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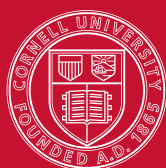

Operational Hedging and Exchange Rate Risk: A Cross-sectional Examination of Canada's Hotel Industry

by Charles Chang, Ph.D., and Liya Ma

Cornell University
School of Hotel Administration

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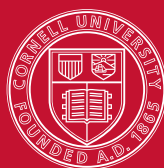
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ABOUT THE AUTHORS

Charles Chang, Ph.D., joined the Hotel School at Cornell University in 2003 upon receiving a Ph.D. in finance from the Haas Business School at the University of California, Berkeley. Prior to that, he was a decorated scholar at the Wharton School of Business, University of Pennsylvania. He is actively engaged in research in the fields of investments, institutional trading, and behavioral finance with a focus on emerging markets. He has presented findings at some of the most prestigious conferences in the field and has published work in top journals such as the *Journal of Financial Economics, the Journal of Corporate Finance*, and the *Journal of International Money and Finance*. Since 2003, he has acted as managing partner for PM Legacy Capital, a privately held investment consulting entity that has managed funds and provided investment consulting services for clients in the U.S. and abroad.

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EXECUTIVE SUMMARY

Rather than engage in expensive and complicated currency hedging, hotels operating in an international environment can gain similar benefits from their normal operations, including revenue management. An analysis of 1,032 Canadian hotels over a period of over two and one-half years shows that due to exhange rate interactions, ADR, occupancy, and RevPAR increase in weak currency environments, while they decrease in strong environments. As a local currency fluctuates in relation to the dollar, euro, or yen, changes in ADR, occupancy, and (thus) RevPAR offset losses from currency translation in weak environments and modify gains when the currency is strong. When a local currency loses value against the dollar, for instance, travelers consider hotels priced in that currency to be less expensive, even though the nominal price hasn't changed. Additional travelers who are attracted by "bargain" prices increase occupancy and cause the hotel's revenue management system to recommend higher rates. Even with higher rates, the hotel's rates might still be favorable, and the hotel's revenue per available room would be augmented by both higher room rates and higher occupancy. The implication is that multinational hotel chains have significantly less exposure to foreign exchange risk than implied by traditional hedging practices.

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Because they are multinational firms that derive income and incur costs in a variety of currencies, many hotel firms, operators, and management companies face complex and substantial foreign exchange exposure. Mandarin Oriental, for example, uses the U.S. dollar as its functional currency, even though at the time of this study it derived only 2 percent of its profit from the Americas. The majority of the company's profits, 54 percent, are collected from Asia, and 44 percent come from Europe. Especially given the recent volatility of the U.S. dollar and the state of the global economy, it seems that hedging foreign exchange risk may be more important today than ever before.

The notion that foreign exchange risk may have a large impact on multinational companies is well studied. Numerous papers document the potential impact of currency fluctuations on earnings and operating decisions.[1] Traditionally, firms seek to reduce foreign exchange risk by using financial hedging, that is, by investing in financial instruments such as currency derivatives to hedge foreign exhange fluctuations. Some studies show that this kind of hedging may be at least partially effective.[2] However, hedging in such

a manner requires financial know-how and incurs trading and monitoring costs, not to mention the expenditure of valuable human resources toward investigating and managing complicated derivatives portfolios.[3] Moreover, hedging instruments only exist for a small number of currencies (primarily, the U.S. dollar, euro, and yen). Hotels receiving Thai bhat income, for instance, would be hard pressed to find derivatives with which to hedge such an exposure. Even if such instruments existed, they would likely be illiquid and expensive to trade. For this reason, we wanted to find operational ways to manage currency risk (rather than financial methods), a notion that we believe is particularly advantageous for the hospitality industry.

Academics and practitioners alike have found that operational hedging can be a strategic complement to financial hedging.[4] Although maintaining operational flexibility can

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[1] For example, see: Philippe Jorion, "The Exchange-rate Exposure of U.S. Multinationals," *Journal of Business,* Vol. 63 (1990), pp. 331-345; Jongmoo Jay Choi and Yong-Cheol Kim, "The Asian Exposure of U.S. Firms: Operational and Risk-management Strategies," *Pacific-Basin Finance Journal, Vol.* 11 (2003), pp. 121-138; Rohan G. Williamson, "Exchange Rate Exposure and Competition: Evidence from the World Automotive Industry," *Journal of Financial Economics, Vol.* 59 (2001), pp. 441-475; and Jose Manuel Campa, "Multinational Investment under Uncertainty in the Chemical-processing Industries," *Journal of International Business Studies, Vol.* 25 (1994), pp. 557-578.

