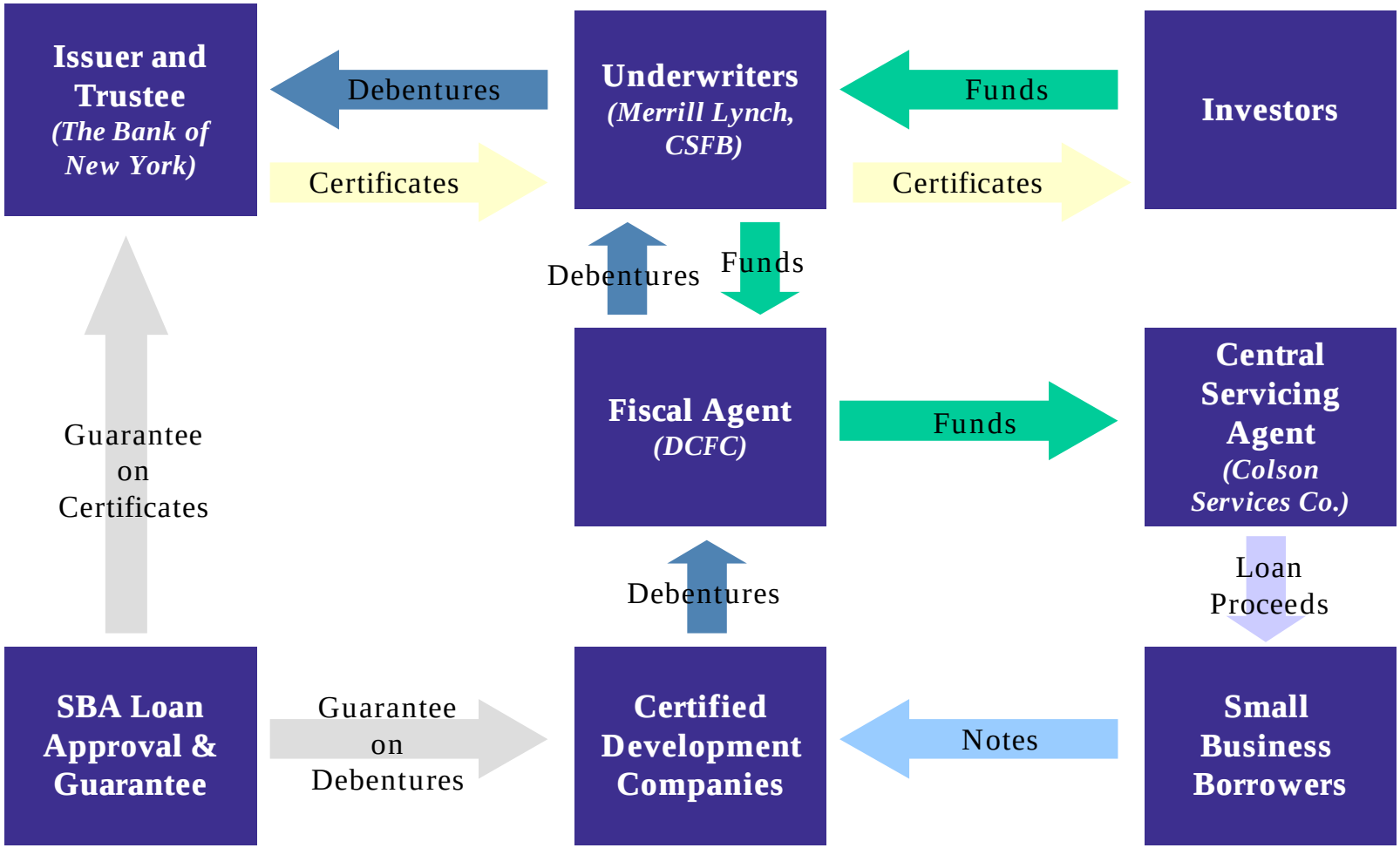
Understanding SBA 504 Interest Rates

September 2004

From Borrowers to Investors and Back



Source: Merrill Lynch Research, 1998.

Three Types of Interest Rates in 504

- ***Debenture Rate**:* The rate that determines interest paid semi-annually to investors in DCPCs.
- ***Note Rate**:* The monthly-pay equivalent of the debenture rate. Borrower P&I portion of monthly payments and principal amortization schedule are calculated using the note rate.
- ***Effective Rates**:* Rates calculated inclusive of P&I, CDC, borrower and CSA fees. Effective rates are provided to CDCs on a full-term basis and in five-year segments.
- No APR-type of rate is calculated.

How is the Debenture Rate Determined?

