

# FINANCE

CASE

Presented by



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## Verre Design Inc.

*NOTE: This case illustrates a fictitious situation involving Verre Design Inc. The comments and questions presented are exclusively attributable to the authors and do not in any way entail the responsibility of Verre Design Inc.*

### The Transfer of Ownership of Verre Design Inc.

Verre Design Inc. is a family business that was founded by Gaétan Charpentier in 1990. Verre Design specializes in thermoformed glass of all kinds: glass staircases, glass shower doors, countertops, glass walls, curved glass, etc. They produce unique pieces based on residential and commercial customers' specifications. Verre Design Inc. only has two employees: Gaétan Charpentier, and his son Alexandre, who work part-time.

Gaétan is the sole shareholder of the company and works one day a week. Since Alexandre has started working at Verre Design Inc., Gaétan has gradually entrusted him with the responsibility of production as he continues to take care of customer service. The customers are mainly construction contractors.

Gaétan does not pay himself for the time he spends working at Verre Design Inc. To make a living, Gaétan works 4 days a week at a job that pays him \$70,000 yearly. If possible, Gaétan is considering fully retiring by next year. If that were to happen, he would like to sell all his shares of Verre Design to his son, Alexandre.

As for Alexandre, he is interested in taking over the business, but has not accumulated enough savings to buy his father's business yet. Furthermore, he does not want to spend a huge amount of money to acquire the business, since he could then be indebted and financially burdened for several years.



## The Sale Price of Verre Design Inc. Shares

Gaétan and Alexandre have been discussing the transfer of ownership of the company's shares for more than a year, but unfortunately have not been able to find a solution that seems adequate for them both. In fact, last week's discussions showed an even greater divergence of views than the previous year.

On the one hand, Gaétan wishes to secure a price that reflects the value of the business he has created, notably to ensure his retirement is secure. According to Gaétan, the value of Verre Design has been increasing significantly in recent years. In 2018, net earnings for the company were just over \$46,000 while in 2019 net<sup>1</sup> earnings increased to \$85,000 and the forecast for 2020 is over \$100,000. Everything suggests that this trend will continue and that profits will be over \$200,000 for the year 2022, that is, within the next two years.

According to Gaétan's calculations, with a net profit of \$100,000 in 2020 and \$200,000 in 2022, Verre Design Inc. is probably worth \$2,000,000 today.

Gaétan reiterates that he does not wish to take any risk with his retirement money. He also mentions that he will invest the money he will get from selling the company in government bonds, whose interest rate is currently only 1%. Gaétan calculates that even with 2,000,000 invested at 1%, he will only earn \$20,000 of interest per year during his retirement. This scenario does not take into account the taxes that Gaétan will have to pay on the capital gain related to the sale of his shares, of which the tax cost is \$0.

Gaétan points out that he has no RRSP since he has always said that his Verre Design shares would represent the whole of his retirement money. He also notes that according to the information he gathered on the Retraite Quebec site, he will be entitled to a pension of \$10,000 annually from age 65, due to his RRQ contributions from his other employment.

Gaétan, believes that with \$20,000 of interest (1% interest on the sale price of 2,000,000 worth of his shares) starting at age 60 and the \$10,000 from the RRQ starting at age 65, he does not have much to go on for his retirement. Gaétan is used to living on an annual salary of \$70,000. He

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<sup>1</sup> See Appendix A for the 2018 and 2019 financial statements.



would like to retire, but he is worried and does not want to be forced to drastically lower his standard of living. Even though he is already 60 years old, he probably has more than 25 years to live since he is in very good health.

For his part, Alexandre has only \$80,000 in savings which are currently invested in a balanced pooled fund at IG Wealth Management. This is a far cry from the \$2,000,000 his father wants.

Alexandre understands his father's situation, but he really does not want to drown in debt for 20 years because he bought the company he works for, especially since he devotes more time to it than his father. In fact, Alexandre works two days a week at Verre Design while Gaétan only spends one day a week at the company.

Alexandre turned 30 last year and points out that he has been working at Verre Design for 10 years. Alexandre's current salary is close to \$30,000 annually<sup>2</sup> for the two days a week he works there. The agreement is that if he moves to 3 days a week at Verre Design, his annual salary will increase to \$45,000.

