6. Predictors of Business Victimisation

The descriptive analyses performed so far suggest that business size was a major predictor of victimisation, but that, for some crime types, business sector and city also had some effect. Because the proportions of businesses of different sizes involved in various sectors of activity differ across the four cities, it is necessary to control for sector and size effects in order to present a valid picture of city effects, if any exist. In this chapter, we try to disentangle the relative impact of four factors—business size, sector of activity, location of premises, and city— on business victimisation by conducting a series of logistic regressions. We describe first how we constructed a business size scale that takes into account the number of employees, but also other indicators. Then, we examine the most likely predictors for each type of victimisation. Finally, we summarise what the ICBS revealed about risks of victimisation against business in China.

Business Size Scale

Three of the ICBS measures were used to construct a business size scale: 1) size of workforce, 2) number of sectors of activity in which each business was operating, and 3) single versus multiple premises. Each item forming the scale was coded and scores were added up to form a business size scale that could range from three (very small) to 13 (very large). Since the three indicators used to construct the scale have been described in Chapter 3, we summarise only the coding scheme below and present details in Table 6.1.

- Size of workforce: the number of full and part-time employees was available for 95.2 per cent of the sample (N = 4867 businesses). Six categories were created—from very small to very large business.

- Number of sectors of business activity: 10 sectors of activity were recorded in the dataset—manufacturing, non-food retail, food retail, wholesale, distribution, financial services, professional services, sub-branch, head office, and other unspecified sectors. At least one main sector of activity was available for all businesses. In addition, some indicated that the company operated across several sectors (up to four) and these were recorded.

- Number of premises: data were available for 98.7 per cent of the sample. Three categories were created.

The three measures were positively and significantly correlated (Table 6.2). Missing values on the variables of size of workforce and number of premises

were replaced with the means calculated by city and sector. We tried to include some measure of turnover in the business size scale, but with more than two-thirds of data missing, it was not possible to create a meaningful measure. The computed business size scale ranged from three to 13 (mean = 5.7, median = 6). Confirming previous results, the average size of businesses in Hong Kong was significantly smaller on the scale (4.35) than business size in Shanghai (6.65), Shenzhen (6.73) or Xi'an (6.11).

Table 6.1 Three Business Size Measures

	Code	N employees	Size of business	%
Size of workforce	1	1 to 5	Very small	27.0
	2	6 to 10	Small	14.8
	3	11 to 49	Medium	29.8
	4	50 to 250	Medium-large	20.3
	5	251 to 750	Large	4.9
	6	751 and more	Very large	3.2
	Code	**N sectors of activity**	**Size of business**	**%**
Sectors of activity	1	1	Small	55.3
	2	2	Medium	32.5
	3	3	Medium-large	8.6
	4	4 or more	Large	3.6
	Code	**N premises**	**Size of business**	**%**
Number of premises	1	One premise at the surveyed location	Small	63.8
	2	Other premises in HK *or* the mainland	Medium	28.9
	3	Other premises in *both* HK and mainland	Large	7.3

Table 6.2 Correlations Between Three Business Size Measures

(N = 5117)	N sectors	N premises
N employees	0.177***	0.293***
N sectors		0.157***

*** $p < 0.001$

Business Size and Victimisation

Using the business size scale, we ran a series of *t*-tests to examine whether there were significant differences between the average size of businesses that had been victimised and those that had not (Table 6.3). Although differences are not large, the overall pattern confirms previous analyses that for most common and non-conventional types of crime the risk of victimisation increases with the size of the business. For example, the average score on the business size scale

for companies that had been victims of any common crime was 6.03, compared with 5.71 for non-victimised companies ($p < 0.001$). The largest differences were found for theft by employees (score of 6.95 for victimised versus score of 5.71 for non-victimised companies, $p < 0.001$) and Internet-related fraud (score of 6.9 for victimised versus score of 5.69 for non-victimised companies, $p < 0.001$).

