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The Dollar in the Turmoil

Agnès Bénassy Quéré, Sophie Béreau, and Valérie Mignon

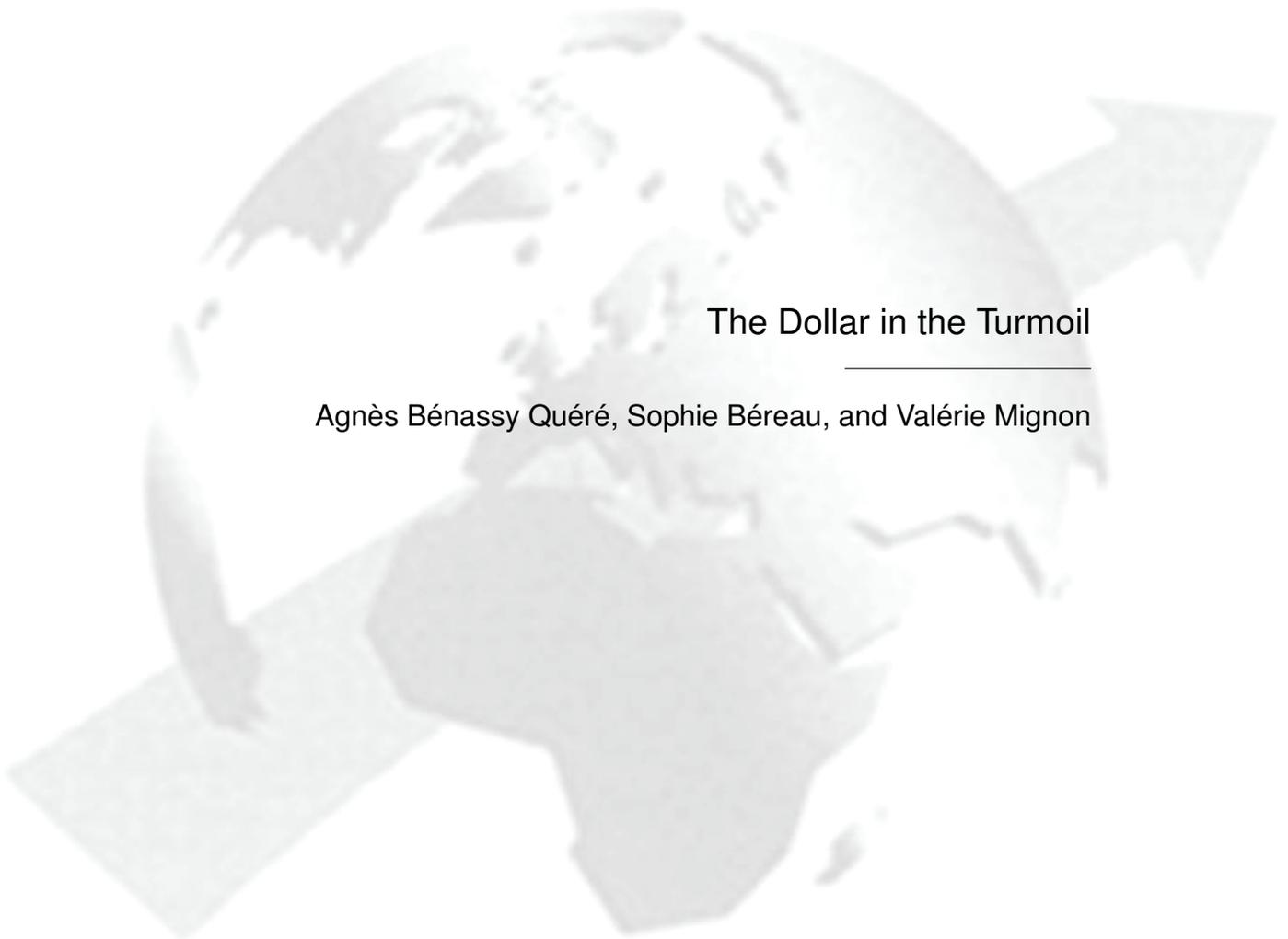


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THE DOLLAR IN THE TURMOIL

NON-TECHNICAL SUMMARY

It is often argued that long-lasting global imbalances have been one major cause of the international financial crisis that started in 2007 and has developed since then throughout 2008-2009. Whatever the origins of those imbalances — wrong microeconomic incentives, failed supervision, lax monetary policy in the United States, excess savings in China, . . . — the fact is that net foreign assets or debts cannot build up continuously without some correction. This basic idea triggered intense research prior to the crisis. Most economists were suggesting that large exchange-rate adjustments, and more specifically, a substantial depreciation of the dollar, would be necessary to bring balances of payments back to sustainable paths, although some of the adjustment would take the form of valuation effects rather than current-account adjustments.

From end-2007 to the end of 2008, the financial crisis had an ambiguous effect on the US dollar, which first depreciated before recovering higher its pre-crisis level. Several factors can explain these erratic changes, including the evolution of interest-rate differentials, massive sales of foreign assets by US institutional investors, the fall in the USD share of international bond emissions, or the fall in the price of oil.