Alexandre points out that he has contributed to the growth of Verre Design's profits. Moreover, he specifies that the net profit forecasted at \$200,000 within 2 years will only be possible if he works 3 days a week at Verre Design. Alexandre believes that without him, Verre Design's future growth will be closer to 0% with a stable net profit of around \$100,000. For Alexandre, it seems unfair to pay more for Verre Design when it is thanks to him that the net profit objective of \$200,000 for 2022 will be reached. When Alexandre mentioned this point to his father, his answer was:

"I already pay you an annual salary of \$30,000 for only 2 days a week. It's a very respectable salary. I would like to remind you that my salary is \$0 for one day of work, even though I am the president and founder of the company."

Alexandre admits that a \$30,000 annual salary to work 2 days a week is respectable and that if he were to be hired by a competitor, his salary would not be higher.

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<sup>2</sup> See the "Wages and social security charges" line in the 2019 financial statements.



As for future growth, Gaétan specifies that Verre Design does not advertise and that all growth (both past growths and the prediction that they will reach \$200,000 in net income in 2022) comes solely from the word of mouth of satisfied customers. Gaétan admits that if Alexandre works only two days a week, it will not be possible to achieve a profit of \$200,000. Alexandre must increase the pace to 3 days a week (for an annual salary of \$45,000) to achieve this. Alternatively, an apprentice would have to be hired and trained to be able to increase production. Gaétan certainly has the skills to train a new employee, but he does not really have the time and prefers to take care of his customers. He would prefer that Alexandre trains an apprentice if he would rather hire an employee than work 3 days a week.

Alexandre is interested in buying the shares in order to continue Verre Design's activities, but he would not be paying \$2,000,000 because it would bury him in debts for a long period of time. Two million is far too much for a company whose highest net profit since it was founded stands around \$85,000 (in 2019) despite the fact that Gaétan does not pay himself any salary. Bruno, one of Alexandre's acquaintances, bought the shares of a small company similar in size to Verre Design Inc. for only 5 times the amount of their last year's net profits. That would correspond to \$425,000 (= 5 x \$85,000) for all of Verre Design Inc.'s shares.

This is very far from the \$2,000,000 Gaétan is asking for and anyhow there is no way Alexandre would have access to that amount of money. He currently only has \$80,000 in savings and when he discussed the matter with his bank, his advisor told him that the bank could not lend him more than \$400,000 and would have to require all possible personal guarantees. His advisor explained to him that the bank prefers to lend money to buy a home with a mortgage guarantee, not to buy shares. To limit the risk they are taking, the bank will not go over \$400,000 and the interest rate would be 6%.

Struggling with discussions that do not seem to be moving forward despite his good intentions, Alexandre asks for your advice to help him make the right decision. He asks you to take into account the two divergent points of view in order to find a compromise:

1. What purchase price would you recommend to Alexandre if he was to become the owner of Verre Design shares? Your proposal and arguments should also aim to convince Gaétan that the price is fair.



2. How could Alexander finance the purchase of the shares? Clearly justify your answers and recommendations.

## Alexandre's Expansion Project

According to Statistics Canada, in 2019, 287 companies (including 66 in Quebec) work in the manufacture of glass and glass products.

Verre Design currently uses three ovens for its production, and this has been sufficient to meet demand so far. Under Gaétan's direction, all production is done in the small factory situated on the land adjacent to the family home. The premises are small, but there is still the possibility of further increasing production if demand increases. More precisely, it is possible to double the small factory's production with the three ovens already in place.

However, it is important to highlight a potentially very important problem. The small factory is currently operating on the grounds of the family residence which is in a residential area. The municipal councillor has already mentioned to Gaétan that Verre Design should not produce thermoformed glass in a residential area. The town has tolerated the situation for several years but has already informed Gaétan that if production grows, they will be forced to relocate Verre Design's operations to an industrial zone such as the town's industrial park.