Table 6.3 Business Size and Victimisation Prevalence: *t*-tests on business size scale by type of victimisation

	Victimised?	N	Mean size on scale	Mean difference	*t*-test
Any common crime	Yes	328	6.03	0.31	2.80**
	No	4789	5.71		
Burglary	Yes	186	6.34	0.63	4.31***
	No	4931	5.71		
Vandalism	Yes	94	6.35	0.63	3.06**
	No	5023	5.72		
Vehicle-related crime	Yes	57	6.51	0.79	3.02**
	No	5060	5.72		
Theft by employees	Yes	93	6.95	1.24	6.07***
	No	5024	5.71		
Theft by customers	Yes	89	5.23	-0.52	2.46*
	No	5028	5.74		
Theft by outsiders	Yes	159	6.39	0.68	4.30***
	No	4958	5.71		
Violent crime	Yes	59	6.58	0.86	3.34**
	No	5058	5.72		
Other common crimes	Yes	50	6.13	0.40	1.44
	No	5067	5.73		
All fraud	Yes	687	6.01	0.32	3.97***
	No	4430	5.69		
Fraud by employees	Yes	187	6.34	0.63	4.31***
	No	4930	5.71		
Fraud by outsiders	Yes	407	5.57	-0.18	1.80
	No	4710	5.75		
Internet-related fraud	Yes	177	6.90	1.20	8.07***
	No	4940	5.69		
Bribery	Yes	312	6.57	0.89	7.85***
	No	4805	5.68		
Extortion	Yes	116	5.88	0.15	0.81
	No	5001	5.73		
IP and copyright violation	Yes	312	6.62	0.94	8.26***
	No	4805	5.68		

*$p < 0.05$ **$p < 0.01$ ***$p < 0.001$

Theft by customers, however, was a notable exception to the general model. For this type of crime, the pattern is reversed and smaller businesses were more likely to be victims (score of 5.23 for victimised versus score of 5.74 for non-victimised companies, $p < 0.05$). Small and non-significant differences in average business size were found for fraud by outsiders and extortion, suggesting that small and large businesses were equally likely to be targeted.

Predictors of Business Victimisation

The previous analysis confirmed that, for many of the crimes surveyed, business size was a major predictor of victimisation; however, we saw previously that business sector, city and, to some extent, the location of the business premises also had some effects. To estimate the relative impact of these four factors in each type of crime, we conducted binary logistic regressions—a statistical technique appropriate for dichotomous dependent variables, such as the incidence of victimisation. Variables were introduced by block-wise entry in the following order: 1) business size, using the scale as a continuous variable; 2) main sector of business activity; 3) location of premises; and 4) city. To assess the impact of each of the four factors, we examine the Nagelkerke R-squared at each step (or block) of the regression analysis.[1] Table 6.4 presents the amount of variance explained by each predictor for each type of victimisation.

Although the overall model is significant for the majority of the types of crime considered (apart from vandalism and vehicle-related crime), the four predictors together do not explain a great amount of variance. The highest amount is 14.9 per cent for theft by customers and the lowest is 2.1 per cent for fraud by outsiders. In the majority of the regression analyses, size and sector account for more variance than city or location of premises, although there are some exceptions. We review below the summary diagnostics for each type of victimisation.

Predictors of Victimisation by Type of Crime

Burglary

About half of the variance explained (1.3 per cent) is accounted for by the size of the business, and another third by a small sector effect, with wholesaling and trading businesses less likely to be burgled than those in other sectors.

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1   Nagelkerke R^2 is a pseudo-R^2, which attempts to quantify the proportion of explained variance in the logistic regression model in a way similar to the R^2 in linear regression, although the variation in a logistic regression model must be defined differently.

Vandalism

There is a small effect of business size (1 per cent of the variance explained). It is likely the effect is not strong because, as we have seen before, businesses of medium to large size were the ones most at risk of vandalism, not the very large ones.

Theft of and from Vehicle

Nearly half of the total 2.7 per cent variance explained is due to the effect of business size, with other factors contributing negligible amounts. It is probable that larger businesses owned a larger fleet of vehicles than smaller ones, and therefore were more at risk of theft of and from vehicles.

