

# OPERATIONAL ISSUES OF CURRENCY UNIFICATION IN CUBA: A NOTE

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Currency unification and multiple exchange rates are probably among the most discussed topics by macro-economists doing research on the Cuban economy. For instance, Di Bella and Wolfe (2008) describe the main challenges related to currency unification, look at possible exchange rate system choices, and provide a detailed analysis of possible stock and flow issues related to unification. Di Bella and Wolfe (2009) further describe challenges for economic measurement arising from a bi-monetary economy with multiple exchange rates. Other papers are more descriptive but nonetheless deal with these issues, including Hernández-Catá (2011, 2015), Pérez-López (2015) and Pérez (2014). The current note builds on previous work and asks (and attempts to answer) the following questions: Is currency unification possible without addressing structural problems? What are the main challenges (operational and other) associated with currency unification? Why currency unification has not proceeded despite the authorities' announced intentions?

As has been argued in prior work and will be discussed below, we think that at the heart of this policy delay are the inherent difficulties associated with the distribution of losses and gains that would result from currency unification. In particular, the challenges associated with determining who will gain and lose among CUC, CUP and remittance/grant earners may be compounded in an environment of lower external flows and population aging, as discussed in Di Bella, Romeu and Wolfe (2012a, 2012b).

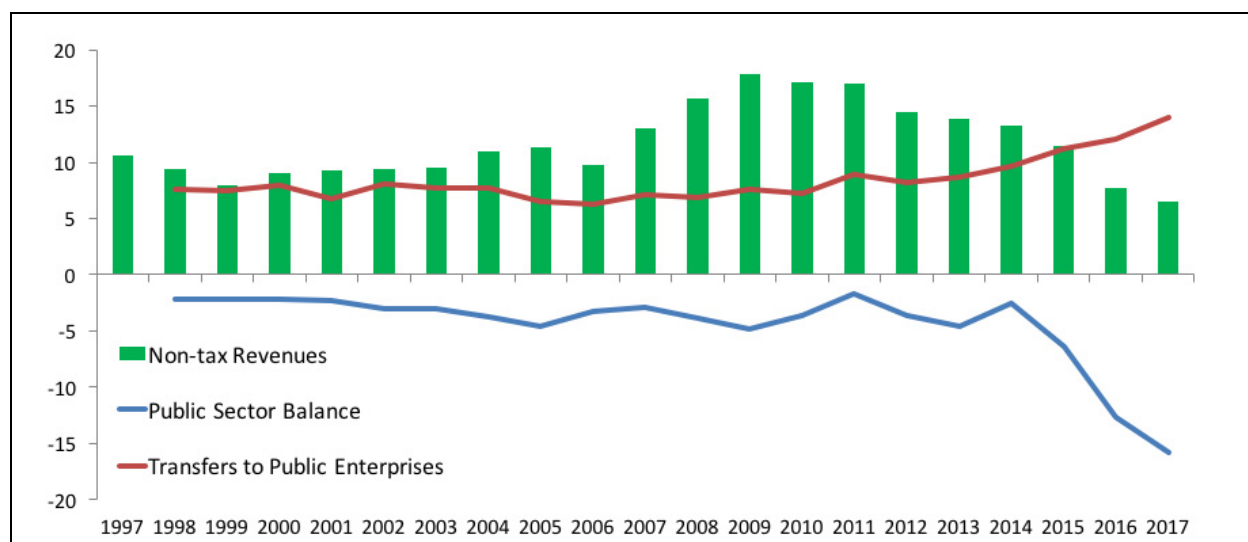
## MULTIPLE CURRENCIES AND MULTIPLE EXCHANGE RATES

The existence of two legal currencies masks the existence of multiple exchange rates and tight capital controls. The Cuban Peso (CUP) is used for transactions in rationed tradable and non-tradable goods markets and cannot be converted directly to foreign currencies. CUP earners willing to access non-rationed markets need to convert them to Convertible Cuban Pesos (CUCs) at the “unofficial but legal” exchange rate of 24 CUPs/CUC. Two propositions are

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1. The views expressed in this paper are those of the authors and do not necessarily represent those of the IMF, its Management, its Board of Directors, or IMF policy; nor of DevTech Systems Inc., its Management, and its Board of Directors. We thank, without implicating, participants of the 27th Annual Meetings of the Association for the Study of the Cuban Economy (ASCE) for their comments and suggestions, including Helena Solo-Gabriele, Carmelo Mesa-Lago, Omar Everleny Pérez Villanueva, Armando Linde, Luis R. Luis, Joaquín Pujol, and Jorge Pérez-López.