The dollar appreciation observed from end-2007 to the end of 2008 means that US foreign assets were devalued once converted into dollars. Simultaneously, asset prices were heavily affected by the crisis worldwide. In this paper, we show that the crisis so far has not triggered the long-awaited re-balancing of the US balance of payments. This suggests that the dollar would need to depreciate even more than what was thought before the crisis.

We evaluate the impact of the crisis on the real equilibrium exchange rate of the US dollar. We find that, between end-2007 and end-2008, the US net foreign asset position fell by 15 to 24 percent of GDP. Consistently, the equilibrium effective exchange rate of the dollar depreciated by 2.8 to 72%, depending on the methodology and horizon. Looking forward, the dollar may temporarily appreciate if the US economy recovers more quickly than other economies. However, global-imbalance determinants of the dollar point to a weak dollar in the medium-to-long run, although a fall in sovereign-bond prices may help the US net foreign asset position to improve when the crisis is over and interest rates start to rise again.

ABSTRACT

We study the impact of the global financial crisis on the equilibrium exchange rate of the US dollar. We first simulate the impact of the crisis on the US net foreign asset position. Then, we calculate the equilibrium value of the dollar according both to a BEER and to a FEER approach. We find the case for a strong, although temporary, depreciation of the dollar even more acute than before the crisis. This suggests that the strength of the dollar in late 2008 and early 2009 may be short-lived.

JEL Classification: F31, C23

Keywords: Equilibrium exchange rate, US dollar, global imbalances, crisis, valuation effects

LE DOLLAR DANS LA TOURMENTE DE LA CRISE

RÉSUMÉ NON TECHNIQUE

La persistance des déséquilibres de balances de paiements dans le monde, et notamment aux Etats-Unis, est souvent vue comme une cause importante de la crise mondiale actuelle. Quelles que soient les causes de ces déséquilibres — mauvaises incitations microéconomiques, échec de la supervision, politique monétaire laxiste aux Etats-Unis, excès d'épargne en Chine, . . . — le fait est qu'un pays ne peut indéfiniment accumuler des actifs nets ou des dettes nettes sans subir une correction, à un moment donné. Cette idée simple a suscité un intense débat avant la crise. La plupart des économistes pensaient alors que d'importants ajustements de taux de change et, plus spécifiquement, une forte dépréciation du dollar, seraient nécessaires pour ramener les balances de paiements sur des trajectoires soutenables, même si une partie de l'ajustement des positions nettes pouvait se produire *via* des effets de valorisation des actifs et des dettes.

Entre fin 2007 et fin 2008, la crise financière a eu un effet ambigu sur le dollar, lequel a commencé par se déprécier avant de se réapprécier pour dépasser son niveau d'avant-crise. Plusieurs facteurs ont pu expliquer ces mouvements erratiques : l'évolution des différentiels de taux d'intérêt, des ventes massives d'actifs par les investisseurs institutionnels américains, la chute de la part du dollar dans les émissions d'obligations internationales, ou encore la baisse du prix du pétrole.

L'appréciation du dollar entre fin 2007 et fin 2008 signifie que les actifs extérieurs américains ont été dévalorisés une fois exprimés en dollars. Simultanément, les prix d'actifs ont été sévèrement affectés par la crise mondiale. Nous montrons ici que, jusqu'à présent, la crise n'a pas déclenché le rééquilibrage tant attendu de la balance des paiements américaine. Ceci suggère que le dollar pourrait avoir à se déprécier encore davantage qu'on ne le pensait avant la crise.

Nous évaluons l'impact de la crise sur le taux de change réel d'équilibre du dollar. Nos résultats montrent que, entre fin 2007 et fin 2008, la position extérieure nette américaine s'est dégradée de l'ordre de 15 à 24 points de PIB. Par conséquent, le taux de change effectif réel d'équilibre du dollar s'est déprécié de 2,8 à 72% selon l'approche et l'horizon retenus. Le dollar pourrait temporairement se redresser si l'économie américaine redémarre plus rapidement que d'autres. Cependant, les déséquilibres mondiaux suggèrent un dollar faible à moyen-long terme, même si l'on ne peut exclure que l'ajustement de la position extérieure nette américaine soit favorisé par un krach obligataire mondial (étant donné la position largement débitrice des Etats-Unis sur ce segment), notamment lorsque la fin de la crise sonnera la remontée des taux d'intérêt.

RÉSUMÉ COURT

Nous étudions l'impact de la crise financière sur différentes mesures de taux de change d'équilibre du dollar. Dans un premier temps, nous quantifions la dégradation de la position extérieure nette américaine suite à la crise. Puis, nous calculons des valeurs d'équilibre de moyen et long termes du dollar selon les approches FEER et BEER. Nous montrons que la valeur d'équilibre du dollar s'est dépréciée avec la crise, suggérant que la remontée de la devise américaine intervenue fin 2008-début 2009 pourrait être de courte durée.

