

The Life Cycle of an Emerging Capital Market

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ABSTRACT

We examine closed-end country fund premiums to net asset values at the time the funds are first introduced for four Southeast Asian markets; Indonesia, the Philippines, Taiwan, and Thailand. Using an estimate of the premium's half-life (i.e. the time that it takes for a premium to be reduced in half), we find that premiums in these markets were relatively short-lived, lasting only a few months. This is despite the fact that these markets remained relatively closed to international investors for many years after the introductions of the country funds.

Introduction

During the last 25 years, many developing countries have navigated the transition from a state-controlled to a market-based economy. This transition can be difficult because of the necessary development of legal and financial infrastructures, social welfare, taxation, and corporate governance systems. The transition has proven to be especially difficult in countries with capital flows restrictions that had segmented their national capital markets from other international markets, such as many of the emerging market countries of Southeast Asia. Many of these countries choose a closed-end country fund as their initial entry into international markets.

Closed-end country funds (CECFs) are closed-end mutual funds invested in the assets (typically common stocks) of a single foreign country. When an emerging market is segmented from other markets, local prices are not necessarily the same as prices in international markets. When there are investment restrictions, CECF share prices in international markets are determined not only by a fund's net asset value (NAV) in its local market, as is the case with open-end country funds in unrestricted markets, but also by demand for the limited supply of fund shares in international markets (Errunza and Losq, 1985; Eun and Janakiramanan, 1986; Bonser et al., 1990). CECFs then can trade at premiums to their net asset values in the local markets. Premiums (discounts) to net asset value also reflect investor sentiment regarding the relative value of local and international assets (Bodurtha, Kim and Lee, 1995). CECF premiums tend to fall as investment restrictions are eased and international investors gain less restricted access to the emerging markets. Patro (2005) finds that existing CECFs fall by 8.8% over the four months following the announcement of a new fund. In the limit, CECF prices tend to act like closed-end fund share prices in unrestricted markets and approach or fall slightly below their net asset values.

We focus on emerging markets that offer a subset of their local equities to international investors via a closed-end country fund. In particular, we examine the premium for the initial public offering of a closed-end country fund from Indonesia, the Philippines, Taiwan, and Thailand. Each of these markets had significant investment barriers that restricted the free flow of capital upon the release of the country's first closed-end country fund.

We characterize the evolution of a closed-end country fund in these markets in two ways. We first estimate the half-life of a typical emerging market CECF premium using an approach suggested by Jorion (1990). We find that CECF premiums fall by half within the first two

months after a CECF's initial public offering. We supplement these with a measure of market openness to explain cross-sectional differences in premiums and changes in premiums in the closed-end country funds. We find that the rapid drop in CECF premiums occurs despite the fact that these emerging markets take several years to become fully open to international investors. These measures provide insight into how – and how quickly – restricted local markets are integrated into global equity markets.

The Half-Life of an Emerging Market Closed-End Country Fund

We focus on initial public offerings of Southeast Asian CECFs that have capital flow barriers resulting in economically significant premiums to their net asset values. In particular, we include in our analysis only those CECFs that are initially issued with a premium of more than 10 percent. This excludes CECFs from countries with relatively integrated capital markets and countries that used other mechanisms to open their markets (such as China's H-shares). The choice of these four countries was determined by data availability constraints. Data availability excluded numerous other Asian countries with investment restrictions, most notably China, India, and South Korea.

A. The Premium to Net Asset Value on a Closed-End Country Fund

For each of our sample markets, we wish to estimate how long it takes the closed-end country fund premium to be reduced in half. We calculate CECF premiums (or discounts) as the difference in the logarithm of fund price and net asset value using weekly closing prices from Bloomberg:

$$\text{Premium} = \ln(\text{price}) - \ln(\text{NAV}) \quad (1)$$

where price is the dollar value of the CECF in international markets and NAV is the local net asset value translated into dollars. Figure 1 presents the CECF premiums to net asset value for these funds using time $t=0$ as the month when each fund was first issued to the public. The average fund premium from the inception date is also provided for reference.

B. How Long Does the Premium Take to Get Half-Way Back to Zero?

Following Jorion (1990), let e_t denote the natural logarithm of the percentage premium or discount at time t of a closed-end country fund price P_t to net asset value NAV_t , such that $e_t \equiv \ln(P_t/\text{NAV}_t) = \ln(P_t) - \ln(\text{NAV}_t)$. With restrictions on foreign investment in the assets comprising the fund, the fund is likely to trade at a premium to net asset value such that $e_t > 0$. As investment restrictions on cross-border capital flows are gradually eased, arbitrage should gradually enforce the long-run equilibrium condition $P_t = \text{NAV}_t$ and the log premium e_t should approach zero. In the absence of investment restrictions, values of closed-end funds often trade at a slight discount to net asset value because of liquidity considerations. To allow for this possibility, suppose fund price settles to a value $P_t^q < \text{NAV}_t$ such that $e_t^q = \ln(P_t^q / \text{NAV}_t) = d^q < 0$.