Theft by Employees

Compared with other types of crime, here, a higher amount of variance is explained by the four factors combined (7.9 per cent). Half of that variance (3.9 per cent) is due to the size of the business, with larger businesses at greater risk of theft by employees. Another 1.8 per cent and 1.1 per cent are explained by the city and the location of the premises, respectively. Businesses in Hong Kong and Shenzhen were at more risk compared with those in Shanghai and Xi'an; however, companies located in serviced buildings that provided for small business tended to be relatively better protected from theft by employees.

Theft by Customers

Nearly 15 per cent of variance (the highest proportion among all crime types) is explained by the four factors. In contrast with most of the other crimes, for theft by customers, the size of the business did not have a significant effect (0.8 per cent of variance explained, n.s.), and this is because both the smallest and the largest businesses were more likely to be targeted. Not surprisingly, more than half the variance (9 per cent) is explained by the sector of activity, with retail shops significantly more likely to become victims of theft by customers. The location of the premises adds another 2.9 per cent of variance explained, and, consistent with the previous finding, businesses located in indoor and outdoor shopping areas were more prone to theft by customers. Finally, there was a small city effect (2.2 per cent of variance explained), with Hong Kong businesses more at risk of theft by customers.

Theft by Outsiders

Business size and sector each explain 1.4 and 1.3 per cent of variance respectively; larger businesses were significantly more at risk of theft by outsiders, but wholesalers and traders were least likely to be targeted. There are no significant location or city effects, each accounting for less than 1 per cent of variance.

Robbery and Assault

For these two violent crimes, the city effect is the strongest, with 4 per cent of variance explained. The city effect accounts for more than half the total variance explained (6.6 per cent). Violent crime, particularly robbery, was significantly more prevalent in Shenzhen, but rare in Shanghai. It was also more likely to target larger businesses (1.7 per cent of variance is explained by business size).

Fraud by Employees

Less than 3 per cent of variance is explained by the four factors combined, and nearly half (1.3 per cent) by the effect of business size. Like many of the other types of crime, the risk of fraud by employees increased with the size of the business. It is likely that larger businesses offer more opportunities for fraud and reduced chances of detection among a large workforce. It is to be expected that the location of the premises does not explain much variance, because this is an offence committed 'from the inside', regardless of location.

Fraud by Outsiders

Most of the variance explained (only 2.1 per cent overall) is accounted for by two factors: city and sector. Fraud by outsiders was significantly lower in Shanghai. While wholesalers and traders were relatively protected from theft by outsiders, they were, however, particularly prone to fraud by outsiders, although sector explains only 0.7 per cent of variance. It is not surprising that traders were prone to being defrauded, since their activity is based on a large number of transactions.

Internet-Related Fraud

Again, business size (risks increasing with business size) is the main predictor of Internet fraud and accounts for 4.4 per cent of variance explained. In addition, there are some city effects, with a higher prevalence in Shenzhen and Xi'an, but a significantly lower prevalence in Hong Kong.

Bribery

More than half the variance is accounted for by business size (3 per cent of 5.8 per cent total variance explained) and another 1.8 per cent by the city, with bribery particularly prevalent in Xi'an. Retailers were the least likely to be asked for a bribe, although the effect is small (0.7 per cent of variance explained).

Extortion and Intimidation

Overall, 5.8 per cent of variance is explained by the four factors, but city (3.2 per cent) and sector (2 per cent) are the main predictors. Businesses in Hong Kong and Shenzhen were most at risk of extortion. Again, wholesalers and traders seemed somewhat protected. Size had a negligible (0.1 per cent) effect.

