FOR AGENDA

SM/10/305
Correction 2

December 14, 2010

To: Members of the Executive Board

From: The Secretary

Subject: **Canada—Selected Issues**

The attached corrections to SM/10/305 (11/29/10) have been provided by the staff:

Factual Errors Not Affecting the Presentation of Staff's Analysis or Views

Page 44, para. 3, line 5: for "with Fiat. Chrysler Group LLC, as of 2009, is owned by Fiat, the United Auto Workers (UAW) and the U.S., Canadian, and Ontario governments. read "with Fiat. As of 2009, Fiat, the United Auto Workers (UAW), and the U.S., Canadian, and Ontario governments are shareholders of Chrysler Group LLC."

Typographical Errors

Page 20, line 1: for "differentials between Canadian and U.S. interest rates cannot explain"
read "differentials between Canadian and U.S. interest rates can explain"

Page 37, Table 1: replaced to correct the amount in both rows for "Capital Services"

Page 44, para. 2, line 3: for "Chrysler received CA$2.9"
read "Chrysler received CAD2.9"

Questions may be referred to Mr. Kramer, WHD (ext. 38491).

This document will shortly be posted on the extranet, a secure website for Executive Directors and member country authorities.

Att: (3)

Other Distribution:
Department Heads

B. Empirical Results

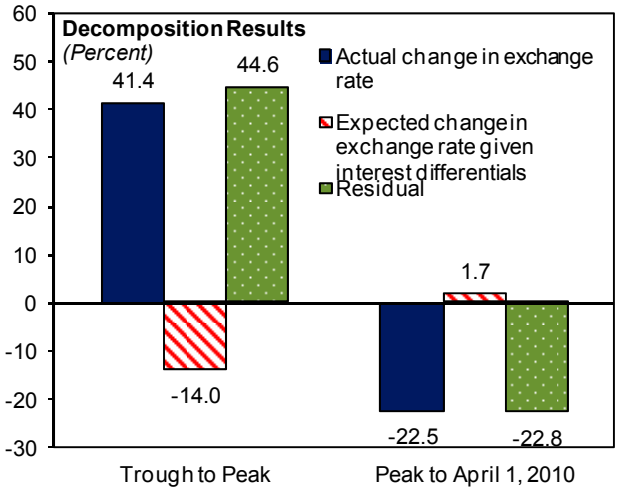
Results Based on the UIP Decomposition Method

5. **The Uncovered Interest Parity (UIP) condition is used to assess the contribution of monetary policy news in the United States to exchange rate developments in Canada during the crisis**.[4] In practice, the UIP states that:

expected change in exchange rates between two countries	=	difference in interest rates between those two countries	+	difference in risk between the assets of the two countries

So, theoretically, if the interest rate differential between two countries is 3 percent, then the currency of the nation with the higher interest rate would be expected to depreciate 3 percent against the other currency, controlling for differences in the perceived riskiness of country A's assets relative to country B's assets. Employing the instantaneous forward interest rate differentials in an adapted UIP framework, we can thus decompose exchange rate movements into changes attributable to monetary policy and a residual (see the Appendix for a detailed description of the methodology used).

6. **Results suggest that shifts in the Canadian dollar during the crisis were likely driven by flight-to-safety (first *away* then *into* the loonie) rather than by return considerations**. The CAD/USD depreciated by over 40 percent during the initial phase of the crisis (i.e., in the "trough-to-peak" period), then recouping some ¼ of its pre-crisis value by early 2010 (in the "peak-to-April 2010" period).[5] Changes in expectations about forward



Sources: Bloomberg, Haver Analytics, and Fund staff calculations.