Classification JEL : F31, C23

Mots clés : Taux de change d'équilibre, dollar, déséquilibres mondiaux, crise, effets de valorisation

THE DOLLAR IN THE TURMOIL¹

Agnès Bénassy-Quéré* Sophie Béreau† Valérie Mignon‡

1. INTRODUCTION

It is often argued that long-lasting global imbalances have been one major cause of the international financial crisis that started in 2007 and has developed since then throughout 2008-2009. Whatever the origins of those imbalances — wrong microeconomic incentives, failed supervision, lax monetary policy in the United States, excess savings in China, . . . — the fact is that net foreign assets or debts cannot build up continuously without some correction. This basic idea triggered intense research prior to the crisis.² Most economists were suggesting that large exchange-rate adjustments, and more specifically, a substantial depreciation of the dollar, would be necessary to bring balances of payments back to sustainable paths. However, it was also recognized that a sizeable share of the adjustment would take the form of valuation effects rather than current-account adjustments. For instance, a depreciation of the dollar would revalue US gross foreign assets while keeping US gross foreign liabilities constant, which would raise the US net foreign asset position.³

From mid-2007 to the end of 2008, the financial crisis had an ambiguous effect on the US dollar: from mid-2007 to mid-2008, the real effective exchange rate of the United States depreciated by 7%; but during the second half of 2008 it appreciated by 13% (See Figure 1). Several factors can explain these erratic changes, including the evolution of interest-rate differentials, massive sales of foreign assets by US institutional investors, the fall in the USD share of international bond emissions, the fall in the price of oil, or, more generally, the worldwide extension of the crisis.

The dollar appreciation observed from mid-2007 to the end of 2008 means that US foreign assets were devalued once converted into dollars. Simultaneously, asset prices were heavily affected by the crisis worldwide. As noted by Milesi-Ferretti (2009), a worldwide fall in equity prices deteriorates the net foreign asset position of the United States due to the positive net equity position of this country. He suggests that the crisis could have deteriorated the net foreign asset position of the United States by over USD 2 trillion (15% of GDP).

¹We are grateful to Benjamin Carton and Peter Morgan for helpful remarks on a previous version of this paper. All errors remain ours.

*CEPII (agnes.benassy@cepii.fr)

†EconomiX, University of Paris Ouest (sophie.bereau@u-paris10.fr)

‡EconomiX, University of Paris Ouest and CEPII (valerie.mignon@u-paris10.fr)

²See, e.g., the special issue of *Brookings Papers on Economic Activity*, 2005:1.

³See Gourinchas and Rey (2005), Blanchard, Giavazzi and Sa (2005), or, for a survey, Gourinchas (2007).

Figure 1 – US real effective exchange rate

Source: IFS.

Hence, the crisis so far has not triggered the long-awaited re-balancing of the US balance of payments, despite the US current account deficit being expected to shrink substantially.⁴ This suggests that the dollar would need to depreciate even more than what was thought before the crisis. In this paper, we evaluate the impact of the crisis on the real equilibrium exchange rate of the US dollar. We first assess the US net foreign asset position at the end of 2008 by applying valuation effects on gross foreign assets and liabilities registered at end-2007, and by accounting for the US current-account deficit in 2008. Based on Bénassy-Quéré, Béreau and Mignon (2008), we then derive a set of real equilibrium exchange rates at end-2008 that we compare to their pre-crisis levels. Of course, the global crisis is far from over, and further adjustments will take place. It is however useful to study the balance-of-payment adjustment so far, especially since the lack of adjustment could trigger a dollar crisis, after the housing and banking crisis.

The paper is organized as follows. Section 2 summarizes the methodology to derive equilibrium exchange rates. Section 3 studies the impact of the financial crisis on the US net foreign asset position. In Section 4, the real equilibrium exchange rate of the dollar is derived for several time horizons. Section 5 concludes.

2. EQUILIBRIUM EXCHANGE RATES AT VARIOUS TIME HORIZONS

In a previous paper,⁵ we have compared different views of equilibrium exchange rates within a single, stock-flow adjustment framework, showing how each concept corresponds to a particular horizon:

⁴Note that a rise in the current account is far from granted given the large fiscal stimulation undertaken by the US government.

⁵Bénassy-Quéré et al. (2008).

- In the *very long run*, prices and stocks have adjusted to equilibrium and productivity catch-up is complete. Then, the appropriate concept of equilibrium exchange rate is that of *purchasing power parity*.
- In the *long run*, only prices and stocks (not productivity) have adjusted. The equilibrium exchange rate can then be defined as a *behavioral equilibrium exchange rate* (BEER) which depends on the “equilibrium” value of the net foreign asset position as well as on the productivity gap across economies.
- In the *medium run*, only prices have adjusted (not stocks, neither productivity). The relevant concept of equilibrium exchange rate is the *fundamental equilibrium exchange rate* (FEER) corresponding to the exchange rate that would bring the trade account at some specific target which is consistent with adjusting the net foreign asset position to its “equilibrium” level.