[2] As studied by: Raveendra N. Batra, Shabtai Donnenfeld, and Josef Hadar, "Hedging Behavior by Multinational Firms," Vol. 13 (1982), pp. 59-70; and David A. Carter, Christos Pantzalis, and Betty J. Simkins, "Firmwide Risk Management of Foreign Exchange Exposure by U.S. Multinational Corporations," SSRN working paper, 2001 (papers.ssrn.com/sol3/papers.cfm?abstract_id=255891).

[3] Christopher Geczy, Bernadette A. Minton, and Catherine Schrand, "Why Firms Use Currency Derivatives," *Journal of Finance, Vol.* 52 (1997), pp. 1323-1354; and George Allayannis, Jane Ihrig, and James P. Weston, Exchange-rate Hedging: Financial versus Operational Strategies," *American Economic Review, Vol.* 91 (2001), pp. 391-395.

[4] See: Ulrich Hommel, "Financial versus Operative Hedging of Currency Risk," *Global Finance Journal, Vol.* 14 (2003), pp. 1-18; Christos

be a critical component of mitigating currency risk, this is a challenge for manufacturers and retail establishments. Manufacturers usually cannot adjust operations in rapid response to foreign exchange, given the expense of relocating factories or retooling production. For a retail entity, product pricing and inventory is not easily controlled and major changes likewise cannot generally be immediately implemented. Moreover, since the large majority of their customers are likely to be local, foreign currency strength has little impact on retailers' pricing decisions. In contrast, hotels have the advantage of being able to adjust room rates and inventory, in terms of the number of available rooms. Therefore, hotel operators can adjust to changes in the financial environment with relative ease. Moreover, the large international clientele served by hotels implies that foreign exchange fluctuations may have a material impact on demand.

Consequently, we argue that existing revenue management practices and demand phenomena already have the effect of hedging foreign exchange risk for hotels. Research has shown that international tourism arrivals to a country typically increase when the country's currency is weak, since local goods appear cheap to foreign travelers.[5] Revenue managers would observe the resulting high occupancy and respond by increasing room rates (ADRs), thus contributing to higher revenues per available room (RevPAR). This is in nominal terms, because currency weakness leads to profit conversion losses, as the foreign currency is worth less in translated terms. On balance, the two effects might cancel out, as demonstrated in the following illustration.

Say that a U.S.-based hotel company operates a 500-room property in Canada. This property receives revenues in Canadian dollars (CAD), but its earnings must be converted to U.S. dollars (USD) to be returned to the parent company. Suppose the exchange rate last year was 1 USD per 1 CAD, average ADR at the Canadian hotel was 100 CAD (or 100 USD), and average occupancy was 70 percent. Under those assumptions, RevPAR was then 70 CAD per room (70% * 100) and revenue was 12,775,000 CAD (70/day * 500 rooms * 365 days/year). Say that operating costs were 10,000,000 CAD. Subtracting that amount, the hotel generated a total profit of 2,775,000 CAD. This amount is the firm's foreign exchange exposure. At that exchange rate, the hotel's total profit realized in U.S. dol-

lars is identical—that is, 2,775,000 USD (2,775,000 CAD * 1 USD/CAD). (These calculations are found under "Last year" in Exhibit 1.)

This year, suppose that the CAD depreciates to 0.85 USD/CAD. If there are no changes in demand, ADR would remain 100 CAD, occupancy 70%, and total profit 2,775,000 CAD. However, due to the change in the exchange rate, the translated profits in U.S. dollar terms are 2,358,750 USD (2,775,000 CAD * 0.85 USD/CAD), reflecting a material currency translation loss of 15 percent. (These calculations are shown in the "No hedge" section in Exhibit 1.) However, when the CAD weakens, occupancy in Canada may rise, as rooms now appear cheaper to foreign travelers, notably, those from the United States. Suppose, then, that occupancy increases to 75 percent, and, as result, ADR is increased to 110 CAD in response to higher room demand. Even with that rate increase, the hotel's rooms still present a discount in USD terms since each room costs 110 CAD * 0.85 USD/CAD = 93.5 USD. RevPAR is now 82.50 CAD, and so total revenue is 15,056,250 CAD. Assuming that half of all costs are fixed and half fluctuate with revenue (or occupancy),[6] costs increase to 10,892,857, and net profit is 4,163,393 CAD (or 3,538,884 USD). This represents a 27.5-percent *gain* compared to the previous year. (This is shown in Operational hedge 1 in Exhibit 1.) Even if occupancy remains constant at 70 percent, the increased ADR means higher real profits. Under this assumption, ADR increases to 110 CAD, and RevPAR is 77 CAD. Total profit is 3,552,500 CAD or 3,019,625 USD, an increase of 8.8 percent from the previous year (see: Operational hedge 2). Only if occupancy falls (to 65%) does the tradeoff yield reduced profits (see: Operational hedge 3).

