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## PRAXAIR, INC. (PX)

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### COMPANY DESCRIPTION

Praxair is the largest industrial gas supplier in North and South America. The company also has growing operations in Asia as well as an established business in Europe. Praxair's primary products in its industrial gases business are atmospheric gasses (oxygen, nitrogen, argon, rare gases) and process gases (carbon dioxide, helium, hydrogen, electronic gases, specialty gases, acetylene). Additionally, the company designs, engineers, and manufactures equipment that produces industrial gases for internal use and external sale. The company's surface technologies segment supplies wear-resistant and high-temperature, corrosion-resistant metallic and ceramic coatings and powders.

### INVESTMENT THESIS

Praxair historically earns strong returns on invested capital, with ROICs averaging approximately 13% over the past five years. However, this number is currently being suppressed by \$2 billion in investments spread across 35 projects that Praxair currently has underway. We believe that most of these project costs have already been capitalized on the balance sheet but are not yet generating revenue. As these projects come online over the next several years, they should contribute meaningfully to returns on invested capital and generate additional free cash flows.

Since the 2008 recession, negotiations for new, onsite plants take substantially longer, with customers requiring more time to make decisions. Despite customer indecisiveness, Praxair management views North America and Asia as growth regions. As Asian economies mature, countries will require more energy along with an increasing demand for goods and services – all of which require industrial gases for production. Additionally, there are over twenty chemical plants being proposed in the North American Gulf region. With abundant sources of natural gas, the United States is quickly becoming one of the lowest-cost producers for the refinery, chemical, and steel industries.

Praxair has built the best industrial gas model within the industry. The company derives between 85% and 90% of its annual revenue from selling industrial gases—a business with strong, inherent competitive advantages. The remaining revenue mix consists of selling equipment and service applications. Praxair carries less exposure to the electronics market, which is more commoditized than industrial gases, and selling hydrogen gases, which offer fewer cross-selling opportunities, than any of its industry competitors (namely Air Products). As a result, Praxair's operating margins and returns on invested capital continue to outperform its peers. In summary, Praxair is a well-managed company situated within an industry that provides very attractive returns for the dominant player.

### COMPANY HISTORY

Praxair's can trace its origins back to 19<sup>th</sup> century Germany, where a professor of mechanical engineering at the College of Technology in Munich started experiments in refrigeration. Karl von Linde's research led to the 1895 development of a cryogenic air liquefier. Von Linde built his first oxygen production plant in 1902 and his continuing research led to the establishment of the first plant for the production of pure nitrogen two years later. The entrepreneur-scientist went on to build air separation plants throughout Germany and Europe during the first decade of the 20th century. In 1907, Karl von Linde started the Linde Air Products Company in Cleveland, Ohio; thereby, establishing the first

firm in the United States to produce oxygen from air using a cryogenic process. Although oxygen distillation was relatively inexpensive—the raw material is free—the storage and transportation of gases in heavy containers was very costly. With its foundation in scientific inquiry, the Linde Air Products Company made research and development a priority.

The Linde Company's relationship with Union Carbide started around 1911, when the two competitors undertook joint experiments regarding the production and application of acetylene. Union Carbide, formed in 1898, manufactured calcium carbide, a catalyst for the production of metal alloys. In 1917, Linde pooled its resources with National Carbon, Prest-O-Lite, Electro Metallurgical, and Union Carbide to form Union Carbide and Carbon Corporation. Linde soon became one of the world's largest producers of such industrial gases as acetylene, hydrogen, and nitrogen, which formed the foundation of the petrochemical industry. The companies' combined research efforts coincided with a national push for new technologies to help win World War I, and new applications for industrial gases came in rapid succession. Cooperative research and development among Union Carbide companies used Linde's gases to facilitate production of corrosion and heat-resistant ferroalloys used in skyscrapers, bridges, and automobiles.

The Linde Division benefited from Union Carbide's globalization in the 1950s and 1960s and cemented its position as America's top producer of industrial gases through continuous innovation. Unfortunately, Linde's steady performance throughout the 1970s and 1980s was obscured by the succession of financial, environmental, and human disasters endured by parent company Union Carbide, including the infamous disaster at its pesticide plant in Bhopal, India, in December 1984. Union Carbide's market capitalization dropped 75% to less than \$3 billion following the Bhopal disaster. Union Carbide took on massive debt to resist a takeover threat. Divestments scaled the parent company back to its three primary businesses (industrial gases, chemicals and plastics, and carbon products) in the late 1980s, but its debt load prevented research and development, diversification, and international expansion.