2. A recent documentary by Alpert (2017) shows video footage of Mr. Alpert's multiple visits to Cuba, beginning in the 1970s and until recently. The value of the images for those interested in the Cuba's economy is enormous. One of the most touching parts of the documentary is the visits that Mr. Alpert makes through the years to a family of Cuban peasants, the “Familia Borrego”. In the images one can see the invincible optimism, good nature, and work ethic of the “representative Cuban” in the face of the most adverse economic conditions. We would humbly like to dedicate this note to them and to other Cubans who continue to be optimistic in the face of adversity.

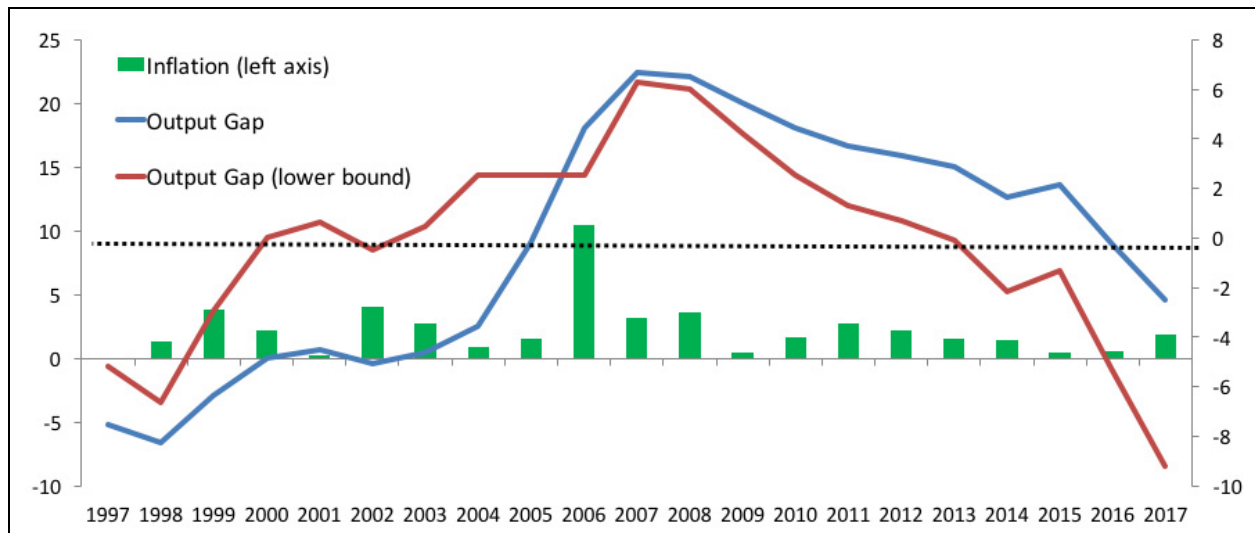
**Figure 1. Cuba: Fiscal Accounts (Percent of GDP)**

clear from the outset: (i) the very expensive CUC (in terms of CUPs) ensures that any excess supply of CUPs (even if large) can still be sterilized at a relatively low cost in terms of foreign exchange (as the “indirect” exchange rate between the CUP and the US\$ is also 24 CUPs/US\$); and (ii) the existence of multiple exchange rates calls for caution when making policy recommendations based on official statistics. Officially, CUPs and CUCs are exchanged at par: This implies that national accounts and public sector finances are constructed under the convention that 1 CUP = 1 CUC = 1 US\$. This means that a given figure for the official public sector deficit can have wildly different consequences for the monetary adjustment of disequilibria depending on its origin. If the deficit originated in the CUP account, the magnitude of international reserve adjustment will be much lower than if it originated in the CUC account. For instance, the recent increase in the public sector deficit (Figure 1) appears to have originated in the CUC account (due to a decrease in non-tax revenues that largely reflects lower external flows from Venezuela; these are also manifested in increases in

economic slack as shown in Figure 2), and thus will likely have a stronger impact in terms of international reserve decreases, tightening capital account restrictions, increased rationing in tradable goods markets, or a combination of the above.<sup>3</sup> This will become apparent below when we explain the operation of the CUC and CUP accounts in greater detail.