IP and Software Copyright Infringement

The size of the business is the strongest predictor of victimisation, accounting for 3.3 per cent of variance explained, with the larger companies more at risk. There is also a sector effect (1.4 per cent of variance explained) and a city effect (0.9 per cent of variance). Retailers had a significantly lower risk of victimisation than other sectors, particularly manufacturing and financial and professional services. Unlike manufacturers and designers, who own patents and trademarks, retailers rarely own IP rights over the products they sell. The prevalence of IP and copyright violation was lowest in Hong Kong and Shanghai. Hong Kong generally has stronger laws and enforcement mechanisms against this type of crime than the mainland.

Table 6.4 Stepwise Logistic Regression with Four Predictors of Business Victimisation: Variance explained at each step and overall

Predictor of victimisation[a]	STEP 1 Size[b]	STEP 2 Economic sector[c]		STEP 3 Location of premises[c]		STEP 4 City[c]		OVERALL MODEL	H-L (df), p[d]
Type of victimisation									
Any common crime[e]	0.4***	1.2*	Retail (+)	0.6*	All shopping areas (+)	1.7***	HK/Shenzhen (+)	3.9***	8.45 (8), p=0.39
Burglary	1.3***	1.0*	Wholesaling (-)	0.1		0.1		2.5***	6.33 (8), p=0.61
Vandalism	1.0**	0.5		0.4		0.5		2.4*	8.10 (8), p=0.42
Theft of and from vehicle	1.5*	0.5		0.5		0.2		2.7	20.10 (8), p=0.01
Theft by employees	3.9***	1.1		1.1*	Serviced buildings (-)	1.8**	HK/Shenzhen (+)	7.9***	10.90 (8), p=0.21
Theft by customers	0.8	9.0***	Retail (+)	2.9***	All shopping areas (+)	2.2**	HK (+)	14.9***	16.42 (8), p=0.04
Theft by outsiders	1.4***	1.3*	Wholesaling (-)	0.5		0.5		3.7***	6.00 (8), p=0.68
Robbery & assault	1.7**	0.6		0.3		4.0**	Shenzhen (+) Shanghai (-)	6.6***	5.87 (8), p=0.66
Other common crimes	0.4**	0.1		1.0		3.3**	HK (+)	4.8**	8.01 (8), p=0.43
Fraud by employees	1.3***	0.1		0.0		0.8*	HK (+)	2.2**	6.39 (8), p=0.60
Fraud by outsiders	0.2	0.7**	Retail/ Wholesaling (+)	0.2		1.0***	HK (+) Shanghai (-)	2.1***	14.05 (8), p=0.08
Internet-related fraud	4.4***	0.4		0.3		1.3***	HK (-)	6.4***	5.99 (8), p=0.65
Bribery	3.0***	0.7*	Retail (-)	0.3		1.8***	Xi'an (+)	5.8***	8.99 (8), p=0.34
Extortion	0.1**	2.0*	Wholesaling (-)	0.5		3.2***	HK/Shenzhen (+)	5.8***	5.46 (8), p=0.71
IP and SW copyright violation	3.3***	1.4***	Retail (-)	0.5**	Serviced buildings (-)	0.9**	HK/Shanghai (-)	6.1***	7.95 (8), p=0.44

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Notes: [a] Each column indicates the amount of variance explained by the single variable entered at that step; the amount of variance explained is estimated using the Nagelkerke R^2; [b] size based on the business scale as a continuous variable; for business size, all statistically significant relationships indicate that business size and risks of victimisation are positively associated; [c] (+) indicates higher risks of victimisation, (-) lower risks of victimisation; [d] the Homer–Lemeshow (H-L) statistic is a goodness-of-fit test, which assesses the fit of a logistic model against the actual outcomes; a statistically non-significant (that is, $p \geq 0.05$) H-L test suggests that the model fits the data well; [e] includes burglary, vandalism, theft of and from vehicle, theft by employees, customers and outsiders, robbery, assault and threats, and other common crimes.

Summary of Predictors of Victimisation

One of the main findings of the China ICBS is that the size of a business is the strongest predictor of victimisation for most types of common and non-conventional crimes, apart from theft by customers, which was more prevalent in small retail businesses. Two sectors of activity were associated with the risk of victimisation: the retail sector was particularly prone to theft by customers, and the wholesaling sector was somewhat protected from crime apart from fraud by outsiders, which was more prevalent in that sector. Finally, some city effects were present: overall, victimisation was higher in Shenzhen, particularly for violent crime, but not for theft by customers. The latter was most frequent in Hong Kong, probably because of the high proportion of retailers in this city.

