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Royalty Financing as a Tool for Economic Development

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NOTES

ROYALTY FINANCING AS A TOOL FOR ECONOMIC DEVELOPMENT

I. Introduction

The undercapitalization of business,[1] especially of small firms,[2] has been recognized as one of the most serious hindrances to continued economic development. Because new, small businesses are responsible for a majority of the new jobs created,[3] policies

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1. Litvak, *New Development Finance Techniques*, COMMENTARY 18 (April 1980) [hereinafter cited as *New Development Finance Techniques*]. Interest subsidies and tax abatements have been used to help combat the undercapitalization of business. The Supreme Court has defined undercapitalization as "an obvious inadequacy of capital, measured by the nature and magnitude of the corporate undertaking, has frequently been an important factor in cases denying stockholders their defense of limited liability." Anderson v. Abbott, 321 U.S. 349, 352 (1944). Because these methods have not been successful, *see* notes 22-23 *infra* and accompanying text, new methods of ensuring proper capital allocation are necessary.

2. Kieschnick, *Policies to Support New Businesses*, COMMENTARY 21 (July 1980) [hereinafter cited as *Policies to Support New Businesses*]. The traditional sources of capital - debt, equity and venture capital funds - are particularly ineffective methods of finance for small firms. Entrepreneurs have found these sources inadequate, and therefore have tended to avoid these methods even though they are available. *See* notes 5-18 *infra* and accompanying text. Consequently, in the typical new firm, 81% of the capital comes from personal savings, while contributions of equipment (a form of personal savings) provides eight percent of the capital. *Id.* 75% of the new firms are capitalized solely with personal savings.

3. B. DANIELS & M. KIESCHNICK, THEORY AND PRACTICE IN THE DESIGN OF DEVELOPMENT FINANCE INNOVATIONS 19-20 (1978) (working papers drafted for the Council of State Planning Agencies) [hereinafter cited as 1978 WORKING PAPERS]. Nationwide, firms younger than four years provide at least 50% of the new jobs created. In the Northeast, these firms are responsible for 53.6% of the new jobs created, in the Midwest, 57.8%, in the South, 61.8%, and in the West, 61.2%. New firms provide a greater percentage of the new jobs created than do the older firms. For example, in the Northeast, firms five to eight years old provide 19.6% of the new jobs, firms 9-12 years old provide 14.2% and those firms 13 and older provide 12.7%. *Id.*

There is a similar relationship between small firms and job creation. In the Northeast, firms employing fewer than 11 employees create 32.6% of the new jobs, those employing 11-50 create 30.6%; firms employing 51-251 create 25%; and those employing over 251 create 11.9%. *Id. See also* B. DANIELS & L. LITVAK, INNOVATIONS IN DEVELOPMENT FINANCE 25 (1979) [hereinafter cited as INNOVATIONS IN DEVELOPMENT FINANCE]. For a discussion of small firms and job-generation see D. BIRCH, THE JOB GENERATION PROCESS (1979) (a report prepared for the United States Department of Commerce, Economic Development Administration, Office of Economic Research), *reprinted in Proposed Development Legislation:*

designed to accelerate the formation and growth of these firms have been advocated at all levels of government.[4]

Traditionally, firms have sought capital from one of three sources - debt, equity and venture capital. Debt makes up the largest portion of capitalization[5] in new firms that obtain outside financing.[6] Many new, small firms, however, are unable to obtain loans.[7] Even if a high-risk firm is able to obtain a loan, the debt will expose the firm to several financial risks, which make debt an ineffective mechanism for financing these firms.[8] Equity, an investment in a firm entitling the investor to share in the income of the firm, is the usual alternative to debt financing.[9] "Financial experts

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Hearings on H.R. 3405, 4098, 4099, 4100 Before the Subcomm. on Economic Stabilization of the House Comm. on Banking, Finance and Urban Affairs, 96th Cong., 1st Sess. (1979).

4. *Policies to Support New Businesses, supra* note 2, at 21. "The impetus for these policies has been twofold: most state and local policies, seeking to stimulate large firms, have failed to provide sufficient investment and employment; in addition, recent research has produced abundant evidence that small firms dominate the marketplace in both job creation and innovation." *Id.*

5. 1978 WORKING PAPERS, *supra* note 3, at 34. Small firms have a higher than average debt-equity ratio, reflecting their difficulty in raising equity capital and their resulting reliance on debt. The debt tends to be short term, often requiring repayment at a point in the firm's development when it may not have the funds to repay the principal. INNOVATIONS IN DEVELOPMENT FINANCE, *supra* note 3, at 52. For manufacturing firms with assets valuing less than one million dollars, debt comprises over one-half of the firm's capital structure. 1978 WORKING PAPERS, *supra* note 3, at 34.

6. *See* note 2 *supra*.