In 1988, the Linde division was renamed Union Carbide Industrial Gases, and in June 1992 its shares were distributed to Union Carbide shareholders on the basis of one share of the new Praxair, Inc. for each share of the parent. The new company maintained some ties to its former parent; Union Carbide was still one of its largest customers. The name Praxair was derived from the Greek praxis, or practical application, plus the name of the company's primary product.

#### *BUSINESS OVERVIEW*

Although the industrial gas market is highly competitive, Praxair's business model focuses on building large onsite plants designed to serve their primary customer's various needs and then using this platform to service the surrounding middle and small market companies. The majority of Praxair's on-site customer business operates under long-term contracts which typically range from 10 to 15 years with high take-or-pay requirements that are targeted at Praxair's desired internal rate of return. Industrial gases are a very small part of their customers' cost structure, yet critical to their operations. Praxair's strategy is to be selective in the geographies they enter. Integrated supply systems are built onsite in order to serve the anchor client, as well as the surrounding merchant and packaged gas customers. Praxair's goal is to have a high density of customers around their supply sites which allow them to distribute the generated industrial gas to local customers with minimal distribution costs.

Praxair's integrated supply chain has three distribution methods: On-Site, Merchant Liquid, and Packaged Gases. Customers that require large volumes of gases (typically oxygen,

nitrogen, and hydrogen), and also have relatively consistent demand, are supplied by on-site plants. Praxair constructs a plant on or adjacent to the customer's property and supplies the product directly to the customer. These on-site contracts typically carry terms that range from 10-20 years and have minimum purchase requirements as well as price escalation provisions. Any excess product from on-site plants can be sold to other customers.

The merchant liquid business distributes liquefied gases such as oxygen, nitrogen, argon, carbon dioxide, hydrogen, and helium from Praxair plants to storage containers or directly to customers. Due to the expensive distribution costs and relatively low sales price per unit, atmospheric gases, merchant oxygen and nitrogen are only economical when distributed within a small radius from the production plant. However it is more economical to ship argon, hydrogen, and helium over much longer distances.

Praxair distributes packaged gases to customers who require only a small amount of product. They supply the gases in metal cylinders which store the gas under high pressure. Additionally, since much of the cylinder gas sold in the United States is by independent distributors, Praxair works with these independent distributors who buy the gas from merchants, such as Praxair, then repackage it into cylinders in their own facilities.

Sales by Distribution	2010	2011	2012	2013	2014
On-Site	25%	25%	25%	25%	25%
Packaged Gas	29%	28%	29%	29%	29%
Merchant	30%	31%	31%	31%	31%
Other	16%	16%	15%	15%	15%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

