period t, a concept that we define as agent A's pseudo-wealth, will be

$$PW^A = (\lambda^A - p_t)b_t$$

where b_t is the amount of betting in equilibrium.

Similarly, agent B's pseudo-wealth will be

$$PW^B = (p_t - \lambda^B)b_t$$

In every period pseudo-wealth is destroyed but also created by new betting, until the period when the sunspot occurs, when no new pseudo-wealth can be created. Thus, the expected wealth of the society will decrease at that moment.

Consumers' goal is to maximize the expected discounted value of utility, by choosing consumption of goods, betting, savings or borrowing, and in a version of the model, also leisure.

3. Results

Closing the model requires assumptions on the formation of output. We analyze two cases: an endowment economy where consumers receive and consume only a tradable good, and a production economy where consumers enjoy utility both from a tradable and a non-tradable good, and both goods can be produced in the domestic economy.

3.1. Endowment Economy

We first assume that every agent receives a constant endowment of the tradable good in every period. Agents enjoy utility only from the consumption of that good. They decide consumption, borrowing, and betting in every period.

The creation of the market for bets has two effects: it creates pseudo-wealth, what increases consumption. But it also creates uncertainty, what increases precautionary savings. We are interested in analyzing situations in which the increase in expected wealth leads in equilibrium to increases in spending and aggregate demand. Thus, we constrain the family of permissible utility functions to the ones that guarantee that result. In Guzman and Stiglitz (2014), we solve the model for a utility function that features no precautionary savings, i.e. the quadratic utility function.

Agents want to smooth out consumption over time. Given their expectations of future wealth (which include the positive pseudo-wealth component), they want to consume more than the constant endowment they receive. Then, it will be optimal to borrow. If no sunspot is realized, agent B will win the bet and agent A will lose. The distribution of wealth changes in favor of agent B. Pseudo-wealth is destroyed, but new pseudo-wealth is created, as it is possible to bet over the occurrence of the sunspot in the next period.

Importantly, the future will look the same as a period before if no sunspot is realized (as it can be seen from the bottom node of the second period in figure 1). Realizations of states act as permanent wealth shocks—positive for the winner and negative for the loser. Even though agents want to achieve a smooth path of consumption, they are unable to reach that outcome. Consumption of agent A will decrease over time until the sunspot is realized, and the opposite will occur with consumption of agent B.

At the moment the sunspot is realized, agent A wins and experiences an increase in wealth, while the opposite happens to agent B. But the key issue is that no new pseudo-wealth can be created. The society as a whole feels less wealthy. The presence of pseudo-wealth had led to a positive aggregate borrowing. That debt must be repaid. After the sunspot, there is no more uncertainty, and both individual and aggregate consumption will be smooth. Then, aggregate consumption must be smaller than the aggregate endowment in every period since the occurrence of the sunspot in order to satisfy the transversality condition.

Concluding, the presence of pseudo-wealth will lead to an ex-post suboptimal intertemporal allocation of consumption for the society. Aggregate consumption will change discontinuously with no changes in any of the state variables describing the economy. Furthermore, the existence of pseudo-wealth will lead to a persistent “boom” in consumption that will ex-post imply that discontinuous fall.

3.2. Production Economy

Next, we assume that output is endogenous. The economy produces two goods, a tradable and a non-tradable. Consumers are also workers (they work for the firms that produce those goods), and enjoy utility from both types of goods, as well as from leisure. They receive labor income as a compensation for their work.

Goods are produced by foreign firms. We assume that they do not spend their profits in the domestic economy. The reason for this assumption is to ensure that demand is not driven by the consumption of entrepreneurs.[3]

Production of the non-tradable good requires only labor and exhibits decreasing returns to scale.

We introduce a real rigidity in the production function of the tradable good. Producing this good requires labor and a fixed supply factor, which can be interpreted as land. The production function exhibits marked decreasing returns of labor. To simplify, we assume it takes a Leontief form. The combination of the Leontief assumption and the land endowment constraint implies that the tradable sector cannot absorb unlimited amounts of labor. This representation intends to capture the reality of economies in which production in the tradable sector is not labor intensive (as it is the case for modern agricultural sectors), or in which there is a limit to its expansion that constrains the capacity of the economy to produce the adjustments through it.

In the initial period, the equilibrium will also be characterized by positive betting; hence agents will have positive pseudo-wealth. The implication is that they will decide to work less than in a world with no pseudo-wealth and to consume more than the wage they receive—which they can accomplish by borrowing.