Now, let's look at the reverse case. Had the CAD instead strengthened against the USD, hotel rooms would appear more expensive to U.S. travelers, and U.S. travel to Canada would probably decrease, thereby reducing occupancy. Management might then lower ADR to maintain occupancy, thereby reducing RevPAR. While profits would be lower in CAD terms, those profits would be worth more in USD terms. Thus we see that operational changes move in the opposite direction of currency changes, creating offsetting effects. In other words, hotel operations "naturally hedge" foreign exchange risk—particularly hotels with large international corporate traveler clienteles. However, occupancy rates at hotels that target domestic travel will also be affected by those at the competitors which lure international travelers.

Pantzalis, Betty J. Simkins, and Paul A. Laux, "Operational Hedges and the Foreign Exchange Exposure of U.S. Multinational Corporations," *Journal of International Business Studies, Vol.* 32 (2001), pp. 793-812; and Arnd H. Huchzermeier, "Global Manufacturing Strategy Planning under Exchange Rate Uncertainty," University of Pennsylvania, 1991.

[5] An early and complete study on this relationship is found at: Christine Lim, "Review of International Tourism-demand Models," *Analysis of Tourism Research, Vol.* 24 (1997), pp. 835-849.

[6] Note that since we are investigating monthly data in this study, it is unlikely that short-term changes in occupancy will have major effects on the total costs of the property. The larger the proportion of costs that are variable, the smaller the gains yielded by operational hedging. If all costs are variable, gains are reduced to about 4.400. Nevertheless, this is still a gain, due to operational hedging.

EXHIBIT **1**

Examples of hypothetical operational hedges

	F/X	ADR	Occ	RevPAR	Revenue	Cost	Profit
Last year							
CAD	1	$100.00	70%	$70.00	$12,775,000	$10,000,000	$2,775,000
USD	1	$100.00	70%	$70.00	$12,775,000	$10,000,000	$2,775,000
This year							
No hedge							
CAD	1	$100.00	70%	$70.00	$12,775,000	$10,000,000	$2,775,000
USD	0.85	$85.00	70%	$59.50	$10,858,750	$8,500,000	$2,358,750
Compared to last year							-$416,250
Operational hedge 1							
CAD	1	$110.00	75%	$82.50	$15,056,250	$10,892,857	$4,163,393
USD	0.85	$93.50	75%	$70.13	$12,797,813	$9,258,929	$3,538,884
Compared to last year							$763,884
Operational hedge 2							
CAD	1	$110.00	70%	$77.00	$14,052,500	$10,500,000	$3,552,500
USD	0.85	$93.50	70%	$65.45	$11,944,625	$8,925,000	$3,019,625
Compared to last year							$244,625
Operational hedge 3							
CAD	1	$110.00	65%	$71.94	$13,129,050	$10,138,571	$2,990,479
USD	0.85	$93.50	65%	$61.15	$11,159,693	$8,617,786	$2,541,907
Compared to last year							-$233,093

Hence, domestic-trade hotels could react similarly to currency changes, albeit perhaps more modestly.

The inverse relationship between currency strength and ADR, occupancy, and RevPAR has been studied by others in a variety of markets, including Australia, Italy, South Africa, and the United Kingdom.[7] We focus here on Canada, a country with a mature and stable hotel industry that depends heavily on U.S. travelers. We show that when the Canadian dollar (CAD) weakens, rooms appear less expensive to foreign travelers and occupancy rates rise despite higher

ADRs, resulting in improvements in RevPAR. We further show that this result persists even when we control for economic factors such as prevailing interest rates, market returns, and inflation. Indeed, the need for foreign currency exposure is eliminated almost entirely by operational hedging for a large class of firms. Importantly, however, these effects are not uniform for different types of hotels.

Unlike other studies in this field, such as that of co-author Chang,[8] we collected data on individual hotels in Canada. Whereas other studies in the field test the relationship between a country's average ADR and that country's

[7] See: Charles Chang, "To Hedge or Not to Hedge: Revenue Management and Exchange Rate Risk," *Cornell Hospitality Quarterly, Vol.* 50 (2009), pp. 201-313.

