



אוניברסיטת חיפה

דורון קליגר

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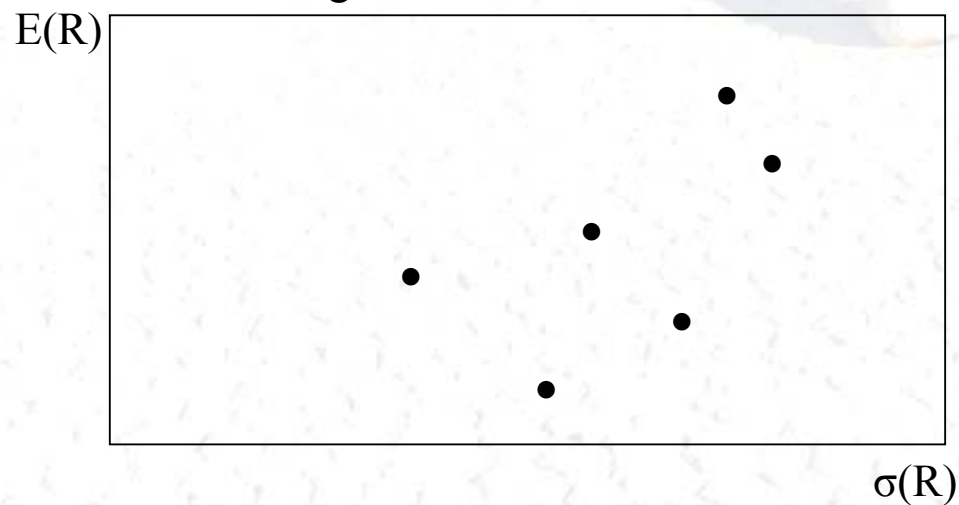
## FINANCIAL TOOLS FOR EVALUATING CASH FLOWS (II); CONTINUED

### The Capital Assets Pricing Model (CAPM)

קו שוק ההון – The Capital Market Line (CML)

קו ניירות הערך – The Security Market Line (SML)

נכסים בודדים – Single Assets



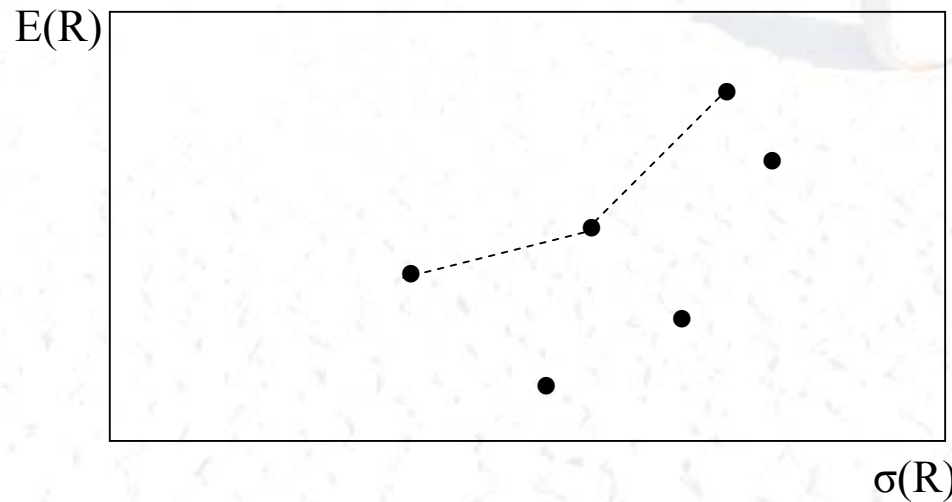
## Single Assets – נכסים בודדים

When investing in *one asset only*:

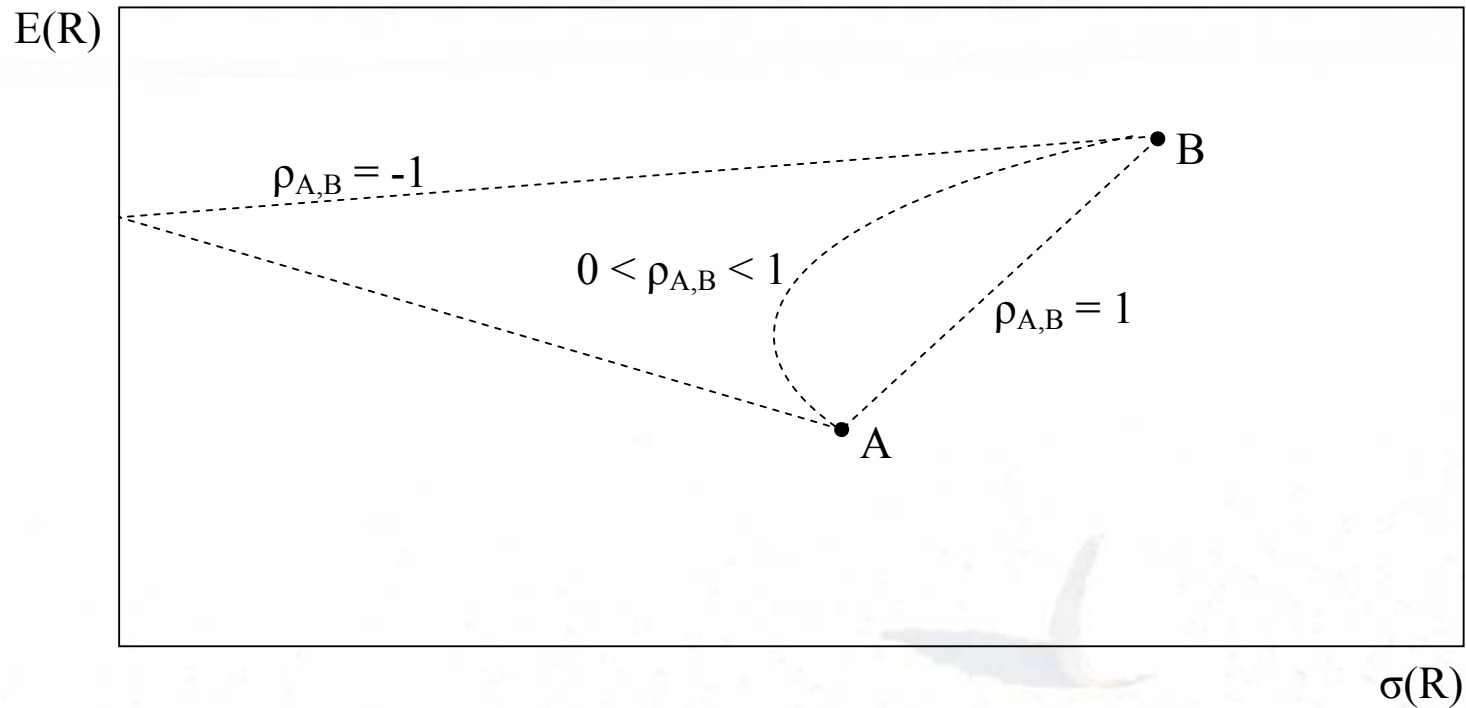
$A \succ B$   
for all risk averse

$\Leftrightarrow$

$\mu_A \geq \mu_B$   
and  
 $\sigma_A \leq \sigma_B$   
and  
at least one inequality is strong