- **Debenture Rate** = swap rate + spread to swap.
- **Swap Rate** = treasury yield + swap spread. 20-year 504 loan uses *10-year swap rate*, 10-year 504 loan uses *5-year swap rate*.
- **Pricing.** Fiscal agent and underwriters agree on the swap rate plus the spread to swap. The fiscal agent accepts the debenture rate and obtains approvals from Treasury and SBA.

Debenture and Note Features Differ

Feature	***Debenture***	***Note***
Interest rate	Debenture rate	Note rate
Payment date	**Semi-annual**	**Monthly**
Amortization	Semi-annual	Monthly
Prepayment	**Semi-annual**	**Semi-annual**
Prepay penalty	Scheduled	Scheduled

Why Do the Features Differ?

- *Debenture semi-annual payment* was chosen to appeal to government and corporate bond investors who expect semi-annual payments. Borrowers make monthly payments.
- *Semi-annual prepayment restriction and prepayment penalties result in a much lower interest rate for small business borrowers.* An option to prepay at anytime with no penalty would cost well over another point on the debenture rate.
- Historically, about half of borrowers have prepaid. *All borrowers should not pay a higher rate so some can prepay*.
- *Rich historical data appeal to investors.* 504 program boasts data since late 1986. This is a key selling point to investors.

How is the Note Rate Determined?

- **Note rate:** The monthly-pay equivalent of the debenture rate. Simple time value of money concept but sophisticated calculation required. Typically has been about 8 BP above the debenture rate.

- **Derivation:** The semiannual debenture P&I payment is divided by 6 to obtain a monthly payment. This must be further broken down into (a) interest due and (b) paid-down principal (so that principal due = 0 after the last scheduled payment). Note rate is obtained using iterative calculations (e.g., *solver* in Excel).

Converting Debenture Rate to Note Rate

(estimate using HP12c calculator)

- ***Assume*** 5.80% rate, $350,000 orig. prin., 20-yr.
- ***Inputs*** *n* = 40, *i* = 2.9 (rate / 2), *PV* = 350000.
- ***Solve*** for PMT which = -14898.04.
- ***Clear*** registers using *{f} {FIN}* and *{f} {REG}.*
- ***Inputs*** *n* = 240, *PV* = 350000, *PMT* = [-14898.04 / 6] converts semi-annual payment to monthly.
- ***Solve*** for *i* which = 0.48986. Annualized rate = 0.48986% x 12 = 5.878%, within 0.001 point of CSA's reported rate for 6/02.

How Are Effective Rates Determined?