To operationalize these different approaches, we estimated real equilibrium exchange rates on a panel of 15 countries belonging to the G20⁶ over the 1980-2005 period, and a simple model where the net foreign asset position (NFA) depends on demography, GDP per capita and public debt, as in Lane and Milesi-Ferretti (2001). This equation was then used to derive the “equilibrium” NFA, i.e. the NFA that would be consistent with its structural determinants. Then, two different avenues were successively followed:

- The BEER approach: a panel cointegration relationship is estimated on 15 countries, where the real effective exchange rate is regressed on the observed NFA-to-GDP ratio and on an index of relative productivity. Two BEER concepts can be derived depending on the values used for the fundamentals when calculating equilibrium exchange rates. Using the current NFA position and relative productivity leads to a “medium-run” BEER which is consistent with the current NFA position staying constant at its current value. Alternatively, substituting “equilibrium” values of fundamentals⁷ for their observed current levels yield the long-run equilibrium exchange rate.
- The FEER approach: an accounting methodology based on Lane and Milesi-Ferretti (2002) is used to calculate the current-account target that would be consistent with the NFA position to converge in T years to its “equilibrium” level. The equilibrium exchange rate is then calculated as the real effective exchange rate that would bring the current account to its target, accounting for both the output gap and delayed effects of exchange-rate variations (see Isard and Faruqee, 1998).

The results obtained for 2005 suggest that, at that time, the real effective exchange rate of the dollar was close to its long-run, BEER level but much over-valued compared to its medium-run, FEER level. Indeed, the dollar was expected to dramatically depreciate to progressively close

⁶The panel is composed of the G20 countries except Russia and Saudi Arabia (due to lacking data), namely: Argentina, Australia, Brazil, Canada, China, the United Kingdom, Indonesia, India, Japan, Korea, Mexico, Turkey, the United States, South Africa and the Euro area.

⁷Besides the model-based equilibrium NFA-to-GDP ratio, we used an Hodrick and Prescott filter on the relative productivity index series to derive long-run relative productivity values, see Bénassy-Quéré et al. (2008).

the gap between observed and “equilibrium” US NFA. Interestingly, at end-2008 the dollar was back to its end-2005 level in real effective terms, which itself is close to its end-2006, pre-crisis level. To what extent has the pre-crisis diagnosis changed? This is the issue of the next sections.

3. IMPACT OF THE FINANCIAL CRISIS ON THE US NET FOREIGN ASSET POSITION

In this section, we show how the impact of the financial crisis on the NFA position of the United States can be recovered. Following Lane and Shambaugh (2007), the NFA position at end of period t , NFA_t , can be expressed as follows:

$$NFA_t = NFA_{t-1} + CA_t + VAL_t \quad (1)$$

where CA_t denotes the current account of period t and VAL_t are valuation effects that in turn can be decomposed into capital gains on gross assets KG_t^A and capital gains on gross liabilities KG_t^L :

$$VAL_t = KG_t^A - KG_t^L = kg_t^A A_{t-1} - kg_t^L L_{t-1} \quad (2)$$

where A_{t-1} , L_{t-1} represent the stock of gross assets and liabilities at the end of period $t - 1$ ($A_{t-1} - L_{t-1} = NFA_{t-1}$), and kg_t^A , kg_t^L are the corresponding rates of revaluation between $t - 1$ and t . It follows that:

$$NFA_t = (1 + kg_t^A) A_{t-1} - (1 + kg_t^L) L_{t-1} + CA_t \quad (3)$$

Denoting by i the type of asset or liability (FDI, portfolio equity, portfolio debt, *etc.*), $a_{i,t-1}$ (resp. $l_{i,t-1}$) the share of i -type assets in A_{t-1} (resp. the share of i -type liabilities in L_{t-1}), and $kg_t^{A_i}$, $kg_t^{L_i}$ the valuation effect on each type of asset and liability, Equation (3) can be decomposed as follows:

$$NFA_t = \underbrace{\left[\sum_i (1 + kg_t^{A_i}) a_{i,t-1} \right]}_{(1+kg_t^A)} A_{t-1} - \underbrace{\left[\sum_i (1 + kg_t^{L_i}) l_{i,t-1} \right]}_{(1+kg_t^L)} L_{t-1} + CA_t \quad (4)$$

We apply this methodology to US gross foreign assets and liabilities at the end of 2007. More specifically, the following valuation effects are introduced:

- Exchange-rate adjustment:
 - Asset side: we apply exchange-rate adjustments to all assets except bonds, banks and financial derivatives; for the latter categories, the exchange-rate adjustment is applied on half the gross asset stock (meaning that the other half is assumed to be dollar-denominated);
 - Liability side: no exchange-rate adjustment is applied (US liabilities are assumed to be dollar-denominated).