7. COUNCIL OF STATE PLANNING AGENCIES, FINANCING NEW BUSINESS DEVELOPMENT 2 (June 1980) [hereinafter cited as FINANCING NEW BUSINESS DEVELOPMENT]. Debt requires the borrower to repay the lender the principal borrowed plus a fixed amount as interest. A lender's return on a loan to a successful firm will be no greater than a return on a venture which is a complete failure. From the lender's point of view, there is little incentive to make loans to businesses with any chance of failure, because it is not possible to earn greater returns on successful ventures to cover inevitable losses. *Id. See also* THE COUNCIL OF STATE PLANNING AGENCIES, ROYALTY FINANCING 1 (a report submitted by the National Governors' Ass'n.), [hereinafter cited as ROYALTY FINANCING].

8. Debt financing usually requires a constant stream of payments from the debtor to the creditor. Because new firms rarely have predictable revenues to cover the interest payments, they are not the ideal candidates for debt financing. New firms require "patient money," which allows the borrower to use the money for a period of time, with no repayment required until a firm has had time to generate revenues. ROYALTY FINANCING, *supra* note 7, at 4. Consequently, only firms with predictable cash flows should be financed primarily with debt. In addition, because a loan to a new firm is so risky, a bank often requires an entrepreneur's personal assets as collateral. An unwillingness to jeopardize personal assets discourages many potential firms from ever coming into existence. *Id.*

9. *Id.* An equity investment in a firm also requires the entrepreneur to relinquish a portion of his control of the business to the investor. Equity is defined as a "share in a corpora-

almost always assert that new technology based companies should be financed primarily with equity."[10] However, equity has several characteristics which discourage its use.[11]

Venture capital funding, the third traditional source of financing, is the segment of the capital market most oriented toward financing new, high-risk companies.[12] When venture capitalists invest in a firm, they traditionally rely heavily on equity financing.[13] A venture capital firm generally invests in several high-risk firms with the expectation that the revenues from the successful ventures will exceed the losses from failed ventures, thereby resulting in a net gain.[14] Venture capital financing was particularly successful in the 1960's because venture capitalists were often able to sell their interest at several times the initial investment when the small

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tion, whether or not transferable or denominated [as] 'stock' or similar security." 11 U.S.C. § 101(15)(A) (Supp. III 1979). "Stock is an equity; it represents an ownership interest. It is to be distinguished from obligations such as notes or bonds which are not equities, and represent no ownership interest." United States v. Evans, 375 F.2d 730, 731 (9th Cir. 1967).

10. FINANCING NEW BUSINESS DEVELOPMENT, *supra* note 7, at 3.

11. Entrepreneurs refrain from equity financing because they wish to maintain control of their businesses. "Many owners of small firms will object to public investment when it means giving up a share of the business." *Policies to Support New Businesses, supra* note 2, at 23.

Equity may also be an unfavorable method of financing a new firm from an investor's point of view. Stockholders assume a greater risk than do bondholders. Stockholders will, however, obtain a greater return if the venture is successful than will lenders, who are limited to a fixed return even if the venture is a success. FINANCING NEW BUSINESS DEVELOPMENT, *supra* note 7, at 2. Because purchasers of equity are not entitled to a fixed return on their investment until business costs, including interest payments, have been paid, investors may not wish to purchase equity in a firm when its future earnings are far from certain, even though the rate of return will be higher if the enterprise is successful. *Id.*

12. INNOVATIONS IN DEVELOPMENT FINANCE, *supra* note 3, at 48. Venture capitalists recoup their investments by selling the shares they have accepted from the firm in exchange for the capital. Because the cost of selling the shares is so high, however, the venture capital firms are instead investing in larger, older firms, which issue a greater number of shares. The sale of a larger number of shares will compensate the venture capitalist for accepting the risk of the investment and will cover the transaction cost. In 1975, only five percent of the venture capital industry's new investment went to start-ups. *Id.* For a discussion of transaction costs, see note 43 *infra* and accompanying text.

13. ROYALTY FINANCING, *supra* note 7, at 2.

14. *See* notes 39-40 *infra* and accompanying text for a discussion of risk-pooling. Equity gives the holder a right to share in a firm's income, but because these new, high-risk ventures rarely generate income at the outset, venture capitalists make a profit by selling their shares at an accelerated price when the firm goes public. ROYALITY FINANCING, *supra* note 7, at 2. *See also* note 15 *infra*. A venture capitalist obtains a return by liquidating the investment at some future time, not by receiving dividends. *Id.*

high-risk firm went public.[15]

Since 1970, however, fewer firms have been able to go public, decreasing the importance of venture capital as a mechanism for financing new firms.[16] Because many new firms have been unable to go public, venture capitalists have had to seek other methods of investments.[17] These alternate methods have proven unacceptable and have contributed to a decrease in the use of venture capital as a source for financing new firms.[18]

This Note will first discuss the role that government has played in providing adequate financing for new, small firms. It will examine both traditional government responses to capital market imperfections and more innovative capital allocation mechanisms. Second, this Note will explain the use of the royalty financing method by public financial intermediaries. Finally, England's National Research Development Corporation and the Connecticut

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15. "Go public" refers to a situation in which a privately controlled firm offers its shares for sale on the market. *Id.* The Investment Company Act of 1940, 15 U.S.C. § 80a-2(34) (1976), defines offer for sale as "every contract of sale or disposition of, attempt or offer to dispose of, or solicitation of an offer to buy, a security or interest in a security, for value."