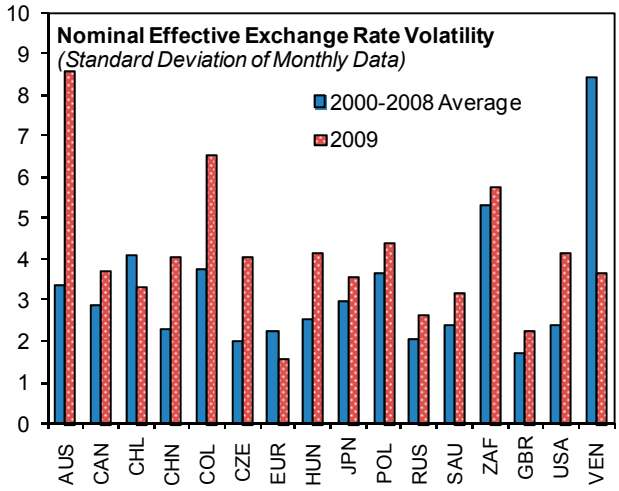
[4] In theory, the UIP condition is accepted as intuitive, but debate over whether or not UIP is empirically valid continues. For the purpose of decomposition into its components, however, we need only to assume that interest rate differentials and exchange rate movements have a one-to-one relationship, an assumption that seems plausible (see Fisher et al, 1990).

[5] The trough (11/06/2007) is defined as the minimum exchange rate (Canadian dollar/U.S. dollar) from the start of the crisis to April 1, 2010. The peak (3/9/2009) is defined as the maximum exchange rate from the trough to April 1, 2010.

differentials between Canadian and U.S. interest rates can explain neither the weakening nor the strengthening of the loonie during the crisis: the revisions would have suggested opposite movements in the currency. Thus, the UIP decomposition lends support to the view that swings in the CAD were driven by shifts in investors' sentiment first away and then into Canadian-dollar-denominated assets.

7. **The finding that the weakening of the CAD/USD reflected a flight-to-safety effect is in line with views of exchange rate developments at the time**. Most commentators saw the strength in the U.S. dollar at the beginning of the financial turmoil as a sign of panic and risk aversion, as investors liquidated investments bought at a time when interest rates heavily favored European or other non-U.S. assets. Institutional investors, faced with losses suffered on U.S. investments, were also liquidating overseas assets to meet margin calls. All these factors added to the U.S. dollar's strength as major foreign currencies were sold for U.S. dollars; returns ceased being the driver for investors, instead paving the way for strategies aimed at capital protection. This is in stark contrast to the Asian crisis of 1997–98 and the crisis following the Russian debt default in 1998 during which investors fled the currencies of the countries in crisis.

8. **The likelihood of an initial flight to safety away from the Canadian dollar is corroborated by the steep rise in 2009 in the volatility of the loonie**.[1] In Canada, and other commodity exporters like Australia, and South Africa the volatility hike likely reflected increased uncertainty about the course of commodity prices at the onset of the turmoil. Several formerly planned economies—Russia, Poland, the Czech Republic, and Hungary—also saw more exchange rate volatility than other countries, reflecting the depth of the crisis there. Remarkably, the euro saw less volatility in effective terms in 2009 than it did in previous years.



Sources: INS and Fund staff calculations.

9. **The view that then the loonie strengthened because confidence returned also tallies with the conventional wisdom**. The decision in April 2009 of the Bank of Canada to slash rates to virtually zero while promising to hold them until mid-2010 ruled out future revisions to nominal rate differentials vis-á-vis the Fed Funds rate—that was already at the

[1] Volatility is here defined as the standard deviation of monthly exchange rates in a given year.

Table 1. Path for Potential Output Growth Components 1/

	2005-2008	2008	2009	2010	2011	2012	2013	2014	2015
***Potential Growth**, percentage change*	*2.4*	*2.1*	*1.5*	*1.6*	*1.8*	*1.9*	*1.9*	*1.9*	*2.0*
Capital Services, *percentage change*	3.6	3.2	1.8	2.1	2.5	3.0	3.2	3.4	3.6
Labor Services, *percentage change*	1.2	0.9	*0.8*	0.7	0.8	0.8	0.7	0.7	0.7
NAIRU, *percentage points 3/*	6.9	6.7	6.7	6.7	6.5	6.3	6.1	6.1	6.1
Labor force participation rate, *percentage points 4/*	77.9	78.1	78.1	78.1	78.1	78.1	78.0	77.9	77.9
Total Factor Productivity, *percentage change*	0.3	0.3	*0.3*	0.3	0.3	0.2	0.2	0.2	0.2