[8] *Ibid.*

EXHIBIT 2

Summary statistics for economic and operational variables

Exchange Rates				Stock Market Levels				Interest Rates (%)			
Max	Min	Mean	SD	Max	Min	Mean	SD	Max	Min	Mean	SD
1.40	1.10	1.23	0.08	12289	8266	9903	1319	4.29	2.00	2.80	0.71

ADR				Occ (%)				RevPAR			
Max	Min	Mean	SD	Max	Min	Mean	SD	Max	Min	Mean	SD
1185.69	11.20	96.35	37.08	100	5	61	27	970.69	2.22	61.60	41.21

CAD/USD Exchange Rate
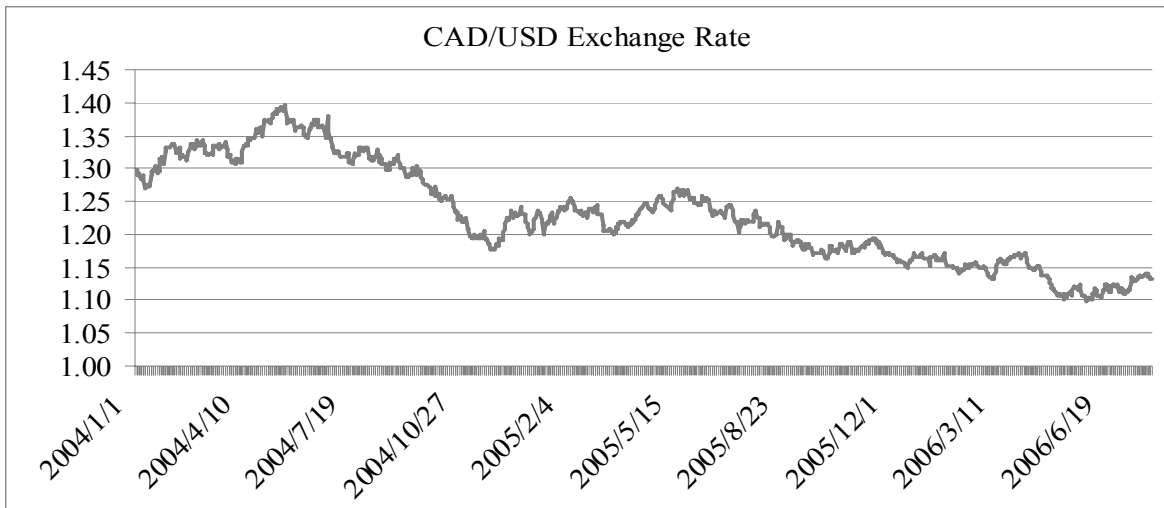
currency, we are able to compile ADR and occupancy information for thousands of individual hotels. As a result we can test how different kinds of hotels react to changes in the foreign exchange economy. We find, for example, that large hotels are more sensitive to changes in exchange rates than small hotels are, perhaps because larger hotels are more internationally recognized and accommodate more international travelers. As a result, when currency weakens by 10 percent, the largest hotels should enjoy a 5.3-percent increase in RevPAR, whereas the smallest see only a 4.7-percent increase. Chain hotels are more sensitive to exchange rate changes than are franchised hotels. Franchised hotels are often owned and run by local owners who have no need to translate currency. Finally, economy hotels are more sensitive to currency fluctuations than midscale and upscale hotels are. We believe that higher-end hotels, especially upscale hotels, cater to clients who have relatively low price sensitivity. As a result, changes in currency strength do not materially affect their travel plans and hence are not as readily reflected in revenue management practices.

In the light of our findings, we suggest that multinational hotel companies recognize the effects of operational hedging, taking such effects into account when determining hedging needs and tailoring revenue management strategies

to account for shifts in demand that result from changes in currency strength. As we indicated above, while operational hedging benefits nearly all hotels, hedging decisions depend strongly on the size, ownership structure, and class of the hotel in question.

Data

As we said, Canada's hospitality industry is relatively mature and sizable. According to the World Travel Organization, Canada consistently ranks among the top ten destinations in the world, having attracted 18.77 million overnight visitors in 2005. In 2003, Canada's 17,915 lodging establishments, 89 percent of which were hotels, resorts, or motels, generated USD 52.1 billion in revenues.[9] Moreover, a substantial portion of Canada's tourism is international, owing to a particularly strong relationship with the United States. In 2004, international tourists accounted for 25.66 percent of total overnight hotel guests in Canada, and an astounding 81 percent of Canada's total international visitors were from the U.S.[10] Additionally, since the 1989 U.S.-Canada Free Trade Agreement and the 1994 North American Free

[9] *Compendium of Tourism Statistics Data 2001–2005* (Madrid: World Tourism Organization, 2007).