Suppose the constrained fund premium e_t approaches the equilibrium value e_t^q from above according to a first-order autoregressive process,

$$e_t = k_0 + k_1 e_{t-1} + u_{t-1}, \quad (2)$$

where k_0 and k_1 are constants and the error term u_{t-1} is assumed to be normal and independently and identically distributed (i.i.d.) over time. If a fund sells at a discount to net asset value in

equilibrium, then the log premium or discount will approach the intercept such that $k_0 = d^e < 0$.

Assuming $k_1 < 1$, the expectation of the process in (2) is

$$\hat{e}_t = k_0 / (1 - k_1). \quad (3)$$

Shocks to this system are corrected at the rate of $(1 - k_1)$ per period. If the initial and final deviations from equilibrium are $D_0 = (P_0 / NAV_0) - 1$ and $D_T = (P_T / NAV_T) - 1$, then the number of intervals from D_0 to D_T is given by $N_{0,T} = (\ln D_T - \ln D_0) / \ln k_1$. The half-life of the deviation from equilibrium is then

$$\text{Half-life} = \ln(1/2) / \ln k_1. \quad (4)$$

For example, if k_1 is estimated from weekly data to be (0.9868), then the estimated half-life of the fund premium is $\ln(1/2) / \ln(0.9868) = 52.14$ weeks or about one year.

Table 1 compares the null of $k_1 = 1$ to the alternative of $k_1 < 1$ using a one-tailed test for each of the four CECFs and for the average premium from the IPO date. The CECF k_1 values range from 0.626 for Taiwan to 0.850 for Thailand, and each is statistically different from unity. These values imply half-lives that range from 1.5 months for Taiwan to 4.3 months for Thailand. The half-life of the average premium is 1.3 months. According to these estimates, fund premiums are relatively short-lived.

C. The Relation of Fund Premiums to the Openness of the Market

An emerging market's CECF premium or discount should be related to the market's degree of integration with global markets. Edison and Warnock (2003) use emerging market equity indices published by the International Finance Corporation (IFC) to estimate a emerging market's

openness or degree of integration into global financial markets. The IFC publishes a “global” or IF CG index of actively traded shares that represents 60 to 75 percent of a country’s total market capitalization, with an industrial composition that is representative of the market. The IFC also constructs an “investable” or IF CI index that is a subset of the global index and represents shares that are obtainable by foreign investors based on the country’s investment restrictions. To the extent these indices diverge, international investors cannot replicate the global market with internationally investable shares.

Edison and Warnock (2003) propose two related measures to capture the effect of capital controls on relative prices. They first propose the ratio of an emerging market’s investable capitalization to global market capitalization as a proxy for the degree of a market’s integration into global markets. Foreign ownership restrictions in country i at time t are defined as

$$FOR_{i,t} = 1 - \left[\frac{MC_{i,t}^{IFCI}}{MC_{i,t}^{IFCG}} \right], \quad (5)$$

where MC stands for a particular index’s market capitalization for country i at time t . The value of $FOR_{i,t}$ can range from zero in a completely open market with no investment restrictions to one in a completely closed market.

Although equation (5) reflects market restrictions at a given point in time, changes in this measure can be adversely affected by differences in restrictions across industries or sectors. For example, if banking stocks are included in the global index but not in the investable index, then shocks that hit only the banking sector will affect only the global index and hence equation (5).

To control for this effect, Edison and Warnock scale the market capitalizations by the respective investable and global price indices $P_{i,t}$,

$$FOR_{i,t} = 1 - \left[\frac{MC_{i,t}^{IFCI} / P_{i,t}^{IFCI}}{MC_{i,t}^{IFCG} / P_{i,t}^{IFCG}} \right], \quad (6)$$

to yield a measure of month-to-month changes in capital controls. This measure is much smoother than that in equation (5).

Figure 2 presents these measures over time. As a general rule, the IFC begins reporting market capitalization and price for an emerging market when international investors first gain access to the market. This coincides with the initial public offering of the country's first CECF for the four markets in this study, so the "event time" display in Figure 2 is aligned with that in Figure 1. Despite the rapid fall in CECF premiums, these emerging markets remained relatively closed to international investors for more than eight years after the introduction of the country's first CECF. Indeed, applying equation (4) to the Edison-Warnock measure in equation (6) produced unit root k_1 coefficients that were not significantly different than one.