## תיקים של 2 נכסים – 2 Assets Portfolios



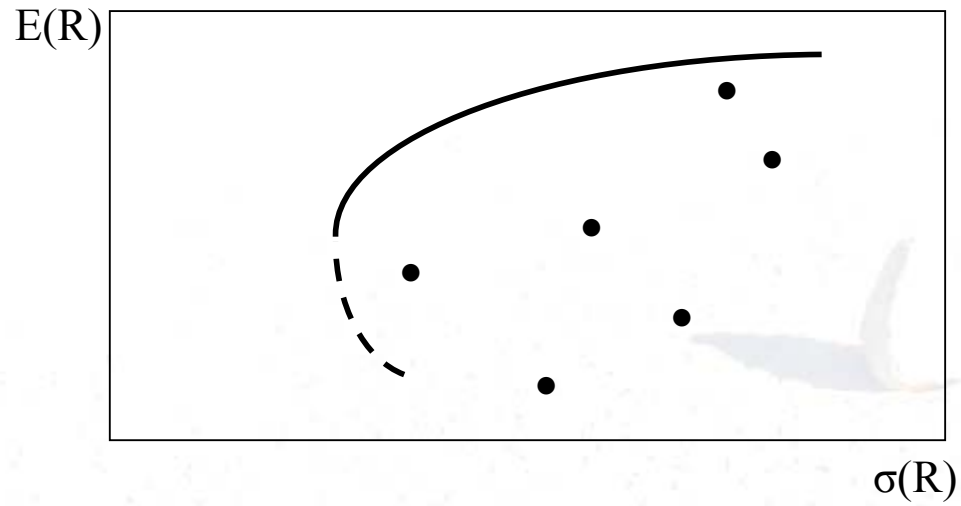
$$X_a + X_b = 1$$

$$E(R_p) = X_a \cdot E(R_a) + X_b \cdot E(R_b)$$

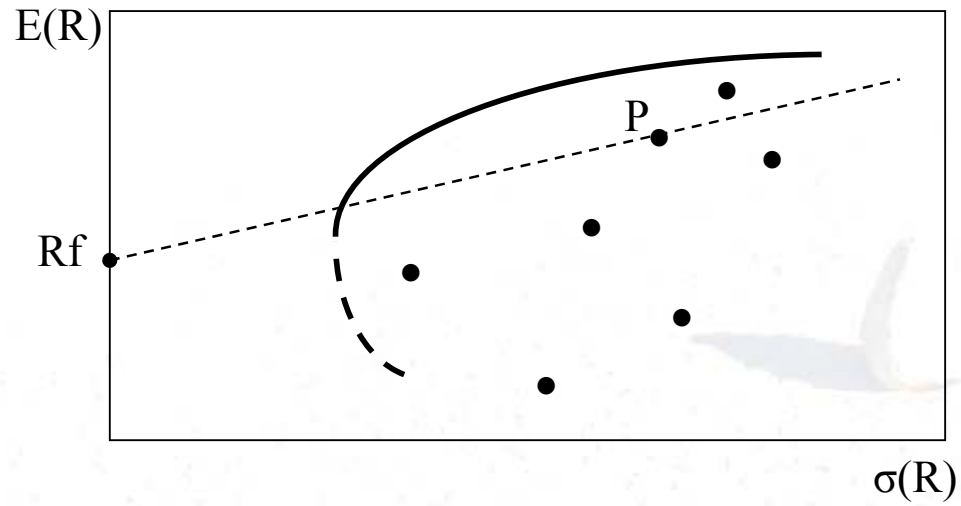
$$\sigma^2(R_p) = (X_a)^2 \cdot \sigma^2(R_a) + (X_b)^2 \cdot \sigma^2(R_b) + 2(X_a)(X_b) \cdot \text{COV}(R_a, R_b)$$

$$\sigma(R_p) = (\sigma^2(R_p))^{1/2} \quad \text{COV}(R_a, R_b) = \rho(a, b) \cdot \sigma(R_a) \cdot \sigma(R_b)$$