[10] *Ibid.*, p. 38.

Summary statistics for hotel categories. based on 1,032 Canadian hotels

Size

80, 8%
181, 18%
336, 33%
435, 41%

- ■ < 75 rooms
- ■ 75 - 149 rooms
- ■ 150 - 299 rooms
- ■ > 300 rooms

Operation Style

107, 10%   82, 8%
843, 82%

- ■ Chain
- ■ Franchise
- ■ Independent

Class

61, 6%
189, 18%
324, 31%
223, 22%
235, 23%

- ■ > Upscale
- ■ Midscale w/ F&B
- ■ Midscale w/o F&B
- ■ Economy
- ■ Independent
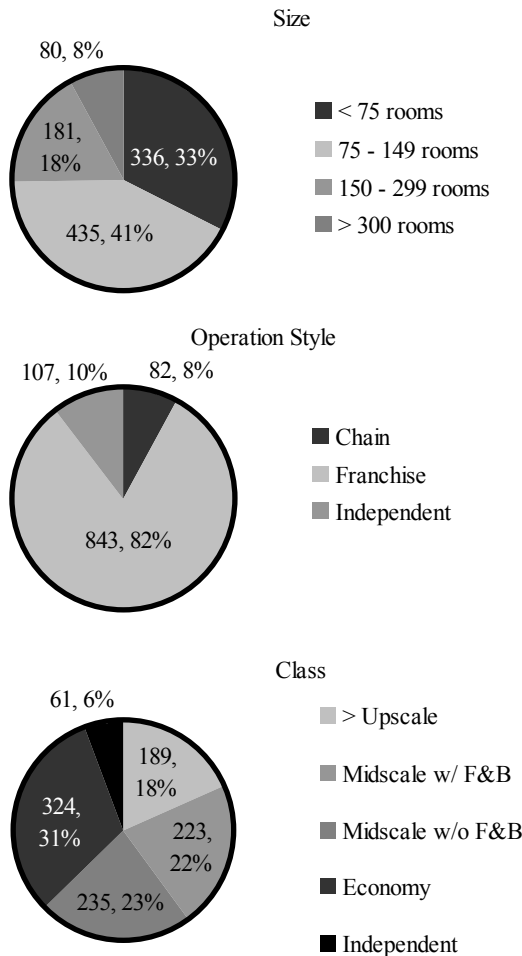
Trade Agreement, over 84 percent of Canada's exports have gone to the U.S., and 56 percent of all Canadian imports come from the U.S.[11] As a result the CAD/USD exchange rate has the potential to have a significant impact on business and travel patterns.

To test this relationship, we studied rate and occupancy information for 1,032 hotels in Canada between January 1, 2004, and July 31, 2006, for a total of nearly 25,000 observations. Exhibit 2 presents a graph of the exchange rate, quoted in the form of CAD/USD (unlike our hypothetical example).[12] The CAD appreciated 12.74 percent against the USD during the period of study, improving from 1.297 to 1.132 CAD/USD. Economic data include Canada's two-month treasury rate, its composite stock market return, and

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[11] *CIA the World Factbook (Washington, DC:* Central Intelligence Agency, 2008).

[12] www.oanda.com

its consumer price index.[13] These data are used to control for factors in Canada's economy other than exchange rate that may also affect hotel operations and performance. As Exhibit 2 shows, the CAD/USD exchange rate, stock market return, and interest rates changes did not experience significant or abnormal volatility during the study period.

Operational data collected from Smith Travel Research include monthly ADRs, occupancy rates, and RevPAR for each hotel. The average ADR in CAD terms during this period was 96.35, with average occupancy of 61 percent. The most expensive hotel room sold for CAD 1,185.69 and the least expensive was 11.20 (see Exhibit 2). For each hotel, we also collected data on size, ownership style, and class. Size is separated into four categories, as follows: (**1**) less than 75 rooms, (**2**) 75–149 rooms, (**3**) 150–299 rooms, and (**4**) greater than 300 rooms. Ownership style is separated into the following three categories: (**1**) chain management, (**2**) franchise, and (**3**) independent. Finally, we separated the hotels into the following five product categories: (**1**) upscale, upper upscale, and luxury; (**2**) midscale with food and beverage; (**3**) midscale without food and beverage; (**4**) economy; and (**5**) independent (see Exhibit 3).