Summary and Conclusion

Many emerging markets attempt a gradual transition to a market economy by only gradually opening their local markets to international investors through closed-end country funds. This can minimize the impact of liberalization on local market participants and processes in the short run, while achieving the long run benefits of integration with global markets. Using a measure of market openness (or, an inverse measure of investment restrictions), we show that the proportion

of local equities that are offered to international investors changed relatively slowly in the Southeast Asian markets of Indonesia, the Philippines, Taiwan, and Thailand. Despite this gradual opening, premiums on closed-end country funds were extremely short-lived. Indeed, it took only 1.3 months for the average premium across the four CECFs in this study to be reduced in half. This is despite the fact that it takes several years for the full array of local assets to be available to international investors.

References

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Table 1
Estimated Half-Life of the CECF Premiums

Fund (Ticker)	IPO date	Observations		k_0	Standard errors		r^2	Initial premium	t-stat ($k_1=1$)	Half-life (months)
		N	k_1		(k_1)	(k_0)				
Indonesia Fund (IF)	1990-3-1	78	0.785	0.020	0.072	0.011	0.609	13.4%	-2.98	2.9
Philippines Fund (FPF)	1989-11-8	75	0.745	-0.052	0.058	0.012	0.694	22.8%	-4.39	2.4
Taiwan Fund (TWN)	1986-12-23	62	0.626	0.040	0.084	0.021	0.482	72.6%	-4.47	1.5
Thailand Fund (TTF)	1988-2-17	80	0.850	0.004	0.051	0.010	0.783	59.6%	-2.96	4.3
Average	-	226	0.577	0.005	0.050	0.006	0.375	47.1%	-8.51	1.3

Figure 1

CECF Premiums after the Initial Public Offering

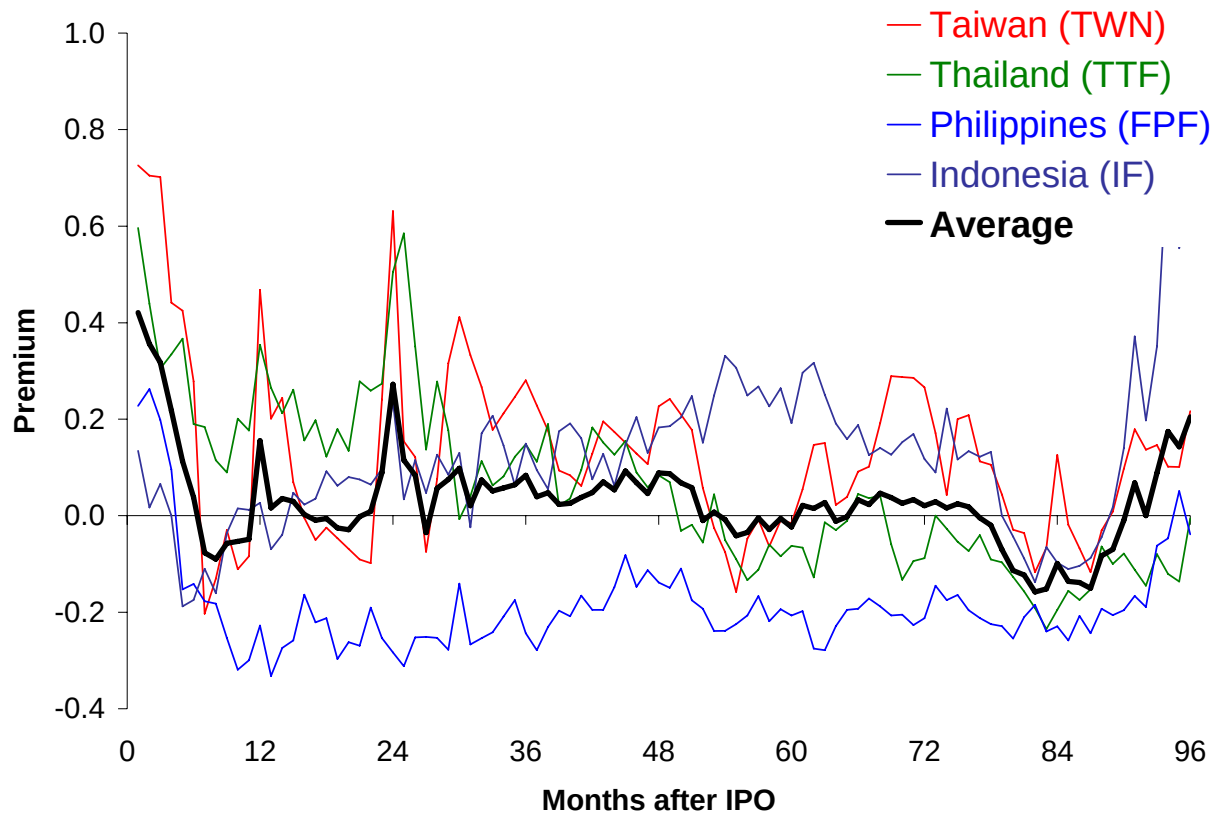


Figure 2
Edison-Warnock's Measure of Market Openness