16. ROYALTY FINANCING, *supra* note 7, at 2. There are several reasons for the infrequency with which firms go public today. Investors are more concerned about risk today than they were in the 1960's. Furthermore, a number of investment bankers who specialized in helping young firms go public have failed or have been acquired by larger firms. Thus, most young firms are deterred from going public at all. For those firms that do go public, capital is substantially more expensive then it was in the 1960's. *Id.*

17. One alternate method for venture capitalists to liquidate their investment is to sell the shares of the young company to a larger firm wishing to acquire the smaller firm in order to obtain new products or to preempt possible competition. *Id.* The number of sell-outs has increased as the ability of small firms to go public has decreased. *Id.* Most of the acquisitions that take place are of those firms with the smallest amount of assets. In 1976, 76.1% of all acquisitions involved firms with less than $1 million in assets, while 11.5% of the acquisitions involved firms with between $1 million and $2 million in assets. INNOVATIONS IN DEVELOPMENT FINANCE, *supra* note 3, at 48. Some entrepreneurs liquidate voluntarily, but others are forced to do so if they are to recover their investments at all. ROYALTY FINANCING, *supra* note 7, at 2.

A second alternative for a venture capitalist to liquidate his investment in a firm is to force the firm to buy back its shares by exercising a "put." When a venture capitalist exercises a "put," he "forces the young company to buy back its shares at a high profit to the venture capitalist." *Id.* New firms are reluctant to grant the venture capitalist the right to exercise a put, because the firms could be forced to use their earnings to buy back their own stock rather than to finance their expansion. *See* note 63 *infra* and accompanying text.

18. The diminished importance of venture capital financing is illustrated by a study of 100 manufacturing firms in four cities, Buffalo, Cincinnati, Atlanta and Salt Lake City, where no new, small firms received funds from organized venture capital firms. *Policies to Support New Businesses, supra* note 2, at 21-22.

Product Development Corporation ("CPDC"), intermediaries which use the royalty financing method, will also be examined.

II. Government Intervention

Traditional sources of capital have proven to be ineffective tools for financing small firms. As a result, government has become involved in channeling capital to small businesses not only for the economic benefit such intervention might achieve, but also for the social benefit realized in the form of product innovation.[19] The responsibility for allocating capital, which is ordinarily undertaken by the capital markets, has been partially assumed by the government because private investment has not proved efficient.[20] This inefficiency is manifested in the market's failure to provide adequate capitalization to small firms even though, in many instances, the small firms offer a better return on investment[21] than the larger firms to which the market directs capital. Government has used several tools to correct these inefficiencies and to direct capital to small firms. State and local governments became involved in channeling capital to small businesses in an attempt to decrease the cost of capital to these firms and to attract them to a particular region[22] and to bolster the local economy. Programs designed to decrease the cost of capital, which range from interest subsidies[23] to tax abatements,[24] have generally not been successful. Aid to

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19. ROYALTY FINANCING, *supra* note 7, at 1.

20. *See* notes 5-18 *supra* and accompanying text.

21. INNOVATIONS IN DEVELOPMENT FINANCE, *supra* note 3, at 25. Federal Trade Commission figures for the period 1972-76 show that manufacturing firms with under one million dollars in assets produced an after-tax return on equity of 15.95%, while firms with over one billion dollars produced a return of only 12.91%. Although the risk associated with an investment in a small firm is usually greater, it appears that an investment in the small firm is warranted because of the higher return. *Id. See also,* 1978 WORKING PAPERS, *supra* note 3, at 86.

22. *New Development Finance Techniques, supra* note 1, at 18. Traditionally, localities believed that by decreasing the cost of capital through revenue bonds or tax abatements, they could compensate for higher production costs or market disadvantages in their area. *Id.* Revenue bonds and tax abatements, however, have been ineffective in influencing a firm's locational choice. *See* note 108 *infra* and accompanying text.

23. *New Developement Finance Techniques, supra* note 1, at 18. Interest subsidies are granted to attract new firms to the area by decreasing the firm's cost of borrowing. For example, "an interest subsidy that reduces the borrowing rate from 10% to 2.5% (about twice the reduction provided by an industrial revenue bond) will on average increase a firm's rate of profit by three tenths of one percent." *Id.*

24. *Id.* Tax abatements are granted to diminish or eradicate a firm's tax liability if a firm

small, new firms is also provided through the grant of loans under the auspices of the Small Business Administration.[25] But like other sources of debt financing, this method forces a firm to incur fixed interest payments immediately,[26] a financial burden most new firms are unable to bear.[27]