- Price adjustments:
 - Foreign direct investment: no adjustment is applied (FDI recorded at book values);
 - Portfolio equity investment: we apply stock-price index variations abroad (asset side) and in the United States (liability side);
 - Foreign derivatives: we apply a 50% depreciation on CDS, both on the asset side and on the liability side; CDS represent 12.6% of total foreign derivatives according to the latest BIS quarterly review on US foreign derivative instruments;
 - Corporate bonds: in Scenario 1, we use observed variations in corporate bond indices abroad (asset side) and in the United States (liability side); since corporate bond indices may not be fully comparable across countries, we alternatively apply a uniform, 50% depreciation on both assets and liabilities (Scenario 2);⁸
 - Government bonds: as for corporate bonds, we either use observed government bond-index variations abroad and in the United States (Scenario 1), or no adjustment at all (Scenario 2).⁹

We rely on the *International Financial Statistics* (International Monetary Fund) database that provides a rough decomposition of US gross assets and liabilities until 2007. Based on BEA (2008), we calculate the share of corporate bonds in the gross portfolio debt investment position to be 47% in 2007 for the liability side. The data is lacking for the asset side, so the same share is assumed to apply to the asset side. Bond indices are extracted from Datastream.

The currency and country compositions of gross foreign assets and liabilities are detailed in Table 1. Following Lane and Shambaugh (2007), we assume that the currency-decomposition of non-USD foreign assets is the same as its country-decomposition.

The valuation rates that are applied to each item (exchange-rate and price adjustments) are summarized in Table 2. The negative valuation effect appears especially important for port-

⁸Regarding Scenario 2, we take a 50% decline as a benchmark assuming that mortgage-backed securities and their cascading asset-backed securities may have lost most of their value, whereas conventional bond prices, especially those on the non-financial sector, are more resilient.

⁹Alternatively, we could have assumed an increase in government bond value related to the fall in interest rates. However, such revaluation of government bonds is difficult to measure theoretically since it depends on the average maturity of the bonds.

Table 1 – Currency decomposition of US gross foreign assets and liabilities (in %)

Country	Gross foreign assets	Gross foreign liabilities
Australia	0.05	0.03
Canada	0.13	0.10
China	0.02	0.01
Euro area	0.41	0.45
Japan	0.08	0.11
South Africa	0.01	0.00
Switzerland	0.04	0.06
United Kingdom	0.27	0.25

Source: Authors' calculations based on BEA data.

folio equities held by US residents, since these cumulate a fall in foreign stock prices with a depreciation of their currencies against the dollar. The impact of the effective exchange-rate variation itself accounts for a 15.5% devaluation of assets denominated in foreign currencies. The remaining 36.7% comes from the fall in foreign stock prices, which is comparable to the fall of the US equity price index (-38.8%).

Concerning portfolio debts, Scenario 2 is more detrimental on both the asset and the liability side (due to the severe, 50% depreciation of corporate bonds in this scenario); however, since the United States is a net debtor in bonds, it is less detrimental than Scenario 1 for the *net* asset position.

Finally, the assumed 50% depreciation on CDS on both sides causes a 13.5% devaluation of gross assets, to be compared to the 6.3% depreciation of gross liabilities.¹⁰ CDS weight equivalently on both the asset and liability sides of the derivative products, but derivatives weight more on the asset side than on the liability side of the US balance-sheet. Hence, the net effect of CDS depreciation of the US NFA is slightly negative.

On the whole, both scenarios point to a marked deterioration of the US NFA position between end-2007 and end-2008.

Figure 2 shows the evolution of gross foreign assets (GFA) and liabilities (GFL) as a percentage of GDP.¹¹ In Scenario 1, gross assets (GFA1) fall by 34 percent of GDP from end-2007 to end-2008, whereas gross liabilities (GFL1) decline by “only” 14 percent of GDP. This difference comes from (i) the exchange rate effect (foreign assets are devalued due to the dollar appreciation), and (ii) the fact that portfolio equity investment accounts for 29% of gross assets but only 15% of gross liabilities. Conversely, the fall in the US NFA is mitigated by the fact that corporate bonds represent a larger share in gross liabilities (36% of the total) than in gross

¹⁰Note that only assets are affected by the exchange-rate variation.

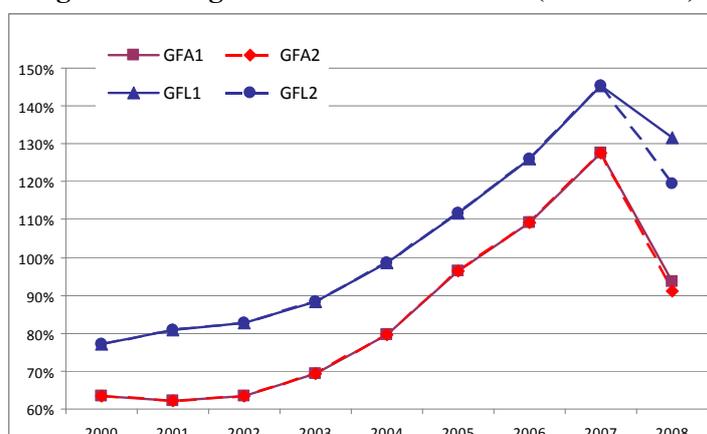
¹¹All positions are divided by US GDP based on *Bureau of Economic Analysis* data.