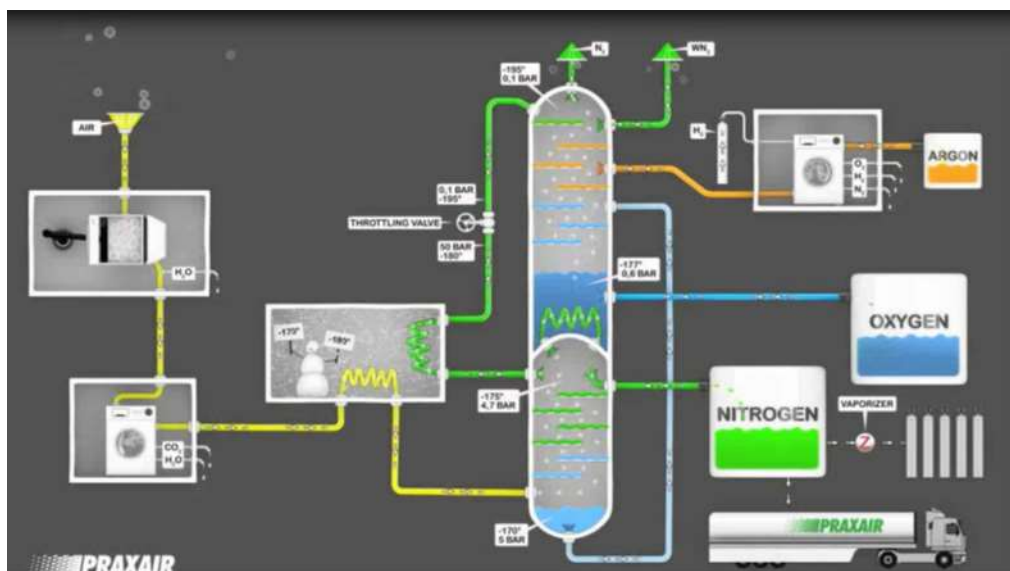
Praxair serves a variety of customers in many industries. Their largest customers in terms of volume are typically the chemical industry, the steel industry, or the refining industry. Depending on the size of the customer requirement, Praxair invests between \$20-100 million into the on-site plant. Medium-sized customers such as hospitals generally do not require an on-site plant. For these customers, Praxair delivers the product in tanker trucks to the customer's pipeline infrastructure system. Often, Praxair will build an on-site storage tank that they monitor to track customer usage. Small customers, who do not need the high quantity production plant or large on-site storage tanks, typically receive high-pressure cylinders. These cylinders are often filled with oxygen or helium, and rotate according to a defined schedule. While the barriers to entry on this side of the business are very low, management notes that customers rarely change suppliers.

Sales by End Markets	2010	2011	2012	2013	2014
Manufacturing	23%	24%	25%	27%	28%
Metals	17%	18%	18%	18%	18%
Energy	11%	11%	11%	11%	11%
Chemicals	10%	10%	10%	10%	10%
Electronics	9%	9%	8%	8%	8%
Healthcare	10%	8%	8%	8%	8%
Food & Beverage	7%	6%	6%	6%	6%
Aerospace	3%	3%	3%	3%	3%
Other	10%	11%	11%	9%	8%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Praxair Surface Technologies is a leading supplier of coating services and thermal sprays for applications in various industries such as energy, printing, petrochemical, textile, among others. The coatings provide functions that include wear resistance, corrosion protection, and thermal insulation. These surface-enhancing functions serve to extend component life, increase performance, and reduce operating costs.

## Atmospheric and Process Gasses

Praxair produces both atmospheric and process gasses. Atmospheric gases refer to gases found in the atmosphere of the earth such as oxygen, nitrogen, and argon. Using air as the raw material, the produced gasses use several cryogenic air separation processes.



The cryogenic air process starts with air as the input, which is then cooled until it liquefies. The system then selectively distills the components by collecting the gases at their various boiling points.

Process gasses are gasses produced by means other than air separation. These include gasses such as carbon dioxide, hydrogen, carbon monoxide, and helium, which are often purchased externally in an unrefined state. For instance, Praxair purchases carbon dioxide from chemical and industrial companies, because carbon dioxide is an abundant by-product of the operations for these companies. Praxair then processes the carbon dioxide into food-grade carbon dioxide.

## Geographic Segments

Praxair serves customers in over two dozen industries that engage in a myriad of activities including healthcare, petroleum refining, water treatment, and chemical manufacturing. The company generates most of its sales (currently 94%) from their managed industrial gas operation segments in North America, South America, Europe, and Asia. The company generates the remaining six percent of sales from their surface technologies segment that produces protective coatings for metal surfaces.

While the global economy continues to muddle along, Praxair manages to meaningfully increase revenues through the construction of new on-site plants and through the acquisition of smaller competitors.

Praxair's operations in North America and Asia continue to perform well, with both areas delivering strong volume growth.

Revenues in South America continue to struggle as the company deals

Sales	2010	2011	2012	2013	2014
North America	5,079	5,490	5,598	6,164	6,796
Europe	1,341	1,458	1,474	1,542	1,527
South America	1,970	2,308	2,082	2,042	2,042
Asia	1,158	1,348	1,414	1,525	1,578
Surface Technologies	568	648	656	652	691
<b>Total</b>	<b>10,116</b>	<b>11,252</b>	<b>11,224</b>	<b>11,925</b>	<b>12,634</b>

with negative currency headwinds as the Brazilian real weakens against the US dollar. Additionally, Brazil manufacturers are struggling with high interest rates. Many Brazilian producers are experiencing decreased power availability, and the power they do consume costs about 2.5x what Americans pay per kilowatt hour.