Because these traditional modes of government financing have not been responsive to firms' needs,[28] government has sought new ways to ensure adequate capitalization of small firms. There are three innovative methods which the government uses to effect efficient capital allocation: first, administrative regulations,[29] second, economic incentives[30] (which rely largely on altering the practices

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agrees to locate in a particular area. Tax abatements have a minimal effect on the cost of new investment. "A mere 2- percent difference in unit labor costs between two areas could offset a 40- percent tax difference." *Id.*

25. Aid to Small Business Act, 15 U.S.C. §§ 631-47 (1976). The Small Business Administration defines "small business" in several ways. One definition requires the business to be independently owned, not to be dominant in its field, to have assets of less than six million dollars, to have a net worth of less than six million dollars, and to have an average income for the last two years of less than two million dollars. 13 C.F.R. § 121.3-11(a) (1980). In subsection (b) the "small business" is defined primarily on the basis of the number of employees, or volume of sales, should the small business be unable to meet the standards of subsection (a).

26. 15 U.S.C. § 633(c) (1976).

27. *Policies to Support New Businesses, supra* note 2, at 21-22. "[T]here is an *excessive* amount of SBA . . . loans available, providing precisely the wrong kind of capital to risky ventures." *Id.* at 23. *See* notes 6-8 *supra* and accompanying text.

If the government decides that equity rather than debt is necessary, it can form a Small Business Investment Company "SBIC". But because an SBIC, like a venture capital firm, earns its profit by liquidating its equity in a business, *see* note 14 *supra* and accompanying text, it has trouble obtaining a return on its investment. *See* notes 14-18 *supra* and accompanying text. For a discussion of SBIC's see *The Small Business Investment Incentive Act of 1980 & Venture Capital Financing*, 9 FORDHAM URB. L. J. 865 (1981).

28. INNOVATIONS IN DEVELOPMENT FINANCE, *supra* note 3, at 52. State programs are often designed to aid existing large companies which traditionally have access to the capital markets. As a result, small, undercapitalized firms do not get the type of help they need. *Id.* For example, although the Connecticut Product Development Corporation ("CPDC") uses the royalty financing method, which is particularly well-suited for financing new firms, the CPDC primarily finances existing firms. *See* note 115 *infra* and accompanying text.

29. For a discussion of New York regulations designed to ensure a more efficient allocation of mortgage money see *Redlining, Disinvestment and the Role of the Mutual Savings Banks: A Survey of Solutions*, 9 FORDHAM URB. L.J. 89 (1980).

30. Economic incentives usually take the form of loan guarantees for small firms. *New Development Finance Techniques, supra* note 1, at 19. For a discussion of loan guarantees, see Lukens Steel Co. v. Klutznick, 629 F.2d 881 (3d Cir. 1980) (court held that "[the Economic Development Administration's] decision to apply the concept of aggregate production in measuring changed production levels resulting form [sic] its assistance to a [steel pro-

of private financial intermediaries), and finally, publicly-owned financial intermediaries which make funds available to firms having difficulty obtaining financing through the private capital markets.[31]

Administrative regulations can be successful in affecting the flow of private capital. Regulations which force institutions to make loans they consider undesirable may cause the withdrawal of funds from the regulated institutions.[32] Economic incentives to increase the flow of capital to underfinanced firms usually take the form of loan guarantees. These guarantees are not capital subsidies; rather, they promote the flow of capital to deserving firms.[33]

Public financial intermediaries, which have been implemented by several states,[34] provide the third alternative to traditional financing methods. One important attribute of the intermediaries is their flexible use of financing methods.[35]

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ducer was] . . . arbitrary and inconsistent with the purpose of the Act," *id.* at 890, where the steel producer sought EDA assistance specifically for the acquisition of equipment intended to effect a change in product mix. *Id.* at 889.) *and* CF&I Steel Corp. v. Economic Dev. Admin., 624 F.2d 136 (10th Cir. 1980) (court held that there was a rational basis in fact for guaranteeing a loan where it was believed that the demand for the product would absorb the increased output financed by the loan.) *Id.* at 140.

31. *New Development Finance Techniques, supra* note 1, at 18-19.

32. *Id.* at 19.

33. *Id.*

34. *See, e.g.*, Connecticut Product Development Act, CONN. GEN. STAT. ANN. §§ 32-32 to 32-47 (West Supp. 1980). *See also* Commercial Fishing and Agriculture Bank, ALASKA STAT. § 44.81 (Michie 1980); Massachusetts Technology Development Corporation, MASS. ANN. LAWS ch. 40G, §§ 1-10 (Law. Co-op Supp. 1981).

35. Some of the intermediaries provide debt to new firms, others provide equity. For an example of an intermediary that provides debt, see Commercial Fishing and Agriculture Bank, ALASKA STAT. § 44.81 (Michie 1980). The Bank has the power to "make variable rate or fixed rate loans to individuals who are residents and who are engaged in commercial agriculture or fishing, including harvesters, processors, suppliers and marketers, or to corporations, partnerships or joint ventures engaged in commercial agriculture or fishing. . . . *Id.* § 44.81.210(1).