Contributions to Potential Output Growth 1/
(Percentage points)

	2005-2008	2008	2009	2010	2011	2012	2013	2014	2015
Potential Growth	*2.4*	*2.1*	*1.5*	*1.6*	*1.8*	*1.9*	*1.9*	*1.9*	*2.0*
Capital Services 2/	1.4	1.2	0.7	0.8	0.9	1.2	1.2	1.3	1.4
Labor Services	0.7	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.4
NAIRU 3/	0.1	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0
Labor force participation rate 4/	0.1	0.0	0.0	0.00	0.0	0.0	0.0	0.0	0.0
Annual hours worked per employee 5/	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1	0.0	0.0
Working age population 6/	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.5	0.5
Total Factor Productivity	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2

Sources: Haver Analytics, WEO, OECD, and staff estimates.
1/ Output-labor elasticity assumed to be 0.6 and output-capital elasticity assumed to be 0.4, see Sharpe, Arsenault and Harrison (2008).
2/ Trend capacity utilization is calculated using data from Stats Canada (detrended by HP-filter).
3/ Non-accelerating inflation rate of unemployment. HP filter of civilian unemployment rate, 15-64 years (seasonally adjusted).
4/ Trend labor force participation rate calculated by applying the HP filter of the ratio between labor force and working age population.
5/ Trend changes in annual hours work per employee is calculated by applying the HP filter of annual hours worked per employee in the total economy.
6/ Working-age population refers to Canadian population 16-65 years of age . Projections as published by Stats Canada.

IV. THE BUMPY ROAD AHEAD FOR NORTH AMERICAN AUTOMAKERS[1]

This chapter examines the development of the Canadian automotive sector vis-à-vis NAFTA partners during the crisis, and reviews the policy support to the sector. Simulating a model of sales of light vehicles in North America estimated on historical data going back to 1960, we find only modest spillovers from an eventual double dip recession in the United States onto Canadian jobs and growth. Yet, even in the absence of a retrenchment in U.S. growth, North American Original Equipment Manufacturers (OEMs) face hard long-term challenges from foreign competitors and risk a permanent loss of market share in the region.

A. Background

1. **The large swings in motor vehicle production have had significant effects on North America's real GDP growth in the past** (Figure 1). Both the production and sales of autos trended up over the 1990s, peaking in the early to mid-2000s, thanks to buoyant consumer spending and the elimination of residual trade barriers across the region following the implementation of NAFTA.[2] However, taking the United States as a benchmark, the contributions to growth have been small, on average, during the past two decades and drops in the sector's output have shaved up to ½ percentage point from GDP growth rates in bad years.

2. **During the 2000s, the industry has undergone two of the largest shocks in the history of the sector**.

- *Energy crisis*. Between 2003 and 2008, the prices of automotive fuels surged to unprecedented levels, discouraging purchases of sport utility vehicles (SUVs) and pickup trucks which have low fuel economy. This has affected sales, especially of the "Big Three" automakers (General Motors, Ford, and Chrysler. See Box 1), who had focused on these vehicles as a result of their popularity and relatively high profit margins.[3]

- *Financial crisis.* The financial crisis further slashed the demand for and production of automotive products, as consumer credit tightened and home equity loans used to finance car

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[1] Prepared by Nicoletta Batini, Thomas Dowling and Grace Bin Li (all WHD). We are thankful to Dennis DesRosiers for providing us with data and a useful conversation.

[2] The introduction of NAFTA is estimated to have contributed until 2000 to an increase in North American motor vehicle production and sales of around 25 percent, although it is associated with a fall in employment in the United States and Canada (with corresponding gains in Mexico). Within the first ten years of NAFTA's ratification, the value of NAFTA auto trade almost doubled. Since NAFTA was introduced, both Mexico and Canada have attracted substantial FDI in the auto sector from the United States and from outside the region.