Operations in Europe also remain sluggish as the countries deal with austerity issues and prolonged economic deterioration. Praxair continues to evaluate its cost structure and continuously restructures its operations to better suit the economic environment in both South America and Europe. Once gas volumes in Brazil and South America begin to rise, Praxair should see a corresponding increase in earnings.

Company management believes that future growth will be driven by the Asian markets; about 40% of their current capital expenditure backlog is split between projects in China, Korea, and India. For example, the Korean backlog relates to three projects underway for Samsung. Samsung generally manufactures their products in-house, but will outsource some manufacturing when necessary. When volumes are down, Samsung pulls their manufacturing activities back in-house, leading them to require more industrial gas supplied by Praxair.

When entering new markets, Praxair's main concern is their ability to build out their integrated supply system. The company recently rejected the idea of entering into what is known as the China's "Coal Triangle". Despite the sizable need for industrial gasses in coal mining operations, Praxair cited the lack of a merchant liquid market as being the determining factor in their decision to avoid the Coal Triangle.

#### VALUATION

Praxair's valuation is dependent on the company's ability to continuously generate strong returns on the company's invested capital. Currently, the company's \$12 billion in property plant and equipment anchors the balance sheet followed by \$2.5 billion accumulated goodwill related to acquisitions. The current capital expenditure back log is \$2 billion - meaning that \$2 billion of the \$12 billion in capitalized PPE is not yet generating revenue.

The company targets a return on invested capital of approximately 15%. Since 2005, Praxair has averaged 13.5% and just over 14% if 2009 is excluded. Although we expect ROICs to drop slightly this year as the company works through their project backlog, the new plants in the pipe-line should begin generating higher margins and returns than their legacy assets.

Using 'Net Operating Assets' as Invested Capital

\$ in millions	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
<b>Invested Capital</b>										
Current Assets	2,133	2,059	2,408	2,301	2,223	2,378	2,607	2,792	2,977	3,265
Less: Current Liabilities	2,001	1,758	2,650	2,979	1,813	2,110	2,535	2,479	2,929	2,673
Plus: Net PP&E	6,108	6,694	7,963	7,922	8,990	9,532	10,131	11,453	12,099	13,047
Plus: Goodwill	1,545	1,613	1,967	1,909	2,070	2,066	2,372	2,507	3,189	3,194
<b>Invested Capital</b>	<b>7,785</b>	<b>8,608</b>	<b>9,688</b>	<b>9,153</b>	<b>11,470</b>	<b>11,866</b>	<b>12,575</b>	<b>14,273</b>	<b>15,336</b>	<b>16,833</b>
Operating Income	1,293	1,519	1,786	1,883	1,575	2,082	2,468	2,437	2,500	2,501
Less: Operating Taxes	376	355	419	530	482	572	647	660	670	670
<b>NOPLAT</b>	<b>917</b>	<b>1,164</b>	<b>1,367</b>	<b>1,353</b>	<b>1,093</b>	<b>1,510</b>	<b>1,821</b>	<b>1,777</b>	<b>1,830</b>	<b>1,831</b>
NOPLAT										
Equity Income	15	10	26	36	24	38	40	34	34	35
Less: Non Controlling Interests	37	31	43	45	43	39	50	52	52	53
Total Income to all Investors	895	1,143	1,350	1,344	1,074	1,509	1,811	1,759	1,812	1,813
<b>Reconciliation with Net Income</b>										
Net Income	732	988	1,177	1,211	1,254	1,195	1,672	1,692	1,711	2,006
After-tax Interest	163	155	173	198	133	118	145	141	150	151
Less: Operating Taxes - Tax Expense				65	313	-196	6	74		
Total Income to all Investors	895	1,143	1,350	1,344	1,074	1,509	1,811	1,759	1,861	2,157
<b>ROIC</b>		14.2%	14.9%	14.4%	10.6%	12.9%	14.9%	13.2%	12.4%	11.4%