Despite the apparent complications of a system with two currencies and multiple exchange rates (and without considering the issue of capital controls), the adjustment mechanism to an excess supply of monetary base (either in CUPs or CUCs) will be a decrease in the international reserves of the Central Bank (with the converse being true: an excess demand of monetary base will be reflected in an increase in the international reserves of the Central Bank). It is important to remember this when analyzing alternatives for currency unification. Likewise, it is important to remember that currency unification may proceed, and multiple exchange rates could still be maintained: Both issues (multiple currencies and multiple exchange rates), though interrelated, are different.

3. Despite the caveats associated with statistics that are produced using official exchange rates, official estimates suggest a strongly increasing fiscal deficit, which per the published budget, could reach approximately 16 percent of GDP in 2017 after posting an estimated 12.6 percent in 2016. These deficits appear driven by a deteriorating net balance of the public enterprises in the context of decreased support from Venezuela. Moreover, it is interesting to note that notwithstanding the stickiness of administrative prices in Cuba, inflation has accelerated somewhat in 2017 despite a deterioration in economic growth measures. This may suggest some increased need to use prices as rationing mechanisms in the context of increased monetary financing of the public deficit.

**Figure 2. Cuba: Measures of Inflation and Economic Slack**

### CUC ACCOUNT AND CUP ACCOUNT

The main operational challenge for unification relates to the operation of the CUP and the CUC accounts. To illustrate this, Table 1 shows the monetary flows of a hypothetical economy that operates similarly to that of Cuba. Specific figures are not calibrated to resemble those of Cuba, except for the fact that the exchange rate matrix (composed by official and unofficial but legal rates) has been picked to be identical to that prevalent in Cuba. In order to simplify the interpretation of the table, all prices have been assumed to be equal to one in the following way: wages (per unit of labor) are equal to one (either one CUP or one CUC; however, only the government is assumed to pay wages in CUCs, while firms pay wages only in CUPs); the price of tradable goods in the rationed markets is one CUP per unit, while the price of tradable goods in non-rationed markets is one CUC per unit. The price of tradable goods in international markets is one unit of foreign currency (say the US\$) per unit of imports (or exports). The price of non-tradable goods is one CUP per unit. This choice of prices makes it easy to convert the monetary flows in the table into real quantity flows. All flows are ex-post, that is, after the operation of the adjustment mechanisms needed for market clearing. This is reflected in the zeroes in the excess demand column. Note that market clearing can occur through rationing (i.e., through quantities in the context of fixed prices), and indeed does. Line 54

shows that budget constraints are respected, and so the example is water-tight from an accounting perspective.

The public sector (a consolidation of the general government and the central bank) administers the system. Separate CUC and CUP accounts are maintained in the tradable goods sector and in the government. The different CUP and CUC accounts determine the supply of monetary base in either domestic currency. CUPs are used in the rationed market (in which the mechanism of adjustment is quantity rationing instead of prices, which remain fixed), and can be exchanged to CUCs to make purchases in the non-rationed tradable market. The firms in the tradable sector collect in CUCs for sales made in the non-rationed market and have a surplus in the CUC account, which is transferred to the government. At the same time, the tradable sector collects in CUPs for sales in the rationed market, and pays most of their expenses in CUPs at official prices. Accordingly, the sector has a deficit in the CUP account that is covered by government transfers. The public sector (General Government plus the Central Bank) has a surplus in the CUC account (cell A24), composed of the surplus of firms selling in the non-rationed tradable good markets, plus external aid grants received minus payment of salaries in CUCs, and has a deficit in the CUP account (cell A22). *Ex-ante*, this will be reflected in an increase in the supply of monetary

