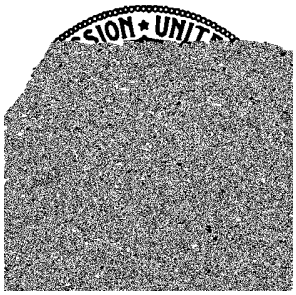
WORKING PAPERS



Pharmaceutical Development Phases:
A Duration Analysis

Rosa M. Abrantes-Metz
Christopher P. Adams
Albert Metz

WORKING PAPER NO. 274

October 2004

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BUREAU OF ECONOMICS
FEDERAL TRADE COMMISSION
WASHINGTON, DC 20580

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$$\Pr(T = t, K = k) = \Pr(T = t \mid K = k)\Pr(K = k) \qquad (8)$$

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$$\pi_k = \int_0^{\infty} \theta_k(s)\bar{F}(s)ds \qquad (9)$$

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$$f_k(t) = \frac{\theta_k(t)\bar{F}(t)}{\pi_k} = \frac{\theta_k(t)\prod_{i=1}^{K}\bar{F}_i(t)}{\pi_k} \qquad (10)$$

$$\Pr(t_u < T \le t_{u+1} \mid K = k) = F_k(t_{u+1}) - F_k(t_u) = \int_{t_u}^{t_{u+1}} f_k(s)ds \qquad (11)$$

$$\Pr(t_u < T < t_{u+1}, K = k) = \pi_k(F_k(t_{u+1}) - F_k(t_u)) = \int_{t_u}^{t_{u+1}} \pi_k f_k(s)ds \qquad (12)$$

$$\Pr(t_u < T \le t_{u+1}, K = k) = \int_{t_u}^{t_{u+1}} \theta_k(s)\bar{F}(s)ds \qquad (13)$$

$$\Pr(t_u < T \le t_{u+1}, K = k \mid x) = \int_{t_u}^{t_{u+1}} \theta_k(s \mid x, v)\, \bar{F}(s \mid x, v)\, ds\, dG(v) \quad (?)?@$$

% A

$$\Pr(t_u < T \le t_{u+1}, K = k \mid x) = \int_{t_u}^{t_{u+1}} \theta_k(s \mid x)\, \bar{F}(s \mid x)\, ds \quad (?)!@$$

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$$\theta_k(t \mid x) = \frac{\int \theta_k(t \mid x, v)\, \bar{F}(t \mid x, v)\, dG(v)}{\bar{F}(t \mid x)}, \quad (?)+@$$

$$\bar{F}(t \mid x) = \int \bar{F}(t \mid x, v)\, dG(v) \quad (?)I@$$

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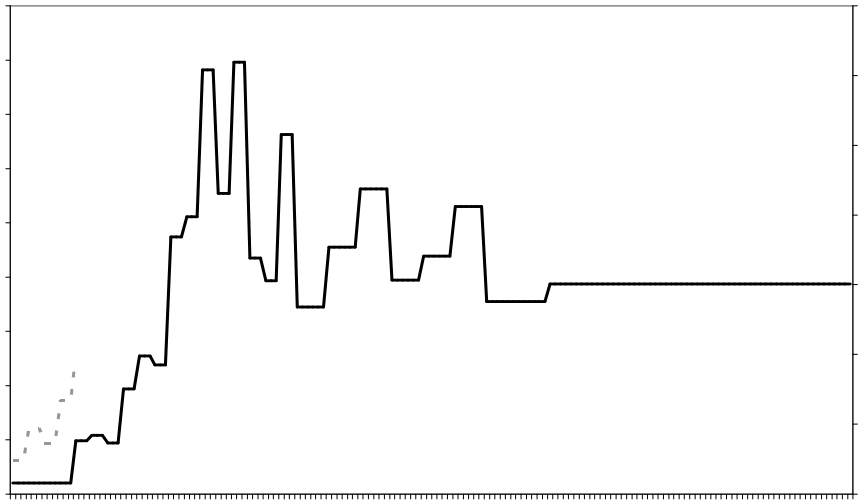

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