APPENDIX 7 A Preliminary Analysis of the 2001 Mega-Swap

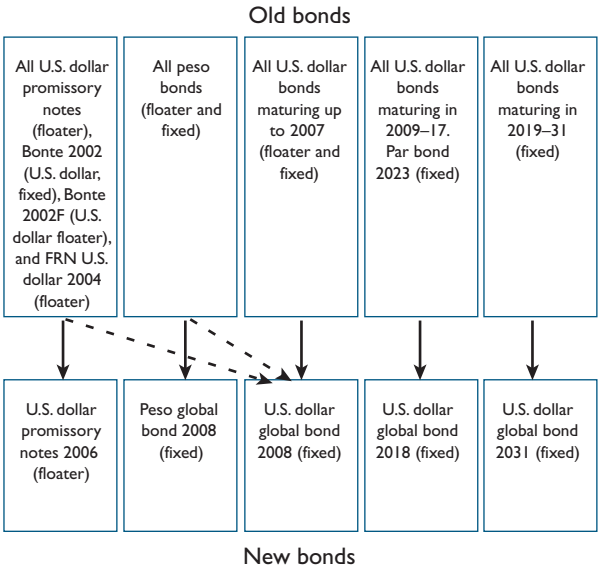
In this appendix, we present a preliminary analysis of the mega-swap of June 2001. The analysis is preliminary in the sense that it only uses publicly available information on individual bond issues, as obtained from Bloomberg, and may not fully take account of possible intricacies and peculiarities of some specific bond issues. The analysis, however, uses latest data, as made available from the Argentine Ministry of Economy and Production, and utilizes more frequent compounding and more detailed assumptions about future floating coupons than those employed by the IMF's internal assessment of the swap in 2001.[1]

The 2001 mega-swap was exercised on a market basis through an auction. The Argentine government started the auction on May 24 and concluded it on June 1. The auction result was announced on June 3, and the bonds were swapped on June 19. The swap was aimed at reducing payment obligations, particularly during 2001–05, by interest capitalizations and duration extensions. The government offered five new bonds in exchange for 52 eligible bonds. Both the new bonds and old bonds had varied structures. The swap was designed strictly in accordance with the government's guidelines, as outlined in Figure A7.1. For example, long-term bonds were swapped with long-term bonds. Fixed-coupon bonds were in principle swapped with fixed bonds. U.S. dollar-denominated bonds were only allowed to be swapped with U.S. dollar-denominated bonds. By this structure, the swap increased the amount of fixed-coupon bonds, dollar-denominated bonds, and long-term bonds.

The swap achieved the government's objectives. As Table A7.1 indicates, the (weighted) maturity of bonds was extended by 3.73 years and the (weighted) coupon raised by 1.11 percentage points,[2] while the (unweighted) discount rate over face value increased by 2.3 percentage points (for details, see Table A7.2). The payment obligation in 2001–05 was significantly reduced; particularly for 2001–02, the new bonds had no principal payment obligations. The payment obligations after 2006, however, increased substantially. In total, the stock of debt increased by $907 million in face value. Because the swap was market-based, the market values of the old bonds and the new bonds were the same ($23.2 billion), meaning that the government bought back $29.5 billion of old bonds and sold $30.4 billion of new bonds, both at $23.2 billion.

In order to see the full impact of the swap, one would need to think in terms of net present value (NPV). One's assessment of the actual costs and benefits from the swap would depend on one's assessment of what constitutes a normal interest rate for Argentina. As stated in the text, an important lesson of the Argentine crisis is that market-based and voluntary financial engineering operations, such as

Figure A7.1. Exchange Options



Sources: IMF documents; and Argentina, Ministry of Economy and Production.

[1]"Argentina—An Assessment of the Debt Exchange Operation," SM/01/204, July 2001.

[2]These are weighted by face value.

Table A7.1. An Overview of the Mega-Swap

Basic Comparison

	New	Old	Difference
Face value (in millions of U.S. dollars)	30,401	29,494	907
Of which			
Fixed	28,371	20,312	8,059
(Percent of total)	93	69	24
Years to maturity (in years from 6/19/01)	16	12	4
Of which			
Fixed	17	16	1
Coupon (fixed bonds, percent)[1]	12	11	1
Premium/discount (in percent)	–24	–21	–3

[1]Weighted by face value.