**Table 1. Economic Flows of an Example Economy with Multiple Currencies, Multiple Exchange Rates and Market Segmentation**

	A		B		C		D		E		F		G		H		I		J			
	General		Tradable		Non-Tradable		House-		External		Excess											
	Government		Goods		Goods		holds		Sector		Demand											
	& Central Bank		Firms		Firms																	
0	Flows		E	I	E	I	E	I	E	I	E	I										
1	<b>Tradable Goods &amp; Services</b>																					
2	Rationed (CUPs)		20.0		20.0	70.0	20.0		10.0												0.0	
3	Non Rationed (Expressed in unofficial CUPs)					720.0		950.0													230.0	0.0
4	Non Rationed (Expressed in CUCs)					30.0		39.6													9.6	
5	Non Rationed (Expressed in FX)					30.0		39.6													9.6	
6	<b>Non Tradable Goods &amp; Services</b>																					
7	<b>Wages</b>																					
8	CUPs		200.0		40.0		300.0		540.0													0.0
9	CUCs																					
10	Expressed in unofficial CUPs		480.0						480.0													0.0
11	Expressed in CUCs		20.0						20.0													
12	<b>Official Grants (liquidated in CUC acct)</b>																					
13	Expressed in unofficial CUPs			120.0																	120.0	0.0
14	Expressed in CUCs			5.0																	5.0	
15	Expressed in FX			5.0																	5.0	
16	<b>Remittances</b>																					
17	Expressed in unofficial CUPs													240.0							240.0	0.0
18	Expressed in CUCs													10.0							10.0	
19	Expressed in FX													10.0							10.0	
20	<b>Taxes and GG Transfers</b>																					
21	<b>(Results)</b>																					
22	CUP Account		130.0																			0.0
23	CUC Account		-230.0		0.0		30.0															
24	Expressed in unofficial CUPs		360.0			720.0																
25	Expressed in CUCs		15.0			30.0																
26	<b>Dividends</b>																					
27	CUP Account			30.0	0.0		30.0															0.0
28	CUC Account																					
29	Expressed in unofficial CUPs			720.0	720.0																	
30	Expressed in CUCs			30.0	30.0																	
31																						
32	<b>Var. Stocks</b>																					
		A	L	A	L	A	L	A	L	A	L	A	L									
33	<b>International Reserves</b>																					
34	Expressed in unofficial CUPs		130.0																			
35	Expressed in CUCs		5.4																			
36	Expressed in FX		5.4																			
37	Origin in unofficial CUP operations																					
38	Expressed in unofficial CUPs		-230.0																		-230.0	0.0
39	Expressed in CUCs		-9.6																		-9.6	
40	Expressed in FX		-9.6																		-9.6	
41	Origin in CUC operations																					
42	Expressed in unofficial CUPs		360.0																		360.0	0.0
43	Expressed in CUCs		15.0																		15.0	
44	Expressed in FX		15.0																		15.0	
45	<b>Monetary Base (CUCs)</b>																					
46	Expressed in CUPs			0.0																		
47	Expressed in CUCs			0.0																		
48	<b>Monetary Base (CUPs)</b>																					
49	Expressed in CUPs			0.0																		
50	Expressed in CUCs																					
51	External Debt																					
52	NFW																					
53																						
	Expenditures + Var. Assets = Income + Var.																					
54	Liabilities		880.0	880.0	800.0	800.0	400.0	400.0	1260.0	1260.0	360.0	360.0										

base in CUPs, and in an attempted sterilization of monetary base in CUCs. In other words, there is an *ex-ante* excess supply of monetary base in the form of CUPs and an excess demand of monetary base in the form of CUCs. Given the assumptions in the illustrative example, this is the counterpart of a surplus in the balance of payments, that is composed of remittances to households and grants to the government, which are partially offset by a trade deficit (the external sector is shown in columns I and J). The surplus in the balance of payments in the context of a fixed exchange rate system should be reflected *ex-post* in an increase in the international reserves of the central bank. Such an increase of reserves is the net result of the excess supply of CUPs and the excess demand of CUCs. In other words, the central bank satisfies the demand of foreign exchange that arises from the CUP account, which is nonetheless lower in absolute terms than the increase in reserves explained by the CUC account, resulting in a net increase in international reserves.