As in the case of the endowment economy, in every period in which no sunspot is realized, agent B will win and agent A will lose the bet, which will affect their paths of consumption. But in this case, the individuals' labor supply will also change: agent B will decrease her labor supply every time she wins the bet (as she is wealthier and wants to consume more leisure), while agent A will increase it to partially compensate for the experienced loss.

The dynamics that is triggered by the occurrence of the sunspot is richer than in the endowment economy. At that moment, agent B will decrease her consumption of the tradable and the non-tradable good, and will increase her individual labor supply. Agent A will do the opposite. But as pseudo-wealth disappears, the expected wealth for the society

[3] Assuming that the marginal propensity to consume is smaller for firms than for consumers would suffice. Empirical evidence shows that the marginal propensity to consume is decreasing in the level of income (Mian, Rao, and Sufi, 2013).

will decrease (i.e. the increase in expected wealth of agent A is lower in absolute value than the decrease in expected wealth of agent B, as the gain of agent A relative to her expected gain is smaller that the loss of agent B relative to her expected gain). Therefore, the aggregate demand for the tradable and the non-tradable good will decrease, and the aggregate labor supply will increase.

The decrease in the demand for non-tradable goods will lead to a decrease both in its production and price. Therefore, the labor demand in the non-tradable sector will fall. If there were no diminishing returns to labor in the tradable sector, it could fully absorb the excess labor supply, and the equilibrium in the labor market could be restored with no effects on the equilibrium wage. However, with diminishing returns, real wages fall. In the model explored here, in which we assume a strong complementarity between labor and land in the tradable sector, the excess of labor supply will not be absorbed by that sector if the land constraint is binding. The adjustments must occur through the non-tradable sector, where there is no limit to labor absorption but where decreasing returns to labor will lead to a lower equilibrium wage.

The fall in wages creates a macroeconomic externality: The behavioral adjustments of the consumer who lost the bet negatively affect the prospects of the consumer who won it (even though the bet itself can provide insurance against the contingency of the shock occurring). This externality operates as an amplification device. In the second round of adjustments, the fall in wages will lead to a reduction of consumption of the tradable and the non-tradable good *both for the loser and the winner*, as well as to an increase in their individual labor supplies, triggering further reductions in the prices of non-tradable goods and in wages. And the fall in wages will also increase the burden of debt, which is denominated in tradable goods, accelerating this downward spiral. This process will continue until a new equilibrium is reached.

Generally, fluctuations in pseudo-wealth will require large changes in prices to restore equilibrium, even when the economy experienced no modifications in the state variables that describe it.

After the sunspot, there is no more uncertainty. Therefore, consumption of the tradable and non-tradable good and labor supply will be smooth over time for all agents—hence aggregate demand and labor supply will also be smooth. As in the case of the endowment economy, the society will need to produce more than what it consumes, in order to repay the debt that had been initially taken as a response to the perceptions of higher wealth. But as the tradable sector was producing using its full capacity, production in that sector cannot increase. On the other hand, consumers want to consume less of the non-tradable good, which will occur in equilibrium—and at the same time, production of the non-tradable good

will be lower. Overall, the economy will not only experience lower consumption after the sunspot, but also lower production. Therefore, the economy will produce less *always*, i.e. both *before* and *after* the sunspot, than it would produce in a world with no market for bets.

In the new equilibrium, it is even possible that the winner of the bet is worse-off. This will be the case if the loss associated with the reduction in wages dominates the gain from winning the bet. Therefore, the agent would be worse-off ex-post *and* ex-ante in every possible state, with respect to the world in which betting is not possible—but not with respect to the world in which betting is possible but he does not bet, as in the later situation he would still suffer from the negative macroeconomic externality that arises at the time the sunspot occurs.

4. Welfare analysis

The previous section showed that the production economy with a market for bets is characterized by lower total output *in every period* than the production economy with no market for bets. Should then the social planner prohibit the market for bets? Or should it allow the creation of a market that while completing markets it leads to lower output?

This is a complex question. Dealing with it requires taking a stance on how to assess social welfare in a context of heterogeneous beliefs.

Suppose the planner decides to respect individual beliefs. Then, it could be the case that creating the market for bets is Pareto efficient. This will be true if, given individual beliefs, everyone feels better off *ex-ante*—even though everyone understand that, under a utilitarian social welfare function, the society will be worse-off *ex-post* due to the misallocation of consumption and leisure, as well as the negative effects on total output. The reason why everyone feels better off is that everyone believes he is the one with the correct beliefs, so everyone believes that losses will most likely be experienced by the others.