Present Values in June 2001

(In millions of U.S. dollars, unless otherwise indicated)

	Interest Payments		Principal Payments		Interest + Principal		
Discount Rate Used	New	Old	New	Old	New	Old	New – Old
14.22 percent (6/1/01)	15,797	13,588	8,667	11,825	24,464	25,413	–949
Of which							
Fixed	15,059	12,190	7,278	4,858	22,337	17,048	5,289
(Percent of total)	95.3	89.7	84.0	41.1	91.3	67.1	
10.75 percent (12/31/99)	20,921	16,037	11,434	13,443	32,355	29,480	2,875
Of which							
Fixed	20,130	14,527	9,878	6,107	30,008	20,634	9,374
(Percent of total)	96.2	90.6	86.4	45.4	92.7	70.0	
11.92 percent (12/29/00)	18,945	15,114	10,360	12,826	29,305	27,940	1,365
Of which							
Fixed	18,172	13,645	8,864	5,621	27,036	19,266	7,770
(Percent of total)	95.9	90.3	85.6	43.8	92.3	69.0	
19.64 percent (9/28/01)	10,940	11,043	6,052	10,181	16,992	21,224	–4,232
Of which							
Fixed	10,272	9,772	4,878	3,695	15,150	13,467	1,683
(Percent of total)	93.9	88.5	80.6	36.3	89.2	63.5	

Accumulated Payment

(In millions of U.S. dollars, unless otherwise indicated)

	Interest Payments		Principal Payments		Interest + Principal		
	New	Old	New	Old	New	Old	New – Old
Jun/01–Dec/02	1,604	4,210	0	5,551	1,604	9,761	–8,157
Of which							
Fixed	1,343	3,303	0	525	1,343	3,828	–2,485
(Percent of total)	84	78	. . .	9	84	39	
Jan/03–Dec/05	3,395	6,352	1,894	6,156	5,289	12,508	–7,219
Of which							
Fixed	2,685	5,773	0	2,952	2,685	8,725	–6,040
(Percent of total)	79	91	. . .	48	51	70	
Jan/06–Dec/10	17,362	7,855	12,766	3,106	30,128	10,961	19,167
Of which							
Fixed	17,331	7,621	12,387	2,705	29,718	10,326	19,392
(Percent of total)	100	97	97	87	99	94	
Jan/11–	48,306	16,911	28,783	14,681	77,089	31,592	45,497
Of which							
Fixed	48,306	16,411	28,783	14,130	77,089	30,541	46,548
(Percent of total)	100	97	100	96	100	97	

Note: For U.S. dollar LIBOR-linked floaters, the coupon rate is set equal to the U.S. dollar LIBOR forward rate. For Argentine domestic interest-rate-linked floaters except for FRAN 2004 and FRAN 2005, the coupon rate is set equal to the U.S. dollar LIBOR plus the spread between the U.S. dollar LIBOR and the benchmark interest rate on 6/19/01. For FRAN 2004 and FRAN 2005, the coupon rate is the last coupon rate before 6/19/01. EMBI Global Argentina stripped yields are used as discount rates. Interest capitalization is included in the principal payment. These estimates do not consider the call schedule (even when bonds are callable), the released collateral, or the accrued interest (in the case of Brady bonds).