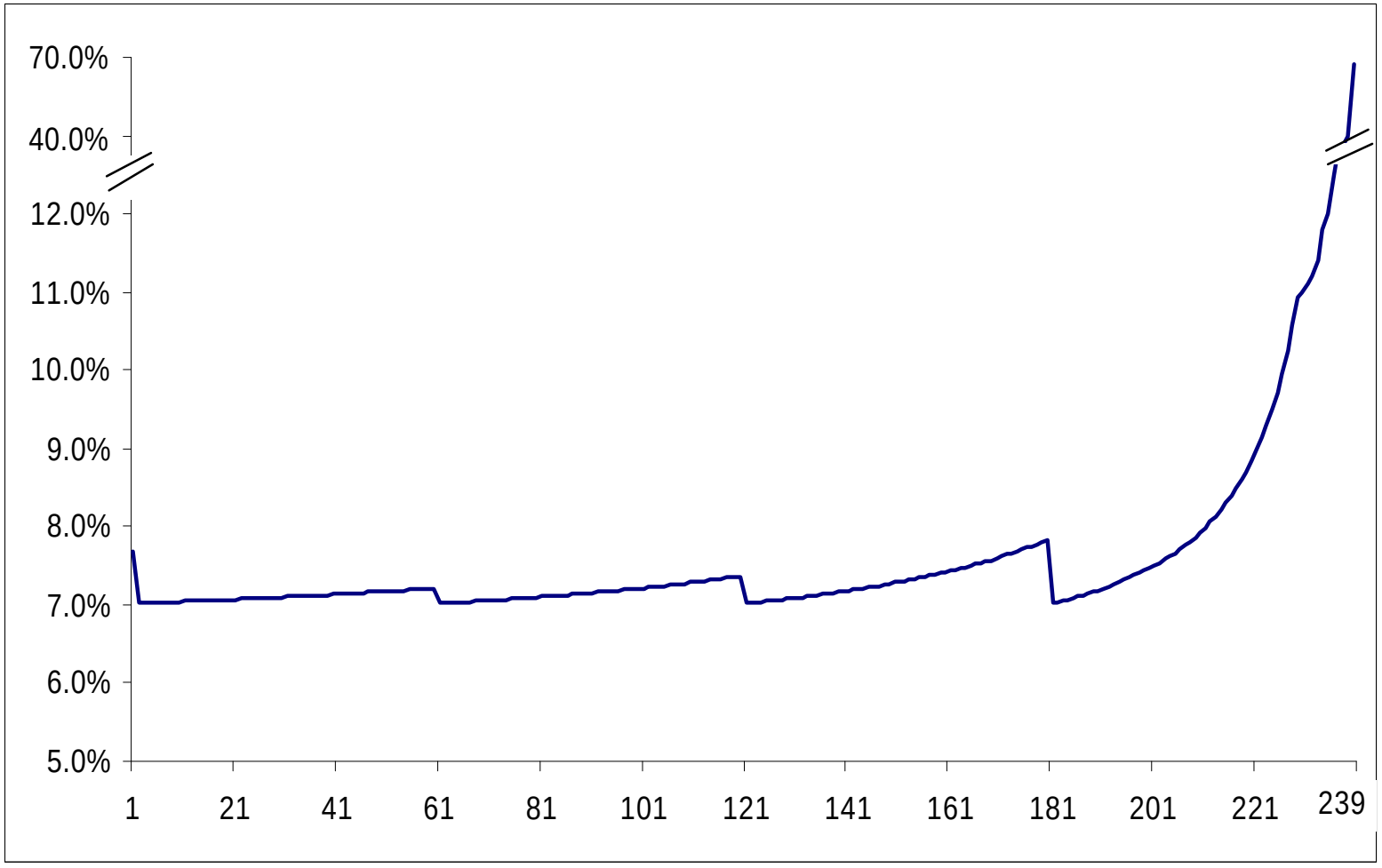
- Monthly interest rates derived by including the impact of ongoing fees (i.e. CDC, borrower, CSA). Fees adjust every five years but principal amortizes monthly. CSA calculates these rates, not NADCO or DCFC.
- Effective rates do not include the impact of *upfront* fees and therefore *are not APRs*. 2.65 points is worth about 32 BP at today's rates over 20 years.
- **Effective rate for any given month** = (*interest+CDC+SBA+CSA*) / *base UPB x 1200*. Where "*base UPB*" = opening UPB for each new monthly calculation (e.g. UPB @ mos. 1, 61, 121, 181).
- Monthly annualized effective rates are then averaged (weighted by balance), reported by CSA and posted on the NADCO web site.

Effective Rates: Example

5.88% note, 0.625% CDC, 0.41% SBA, 0.10% CSA

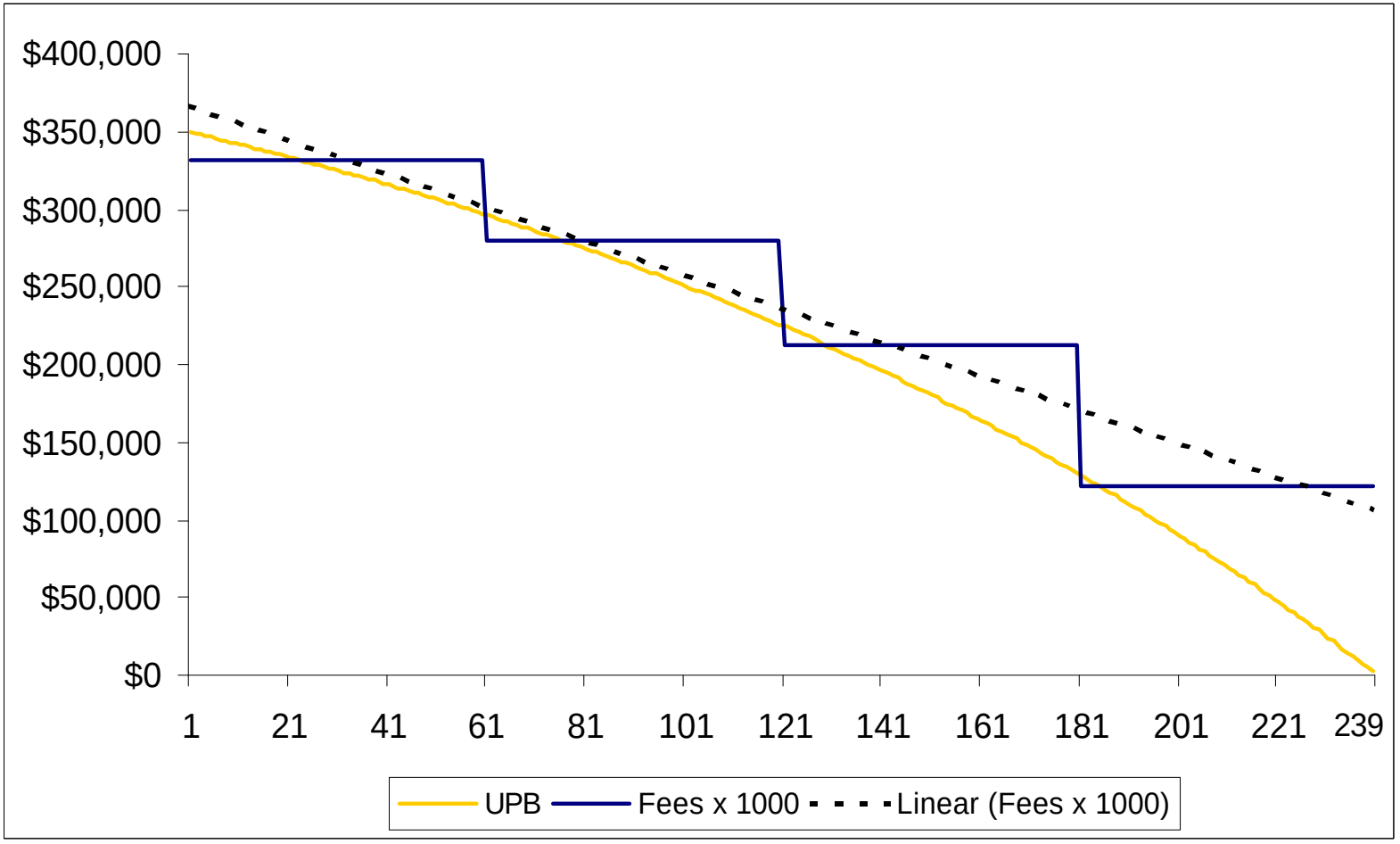
Pmt.#	*UPB*	*Interest*	*CDC*	*SBA*	*CSA*	*Eff. %*
1	350,000	1,715	182	120	29	7.01
60	**297,047**	**1,455**	**182**	**120**	**29**	**7.22**
61	296,023	1,450	154	101	25	7.01
120	**225,865**	**1,107**	**154**	**101**	**25**	**7.37**
121	224,493	1,379	117	77	19	7.01
180	**130,427**	**639**	**117**	**77**	**19**	**7.83**
181	128,587	630	67	44	11	7.01
240	**2,466**	**12**	67	44	11	**65.04**