It is even possible that everyone feels worse off ex-ante when betting is possible. This would occur if the negative macroeconomic externality (the fall in wages triggered by behavioral adjustments of the loser of the bet at the time pseudo-wealth disappears) is sufficiently large—so large that even for the winner of the bet in the sunspot state the gain from winning doesn't compensate for the fall in wages.

Suppose instead that the planner decides not to respect individual beliefs, but instead uses beliefs that are *consistent*. Suppose in particular that the planner uses so-called *reasonable beliefs*, defined as a convex combination of the different agents' beliefs (Brunnermeier, Simsek, and Xiong, 2014): $\lambda^R = \sum_{i=A,B} a_i \lambda^i$, with $\sum_{i=A,B} a_i = 1$.

Then, for every reasonable belief and for a utilitarian social welfare function, welfare would be lower when the market for bets exists than when it doesn't.

The first reason for "excessive betting" arises both in the endowment and the production economy: it comes from the intertemporal misallocation of consumption due to the perception of an unfeasibly high expected aggregate wealth. In the production economy, there are additional factors affecting the volume of betting in equilibrium and therefore whether the level of betting is excessive. On the one hand, the non-internalization of the macroeconomic externalities makes it more likely that there is excessive betting. On the other hand, under rational expectations consumers know that due to the macro externalities, the value of a dollar is larger in the state in which the sunspot is realized. This second force reduces the appetite for engaging in bets that have a negative payoff at the moment of the sunspot.

There are deep philosophical questions regarding what beliefs the planner should use for policy decisions. While taking a stance that doesn't respect individual beliefs could be considered invasive, not doing it could imply that it is optimal to do policies that make the society worse off *ex-post*, even though they make it better off *ex-ante from the viewpoint of individual (possibly distorted) beliefs*—an issue that could contradict the mandate of an elected "planner" who is supposed to make decisions in the best interest of the society. More generally, respecting individual beliefs could imply that the optimal policies must entail an intentionally biased delivery of information that increases the dispersion of beliefs in order to increase pseudo-wealth, as each individual would feel happier when pseudo-wealth is larger.

Perhaps the main conclusion of this section is that we have shown that in world of heterogeneous beliefs, it is possible that completing markets make the economy *worse off* instead of *better off*.

5. Destabilizing Adjustments

In our theory, the adjustments are conducive to a new equilibrium. After the shock, there is full employment with lower wages—and "full employment" means that consumers voluntarily want to work fewer hours at the new wages, even though as a response to the shock they intended to work more hours (at the former wages). It is a full employment equilibrium, but one in which utility levels are significantly lower than prior to the shock, and even possibly lower than if there were impediments to rapid changes in wages.

The presumption in conventional economic theory is contrary to this latter possibility. Adjustments in wages and prices play a key role to ensure the stability of the equilibrium.

Only rigidities for wage and price adjustments would impede a quick transition to a new *stable* equilibrium in which resources are fully utilized.

There is an alternative theory that suggests that the forces responding to the disequilibrium initially generated by a shock may actually be destabilizing. These theories, originating in Fisher (1933)'s theory of debt deflation, and revived in the 1980's and 1990's by Greenwald and Stiglitz (1993), among others, argue that the problem is excessive price flexibility—the fall in prices or wages, in the presence of unindexed debt and other contracts, would increase the real value of leverage, decreasing aggregate demand, decreasing prices further, and increasing real leverage further. This work calls attention to a different "market failure" than price rigidities: the incompleteness of markets and contracts. As in the general theory of the second best, correcting one market failure, i.e. making wages and prices more flexible, can exacerbate the consequences of other market failures.

Adjustments that are destabilizing through aggregate demand effects can play an important role in our theory of pseudo-wealth induced fluctuations. We explained how changes in the possibilities of exploiting different priors, or how shocks to priors that dissipate the initial differences, may lead to a large decrease in aggregate pseudo-wealth, and as a consequence also in aggregate consumption and labor demand. The restoration of full employment needs to offset the wealth effects, requiring large adjustments in wages and relative prices, especially if substitution effects are relatively weak compared to wealth effects. The "natural" adjustments lead to further reductions in expected wealth and lower aggregate demand, worsening the macroeconomic state.