## TWO EXAMPLES OF CURRENCY UNIFICATION AND THEIR IMPLICATIONS

We now provide two examples of currency unification to illustrate their possible implications. Despite their simplicity, they reflect exactly the type of operational issues that a policy maker in Cuba would face in deciding the exchange rate parities at which unification would proceed. Examples assume that once new unification parities are decided, the unified currency would be the CUP, with the CUC being discontinued.

### Example 1. An appreciation of both the CUC and the CUP

Table 2 shows the implications of currency unification involving both an appreciation of the CUC and the CUP *vis-à-vis* the US\$. The assumed appreciation rates are just for illustrative purposes, but they nonetheless show the adjustment mechanisms that are set in motion by a change in the exchange rate parities. Figures are again *ex-post*, i.e., after the operation of all adjustment mechanisms. Concretely, the example assumes that 1 CUC = 12 CUPs and 1 CUC = 2 US\$, while the rest of the prices are kept unchanged. Most importantly, the rationed and non-

rationed portions in the tradable goods market stay unchanged, implying that currency unification occurs together with continuing multiple exchange rates. The implications are straightforward: The appreciation of both the CUC and the CUP results in an indirect exchange rate between the CUP and the US\$ which is now 6 CUP/US\$. The winners in this example would be both CUP and CUC earners, and losers external grant and remittance earners. Importantly, an appreciation of both the CUC and the CUP results in deficits in both the CUP (cell A23) and the CUC (cell A25) accounts of the government, and thus, in a deficit in the balance of payments that needs to be financed by international reserve losses (cell A6 = cell A40 + cell A44). In the absence of fiscal adjustment or further change in the exchange rate parity, the unification parities chosen in this example would eventually result in international reserve exhaustion.

### Example 2. An appreciation of the CUP and a depreciation of the CUC

Table 3 shows the implications of currency unification involving an appreciation of the CUP and a depreciation of the CUC *vis-à-vis* the US\$. Again, the assumed unification rates are just for illustration, to highlight the adjustment mechanisms, with the table showing *ex-post* figures. Concretely, the example assumes that 1 CUC = 12 CUPs and 1 CUC = 0.5 US\$, while the rest of the prices, as well as the rationed and non-rationed portions in the tradable goods market are again kept unchanged, i.e., there is a continuation of multiple exchange rates. The implications are once more straightforward: The depreciation of the CUC and the appreciation of the CUP results in an indirect exchange rate between the CUP and the US\$ that remains at 24 CUP/US\$, as in the initial case (Table 1). Clear losers in this example are CUC earners, while CUP, remittance, and grant earners are unaffected. Importantly, the depreciation of the CUC results in an increase in the surplus (*vis-à-vis* that in Table 1) in the CUC account, prompting a trade surplus (cells I3 – I6) that adds to the surplus in the remittance (cells I13 – I16) and grant accounts (cells I17 – I19) of the balance of payments. Note that in contrast with the previous example (shown in Table 2), a currency unification based in