Methodology and Empirical Findings

We first perform single and multiple regression analyses on our pooled data to test the strength of the relationship between changes in the exchange rate and changes in operational variables. Our single regression equation is as follows:

$$Op = Int + \beta_{Fx}(Fx) + \varepsilon$$

The dependent variable *Op* (operational variable) represents the change in RevPAR, ADR, or occupancy. *Int* is the intercept term and ε is the error term of the regression. They are not presumed to equal zero. *Fx* is the primary independent variable in our analysis and represents the change in exchange rates (again, quoted as CAD/USD). Thus, a negative *Fx* would mean that the CAD is appreciating. β_{Fx} is the coefficient which measures the relationship between the dependent and the independent variables. Positive β_{Fx} implies that when *Fx* increases (that is, the CAD weakens), operational variables also increase (i.e., operations improve). This direction of co-movement forms our hypothesis.

Single regression results are presented as the first test under each of the three headings (*RevPAR, ADR,* and *Occupancy)* in Exhibit 4, on the next page. Coefficients appear first, with *p*-values presented in parentheses below each coefficient. We find that all three operating variables are positively related to *Fx*, a finding that is statistically significant at the 99-percent confidence level in each case. For example, the coefficient for RevPAR in the single regression is 1.7613. This coefficient implies that when the exchange rate increases by 1 percent (the CAD depreciates by 1%), RevPAR in Canada

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[13] Datastream Corporation, www.datastream.net.

EXHIBIT 4

Regression results: Change in currency values vs. operational variables

	Fx	r	m	i	R^2
RevPAR					
Coefficient	1.7613				0.0557
(P-Value)	(0.0000)				
Coefficient	0.4860	-1.1064	-0.4291	0.0013	0.1637
(P-Value)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	
ADR					
Coefficient	0.5922				0.0672
(P-Value)	(0.0000)				
Coefficient	0.1168	-0.4530	-0.1683	0.0011	0.2603
(P-Value)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	
Occupancy					
Coefficient	1.3046				0.0489
(P-Value)	(0.0000)				
Coefficient	0.4375	-0.7393	-0.2171	0.0004	0.1256
(P-Value)	(0.0000)	(0.0000)	(0.0000)	(0.0001)	

increases by 1.7613 percent on average. In other words, even though the CAD is weakening, RevPAR increases sufficiently to offset the change. As is indicated by positive coefficients for ADR and occupancy, this rise in RevPAR is likely to arise from increases in both ADR and occupancy. These results are consistent with aforementioned assumptions made in Operational hedge 1, presented in the Exhibit 1.

Multiple regression analyses include additional economic factors that may affect hotels' operational variables. We include the following three economic variables: change in the two-month treasury rate (*r*), stock market index return (*m*), and inflation (*i*).

$$Op = Int + \beta_{Fx}(Fx) + \beta_r(r) + \beta_m(m) + \beta_i(i) + \varepsilon$$

These results appear as the second set of results under each heading in Exhibit 4. Although coefficients for *Fx* are not as large as they are in single regressions, they are again positive (0.4860 for RevPAR, 0.1168 for ADR, and 0.4375 for occupancy) and significant at the 99-percent confidence level. Results imply that when the CAD depreciates by 1 percent against the USD, even when controlling for economic variables, RevPAR increases by 0.4860 percent.

Results are also highly significant for all three economic variables. The coefficients on *r* are negative (-1.1064 for RevPAR), implying that when interest rates decrease, operational variables increase. This may be explained by the substitution effect. When interest rates are low, investments and savings become less attractive and consumption becomes

more attractive. Increased consumption in the economy may lead to stronger demand for hotels. Similarly, coefficients on *m* are also negative (-0.4291 for RevPAR), which means that when the stock market is weaker, operational performance improves.

This phenomenon may be explained by the countercyclical nature of wealth. Poterba observed a lag between stock market booms and a resulting increase in consumption.[14] Poterba suggested that by the time consumption reflects investors' gains in the stock market (and their resulting feelings of wealth), the stock market is often heading into another slump. Coefficients on *i* are positive (0.0013 for RevPAR), which means that when price levels increase, RevPAR also increases slightly. Since ADRs are likely to rise when price levels in the economy rise, this result is not surprising. On balance, we conclude that the inclusion of economic control variables does not change our main finding that operational performance is positively related to changes in exchange rate.