Table A7.2. Details of Old and New Bonds

Status	Name	Security Type	Currency	Coupon	Coupon Frequency	Issue Amount (In millions of U.S. dollars)	Issue Date	Final Maturity Date	Years to Maturity at Issue Date	Years to Maturity at 6/19/2001	Sinkable	Floater	Exchange Face Value (In millions of U.S. dollars)	Exchange Amount at Market Price	Premium (+) Discount (–) (In percent)	Received Offer (In millions)
New	BP 2006	Pagares	USD	E+580	12	. . .	6/19/2001	6/19/2006	5.0	5.0	Y	Y	2,030	2,030	0.0	. . .
New	Nuevo GL 08	Global	USD	7/15.5	2	. . .	6/19/2001	12/19/2008	7.5	7.5	Y	N	11,456	8,999	–21.7	. . .
New	Nuevo GL 18	Global	USD	12.25	2	. . .	6/19/2001	6/19/2018	17.0	17.0	Y	N	7,463	5,467	–21.4	. . .
New	Nuevo GL 31	Global	USD	12.00	2	. . .	6/19/2001	6/19/2031	30.0	30.0	N	N	8,521	6,024	–26.8	. . .
New	Nuevo GL Peso 08	Global	ARS	10/12	2	. . .	6/19/2001	9/19/2008	7.3	7.3	N	N	931	729	–29.3	. . .
New	Total												30,401	23,249	–23.5	
Old	Hidro	Bocones	USD	. . .	12	2,986.9	12/2/1992	12/2/2008	16.0	7.5	Y	Y	26.8	19.5	–27.2	46
Old	Pre 3$	Bocones	ARS	. . .	12	1,973.4	9/1/1992	9/1/2002	10.0	1.2	Y	Y	130.7	48.1	–63.2	131
Old	Pre4 USD	Bocones	USD	2.00	12	3,161.9	9/1/1992	9/1/2002	10.0	1.2	Y	N	54.6	21.6	–60.4	304
Old	Pro1 $	Bocones	ARS	. . .	12	7,694.4	4/1/1991	4/1/2007	16.0	5.8	Y	Y	1,426.3	817.3	–42.7	1,545
Old	Pro2 USD	Bocones	USD	2.00	12	2,412.8	4/1/1991	4/1/2007	16.0	5.8	Y	Y	242.9	144.5	–40.5	254
Old	Pro3 $	Bocones	ARS	. . .	12	5.6	12/28/1994	12/28/2010	16.0	9.5	Y	Y	0.9	0.6	–33.3	1
Old	Pro4 USD	Bocones	USD	2.00	12	915.2	12/28/1994	12/28/2010	16.0	9.5	Y	N	81.4	70.4	–13.5	97
Old	Pro5 $	Bocones	ARS	. . .	4	455.0	1/15/1999	4/15/2007	8.3	5.8	Y	Y	126.3	78.3	–38.0	193
Old	Pro6 USD	Bocones	USD	2.00	4	1,120.4	1/15/1999	4/15/2007	8.3	5.8	Y	N	131.1	93.4	–28.8	160
Old	Bonex 92	Bonex	USD	. . .	2	2,500.0	9/15/1992	9/15/2002	10.0	1.2	Y	Y	404.4	95.0	–76.5	423
Old	Bonte 02	Bontes	USD	8.75	2	2,682.6	5/9/1997	5/9/2002	5.0	0.9	N	N	248.4	238.4	–4.0	311
Old	Bonte 03	Bontes	USD	11.75	2	2,820.7	2/21/2000	5/21/2003	3.3	1.9	N	N	532.6	512.3	–3.8	615
Old	Bonte 03 F	Bontes	USD	. . .	4	1,078.3	7/21/1998	7/21/2003	5.0	2.1	N	Y	485.3	457.5	–5.7	487
Old	Bonte 04	Bontes	USD	11.25	2	2,897.8	5/24/1999	5/24/2004	5.0	2.9	N	N	987.7	910.6	–7.8	1,104
Old	Bonte 05	Bontes	USD	12.13	2	2,609.2	2/21/2000	5/21/2005	5.3	3.9	N	N	1,113.4	1,013.1	–9.0	1,270
Old	Bonte 06	Bontes	USD	11.75	2	2,608.1	2/21/2001	5/15/2006	5.2	4.9	N	N	1,751.9	1,515.4	–13.5	1,868
Old	Bonte 27	Bontes	USD	9.94	2	1,127.4	10/23/1998	9/19/2027	28.9	26.3	N	N	972.1	678.1	–30.2	974
Old	RA $ 02	Eurobonds	ARS	8.75	2	500.0	7/10/1997	7/10/2002	5.0	1.1	N	N	157.2	147.3	–6.3	181
Old	RA $ 07	Eurobonds	ARS	11.75	2	500.0	2/12/1997	2/12/2007	10.0	5.6	N	N	323.4	265.2	–18.0	380
Old	FRAN	FRAN	USD	. . .	2	1,000.0	3/27/1998	4/10/2005	7.0	3.8	N	Y	544.5	506.4	–7.0	756
Old	FRN2004	FRAN	USD	. . .	4	300.0	3/15/1999	4/6/2004	5.1	2.8	N	Y	69.1	62.2	–10.0	190
Old	FRBs	FRB	USD	2.00	2	8,466.5	11/5/1993	3/29/2005	11.4	3.8	Y	Y	1,714.6	971.1	–43.4	2,071
Old	Disc	Global	USD	2.06	2	4,135.9	4/7/1993	3/31/2023	30.0	21.8	N	Y	550.8	418.6	–24.0	568
Old	GL 03	Global	USD	8.38	2	2,050.0	12/20/1993	12/20/2003	10.0	2.5	N	N	181.1	160.3	–11.5	183
Old	GL 05	Global	USD	11.00	2	1,000.0	12/4/1998	12/4/2005	7.0	4.5	N	N	46.4	40.9	–11.9	77
Old	GL 06	Global	USD	11.00	2	1,300.0	10/9/1996	10/9/2006	10.0	5.3	N	N	77.8	66.5	–14.5	91
Old	GL 09	Global	USD	11.75	2	1,500.0	4/7/1999	4/7/2009	10.0	7.8	N	N	336.6	270.9	–19.5	433
Old	GL 10	Global	USD	11.38	2	1,000.0	3/15/2000	3/15/2010	10.0	8.7	N	N	139.9	110.2	–21.2	216