**Table 2. Example 1: Currency Unification with Appreciation of the CUP and the CUC**

	A		B		C		D		E		F		G		H		I		J			
	General				Tradable				Non-Tradable				House-				External				Excess	
	Government & Central Bank				Goods Firms				Goods Firms				holds				Sector				Demand	
0	Flows																					
1	Tradable Goods & Services																					
2	Rationed (CUPs)		20.0		20.0		70.0		20.0				10.0						0.0			
3	Non Rationed (Expressed in unofficial CUPs)				180.0						530.0				350.0				0.0			
4	Non Rationed (Expressed in CUCs)				15.0						44.2				29.2							
5	Non Rationed (Expressed in FX)				30.0						88.3				58.3							
6	Non Tradable Goods & Services																					
7	Wages																					
8	CUPs		200.0		40.0				300.0				540.0						0.0			
9	CUCs																					
10	Expressed in unofficial CUPs		240.0										240.0						0.0			
11	Expressed in CUCs		20.0										20.0									
12	Official Grants (liquidated in CUC acct)																					
13	Expressed in unofficial CUPs				30.0										30.0				0.0			
14	Expressed in CUCs				2.5										2.5							
15	Expressed in FX				5.0										5.0							
16	Remittances																					
17	Expressed in unofficial CUPs												60.0		60.0				0.0			
18	Expressed in CUCs												5.0		5.0							
19	Expressed in FX												10.0		10.0							
20	Taxes and GG Transfers																					
21	(Results)																					
22	CUP Account		-260.0								30.0											
23	CUC Account																					
24	Expressed in unofficial CUPs		-30.0		180.0																	
25	Expressed in CUCs		-2.5		15.0																	
26	Dividends																					
27	CUP Account				30.0		0.0		30.0										0.0			
28	CUC Account																					
29	Expressed in unofficial CUPs				180.0		180.0															
30	Expressed in CUCs				15.0		15.0															
31																						
32	Var. Stocks																					
33	International Reserves																					
34	Expressed in unofficial CUPs		-260.0																			
35	Expressed in CUCs		-21.7																			
36	Expressed in FX		-43.3																			
37	Origin in unofficial CUP operations																					
38	Expressed in unofficial CUPs		-230.0												-230.0				0.0			
39	Expressed in CUCs		-19.2												-19.2							
40	Expressed in FX		-38.3												-38.3							
41	Origin in CUC operations																					
42	Expressed in unofficial CUPs		-30.0												-30.0				0.0			
43	Expressed in CUCs		-2.5												-2.5							
44	Expressed in FX		-5.0												-5.0							
45	Monetary Base (CUCs)																					
46	Expressed in CUPs				0.0																	
47	Expressed in CUCs				0.0																	
48	Monetary Base (CUPs)																					
49	Expressed in CUPs				0.0																	
50	Expressed in CUCs																					
51	External Debt																					
52	NFW																					
53																						
54	Expenditures + Var. Assets = Income + Var. Liabilities																					
	250.0	250.0	260.0	260.0	400.0	400.0	840.0	840.0	90.0	90.0												

**Table 3. Example 2: Currency Unification with Appreciation of the CUP and Depreciation of the CUC**

	A		B		C		D		E		F		G		H		I		J					
	General				Tradable				Non-Tradable				House-				External				Excess			
	Government & Central Bank				Goods Firms				Goods Firms				holds				Sector				Demand			
0	Flows																							
1	Tradable Goods & Services																							
2	Rationed (CUPs)		20.0		20.0		70.0		20.0				10.0				10.0		0.0					
3	Non Rationed (Expressed in unofficial CUPs)				720.0						710.0				10.0		0.8		0.0					
4	Non Rationed (Expressed in CUCs)				60.0						59.2				0.8									
5	Non Rationed (Expressed in FX)				30.0						29.6				0.4									
6	Non Tradable Goods & Services																							
7	Wages																							
8	CUPs		200.0		40.0				300.0				540.0						0.0					
9	CUCs																							
10	Expressed in unofficial CUPs		240.0										240.0						0.0					
11	Expressed in CUCs		20.0										20.0											
12	Official Grants (liquidated in CUC acct)																							
13	Expressed in unofficial CUPs				120.0										120.0				0.0					
14	Expressed in CUCs				10.0										10.0									
15	Expressed in FX				5.0										5.0									
16	Remittances																							
17	Expressed in unofficial CUPs												240.0		240.0				0.0					
18	Expressed in CUCs												20.0		20.0									
19	Expressed in FX												10.0		10.0									
20	Taxes and GG Transfers																							
21	(Results)																							
22	CUP Account		370.0		10.0		10.0						20.0						0.0					
23	CUC Account		-230.0		0.0				30.0															
24	Expressed in unofficial CUPs		600.0		720.0																			
25	Expressed in CUCs		50.0		60.0																			
26	Dividends																							
27	CUP Account				30.0		0.0		30.0										0.0					
28	CUC Account																							
29	Expressed in unofficial CUPs				720.0		720.0																	
30	Expressed in CUCs				60.0		60.0																	
31																								
32	Var. Stocks																							
33	International Reserves																							
34	Expressed in unofficial CUPs		370.0																					
35	Expressed in CUCs		30.8																					
36	Expressed in FX		15.4																					
37	Origin in unofficial CUP operations																							
38	Expressed in unofficial CUPs		-230.0														-230.0		0.0					
39	Expressed in CUCs		-19.2														-19.2							
40	Expressed in FX		-9.6														-9.6							
41	Origin in CUC operations																							
42	Expressed in unofficial CUPs		600.0														600.0		0.0					
43	Expressed in CUCs		50.0														50.0							
44	Expressed in FX		25.0														25.0							
45	Monetary Base (CUCs)																							
46	Expressed in CUPs				0.0																			
47	Expressed in CUCs				0.0																			
48	Monetary Base (CUPs)																							
49	Expressed in CUPs				0.0																			
50	Expressed in CUCs																							
51	External Debt																							
52	NFW																							
53																								
54	Expenditures + Var. Assets = Income + Var. Liabilities		880.0		880.0		800.0		800.0		400.0		400.0		1020.0		1020.0		370.0		370.0			