For Alexandre, this at first troubling situation may present an opportunity for growth: he believes that the client base's growth could increase sales fivefold within 8 years (i.e., by 2028) to reach \$1,600,000. And after 8 years, sales could likely continue to grow at a rate of 6% annually for at least another 10 years.

However, it is impossible to achieve this level of production at the current location. There is insufficient electrical capacity to operate all 3 ovens simultaneously and with only 2000 square feet in the current small factory, there is no space to add an additional oven. This is without considering that the city could outright prohibit an increase in production since the company is situated in a residential area. For Alexandre, it is obvious that if we want to multiply the production by 5, it's imperative to move the business to the industrial park.



The idea of moving to the industrial park is not new to Alexandre. In fact, Gabriel, a long-time acquaintance of Alexandre, has owned a property in the industrial park for the past 10 years that could serve as a factory and that could operate up to 7 ovens of the same type (or more efficient ovens) as those used at Verre Design current factory.

Gabriel's building has 9,000 square feet of surface area and that is more than enough to allow Verre Design to achieve its desired growth over the next ten years. For optimal production in the long term, it would be best to use the three existing ovens and add two larger and more versatile ovens. This will be enough to allow Verre Design to multiply its production by 5, which would correspond to \$1,600,000 in sales. Alexandre is well aware that if production is multiplied by 5 as of 2021, he won't be able to sell all his production and inventories will therefore inflate. According to Alexandre, sales will double within two years to reach \$720,000. However, it will take at least another 6 years (by 2028) to reach sales of \$1,600,000.

Gabriel bought this building in the industrial park 10 years ago at the price of \$320,000 for a kitchen-catering project, but the venture was a failure and he ceased operations more than a year ago. Gabriel's building has been unused for over a year and there is a mortgage balance of \$260,000. Gabriel also met with a real estate agent who told him that a 9,000-square-foot building in the municipality's industrial park was selling for around \$700,000 in 2020.

The idea of starting a partnership with Alexandre interests him. Gabriel is willing to contribute by letting Alexandre use his building in the industrial park and working with him on the production. Both could work up to 5 days a week in production for an annual salary of \$75,000 each.

Alexandre points out that the building will need to be modified to accommodate Verre Design's operations. Renovations needed inside the building in order to make it operational for Verre Design (such as relocating walls and installing fire doors) will cost \$85,000.

Moving the facilities from the current small factory (the three ovens, inventory, etc.) to the industrial park building will cost \$20,000. The cost to add two new, larger and more efficient ovens will be \$90,000 if electrical installation, etc., are included.

Verre Design's current ovens are expected to be in good operating condition for another 20 years. As for the new ovens, they will be fully functional for 30 years if they are well maintained.



Discussions between Alexandre and Gabriel were going well until Gabriel said, “Since we are going to transfer my building, which is worth \$700,000, to Verre Design Inc., I think it would be fair if you gave me 50% of the shares of the business in exchange.”

Alexandre does not agree. He says that Gabriel only paid \$320,000 for this building and that there is a mortgage balance of \$260,000. What’s more, this building has been of no use to Gabriel for over a year. Finally, the building is not exactly adequate, and renovations to the building are required before it can be used for production of thermoformed glass, and at a cost of \$85,000. Alexandre points out that Gabriel’s building represents at most a contribution of \$60,000 (i.e., the price he paid for his building, \$320,000, minus the mortgage of \$260,000). Therefore, a contribution of \$60,000 is worth less than 10% of Verre Design Inc.’s shares.

Before continuing his discussions with Gabriel, Alexandre asks for your advice to help him in his decision. He asks for your opinion on the following questions:

1. Is it cost effective to move Verre Design’s operations to the industrial park even if it achieved sales of 1,600,000 by 2028?
2. Alexandre believes that Gabriel’s financial contribution via his building is \$60,000 while Gabriel believes it’s closer to \$700,000. What is your recommendation for a fair price?
3. What is your recommendation as to the proportion of Verre Design shares that Alexandre should sell to Gabriel for the transfer of his building?

### Lower Risk on the Cost of Glass

The year 2020 has been a trying one for Verre Design and the main reason was not COVID-19. Instead, the main reason behind Alexandre’s stress in 2020 is that his suppliers told him in November 2020 that the price of his main raw material, glass, had suddenly risen by 14%! As of December 2020, the price for any glass order is 14% higher.