Table 2 – Impact of the crisis on US assets and liabilities: percentage changes from end-2007 to end-2008

Item	Asset side	Liability side
Foreign direct investment	-15.5	0
Portfolio equity	-52.2	-38.8
Portfolio debts (S1)	-10.7	1.1
Portfolio debts (S2)	-29.4	-23.5
Banks	-7.7	0
Financial derivatives	-13.5	-6.3
Others	-15.5	0
Total (S1)	-24.2	-6.3
Total (S2)	-26.2	-15.1

Source: Authors' calculations based on IFS and BEA data.

assets (10%). When dealing with an *ad-hoc* devaluation of 50% on corporate bonds on both asset and liability sides (GFA2 and GFL2), the fall in gross assets is about the same (-36% of GDP), but that of gross liabilities is much more pronounced (-26% of GDP).

Figure 2 – US gross assets and liabilities (% of GDP)

Note: GFA1 (resp. GFL1) and GFA2 (resp. GFL2) denote gross foreign assets (resp. liabilities) in Scenarios 1 and 2, respectively. Source: authors' calculations based on IFS and BEA data.

This differentiated impact of the crisis on the asset and on the liability side, together with a current-account deficit of still 4.8 percent of GDP in 2008, results in a strong deterioration of the US net foreign asset position between end-2007 and end-2008: the NFA position falls by as much as 24.2 percent of GDP in Scenario 1 and 15.2 percent of GDP in Scenario 2.¹²

¹²Milesi-Ferretti (2009) argues that the fall in corporate bonds values is roughly compensated by the revaluation

4. IMPACT OF THE CRISIS ON THE DOLLAR EQUILIBRIUM EXCHANGE RATE

Here we apply the two methodologies described in Section 2 to derive real equilibrium exchange rates for the dollar.

- BEER approach: we use the long-run, parcimonious equation estimated by Bénassy-Quéré et al. (2008) between the real effective exchange rate and its determinants:

$$BEER_{i,t} = \hat{q}_{i,t} = \hat{\beta}_i - 0.331nfa_{i,t} - 0.829rpi_{i,t} \quad (5)$$

where $\hat{q}_{i,t}$ is the predicted value of the real effective exchange rate of country i at the end of year t , based on the cointegration relationship between $q_{i,t}$ and its fundamentals, namely: $nfa_{i,t}$, the NFA-to-GDP ratio of country i at end of year t and $rpi_{i,t}$, the relative CPI-to-PPI ratio of country i in year t (compared to the average ratio in the other countries), as a proxy for the relative productivity differential.¹³ The term $\hat{\beta}_i$ denotes the estimated individual fixed effects.

The NFA-to-GDP ratio introduced in Equation (5) can either be the observed ratio at end of year t , or the “equilibrium” NFA-to-GDP ratio defined as the prediction of a structural, cointegration relationship also taken from Bénassy-Quéré et al. (2008):

$$\begin{aligned} \widehat{nfa}_{i,t} = & \hat{\gamma}_i - 0.127lgdppc_{i,t} - 0.374gdebt_{i,t} + 1.545dem1_{i,t} - 0.426dem2_{i,t} \\ & + 0.029dem3_{i,t} \end{aligned} \quad (6)$$

where $\hat{\gamma}_i$ stands for the individual estimated fixed effects, $lgdppc_{i,t}$ is the logarithm of GDP-per-capita of country i at year t , $gdebt_{i,t}$ is the gross public debt-to-GDP ratio of country i at end of year t , and $dem1_{i,t}$, $dem2_{i,t}$, $dem3_{i,t}$ summarize the population structure as in Higgins (1998). Whenever the current NFA is used, we get a “medium-run” BEER, representing the real effective exchange rate that is consistent with the NFA ratio staying at its observed value. Conversely, substituting the “equilibrium” NFA position¹⁴ for the observed one amounts to calculating the “long-term” BEER, i.e. the real effective exchange rate that would be consistent with the NFA position staying constant at its equilibrium level. Neither the medium-run nor the long-run BEER describes what real exchange rate would allow the NFA position to adjust from its current value to its equilibrium one. To do so, a FEER approach is needed.

- FEER approach: we calculate the “target” current account balance that would bring the US NFA position from its current level to its equilibrium value (given by Equation (6)) within seven years.¹⁵ We also calculate the “underlying” current account balance defined as the

of government bonds following interest-rate cuts. However he finds a decline in the US NFA position of about 15 percent of GDP which fits our assessment with this dampening effect of corporate bond depreciation.

¹³Note that the interest-rate differential is not included in the equation since in the long run, the real expected interest-rate differential should be zero, or at least constant.

¹⁴Recall that the equilibrium NFA position is not affected by the crisis, except *via* the public debt.