Split-sample Category Regressions

We ran each test on each group of hotels to see whether hotels with different characteristics react differently to changes in exchange rate, with regression results presented in Exhibits 5, 6, and 7. RevPAR is the operational variable presented in these tables, but we also performed these analyses using

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[14] James M. Poterba, "Stock Market Wealth and Consumption," *Journal of Economic Perspectives*," Vol. 14. No. 2 (2000), pp. 99-118

EXHIBIT 5

Regression results: Size-split data

	Fx	r	m	i	R^2
<75 rooms					
Coefficient	1.7370				0.0536
(P-Value)	(0.0000)				
Coefficient	0.4665	-1.1034	-0.4278	0.0012	0.1607
(P-Value)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	
75-149 rooms					
Coefficient	1.7504				0.0550
(P-Value)	(0.0000)				
Coefficient	0.4718	-1.1137	-0.4519	0.0014	0.1651
(P-Value)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	
150-300 rooms					
Coefficient	1.8004				0.0584
(P-Value)	(0.0000)				
Coefficient	0.5292	-1.0949	-0.4167	0.0012	0.1635
(P-Value)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	
>300 rooms					
Coefficient	1.8161				0.0591
(P-Value)	(0.0000)				
Coefficient	0.5333	-1.1038	-0.3477	0.0011	0.1627
(P-Value)	(0.0013)	(0.0000)	(0.0003)	(0.0078)	

ADR and occupancy as the variable with qualitatively identical findings. (Those results are available upon request.)

As shown in Exhibit 5, we confirm a strong relationship between currency and RevPAR, but we also find that this relationship strengthens as the hotels increase in size. For a hotel with less than 75 rooms in this sample, a 1-percent increase in the exchange rate leads to a 0.4665-percent increase in RevPAR (1.7370% if we do not control for macroeconomic variables). For a hotel with more than 300 rooms, that RevPAR increase would be 0.5333 percent (1.8161% without macroeconomic controls). This finding demonstrates that larger hotels are more sensitive to fluctuations in exchange rates, consistent with our previous conjecture that larger hotels may be more strongly affected because they attract a larger international clientele.

Ownership style. With a coefficient of 0.5363 (1.8063 without macroeconomic controls), chain hotels' RevPAR appears to be more sensitive to changes in *Fx* than is franchised hotels RevPAR (coefficient = 0.4716 with macroeconomic controls or 1.7483 without, see Exhibit 6, overleaf). Again, we think it likely that chain hotels have a larger international traveler base. Perhaps more important, however, is

the notion that managers of chain hotels may have higher incentives to actively manage room rates in a changing currency environment, since their performance evaluations may be linked to post-translation profits. Owner–managers of franchised hotels, on the other hand, are unlikely to concern themselves with anything but CAD-denominated profits since they have no explicit need to translate profits to USD. As the result, franchised hotels may be less sensitive to changes in the exchange rates. Puzzlingly, independent hotels have the highest coefficient of all, 0.5872 (1.8580 without macroeconomic controls). Considering that independent hotels should be the least likely to attract international travelers, one might expect independent hotel owners to be relatively insensitive to exchange rate changes. To explain this finding, we must examine the final variable, class categorization, which proves to be a confounding variable in this regard.

Class categorization. Notable in the class results shown in Exhibit 7, overleaf, is that economy hotels are most sensitive to changes in exchange rates (β_{Fx} of 0.4959 with macroeconomic controls or 1.7704 without). Midscale hotels were second—β_{Fx} of 0.4652 (controlled) or 1.7288 (uncon-

EXHIBIT 6

Regression results: Ownership style-split data

Category	Fx	r	m	i	R^2
Chain					
Coefficient	1.8046				0.0586
(P-Value)	(0.0000)				
Coefficient	0.5363	-1.0965	-0.3483	0.0012	0.1603
(P-Value)	(0.0016)	(0.0000)	(0.0004)	(0.0045)	
Franchised					
Coefficient	1.7483				0.0546
(P-Value)	(0.0000)				
Coefficient	0.4716	-1.1086	-0.4438	0.0013	0.1634
(P-Value)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	
Independent					
Coefficient	1.8580				0.0636
(P-Value)	(0.0000)				
Coefficient	0.5872	-1.0893	-0.3437	0.0007	0.1685
(P-Value)	(0.0011)	(0.0000)	(0.0012)	(0.1173)	

trolled) for those with food and beverage and 0.4645 or 1.7239 for those without. Finally, the high-end hotels were least sensitive (β_{Fx} of 0.4525 with controls or 1.7192 without). While these differences are more modest than those of the other two categorization criteria, the pattern might be better understood through an examination of the tourist profile. In 2005, close to ten million tourists visited Canada for leisure purposes, while business travelers numbered 2.6 million.[15] Since leisure travelers are more price sensitive than corporate travelers, it would be not surprising that economy hotels captured more international leisure travelers, who are particularly price sensitive, resulting in a higher level of exchange rate sensitivity for economy hotels. Once again, independent hotels have the highest coefficient of all, 0.7436. It could be the case, then, that independent hotels tend to be the most economical hotels and, hence, cater to guests who are more sensitive to changes in USD-denominated prices. Without knowing the precise breakdown of independent hotels, however, we are unable to confirm or reject this conjecture.