Prior to November 2020, glass costs accounted for approximately 55% of its total costs and 40% of the selling price of thermoformed glass. In December 2020, with the increase, glass costs now account for more than 60% of costs and almost 50% of the selling price of thermoformed glass.



This was quite a shock for Alexandre, who has never experienced such a sudden and significant increase in production costs. In fact, it drastically reduced the profit for the month of December as costs rose while the selling price remained unchanged. It was impossible to increase selling prices since they had already been set and formalized in contracts with customers in the two months prior to production. In fact, it takes approximately two months from the signing of a fixed-price sales contract to produce the finished glass product and deliver it to the customer. Furthermore, if Alexandre is targeting growth, he will not be able to increase his selling price by 14%. At a 14% increase in price, customers will become scarcer. A compromise on the profit margin must be made to aim for a lot of growth.

Glass is the main raw material Verre Design needs for their production. Specifically, Verre Design buys sheet glass with a thickness of 4 mm. Each oven running at full capacity can use up to 15,000 square metres of 4 mm glass per year.

Alexandre could not digest the bad experience of the sudden rise in the price of glass in November 2020. He loves the idea of buying all the materials he will need for the next few years, but it is not realistic. He does not have the financial means to buy everything in advance and, in any case, he wouldn't have the space to store all that glass inventory.

At the Montreal Exchange, there is a forward contract the underlying of which is the glass used by Verre Design Inc. The spot price of the glass is currently \$9.40. The information on this contract is as follows.

<b>Forward Contract Specifications</b>			
Contract size (in square metres)	300	300	300
Tick (Size)	\$0.01	\$0.01	\$0.01
Tick (Value)	\$3.00	\$3.00	\$3.00
Price/square metres	\$9.50	\$10	\$11
Contract value	\$2,850	\$3,000	\$3,300
Deadline	Jan-21	Jan-22	Jan-23



For these standardized contracts, the exchange determines the mark-to-market valuation each day based on the spot price of the underlying. In addition, to secure the commitment of each party (buyer and seller) in the final transaction, the exchange requires a deposit of 40% of the value of the forward contract as initial margin.

In addition, there is a maintenance margin of 30% of the forward contract value that must be maintained. If this maintenance margin of 30% is not respected, there will be a margin call on the forward contract holder to make a deposit to increase the margin to await the initial margin level of 40%. Therefore, a position in this forward contract will not only require an initial deposit (the initial 40% margin), but also the possibility of being forced to inject money in the event of a margin call. This can happen if the price of the contract moves unfavourably.

In summary, if Alexandre decides to take the forward contract to hedge the risk of future sheet glass prices, an amount will need to be set aside both for initial margin and to meet a potential margin call. It should also be noted that if the spot price at the maturity of the contract is lower than the forward price at the time of signing the contract, the commitment in the forward contract will generate losses for Verre Design.

In order to avoid a situation similar to the one of November 2020 which could reduce the profit margin, Alexandre is seeking your advice.

1. Explain the parameters in the sheet glass forward contract and the peculiarities of futures markets compared to equity markets.
2. Is it possible to put in place a strategy to avoid higher production costs when a sales contract is signed with customers?
3. What proportion of its raw materials should be “covered” in this way (the percentage to be covered by the forward contract) for a production of one year or more?
4. What are the disadvantages of the hedging strategy with forward contracts compared to the status quo?