The general pattern between business size and victimisation suggests that targets that provided more opportunity for gain were more likely to be victimised. This pattern fits well with the principles of opportunity/situational theories: a suitable attractive target and the absence of capable guardians are parts of the alchemy of victimisation. Situational theories might have better explanatory power when approached from a victimisation rather than an offending perspective. This is because the situational crime-prevention approach merely postulates the presence of a motivated offender and does not attempt to determine the offender's specific motivation or what causes motivation to commit crime (Clarke 1997). An examination of some of the sector/victimisation prevalence patterns (Table 6.4) further supports an opportunity-theory interpretation of the data. For instance, customer theft was more prevalent against retailers than any other type of business; and it was also more prevalent against small businesses, which were less likely to have implemented anti-shoplifting measures. Theft by customers was rare in the manufacturing sector where customers were more likely to be other manufacturers, wholesalers or retailers. On the other hand, manufacturers were more likely to be the victims of burglary. They stock large amounts of goods and materials, and their premises were generally located in industrial zones away from the 'public eye' of more populated residential areas, which made them more attractive targets for burglars.

The wholesaling and trading sector was particularly at risk of fraud by outsiders, but not theft by outsiders. This pattern is also consistent with a situational theory of victimisation: wholesale and trading companies, although they were not particularly large businesses, were likely to perform a large number of business transactions, some of them complex, but rarely involving cash payments. They offer an attractive target for fraud by a third party. The businesses' sector of activity, however, only partly explains victimisation, as Shanghai had a similar proportion of wholesale businesses to the other mainland cities, yet its rate of fraud was lower. Situational factors can also account for the low rate of fraud by employees in very small businesses (up to five employees).

Businesses run by family members probably constituted a large proportion of such small businesses. Also a small business with fewer employees allows for a degree of intimacy that could offer some protection against fraud by insiders because working in close contact in such businesses would make it difficult to defraud the business without being noticed.

An interesting pattern of victimisation emerges when looking at bribery/corruption and extortion/intimidation. Broadly, the mainland cities reported a higher prevalence of bribery than Hong Kong, but businesses in Hong Kong and Shenzhen were more prone to extortion. Shenzhen presented high rates of both bribery and extortion. Bribery tended to target larger businesses predominantly in the manufacturing sector, and these were more likely to be located in mainland China, particularly Shenzhen. Bribery was also common in Xi'an, but unlike in Shanghai and Shenzhen, where people from other businesses were the ones soliciting bribes, the majority of perpetrators in Xi'an were government and public officials. This is likely linked to the characteristics of Xi'an: an inland, relatively isolated city, dominated by state-owned enterprises and where the traditional values of the Communist Party have retained more influence than in Shanghai or Shenzhen. The lower level of bribery/corruption in Hong Kong, on the other hand, is the result of the Government's anti-corruption efforts, particularly the proactive Independent Commission Against Corruption (ICAC), which has focused on both government and corporate acts of corruption. This result is consistent with the results from the 2005 Hong Kong UNICVS, in which respondents reported no incidents of corruption.

The size of the business was not significantly correlated to the prevalence of extortion/intimidation, but the sector was, with retailers and, to some extent, financial services more at risk. A sector effect is not sufficient to explain that pattern, as Shanghai had a comparable proportion of retail businesses to Hong Kong, yet, extortion was infrequent in Shanghai. The two cities of Shenzhen and Hong Kong are located close to each other. The border between Hong Kong SAR and the PRC is fairly porous, and we know the Hong Kong triads have expanded their activities in southern China. Therefore, we speculate that the higher prevalence of extortion/intimidation among Hong Kong and Shenzhen businesses is linked to the involvement of organised crime and triad societies.