Old	GL 12	Global	USD	12.38	2	1,594.0	2/21/2001	2/21/2012	11.0	10.7	N	N	689.0	565.0	–18.0	753
Old	GL 15	Global	USD	11.75	2	2,402.7	6/15/2000	6/15/2015	15.0	14.0	N	N	1,499.8	1,188.6	–20.7	1,918
Old	GL 17	Global	USD	11.38	2	4,575.0	1/30/1997	1/30/2017	20.0	15.6	N	N	2,084.0	1,646.3	–21.0	2,170
Old	GL 19	Global	USD	12.13	2	1,433.5	2/25/1999	2/25/2019	20.0	17.7	N	N	1,257.0	1,030.8	–18.0	1,306
Old	GL 20	Global	USD	12.00	2	1,250.0	2/3/2000	2/1/2020	20.0	18.6	N	N	1,091.9	889.9	–18.5	1,105
Old	GL 27	Global	USD	9.75	2	3,435.1	9/19/1997	9/19/2027	30.0	26.3	N	N	2,543.8	1,774.3	–30.3	2,683
Old	GL 30	Global	USD	10.25	2	1,250.0	7/21/2000	7/21/2030	30.0	29.1	N	N	1,009.5	711.7	–29.5	1,116
Old	GL 31	Global	USD	12.00	2	1,175.0	1/31/2001	1/31/2031	30.0	29.6	N	N	1,159.8	939.4	–19.0	1,175
Old	Par	Global	USD	6.00	2	12,489.0	4/7/1993	3/31/2023	30.0	21.8	N	N	1,823.4	1,267.2	–30.5	1,973
Old	BP E+330	Pagares	USD	E+330	12	400.0	8/22/2000	8/22/2002	2.0	1.2	N	Y	223.6	217.4	–2.8	343
Old	BP E+400	Pagares	USD	E+400	12	400.0	4/24/2000	4/24/2002	2.0	0.8	N	Y	308.8	304.0	–1.6	359
Old	BP E+435	Pagares	USD	E+435	12	150.0	2/16/2001	2/16/2004	3.0	2.7	N	Y	101.5	96.7	–4.7	128
Old	BP E+580	Pagares	USD	E+580	12	1,200.0	10/30/2000	10/30/2002	2.0	1.4	N	Y	1,193.0	1,208.3	1.3	1,193
Old	BP B+410	Pagares	USD	B+410	12	1,184.8	11/2/1999	11/2/2001	2.0	0.4	N	Y	20.2	20.0	–1.0	5
Old	BP B+500	Pagares	USD	B+500	12	111.5	7/14/1999	7/14/2001	2.0	0.1	N	Y	0.6	0.6	0.0	23
Old	BP E+521	Pagares	USD	E+521	12	21.5	11/2/1999	11/2/2001	2.0	0.4	N	Y	1,083.8	1,098.9	1.4	1,084
Old	BP E+600	Pagares	USD	E+600	12	820.2	7/14/1999	7/14/2001	2.0	0.1	N	Y	527.5	538.4	2.1	528
Old	SPAN 02	Span	USD	0.00	2	500.0	12/16/1997	11/30/2002	5.0	1.4	N	N	18.4	18.0	–2.2	28
Old	Total					95,194							29,493.8	23,249.2	–21.2	

Sources: Bloomberg and Argentina, Ministry of Economy and Production.
Note: Y = Yes; N = No.

debt swaps transacted at current market yields, do not work during a crisis. This follows from the voluntary or market-based nature of such operations, which implies that they are by definition NPV-neutral. But interest rates are typically higher during crisis, and any NPV-preserving transformation of cash flows made at higher rates would mean a much higher debt-service burden calculated at more normal rates and serves to worsen debt sustainability.

Voluntary debt swaps (and debt buybacks) done during a crisis can be likened to the case of an individual who, unable to service mortgage undertaken when interest rates were low, decides to refinance it at a much higher interest rate in exchange for temporary relief. The mega-swap involved a relief of $15 billion in undiscounted cash payments for five years in exchange for a commitment to increase Argentina's debt payments by an undiscounted amount of $65 billion. At a more normal and sustainable discount rate of 12 (7) percent, this implied an increase of about $1.3 billion ($10 billion) in the NPV value of debt. It thus significantly worsened Argentina's already shaky debt sustainability.

If a voluntary debt swap is expensive, why would any country want to do it? There are two considerations. First, for a country experiencing an acute liquidity shortage, the only alternative to a market-based debt swap is either to declare an immediate default or to restructure its debt on nonmarket terms. If the country believes that it has no solvency problem, it may be willing to pay the price to avoid the immediate default. Second, the potential macroeconomic gain from improved liquidity from a swap can be large (if the country remains solvent),[3] while the country does not have to make a full payment on the restructured debt if it is in fact insolvent. A country in a desperate situation thus has a strong incentive to "gamble for redemption," by paying for an expensive debt swap in hopes of obtaining a high-return outcome that may have a low probability.

[3]Cline (2003), for example, argues that if the swap had been successful and Argentina had avoided the default, the benefit would have been at least $45 billion, an amount of lost output in 2002 resulting from the default and devaluation.