Effective Rates Rise Over Time



Why Do Effective Rates Rise Over Time?

Principal Amortization vs. (Terraced Fees x 1000)



How Can You Estimate Effective Rates?

- NADCO has a web-based (*www.nadco.org*) estimated effective rates calculator for NADCO members. If you're not a member:
- Go back about six months and look at the range of spreads between effective rates (with the appropriate combination of fees) and the debenture rates. The data is available to anyone at *www.nadco.org*.
- Look at the average, high and low spreads and develop a rule of thumb spread. Add this spread to your estimated debenture rate. Review your estimate every few months.

NADCO's Effective Rates Calculator

20-Year 504 Estimated Payment and Effective Rate Calculator

This calculator ESTIMATES only. For simplicity's sake it ignores the partial 1st month effect on amortized principal and interest due.
It should be within a few BP of actual effective rates and close on payment amounts. Colson's numbers are always official.

REQUIRED INPUTS IN BLUE **RESULTS IN YELLOW**

Enter debenture rate and fees as decimal values (e.g. 5% as .05)

			Estimated	Estimated	Penalty Schedule		===Estimated Penalty Amounts== "Pmt#" is monthly payment number			
Debenture Rate	4.340%		Effective Rates	Monthly Pmts.	Year	Penalty	Pmt #	Amount	Pmt #	Amount
Loan Amount	1,000,000	1st 5 Years	5.62%	7,207.39	1	4.3400%	6	42,830.71	66	17,559.85
CDC fee	0.625%	2nd 5 Years	5.68%	7,044.87	2	3.9060%	12	42,133.64	72	17,125.60
Borrower fee	0.393%	3rd 5 Years	5.82%	6,842.37	3	3.4720%	18	37,278.97	78	13,345.36
CSA fee	0.100%	4th 5 Years	6.53%	6,590.07	4	3.0380%	24	36,623.41	84	12,982.34
(CSA fee is fixed at 0.1%)		Full Term	5.75%		5	2.6040%	30	31,958.46	90	9,458.44
					6	2.1700%	36	31,349.54	96	9,173.94
		Note Rate	4.40574%		7	1.7360%	42	26,886.20	102	5,922.07
		Ending Balance	0.00		8	1.3020%	48	26,329.44	108	5,723.88
					9	0.8680%	54	22,080.26	114	2,760.64
					10	0.4340%	60	21,581.58	120	2,657.08

disclaimer

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This presentation may be downloaded from the NADCO website: *http://www.nadco.org*