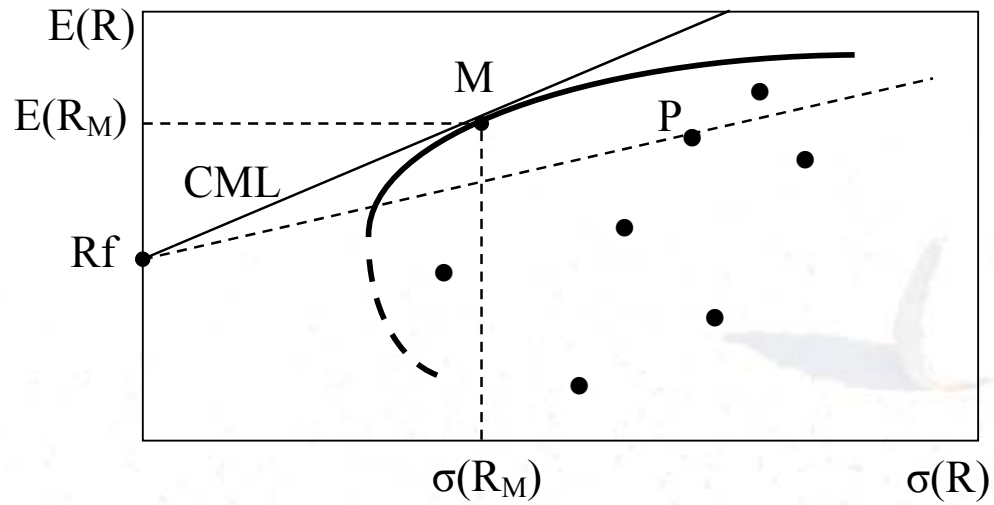
# Efficient Frontier – חזית יעילה



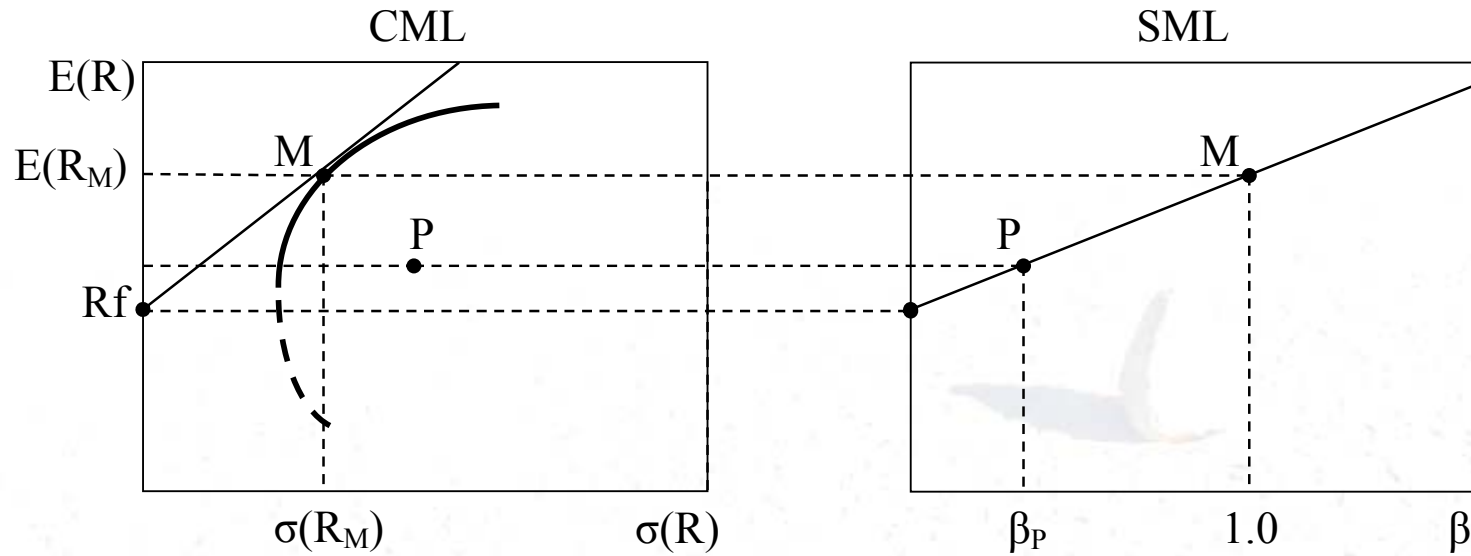
נכס חסר סיכון – Risk Free Asset



Market Portfolio (M) – תיק השוק  
Capital Market Line (CML) – קו שוק ההון



קו ניירות הערך – Security Market Line (SML)



$$\text{SML: } E(R_i) - R_f = \beta_i[E(R_m) - R_f]$$

# קו ניירות הערך – Security Market Line (SML)