the parities chosen in the context of this example would result in international reserve accumulation, and thus, could be sustained in time.

### FINAL REMARKS

Is currency unification possible without addressing structural problems? If by structural problems we understand the existence of segmented markets with rationed and non-rationed segments, the answer is yes, currency unification is possible without addressing structural problems. In such a case, unification could proceed, but multiple exchange rates would continue to exist. The simplest of sustainable currency unifications requires only picking unification parities (of the CUP with the CUC and of the CUC with the US\$), such that the sum of the CUP and CUC accounts of the government (measured in CUPs at unified rates) remains balanced or in surplus. If unification rates result in a deficit of the sum of the CUP and CUC accounts, then currency unification would need to be coupled with a program of fiscal consolidation. For a concrete example of this see Di Bella and Wolfe (2008).

What are the main challenges (operational and other) associated with currency unification? The main operational challenges are to identify the impact on the CUP and CUC accounts associated with unifying exchange rates. In particular, the calculation of the distribution of losses between CUP, CUC and remittance/grant earners following unification is of paramount importance. Given the very depreciated unofficial but legal parity of the CUP *vis-à-vis* the CUC, there is the expectation that unification will proceed with some appreciation of the CUP. The second example of currency unification discussed above (Table 3) shows that this is possible, but only if CUC earners bear most of the burden. Moreover, in addition to the flow-related issues (which are of

course dynamic in nature and determine whether unified parities are sustainable or not), there are balance sheet considerations as well. Di Bella and Wolfe (2008) describe the implications for the net worth of different sectors resulting from currency unification. In this context, it is important to highlight that unification rates could be different for stock and flows.

Why has currency unification not proceeded despite the authorities' announced intentions? The distribution of losses between CUC, CUP and remittance/grant earners is not an easy decision. The expectation that currency unification will involve some indirect appreciation of the CUP *vis-à-vis* the US\$ (and thus, the increased ability of CUP earners to access the non-rationed tradable goods market), implies that CUC earners would need to bear the brunt of the unification. Although there is no detailed information about CUC and CUP earners, it is possible that CUC earners are more prevalent among those higher up in the hierarchy of firms and the government. Whatever the expectations, an additional problem is to conceptually differentiate between currency unification and the elimination of multiple exchange rates. Unification can proceed without eliminating market segmentation, and likely, it is the most realistic assumption in the short-to-medium term, including because an elimination of multiple exchange rates would likely result in a downward revision in measures of the size of the Cuban economy. Proceeding with gradual, piece-wise sectoral exercises of unification will only result in intra-sectoral transfers, and increased economic distortions. Finally, the strong decrease in oil prices at the end of 2014 deeply stressed Venezuela financially, negatively affecting external transfers. This external development may have added to the authorities' reluctance to unify Cuban domestic currencies.



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