A Massachusetts intermediary provides equity financing. *See* Massachusetts Technology Development Corporation, MASS. ANN. LAWS ch.40G, §§ 1-10 (Law. Co-op Supp. 1981). The corporation is empowered to "finance, conduct, or cooperate in financing or conducting technological, business, financial, or other investigations which are related to or likely to lead to business and economic development by making and entering into contracts and other appropriate arrangements, including the provision of grants, loans, and other forms of assistance." *Id.* § 3.

One intermediary provides firms with capital in return for a stream of royalties from the sale of products the capital helped develop. The Connecticut Product Development Corporation uses the royalty method. The CPDC is the only American intermediary to use this

Public financial intermediaries have been used for a variety of developmental activities, ranging from product innovation to regional development and housing finance.[36] Of particular concern are those intermediaries actively involved in the capitalization of new enterprises and the expansion of new enterprises as a means of increasing employment and strengthening the local economy.[37] These intermediaries provide five principal benefits within these areas of concern: they offer opportunities for risk-pooling through their diverse portfolios; they decrease the cost of information-gathering; they decrease the cost of financial transactions; they increase competition in the capital markets; and they can be used to pursue non-discriminatory lending practices.[38]

The major benefit provided by public financial intermediaries is risk-pooling, an opportunity not generally available in the private capital markets.[39] An individual investor might not be willing to completely underwrite a high-risk venture for $100,000; he might, however, be more likely to invest $100,000 in a fund composed of several risky investments, with the expectation that if the fund's profits did exceed its losses, his investment would result in a net gain.[40]

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method. For a discussion of this intermediary, see notes 101-25 *infra* and accompanying text.

36. 1978 WORKING PAPERS, *supra* note 3, at 187. These development institutions have also been used to invest in large scale enterprises, to provide expansion capital for small and medium scale enterprises, to finance local community development, to provide working capital finance and to finance infrastructure repair and improvement. *Id.*

37. For example, the Connecticut Development Corporation's stated purpose is "to stimulate and encourage the development of new products within Connecticut by the infusion of financial aid for invention and innovation in situations in which such financial aid would not otherwise be reasonably available from commercial sources. . . ." CONN. GEN. STAT. ANN. § 32-39 (West Supp. 1980). Prior to enacting the legislation the legislature found "that there exists in the state a great and growing need for industrial and commercial development and activity to provide and maintain employment and tax revenues. . . ." *Id.* § 32-33.

38. *See* notes 39-45 *infra* and accompanying text.

39. INNOVATIONS IN DEVELOPMENT FINANCE, *supra* note 3, at 72. Risk-pooling is accomplished by spreading a high-risk investment over several investors' portfolios so that each investor bears a minimal risk. *Id.* The risk-pooling concept is also employed by venture capitalists, who generally invest in several high-risk firms, hoping that the revenues from successful ventures will offset losses from failed ventures and result in a net gain. *See* note 14 *supra* and accompanying text.

40. By spreading a risky investment over several investors' portfolios, each investor minimizes his risk. 1978 WORKING PAPERS, *supra* note 3, at 45.

Consider a single investment with an expected rate of return of 10%, but with a 50%

The second benefit provided by a financial intermediary springs from its primary benefit of risk-pooling. Because of its diverse investment portfolio, the intermediary should function as a risk-spreading institution. As a result, potential investors should require less information prior to making an investment.[41] Thus the cost of providing such information will be decreased.[42] Similarly, because the intermediary deals with a large number of small enterprises, the cost of a public offering of shares can be spread over several firms offering shares for sale, thereby reducing transaction costs per firm.[43] A fourth benefit derived from intermediaries is an increase in competition in the capital markets, which may increase the volume of loans to new businesses by commercial banks.[44] Finally, public intermediaries can pursue a nondiscriminatory policy

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chance of losing 10% and a 50% chance of returning 30%. Risk-adverse individuals will have different responses to this sort of investment depending on its size (and hence the size of possible gains and losses). If 100 investors have $500 in assets, and the investment is $500, each investor acting alone may be unwilling to take the 50% chance of a 10% loss. But if all 100 investors purchased equal shares of the investment, each would face a potential loss that in absolute terms is much smaller. Investors facing this choice will typically demand a proportionately smaller risk premium. *Id.*

41. 1978 WORKING PAPERS, *supra* note 3, at 151.

42. INNOVATIONS IN DEVELOPMENT FINANCE, *supra* note 3, at 73. Because the risk is spread over several portfolios, each investor will not require as much information. The intermediary, because it will deal with large numbers of firms, will rely on economies of scale to diminish the cost of information gathered per firm. *Id.*

43. *Id.* The transaction cost is the cost of a public offering of securities. The minimum transaction cost of a public offering now exceeds $25,000. The total transaction cost of 20 debt issuances of $1,000,000 each would exceed $500,000. If a financial intermediary obtains the funds in a $20,000,000 umbrella revenue bond offering, however, there will be just one transaction cost of about $25,000. 1978 WORKING PAPERS, *supra* note 3, at 153.