## Annex A

### 2018 and 2019 Financial Statements

État des résultats comparatif Réel	2019-01-01 au 2019-12-31	2018-01-01 au 2018-12-31	En %
<b>PRODUIT</b>			
<b>REVENU D'EXPLOITATION</b>			
<b>TOTAL REVENU D'EXPLOITAT...</b>	319 857	272 502	17%
Intérêts reçus	237	88	169%
<b>TOTAL PRODUIT</b>	<b>320 094</b>	<b>272 590</b>	<b>17%</b>
<b>CHARGE</b>			
<b>COÛT DES MARCHAND. VEND...</b>			
Stock de début	8 500	5 000	70%
Achats	120 612	125 778	-4%
Frêt à l'achat	7 692	6 112	26%
Stock de la fin	(8 500)	(8 500)	0%
Marchandises disponibles	128 304	128 390	0%
Commissions	3 000	-	
Salaire et charges sociales	29 180	24 247	20%
Service de paie	700	777	-10%
Sous-Traitants	14 438	27 900	-48%
Propane et fournitures	4 796	6 826	-30%
<b>COÛT TOTAL MARCH. VENDU...</b>	<b>180 417</b>	<b>188 140</b>	<b>-4%</b>
<b>DÉPENSES D'ADMINISTRATION</b>			
Assurance	8 579	7 705	11%
Taxe mun. et Scolaire	2 020	433	367%
Électricité et Chauffage	3 615	2 664	36%
Frais bureau à la maison	14 215	10 802	32%
Electricité et chauffage	975	1 151	-15%
Cellulaire et internet	2 423	1 989	22%
Entretien générale	3 949	160	2368%
Frais représentation	766	1 041	-26%
Honoraire professionnel	2 265	1 525	49%
Vêtements de travail	130	135	-4%
Papeterie et fourn bureau	500	128	291%
Frais matériel roulant	6 211	8 017	-23%
Taxes, Assurances, permis et cotisation	-	2 253	-100%
Total des intérêts	989	400	147%
Frais de banque	768	531	45%
Amortissement	21 480	9 643	123%
<b>TOTAL DÉPENSES D'AMIN</b>	<b>54 670</b>	<b>37 774</b>	<b>45%</b>
<b>TOTAL CHARGE</b>	<b>235 087</b>	<b>225 914</b>	<b>4%</b>
<b>BÉNÉFICE NET</b>	<b>85 007</b>	<b>46 676</b>	<b>82%</b>



<b>Bilan</b>	<b>2019</b>	<b>2018</b>
<b>ACTIF À COURT TERME</b>		
Banque	40 914	31 763
Compte à recevoir	12 735	26 425
Placements Épargne ET1	53 407	10 106
Inventaire	8 500	8 500
<b>TOTAL ACTIF À COURT TERME</b>	<b>115 556</b>	<b>76 794</b>
<b>IMMOBILISATIONS</b>		
Bâtiment Net	4 745	4 943
Équipement Net	30 951	40 662
Grange Net	13 376	14 862
Matériel roulant Net	39 970	584
Amélioration locative	5 374	5 374
meublier de bureau	1 700	1 700
<b>TOTAL DES IMMOBILISATIONS</b>	<b>96 116</b>	<b>68 125</b>
<b>TOTAL ACTIF</b>	<b>211 673</b>	<b>144 919</b>
<b>PASSIF À COURT TERME</b>		
Compte à payer	678	1 000
TPS à payer ou ( remb. )	1 625	1 237
TVQ à payer ou ( remb. )	3 241	2 471
<b>TOTAL DU PASSIF À COURT T...</b>	<b>5 545</b>	<b>4 708</b>
<b>Passif à long terme</b>		
Emprunt Camion	37 583	-
<b>Tota passif à long terme</b>	<b>37 583</b>	<b>-</b>
<b>TOTAL PASSIF</b>	<b>43 128</b>	<b>4 708</b>
<b>AVOIR DES PROPRIÉTAIRES</b>		
<b>AVOIR DU PROPRIÉTAIRE</b>		
Participation proprio Net	(56 673)	(219 981)
Participations antérieures	-	(259 119)
Bénéfices non-répartis	140 211	572 635
Bénéfice net	85 007	46 676
<b>TOTAL AVOIR DU PROPRIÉTA...</b>	<b>168 544</b>	<b>140 211</b>
<b>TOTAL AVOIR DES PROPRIÉTAIRES</b>	<b>168 544</b>	<b>140 211</b>
<b>PASSIF ET AVOIR</b>	<b>211 673</b>	<b>144 919</b>