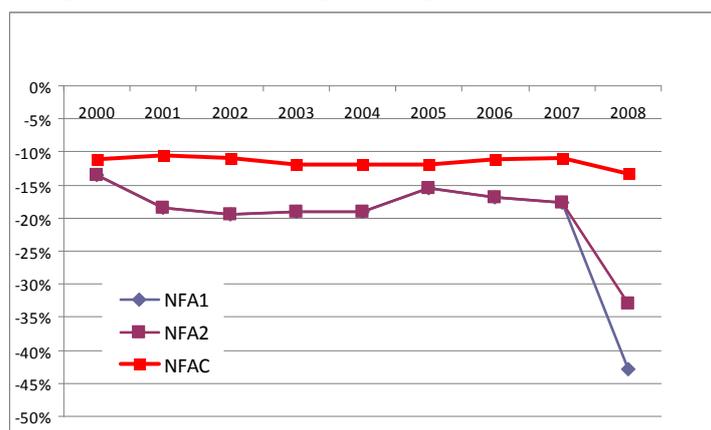
¹⁵Our calculation contrasts with the literature that generally assumes *ad hoc* target current-account balances. Calculations were also made with $T = 5$ or 10 years. The results are available upon request.

current account that would be obtained should the output gap be closed and past exchange-rate variations be factored in. Finally, the FEER is the real effective exchange rate that would be consistent with the underlying current account jumping to its target level, given standard price elasticities.¹⁶

Real exchange rates are calculated with consumer price indices and end-of-year bilateral exchange rates.¹⁷ We use the real effective exchange rate of the US dollar against 14 currencies accounting for 83.3% of world GDP. Net foreign asset positions and public debt ratios from 1980 to 2007 are taken from the IMF, *International Financial Statistics* and OECD databases respectively. GDP per capita is extracted from the World Bank, *World Development Indicators* database.

Figure 3 compares our two measures of “observed” NFA until 2008 to its equilibrium value. The figure shows that the gap between observed and equilibrium NFA widens from -6.7% of GDP at end-2007 to -19.6 or -28.6% of GDP at end-2008, depending on the methodology used to calculate the impact of the crisis.

Figure 3 – US net foreign asset position (% of GDP)



Note: NFAC is the equilibrium NFA-to-GDP ratio. NFA1 (resp. NFA2) denotes the NFA-to-GDP ratio calculated in Scenario 1 (resp. Scenario 2). Source: authors' calculations based on IFS and BEA data.

Turning to current-account targets, Table 3 reports the current account that would be consistent with the NFA position converging in seven years to its equilibrium level. Unsurprisingly, a current-account surplus would be required to close such a large NFA gap in only seven years. This contrasts with the close-to-balance targets calculated for the years before the crisis.

¹⁶Note that this approach encompasses the adjustment of the current account through changes in savings rate insofar as a rise in savings rate, by reducing the relative demand for domestic goods (home bias), is consistent with a currency depreciation. After the adjustment of the NFA is over, the real effective exchange rate is to come back to its “long-term BEER” level. The one-off valuation effect of this ultimate exchange-rate adjustment compensates for the initial valuation effect that is not accounted for in the FEER approach.

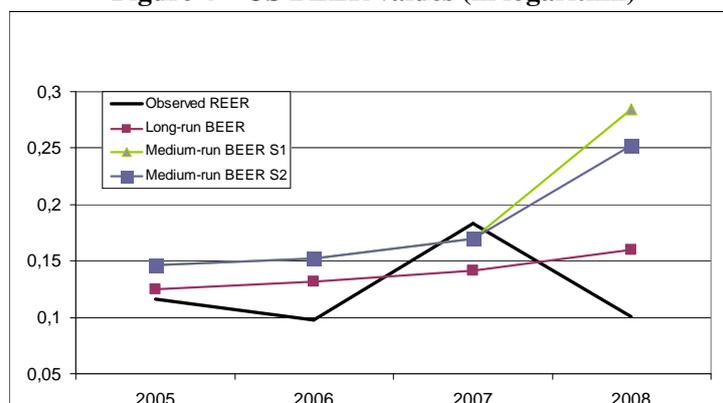
¹⁷Source: IMF, *International Financial Statistics*.

Table 3 – The US current account: observed, underlying and target values (% of GDP)

Year	Observed	Underlying	Target S1	Target S2
2005	-5.7	-5.4	0.22	0.22
2006	-5.7	-5.7	0.45	0.45
2007	-5.1	-4.6	0.54	0.54
2008	-4.8	-5.5	4.39	2.75

Source: Authors' calculations based on IFS and BEA data.

Figure 4 shows the evolution of the various BEER measures, compared to the observed real effective exchange rate of the US dollar, over 2005-2008.¹⁸ Due to the sharp fall in the observed NFA in 2008, the medium-run BEER depreciates by 8 or 11% depending on the calculation of 2008's NFA. At the end of 2008, the US dollar appears to be undervalued by 15 to 18% in real effective terms. The needed depreciation of the dollar according to the long-run BEER measure is much smoother because it relies on the "equilibrium" value of the NFA. According to this remote metrics, the US dollar appears undervalued by 6% in 2008.

