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International Equity for US Investors

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US investors looking to invest in foreign companies typically have two options: 1) trade in foreign markets and purchase the "ordinary" shares of the non-US company, or 2) trade in the US markets via American depositary receipts ("ADRs").

An ADR is a US security that represents (and is backed by) the foreign ordinary shares of a company. The security is issued by a depositary bank that holds the foreign shares as collateral. These "depositary banks"—there are four: the Bank of New York Mellon, Citibank, Deutsche Bank, JPMorgan Chase—handle the operational complexity of creating and redeeming ADRs and distributing dividends to the ADR holders. In return, the ADR holder pays a depositary fee, which is usually between 0 and 5 cents per share per year. The fees are typically taken out of dividend payments.

ADRs are a convenient and cost-effective option for most individual investors. They are designed to provide investors with the same risk as direct ownership of a company's ordinary shares but can be traded on US markets. They are priced in US dollars, but they are not currency hedged, and changes in the relevant foreign exchange rate will impact the value of an ADR.

When a foreign company has a formal agreement with one of the depositary banks to issue ADRs and provide shareholder services for US investors, the ADR is sponsored. Sponsored ADRs typically trade on exchanges, whereas unsponsored ADRs often trade over the counter.

Depositary banks can create unsponsored ADRs for any non-US company without seeking the approval of such company. As a result, unsponsored ADRs can be just as liquid as the ordinary shares they represent. Almost half of all ADRs (by number) are unsponsored, and some of the largest foreign corporations (e.g., Nestlé) have unsponsored ADRs. The US Securities and Exchange Commission (SEC) provides a more detailed description of the types of ADRs as well as additional notes on ADR fees.

ADRs have become widely used in separately managed accounts (SMAs) where investment managers may be constrained by the foreign trading capabilities of certain custodians. ADR

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coverage of foreign benchmarks is incomplete and tends to be broader and more complete in developed markets than emerging markets.

The following table compares Aperio's ADR universe (screened for liquidity and share price) with the MSCI All Country World ex USA Index as of September 30, 2018:

	Aperio ADR Universe		MSCI ACWI ex USA	
Region	**Securities**	**Market Cap**	**Securities**	**Market Cap**
Developed	419	$13.3 Trillion	1,015	$20.3 Trillion
Emerging	185	$3.7 Trillion	1,151	$13.5 Trillion

Even though coverage of Aperio's ADR universe is incomplete when compared to the MSCI ACWI ex USA Index, optimization allows us to construct diversified portfolios with relatively low levels of tracking error to foreign equity indexes.

ADRs or Foreign Ordinaries?

Because foreign trading can require costly infrastructure, some custodians or platforms do not support foreign ordinary trading for SMAs. For portfolios that have the capability to trade both ADRs and ordinaries, the decision of which to use varies from one portfolio to the next and is largely driven by the investment strategy being used and the expected transaction and custody costs (including explicit ADR fees). For index-tracking portfolios, an investor must also consider the impact on tracking error from limiting the investment universe to companies with ADRs.

Tracking Error

Aperio uses forecast tracking error to quantify how closely we expect a portfolio to follow its benchmark. Because limiting the investible universe tends to increase forecast tracking error (all else equal), we explored this impact for hypothetical portfolios benchmarked to common global and international equity indexes.

Optimizing portfolios allows us to achieve relatively low levels of forecast tracking error with a limited universe of stocks. While ADR-only benchmarks exist (e.g., BNY Mellon ADR Index), they generally have higher levels of tracking error to the broader global market indexes (e.g., MSCI All Country World Index). Their country-level exposures can be materially different if the countries are well represented (e.g., Canada or Brazil) or underrepresented (Japan) by ADRs. Optimization allows us to construct portfolios that target country-level exposures similar to the relevant benchmark's.

The following table shows the forecast tracking errors for hypothetical $10 million portfolios optimized on September 30, 2018. We constrained the portfolios to 600 holdings for global portfolios and 400 for foreign portfolios. While these are typical holding counts for taxable, loss-harvesting SMA portfolios, the hypothetical portfolios and their tracking errors are for

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purposes of illustration and are not necessarily typical or representative of any particular or existing investor portfolio. For emerging markets, our universes are limited to ADRs only.

		Tracking Error	
Benchmark	**Holdings**	**ADRs**	**Ordinaries**
MSCI World	600	0.25%	0.24%
MSCI All Country World	600	0.35%	0.34%
MSCI World ex USA	400	0.49%	0.33%
MSCI AC World ex USA	400	0.66%	0.62%

All of the portfolios constructed under these conditions are observed in this simulation to have relatively low forecast tracking errors (< 1%) across common indexes. As expected, portfolios constructed using the broader universe of ordinary securities would be expected to follow their benchmarks more closely than portfolios limited to using ADRs for foreign equity exposure. The differences in tracking error for global portfolios are, we believe, fairly minor and are more material for foreign portfolios. If the number of holdings is increased, the differences appear to become more pronounced as more ordinaries are available to push down tracking error.