In any event, we have documented that, regardless of a hotel's size, ownership style, and class, there is a strong relationship between currency value and RevPAR. In particular, when currency weakens, operational variables improve, creating offsetting effects. However, these effects are not uniform across hotels of different size, ownership style, or class specifications.

[15] World Tourism Organization, *op.cit.*

Conclusion and Managerial Implications

This study confirms the offsetting nature of hotel rates and currency fluctuations. For hotels, exposure to currency risk may be significantly reduced or eliminated through operational hedging, which is the result of traditional revenue management practices and naturally occurring changes in tourism demand. This phenomenon has been noted in several countries (and currencies), in studies of the hotel industry as a whole. In this study, we compiled individual data from 1,032 hotels in Canada for a period of over two and one-half years. Our results were the same as those of the other studies. After controlling for the impact of other important economic variables, virtually all foreign exchange exposure may already be accounted for and eliminated through the offsetting effects of hotel rate changes.

For the average Canadian hotel in this study, all else equal in the economy, when the local currency weakens by 10 percent, occupancy rate should be expected to increase by about 4.4 percent. Given the reduced "real" cost, revenue management will allow operators to enjoy a further increase in nominal ADR of about 1.2 percent. As a result, profitability increases will offset virtually all losses incurred by repatriating earnings in the weakened currency environment. In fact, we find that if as little as 10 percent of a hotel's total costs are fixed, currency translation losses incurred will be entirely offset by improvements in profitability. No hedging will be required.

EXHIBIT 7

Regression results: Class-split data

Category	Fx	r	m	i	R^2
> Upscale					
Coefficient	1.7192				0.0554
(P-Value)	(0.0000)				
Coefficient	0.4525	-1.1458	-0.3887	0.0015	0.1656
(P-Value)	(0.0001)	(0.0000)	(0.0000)	(0.0000)	
Midscale w/ F&B					
Coefficient	1.7288				0.0537
(P-Value)	(0.0000)				
Coefficient	0.4652	-1.1072	-0.4595	0.0014	0.1627
(P-Value)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	
Midscale w/out F&B					
Coefficient	1.7239				0.0532
(P-Value)	(0.0000)				
Coefficient	0.4645	-1.1009	-0.4580	0.0014	0.1602
(P-Value)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	
Economy					
Coefficient	1.7704				0.0560
(P-Value)	(0.0000)				
Coefficient	0.4959	-1.0994	-0.4379	0.0012	0.1637
(P-Value)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	
Independent					
Coefficient	1.9751				0.0726
(P-Value)	(0.0000)				
Coefficient	0.7436	-1.0236	-0.1988	-0.0001	0.1696
(P-Value)	(0.0008)	(0.0000)	(0.1457)	(0.8439)	

Hotels with a substantial proportion of fixed costs will require even smaller improvements in profitability to avoid hedging. Because the largest hotels will see relatively great improvements in occupancy, their profits are more responsive to changes in currency strength than those of the small hotels. Small hotels will need to increase ADR by about 1.4 percent, whereas the largest hotels need only to increase ADR by 0.7 percent. By the same token, chain hotels are more responsive to currency changes than franchise hotels are, and economy hotels are more responsive than are upscale hotels. Independent hotels are by far the most sensitive of all, and require virtually no increase in ADR to offset weakening local currency.

It is most important to note that these results obtain in the normal course of business. Occupancy responds positively to decreasing translated costs to travelers. ADRs increase via the process of revenue management. Neither of these require hotels to implement new or additional policies. Indeed, the effectiveness of operational hedging suggests that the need for multinational hotel companies to hedge using financial instruments is considerably reduced. Indeed, any additional financial hedging may serve to overcompensate and even add additional risk over and above that experienced by operations. Financial managers would be well served to review hedging policies and carefully reconsider the use of financial options as hedging tools. Given differences in size, ownership style, class, customer breakdown, and other variables, each hotel firm would need to follow its own specific approach. ■

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