Small corporations incur a greater percentage of transaction costs from the sale of securities than do corporations issuing larger quantities of stock. When less than $1,000,000 worth of bonds are issued at one time, 11.49% of the proceeds from the sale are necessary to cover the cost of the sale, whereas on an issue of over $50,000,000, only 1.19% of the proceeds are used to cover costs. Similarly, on the sale of common stock, 27.15% of the proceeds are necessary to cover costs on an offering of less than $500,000, whereas only 5.37% of the proceeds will be required to cover the expenses on an offering of greater than $50,000,000. *Id.* at 51. The intermediary facilitates investment in smaller firms by combining transactions to decrease transaction costs per-firm. INNOVATIONS IN DEVELOPMENT FINANCE, *supra* note 3, at 73.

44. INNOVATIONS IN DEVELOPMENT FINANCE, *supra* note 3, at 73. The intermediary may even increase competition in the commercial bank markets. The impact will depend on the particular segment of the market in which the intermediary operates, the intermediary's size, and the terms it offers. *Id.*

in making capital available to small firms.[45]

The method selected to finance the intermediary can have an effect on the cost of capital both to the intermediary and to the firms being financed by it. The intermediary is usually funded by the sale of tax-exempt bonds.[46] Bonds which more strongly obligate a state to assume liability in the case of a default will generally have a correspondingly higher credit rating and a lower cost of borrowing.[47] Because general obligation bonds impose the strongest obligation on a state, the cost of the funds to the intermediary can be minimized through the use of such bonds. These savings can be passed along to those firms which the public intermediary finances.

Although the intermediaries have several unique benefits, they are not without problems. First, the intermediaries are often managed by persons from the banking community who have the atti-

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45. *Id.* For example, one of the goals of the Alaska Fishing and Agricultural Bank is to eliminate the traditional prejudice banks have had against financing fishermen. *Id.*

46. General obligation bonds are backed by the "full faith and credit" of the issuer, thereby giving an unlimited guarantee to its investors that the issuer "will raise funds by whatever necessary and to the fullest extent of its ability in order to honor its obligation." Greenberg, *Municipal Securities: Some Basic Principles and Practices*, 9 URB. LAW 338, 340 (1977) [hereinafter cited as *Municipal Securities*]. *See also* Port of N.Y. Auth. v. Baker, Watts & Co., 392 F.2d 497, 499-501 (D.C. Cir. 1968); Quirk v. Municipal Assistance Corp., 41 N.Y.2d 644, 363 N.E.2d 549, 370 N.Y.S.2d 842, *appeal dismissed*, 434 U.S. 808 (1977); S. SANTO & A. VAN ALYSTYNE, STATE AND LOCAL GOVERNMENT LAW 581-97 (2d ed. 1977). Revenue bonds, on the other hand, are repaid solely from the revenues generated by a specific income-producing facility acquired or constructed with the proceeds of the bond. *Municipal Securities, supra*, at 341. *See* L. MOAK & A. HILLHOUSE, CONCEPTS AND PRACTICES IN LOCAL GOVERNMENT FINANCE 317-21 (1975). Revenue bonds, unlike general obligation bonds, are not payable out of taxes, but instead are paid from the revenues of the specific facility financed by the bonds. Finally, moral obligation bonds are revenue bonds, which are secured by a "make-up" clause which allegedly furnishes a second tier of security to the investor. This "make-up" clause is a device which has the effect of making an otherwise unmarketable issue marketable. *See* Quirk & Wein, *A Short Constitutional History of Entities Commonly Known as Authorities*, 56 CORNELL L. REV. 521 (1971). The "make-up" provision has been held to create a moral obligation upon the state to repay bondholders. *See* Massachusetts Hous. Fin. Agency v. New England's Merchant Nat'l Bank, 356 Mass. 202, 249 N.E.2d 599 (1969); Wein v. City of New York, 36 N.Y.2d 610, 331 N.E.2d 514, 370 N.Y.S.2d 550 (1976); State *ex rel.* Warren v. Nusbaum, 59 Wis. 391, 208 N.W.2d 780 (1973). *But see* Witzenburger v. State *ex rel.* Wyoming Comm. Dev. Auth., 575 P.2d 1100, 1129 (Wyo. 1978) (striking down a "make-up" clause the court stated, "we question the ethics of government utilizing such a merchandising technique"). For a discussion of the problems created when the New York State Urban Development Corporation defaulted on its moral obligation bonds, see Griffith, *"Moral Obligation" Bonds: Illusion or Security?* 8 URB. LAW. 54, 62-69 (1976).