Transaction Costs

While tracking error impact is relatively straightforward to measure, comparing transaction costs is more complex. The relative cost advantages are not always apparent and need to be carefully modeled for each investor based on trading (commissions, bid ask, FX, stamp taxes) and custodial costs. The following table compares ADRs and ordinaries across the major expense categories that should be evaluated in order to make an informed projection.

	ADRs	Ordinaries
Trading Commissions	Lower	Higher
Bid-Ask Spreads	Higher	Lower
Exchange Fees / Stamp Taxes	None	Yes (e.g., London & Hong Kong)
FX Bid-Ask	None	Varies
Depositary Bank Fees	0–5 Cents per Share	None
Annual Custody Fees	Lower	Higher

Trading Costs

Foreign ordinaries generally have higher trading commissions than US securities, require foreign exchange to settle, and in some cases are subject to stamp taxes (e.g., London and Hong Kong). However, ordinaries generally have lower bid-ask spreads than ADRs. This lower spread is a result of higher liquidity in local markets. To accurately assess trading costs, one must model the commissions, FX costs, and bid-ask spreads together with the expected turnover in the portfolio. For large portfolios (more than $20 million in non-US companies), liquidity plays a larger role and ordinaries may start to have advantages over ADRs.

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Custodial Costs

Custodians typically charge more to hold foreign securities than US securities, so ordinaries might appear to be more expensive to hold at first glance. However, ADRs incur depositary bank fees that can sometimes be higher than the foreign custody fees charged by the custodian. Based on our research, we expect ADR fees to vary from 7 basis points to 13 basis points per year for diversified global equity portfolios.

Accurately estimating expected depositary bank fees is also notoriously difficult. While fees are discussed in SEC filings, these typically only set upper limits on the amount of the fees and do not reflect the actual fees that are charged. However, some custodians keep good records of these fees, which provides us with a reliable source of historical data.

When we examined the trailing year ended July 2018, we found that that there is indeed a lot of variation in the fees that are actually charged for ADRs. For some ADRs (e.g., HSBC, Allianz, BHP Billiton), no fees were levied. Conversely, holders of Eletrobras (a major Brazilian utility company) were charged 6 cents per share over the course of the year.

While 6 cents may not seem significant when quoted per share, Eletrobras's ADR [NYSE: EBR] had an average share price of only $5.57 (and hovered closer to $4 as of September 2018). Accordingly, the depositary fee was more than 1% per year when expressed as a percentage of the average share price. Clearly, this is an expensive ADR to hold, and investors should carefully evaluate whether it should be part of their portfolios.

Aperio monitors depositary bank fees and removes ADRs with high fees from its investment universes. We found that excluding ADRs with fees above 0.30% for developed markets and 0.40% for emerging markets per year provided for what we believe is a good balance between cost reduction and tracking error impact. We expect this to reduce the custody costs of a diversified global ADR portfolio by approximately 3 basis points per year.

Summary

ADRs can be an effective way for US investors to gain exposure to foreign markets. They provide good coverage of investible foreign/global indexes and enable the construction of low-tracking-error portfolios. ADRs have lower trading commissions and custody costs than ordinaries but tend to have higher bid-ask spreads. Investors must also pay close attention to the depositary fees when investing through ADRs and watch for those with high fees.

For investors that can trade foreign ordinaries, the decision to use ADRs or foreign ordinaries is complex and requires careful modeling of the transaction and custody costs. In general, we expect foreign equity portfolios in excess of approximately $20 million to benefit from a mix of ADRs and foreign ordinary securities to reduce tracking error and lower transaction costs. Smaller portfolios tend to be more effectively implemented with ADRs.

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The MSCI All Country World Index is an equity benchmark for global stock performance. It is a capitalization-weighted index covering large and midsize companies. The index includes approximately 2,800 stocks from 23 developed-market countries and 24 emerging-market countries.

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The MSCI All Country World ex USA Index is an equity benchmark for international stock performance. It is a capitalization-weighted index covering large and midsize companies. The index includes approximately 2,200 stocks from 22 developed-market countries, excluding the US, and 24 emerging-market countries.

The MSCI World ex USA Index is an equity benchmark for international developed-markets performance. It is a capitalization-weighted index covering large and midsize companies. The index includes approximately 1,000 stocks from 22 developed-market countries, excluding the US.

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