Using 'Debt + Equity + Other Financing Instrument's as Invested Capital

\$ in millions	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
<b>Invested Capital</b>										
Short-Term Debt	521	186	828	1,316	298	402	724	677	1,143	794
Long-Term Debt	2,926	2,981	3,364	3,709	4,757	5,155	5,838	6,685	7,883	8,026
Total Debt and Equivalents	3,447	3,167	4,192	5,025	5,055	5,557	6,562	7,362	9,026	8,820
Net Common Stock and Paid-In-Capital	1,137	994	489	-291	-361	-665	-1,276	-1,618	-1,894	-1,937
Retained Earnings	4,022	4,687	5,325	6,068	6,831	7,475	8,510	9,534	10,243	11,624
Acc. Other Comprehensive Income	-1,257	-1,127	-672	-1,768	-1,155	-1,018	-1,746	-1,852	-2,139	-1,981
Non-Controlling Interests	202	222	321	302	333	353	529	609	647	394
Equity and Equivalents	4,104	4,776	5,463	4,311	5,648	6,145	6,017	6,673	6,857	8,100
<b>Total Funds Invested</b>	<b>7,551</b>	<b>7,943</b>	<b>9,655</b>	<b>9,336</b>	<b>10,703</b>	<b>11,702</b>	<b>12,579</b>	<b>14,035</b>	<b>15,883</b>	<b>16,920</b>
<b>NOLPAT</b>	<b>917</b>	<b>1,164</b>	<b>1,367</b>	<b>1,353</b>	<b>1,093</b>	<b>1,510</b>	<b>1,821</b>	<b>1,777</b>	<b>1,830</b>	<b>1,831</b>
<b>ROIC</b>		15.0%	15.5%	14.2%	10.9%	13.5%	15.0%	13.4%	12.2%	11.2%

The company's free cash flow is beginning to increase as it moves past its aggressive spending on capital expenditures and acquisitions. In 2012, Praxair spent \$2.2 billion on capital spending, representing approximately 20% of sales. The current level of capital expenditures is more in line with management's long-term goal -- 15% of sales.

Cash Flow	2010	2011	2012	2013	2014
Cash from Operations	1,905	2,455	2,752	2,917	3,395
Capital Expenditures	-1,388	-1,797	-2,180	-2,020	-1,900
Free Cash Flow	517	658	572	897	1,495

Our fair value estimate implies a multiple of 12 times Value Line's estimate of 2016 cash flow from operations. Considering the company's ability to grow its revenue at 7% coupled with returns on invested capital that should approach 15%, we find the company's low business risk an attractive complement to our estimate of fair value. Our 8% cost of capital reflects the low risk associated with the company's long term contracts for onsite clients. However, as is our practice, we discount economic profit (difference between returns on invested capital and cost of capital) by 10%.

Praxair, Inc. [PX]	Forecast									
Assumptions	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Sales	6%	6%	5%	5%	4%	4%	3%	3%	3%	3%
Operating Margin	22%	23%	24%	25%	25%	25%	25%	25%	25%	25%
Invested Capital Growth (% of Sales)	15%	15%	15%	15%	15%	7.5%	7.5%	7.5%	7.5%	3%
Capital Charge	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Discount Rate	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Tax Rate	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%
ROIC	13%	13%	13%	14%	15%	15%	15%	15%	15%	15%
Sales	13,049	13,832	14,523	15,250	15,860	16,494	16,989	17,498	18,023	18,564
Invested Capital	18,790	20,865	23,044	25,331	27,710	28,947	30,221	31,534	32,885	33,442
ROIC	2,098	2,712	2,996	3,546	4,156	4,342	4,533	4,730	4,933	5,016
Capital Charge	1,503	1,669	1,843	2,026	2,217	2,316	2,418	2,523	2,631	2,675
Economic Profit	594	1,043	1,152	1,520	1,940	2,026	2,115	2,207	2,302	2,341
Discount Factor	0.909	0.826	0.751	0.683	0.621	0.564	0.513	0.467	0.424	0.386
Present Value	540	862	866	1,038	1,204	1,144	1,086	1,030	976	903
Sum of Present Value	9,649									
Terminal Value	22,564									
Invested Capital	18,790									
Debt, Leases & Obligations	-7,362									
Total	44,181									
Shares Outstanding	302									
<b>Estimate of Fair Value</b>	<b>\$ 146.37</b>									
Current Stock Price	\$ 122.36									
Discount to Fair Value	16.4%									
Business Risk	Low									
Required Margin of Safety	20%									
<b>Entry Price</b>	<b>\$ 117.10</b>									

Terminal Value Calculation	
Economic Profit CAGR	12.1%
2022 Economic Profit	2,341
Terminal Value Growth Rate	6.0%
Terminal Value	22,564

We value Praxair at roughly \$146 per share using discounted economic profit based on the spread between returns on invested capital and cost of capital. We believe additional investment is warranted below \$117, a level which should afford a sufficient margin of safety to our valuation.