47. INNOVATIONS IN DEVELOPMENT FINANCE, *supra* note 3, at 74.

tudes of conventional lenders.[48] As a result, management of the intermediaries has not been aggressive enough in seeking appropriate candidates for aid.[49] Second, because the banks are often intimately involved with the financing of these intermediaries, the banks are in a position not only to evaluate investment proposals but occasionally, to persuade the less risky financing candidates to accept private financing from the bank.[50] Third, intermediaries have operated at too high a debt-equity ratio to finance high-risk growth operations.[51] Many intermediaries have had to avoid riskier ventures to ensure a sufficient cash flow to service debt obligations.[52] Further, the broad and diverse ownership[53] of the intermediaries can create conflicting goals and policies which make it difficult for an investor to assess management policy and to determine what position the intermediary will take in a given situation.[54]

Once a public financial intermediary is established, a method of repayment for firms receiving capital must be determined. A public intermediary functions efficiently as a capital-channeling mechanism only if it supplies the proper type of capital to a deserving firm.[55] If the intermediary uses an ineffective financing method

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48. *Id.* at 84.

49. *Id.* Development corporations often have small staffs and only one office. The corporations lack the funding to travel around the state in search of prospective aid recipients. Similarly, if the corporation is centrally located, small businessess may not be aware of its existence. A decentralized corporation would make the corporation's resources available to more businesses. *Id.*

50. *Id.* The borrower may withdraw its application after loan approval because a bank may be willing to make a loan to the company because the development corporation investigated the company and found it credit-worthy. Thus, it is possible for private intermediaries to benefit from the work of the development corporations. *Id.* This problem is alleviated by the royalty method, because at the time the grant is made the firm and the intermediary decide how long the intermediary will be entitled to receive royalties from the firm. Because the grant does not have to be repaid by the firm, there is no chance that the firm will refinance at more favorable terms if it becomes successful. *See* notes 60-61 *infra* and accompanying text.

51. *Id.*

52. *Id.*

53. *Id.* The owners of business development corporations are often banks, insurance companies and thrift institutions. *Id.*

54. *Id.* at 84. "One is often left with the impression that the [business development corporation] is a charitable organization run by volunteers who are seeking to do good, rather than an aggressive, innovative, and profitable market correcting organization." *Id.* at 84-85.

55. *See* ROYALTY FINANCING, *supra* note 7, at 1-5.

such as debt,[56] equity,[57] or venture capital funds[58] to finance the new small, firm, its effectiveness as a financing mechanism is greatly diminished.

What is needed is a financing mechanism that can be used by the state intermediary to channel capital to deserving firms. The ideal financing mechanism for a small firm should have four characteristics:

> First, it should not require the firm to make payments before a product achieves some success ("patient" money); next, it should not place the firm in the position of being sold out against its interests to a competitor or larger firm; third, it should allow the investor to achieve high returns if the firm or product is successful to compensate for risk and inevitable losses elsewhere; and finally, this high return should be achievable by means other than capital gains dependent on selling the security; [that is,] the return should be achievable even without the security being liquid.[59]

III. The Royalty Method

The royalty method possesses each of these desirable characteristics. Under this method, a firm enters into a contract with an investor whereby the firm receives a grant to facilitate the development of a product and promises to pay royalties in return.[60] These royalties are based either on the total sales of the firm, if the grant is made to the firm as a whole, or on the sales of a specific product, if the grant is made to develop that product.[61]

The royalty method has several advantages. First, because no royalties need be paid until a product begins to generate revenues, there is no drain on the firm's cash flow at the outset. This is a clear advantage over financing by debt, which requires interest payments almost immediately.[62] Once sales begin, however, the firm will feel the effect of repayment more quickly than it would if

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56. *See* notes 6-8 *supra* and accompanying text.

57. *See* notes 9-11 *supra* and accompanying text.

58. *See* notes 12-18 *supra* and accompanying text.

59. ROYALTY FINANCING, *supra* note 7, at 4.

60. *Id.*

61. *Id.* This is in contrast to venture capital firms, which sponsor companies, not projects. In addition, the contract should specify the rate at which the royalties are to be paid and the consequences if the firm is acquired. *Id.* For example, the contract should specify whether the firm receiving the grant remains liable for the royalty payments if the company acquiring the firm defaults. Further, provision should be made to determine who controls patents developed with the royalty financing funds.

62. *See* note 8 *supra* and accompanying text.

it were financed with equity, because young profitable firms generally funnel the majority of their earnings back into the firm.[63] Further, because an investor does not own shares in the firm, he cannot force the company to sell out, alter the firm's organizational structure or hinder the independent management of the firm.[64] Third, because the royalties which flow to the investor are based on sales volume, an investor has the opportunity to receive a greater return on his investment if the product is successful. The fact that the return is not dependent on a firm's ability to go "public" encourages investors to make grants to small local companies which are unable to go public.[65]

The royalty method also has several tax advantages. First, the firm may deduct the royalty payments as a business expense.[66] This is a significant advantage over equity, from the firm's point of view, as dividends are paid out of after-tax income. Second, the royalty method also avoids the double tax on dividends.[67] A firm can deduct its royalty payments, reducing its taxable income and therefore its tax liability.[68]

IV. The National Research Development Corporation

The National Research Development Corporation ("NRDC"), which was established by England's Development of Inventions Act in 1948,[69] was the first public intermediary to use the royalty

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63. J. WESTON & E. BRIGHAM, ESSENTIALS OF MANAGERIAL FINANCE 447-48 (5th ed. 1979). Young, growing firms generally reinvest their earnings rather than pay dividends. *Id.*

64. ROYALTY FINANCING, *supra* note 7, at 5.

65. Although the royalty method provides a return without a liquidation, the right to future royalties can be sold by the investor entitled to the royalties. *Id.*

66. I.R.C. § 162(a)(3). Royalty payments are similar to payment of interest on debt in that they are both deductible. *Id.* § 163.