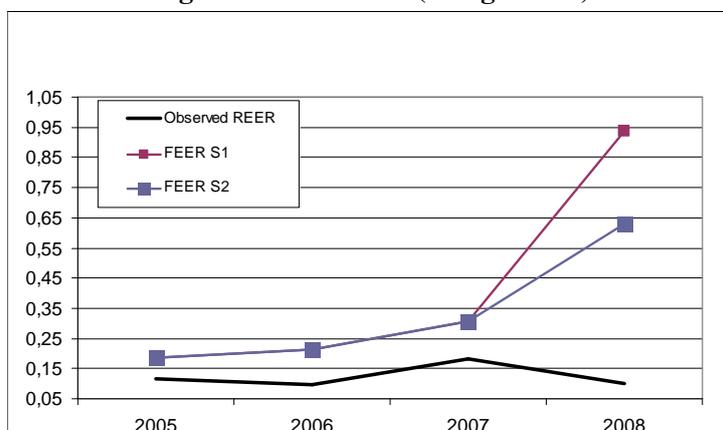
Figure 4 – US BEER values (in logarithm)

Note: An increase corresponds to a depreciation of the USD. Source: authors' calculations.

In turn, Figure 5 compares the FEER based on the two alternative calculations of the target current account, with the observed real effective exchange rate of the dollar over the same period. As expected, the dollar shows out much more under-valued in this case than with the BEER, because the current account must jump from a large deficit to a surplus (see Table 3). The misalignment widens from 12% in 2006-2007 to 53-84% at end 2008.

Table 4 reports the evolution of the various equilibrium exchange rates obtained between end-2006 and end-2008. The comparison between 2006 and 2008 is especially telling since 2006 is

¹⁸A rise in the real effective exchange rate denotes a dollar depreciation.

Figure 5 – US FEER (in logarithm)

Source: authors' calculations.

the last observation before the crisis, and because the real effective exchange rate of the dollar is approximately the same at end-2008 as at end-2006. The large depreciation called for by the FEER approach between 2006 and 2008 contrasts with the stability of both the observed real effective exchange rate and the “long-run” BEER. The “medium-run” BEER falls in-between.

Of course, these estimations should not be taken at face value, especially given the large uncertainty surrounding the calculation of (i) the NFA position at end-2008 and (ii) current-account targets and FEERs. Furthermore, massive valuation effects are to take place in 2009 and will impact the calculated misalignments. Finally, the rise in interest rates after the crisis is over may well trigger a fall in bond prices - especially sovereign bonds. Due to the net debtor position of the United States in bonds, this would be positive for the net foreign asset position.

Still, our results highlight the fact that the crisis so far has not worked in the direction of re-balancing the US balance sheet, so a dollar crisis cannot be excluded at this stage.

Table 4 – Percentage variation of the equilibrium effective exchange rate of the US dollar between end-2006 and end-2008, in percent

	Observed REER	Medium-run BEER		FEER		Long-run BEER	
		S1	S2	S1	S2	S1	S2
2006-2008	+0.3%	+13.2%	+9.9%	+72.4%	+41.5%	+2.8%	

Note: A positive figure denotes a depreciation of the dollar. Source: Authors' calculations.

5. CONCLUSION

We have proposed a first evaluation of the impact of the crisis on the equilibrium exchange rate of the US dollar. To do so, we have calculated the impact of the crisis on the US net foreign

asset position, and on the “target” current account that would allow the US NFA to converge to its “equilibrium” value in seven years. We then have calculated different equilibrium exchange rates: a “medium-run” BEER that is consistent with the NFA position staying constant at current level; a FEER that is consistent with the current account jumping to its target value; and a “long-run” BEER, that corresponds to the NFA position being constant at its equilibrium level.

We find a strong, negative impact of the crisis on the US net foreign asset position at the end of 2008. This translates into a depreciation of all measures of the equilibrium exchange rate of the dollar between end-2006 and end-2008, ranging from 2.8% for the long-run BEER to 41.5-72.4% for the FEER. Given that the real effective exchange rate of the dollar was approximately the same at end-2008 as at end-2006, it can be concluded that the misalignment widened.

Although these estimations should not be taken at face value, they highlight the fact that the crisis so far has not worked in the direction of re-balancing the US balance sheet. Hence, the strength of the dollar at end-2008 and early 2009 does not rely on reduced imbalances, but rather on technical factors such as massive sales of foreign assets by US institutional investors, the fall in the USD share of international bond emissions, or the fall in the price of oil. Looking forward, the dollar may temporarily appreciate if the US economy recovers more quickly than other economies. However, global-imbalance determinants of the dollar point to a weak dollar in the medium-to-long run, although a fall in sovereign-bond prices may help the US net foreign asset position to improve when the crisis is over and interest rates start to rise again.

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TÉL : 01 53 68 55 14 - FAX : 01 53 68 55 04

sylvie.hurion@cepii.fr

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