Our theory shows that it is plausible that the equilibrium with flexible wages is associated with lower production and aggregate labor income than the equilibrium with (somewhat) rigid wages. The reason is that the fall in wages that results from the destruction of pseudo-wealth (that occurs when the land constraint is binding) increases the profits of foreign firms in the tradable sector; but those firms do not spend them in the domestic economy. Hence, the fall in wages leads univocally to a decrease in the demand for non-tradable goods. Workers are thus doubly hurt by the wage reduction, both as a result of the transfer of income and as a result of a decrease in aggregate demand for the non-tradable goods, which cannot be compensated for by an increase in the demand for the tradable good. A slower pace of decline in wages (for instance due to regulations on the speed at which wages can fall) would impose a redistribution of wealth from foreign firms to consumers—or equivalently, a redistribution from agents with "low" (precisely zero in the model) to "high" marginal propensity to consume out of incomes. Workers would work less than they

would have liked, but demand for the non-tradable good would be higher, increasing labor income twice.[4]

This redistribution of profits has positive amplification effects on the economy through demand effects. The larger labor income leads to a higher demand for both the tradable and the non-tradable good. While the higher demand for the tradable good does not alter its level of production (but decreases the trade balance), the higher demand for the non-tradable good leads to an increase in its price and level of production, and an associated increase in the demand for labor in the non-tradable sector. These adjustments lead to further increases in aggregate demand, until a new equilibrium (where the wage constraint may be binding or not) is reached. If these demand effects are strong, the new equilibrium could even feature a larger level of production of the non-tradable good and larger employment than in the equilibrium with flexible wages. Generally, *this will be the case when the demand effect is more important than the substitution effect.*[5]

This result, according to which wage rigidities create a distributive effect that translates into a demand effect that results in the end in more labor income and production than would be the case in the perfectly flexible world, is not exclusive of our theory. It has in general been pointed out in the above-mentioned literature on Fisher-Greenwald-Stiglitz effects and macroeconomic externalities (as for example in Eggertsson and Krugman, 2012), where Fisher effects may imply a positively-sloped aggregate demand, and in the literature on inequality and growth (Stiglitz (2012); Mian and Sufi (2014); among others).

6. Conclusions

Much of well-established macro-economic theory relies on the assumption of common beliefs. However, such an assumption is not consistent with much observed economic behavior. The key question is whether it is only a convenient simplifying assumption with no major consequences for explaining important macroeconomic issues, or it whether it misses issues that are especially significant in understanding macroeconomic instability.

This chapter has described a series of papers that introduce a theory in which differences in beliefs play an important role in explaining macro-economic fluctuations. Our analysis focused on the concept of pseudo-wealth, and the associated notion that there can be large changes in perceptions of aggregate expected wealth even when there are no changes in the real factors of production of the economy. In our theory, due to inconsistent aggregate

[4] It is understandable, in this context, why the owners of the foreign firms and those representing their interests would argue for the virtue of wage flexibility.
[5] And the substitution effect when the land constraint is binding in the tradable sector is zero.

perceptions on expected wealth the sum of the present discounted value of individuals' "planned" consumption exceeds the feasibility set during times, only to require adjustments later on. These fluctuations have repercussions on the aggregate economy: We described how fluctuations in the possibility of exploiting differences in beliefs give rise to large fluctuations in pseudo-wealth, and thereby, into aggregate demand and economic activity.

An important conclusion is that completing markets (as happens with the creation of the market for bets) may lead to unsettling results in terms of welfare, as it is possible that everyone's ex-ante expected utility increases while the levels of production of the economy decreases permanently—and yet everyone, still understanding this situation, would vote for the creation of the market for bets. But if the planner decided to use other beliefs, different than the ones from the individuals but *consistent*, under a utilitarian welfare function it would be optimal to prohibit the bet, to prevent what clearly appears to be (from an ex post perspective, and even from an ex ante perspective using a consistent of set of beliefs) the misallocations of consumption of goods and leisure and the destruction of real wealth that negative wealth shocks (as the destruction of pseudo-wealth) entail.

Contrary to the standard wisdom, we have also seen that the natural adjustments that follow the destruction of pseudo-wealth may exacerbate the economic downturn, moving the economy to an equilibrium with lower aggregate labor income than would be obtained under non-fully flexible wages. Those within the country are unambiguously worse off with more flexible wages. Then, an optimal policy might be directed towards *reducing* rather than increasing wage flexibility, as doing so would create a distributive effect that would stimulate aggregate demand and production.

The models presented here are full equilibrium models—the only assumption that has been changed from more standard models is the very plausible one that individuals differ in their beliefs. There is, accordingly, no unemployment. The labor market always clears. But in more plausible macro-economic models there may be nominal or real rigidities. Then the volatility to which the variations in pseudo wealth that we have described will have more adverse welfare consequences: they can give rise to fluctuations not only in *employment* but also in unemployment. Moreover, such fluctuations may be greater the greater labor market flexibility. But these are issues which will have to pursue in a sequel to this paper.

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