#### RISK TO INVESTMENT

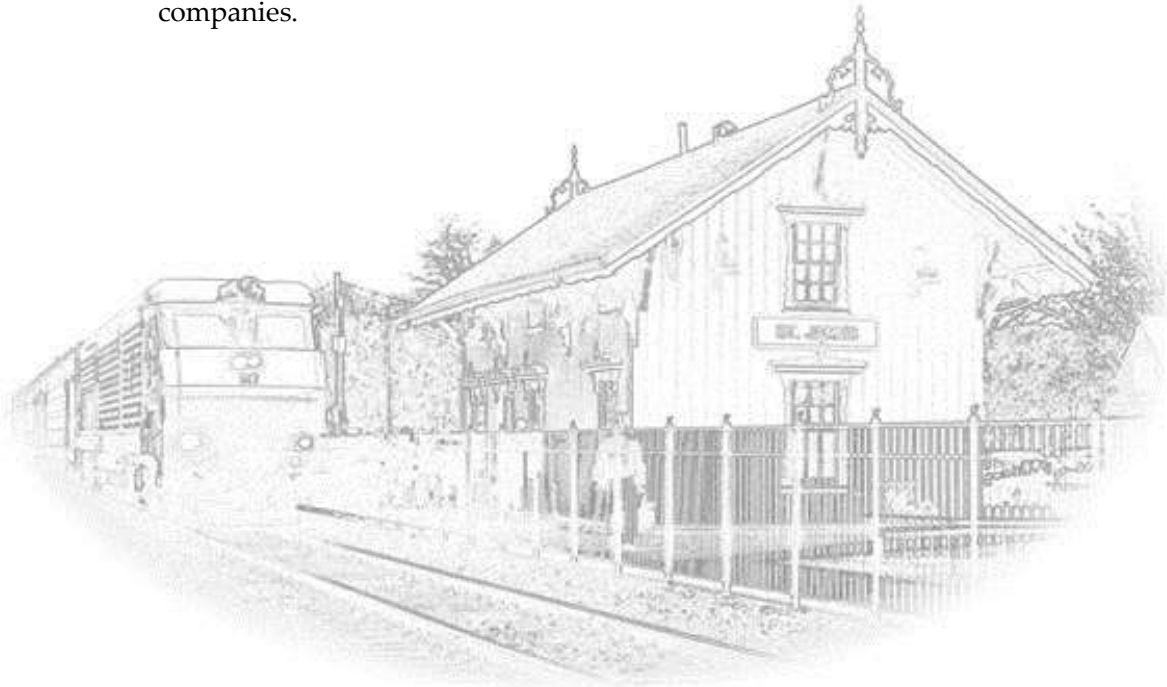
While Praxair is a global company serving some 25 industries in 50 countries, a broad decline in the economy will adversely affect the demand for Praxair's products. Additionally, energy is Praxair's single largest cost item in the production and distribution of industrial gases. Should the price of energy increase materially, Praxair may not be able to pass through costs to customers.

Although the company's exposure to North America has dropped to around 52% from 65% of total revenue over the past decade, Praxair still remains sensitive to U.S. industrial production and overall economy. In addition, our model assumes high growth rates in Asian markets, which may not materialize because of increasing competition or other factors.

## ST. JAMES INVESTMENT COMPANY

We founded St. James Investment Company in 1999, managing wealth from our family and friends in the hamlet of St. James. We are privileged that our neighbors and friends have trusted us for over a decade to invest alongside our own capital.

The St. James Investment Company is an independent, fee-only, SEC-Registered Investment Advisory firm, providing customized portfolio management to individuals, retirement plans and private companies.



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