## Annex B

### *The Risk of Verre Design Inc. Shares*

The shares of Verre Design Inc. are not publicly traded. As such, it is impossible to conduct research to obtain precise information on the risk or return of Verre Design Inc. shares. However, research on comparable companies that are publicly traded and in the same economic sector allows analysts to predict that the two most popular measures of stock risk, beta and standard deviation, are a fit for Verre Design Inc.:

Risk of Verre Design Inc. Shares		
Beta	$\beta$	1.2
Standard deviation	$\sigma$	40%



## Annex C

### 10-year forecast: returns and risks on financial markets

(source: MERCER Global Investment Management)

## Hypothèses économiques En date du 31 mai 2020

Catégorie d'actifs	Corrélations															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 Bons du Trésor	1.00	0.09	(0.08)	(0.33)	(0.16)	(0.26)	(0.24)	(0.30)	(0.05)	(0.03)	0.07	0.32	0.17	(0.36)	(0.20)	0.00
2 Tous crédits Univers	0.09	1.00	(0.15)	(0.08)	(0.04)	(0.07)	0.31	(0.11)	(0.01)	0.03	0.22	(0.10)	0.43	0.06	0.45	0.12
3 Actions can. (forte cap.)	(0.08)	(0.15)	1.00	0.54	0.68	0.88	0.31	0.73	0.78	0.12	0.21	0.16	0.01	0.26	0.14	0.18
4 Actions E-U (forte cap.)	(0.33)	(0.08)	0.54	1.00	0.79	0.94	0.81	0.87	0.53	0.53	0.16	0.22	(0.16)	0.39	0.37	0.49
5 Actions int. (forte cap.)	(0.16)	(0.04)	0.68	0.79	1.00	0.94	0.67	0.91	0.80	0.44	0.36	0.19	(0.03)	0.31	0.44	0.50
6 Actions mondiales ESG	(0.26)	(0.07)	0.68	0.84	0.94	1.00	0.77	0.95	0.71	0.50	0.29	0.22	(0.10)	0.38	0.42	0.52
7 Actions mondiales à faible volatilité	(0.24)	0.31	0.31	0.81	0.67	0.77	1.00	0.69	0.37	0.58	0.25	0.16	(0.11)	0.42	0.57	0.57
8 Actions mondiales (faible cap.)	(0.30)	(0.11)	0.73	0.87	0.91	0.95	0.69	1.00	0.71	0.45	0.25	0.18	(0.05)	0.43	0.42	0.46
9 Actions de pays émergents	(0.05)	(0.01)	0.78	0.53	0.80	0.71	0.37	0.71	1.00	0.22	0.38	0.20	0.08	0.28	0.40	0.33
10 Actions privées - marchés secondaires	(0.03)	0.03	0.12	0.53	0.44	0.50	0.58	0.45	0.22	1.00	0.28	0.48	(0.15)	0.51	0.50	0.92
11 Infrastructures	0.07	0.22	0.21	0.16	0.36	0.29	0.25	0.25	0.38	0.28	1.00	0.21	0.28	0.07	0.40	0.64
12 Immobilier canadien	0.32	(0.10)	0.16	0.22	0.19	0.22	0.16	0.18	0.20	0.48	0.21	1.00	(0.27)	(0.01)	(0.01)	0.47
13 Hypothèques commerciales	0.17	0.43	0.01	(0.16)	(0.03)	(0.10)	(0.11)	(0.05)	0.08	(0.15)	0.28	(0.27)	1.00	0.15	0.38	(0.00)
14 Dette privée sénior	(0.36)	0.06	0.26	0.39	0.31	0.38	0.42	0.43	0.28	0.51	0.07	(0.01)	0.15	1.00	0.69	0.44
15 Obligations de croissance	(0.20)	0.45	0.14	0.37	0.44	0.42	0.57	0.42	0.40	0.50	0.40	(0.01)	0.38	0.69	1.00	0.57
16 Investissements durables	0.00	0.12	0.18	0.49	0.50	0.52	0.57	0.46	0.33	0.92	0.64	0.47	(0.00)	0.44	0.57	1.00

Source: Hypothèses économiques de Mercer (31 mai 2020). Les rendements espérés représentent le rendement espérés sur les prochaines 10 années.