[3] In Canada 61 percent of total automotive production is attributable to Ford, GM and Chrysler. In the United States and Mexico the corresponding share is 53 percent and 49 percent, respectively

12. **Failure to address these challenges could result in further erosion of the market share of North American automakers**, particularly of the Big Three, whose market share in the region has fallen for fifteen consecutive years due to: (1) a cost structure that is improved but still higher than the new domestic and (2) a loss of consumer confidence in their products.

13. **However, this need not have an impact on the region's automotive jobs and output as long as import nameplate brands continue to build a substantial supply base inside NAFTA**. The production-to-sales ratio has been consistently in the 80 percent range since 2000. Thus the import leakage has been steady around 20 percent this decade. Importantly, distribution and retail generate significantly more jobs than manufacturing (the ratio of jobs in manufacturing to other sector's jobs being estimated at 1:5–1:7 for the countries in this region), and jobs in these other areas of the value chain would not be put in jeopardy by a change in the composition of OEMs in the region in future years.

Box 1. Canada's Auto Industry and the "Big Three"

The "Big Three" automakers (Chrysler, Ford, and General Motors) have dominated the auto industry in North America for more than 50 years. Chrysler, Ford, and GM make up around 50 percent of production in Canada, Mexico, and the United States and 45 percent of sales in Canada and the United States. In the United States and Mexico, GM and Chrysler account for about 1/3 of all domestic production. In Canada, however, they combine to account for 43.5 of all vehicle manufacturing.

"Big Three" Light Vehicle Production by Country, 2009

	Canada	Mexico	United States
	Percent of Total Domestic Production	Percent of Total Domestic Production	Percent of Total Domestic Production
Chrysler	21.4	10.5	8.7
Ford	16.2	15.7	24.5
General Motors	22.1	23.8	21.8
Total	59.7	50.1	55.0

Sources: OICA, TD, and Fund staff calculations.

Given the importance of the "Big Three" to the North American auto industry, a cross-border bailout package was given to Chrysler and GM to stabilize the sector and prevent further job losses in 2008–09. Under the Canadian and U.S. auto bailout packages, Chrysler received CAD2.9 billion from the Canadian and Ontario governments and USD12.8 billion from the United States government. GM's packages included CAD10.8 billion and USD50.7 billion, respectively. In exchange, both firms completed equity transfers and agreed to undergo restructuring. Ford leveraged assets to raise cash to deal with its debts and did not require government assistance. The first two quarters of 2010 were profitable for both Ford and GM. GM had repaid USD1.5 billion to the United States and CAD1.5 billion to Canada as of September 2010.

The crisis led to a top down reorganization of the Big Three. Chrysler Canada's parent, Chrysler LLC was reorganized into Chrysler Group LLC and partnered with Fiat. As of 2009, Fiat, the United Auto Workers (UAW), and the U.S., Canadian, and Ontario governments are shareholders of Chrysler Group LLC. General Motors of Canada is wholly owned by General Motors Company which, after restructuring, is now majority-owned by the U.S. government with stakes also held by the UAW, Canadian and Ontario governments, and creditors. Looking forward, Chrysler and GM expect to hold initial public offerings in late 2010–2011.

"Big Three" Light Vehicle Sales, by Country

	Canada		Mexico		United States	
	2009 Mkt. Share	Aug. 2010 Mkt. Share	2009 Mkt. Share	Aug. 2010 Mkt. Share	2009 Mkt. Share	Aug. 2010 Mkt. Share
Chrysler	11.2	10.6	10.9	9.0	8.8	7.4
Ford	15.4	16.4	11.7	15.2	15.3	14.4
General Motors	17.2	17.0	18.3	17.2	19.6	19.4
Total	43.8	44.0	41.0	41.4	43.7	41.2

Sources: DesRosiers, Haver Analytics, Motor Intelligence, Ward's Automotive, and Fund staff calculations.

Continued