67. 1978 WORKING PAPERS, *supra* note 3, at 79. Dividends are distributed to the shareholder out of income on which the corporation has already paid tax. When the dividend is received by the shareholder it is taxable to him as ordinary income. Thus, the same income is taxed twice. *Id.* For a discussion of the double tax see B. BITKER & J. EUSTICE, FEDERAL INCOME TAXATION OF CORPORATIONS AND SHAREHOLDERS §§ 1.03, 1.08, 2.01, 5.06 (4th ed. 1979).

68. This deduction is generally a favorable one for a new firm because the resulting after-tax income is greater, thereby making more money available to expand operations. *See* note 63 *supra.*

69. Development of Inventions Act 1948, 11 & 12 Geo. 6, c.60 (current version at 1967, c.32 *as amended by* Industrial Expansion Act, 1968, c.32, § 11 and Industry Act, 1975 c.68, § 26).

financing method. The NRDC was established to achieve two goals. First, the NRDC was devised to ensure full exploitation of British inventions,[70] particularly those developed in government research establishments and in government-financed universities.[71] The NRDC is authorized to administer, organize and exploit publicly-owned patents[72] in order to ensure that full and proper use is made of British inventions. The NRDC was also expected to act as a liaison between research and industry, to hasten the development of inventions into marketable products[73] and to encourage new inventive talent.[74]

The NRDC's second goal is an extension of the first. By encouraging inventions, the NRDC was expected to help close the gap in the British balance of payments[75] and to maintain the British

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70. 451 PARL. DEB., H.C. (5th ser.) 2676 (1948). In his introduction of the bill, Harold Wilson, the President of the Board of Trade, stated that it would be in England's best interest to make better use of its inventions in order to maintain its competitive edge in the world. *Id.* The Members of Parliament were particularly concerned with American industry's ability to exploit commercially those inventions first developed in England. Wilson cited penicillin as an example of a British invention developed by Americans which the British eventually had to pay royalties to use. *Id.* at 2682.

71. *Id.* at 2679. Mr. Wilson explained,

> Government Departments and Government research organizations are not the kind of people who would themselves be interested in developing the results of their inventions. That is even more true, I think, in the case of discoveries and inventions made in the process of more fundamental research at the universities. . . . But it is because industry has its own facilities and is, on the whole, extremely successful in developing those inventions, that we have not found it necessary to make very much provision on that side.

Id. at 2677. The NRDC, however, also has the power to develop inventions, when they are not sufficiently exploited by the private sector. *See* Martin, *The Development of Inventions Act, 1948*, 3 INDUS. L. REV. 225, 226 (1949). *See also* text accompanying notes 80-84 *infra*.

72. Bard & Zvegintzov, *The Work of the National Research Development Corporation*, DISCOVERY, 287-88 (July 1955) [hereinafter cited as *The Work of the NRDC*]. Those concerned with the administration of public services felt that centralized management of publicly-owned patents was necessary to increase efficiency. This responsibility had previously been that of the individual government department that developed the particular invention. *Id.*

73. *Id.* Scientists believed that such a corporation would enable science to be applied more quickly and decisively to industry. *Id.* During World War II, the Scientific Advisory Council recommended setting up an organization, independent of government departments, to take control of inventions arising out of public research to allow industry to make full use of them. As a result, the NRDC was established to ensure full use of British inventions. Martin, *The Development of Inventions Act, 1948*, 3 INDUS. L. REV. 225, 226 (1949).

74. *The Work of the NRDC*, *supra* note 72, at 288.

75. 451 PARL. DEB. H.C. (5th ser.) 2695 (1948). One House member, M. Philips Price,

standard of living.[76]

The NRDC's normal duties arise upon completion of the basic research on a project and cease just prior to production and distribution.[77] The Board of Trade, however, may permit the NRDC to provide financial assistance to research projects likely to lead to an invention,[78] or to finance production and distribution.[79]

The NRDC is generally permitted to function within these limits only when "the public interest so requires."[80] Patent rights for inventions developed in the public sector may be acquired, however,

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expressed this view when he stated,

> The House can do no better work than to pass a Measure which even in a small way increases our industrial efficiency and aims at closing the gap in our balance of payments. We can only hold our own in the world today if our methods of production are on the very highest level of efficiency, and for this we need all the best technical improvements that science can give to industry and agriculture.

Id. Parliament believed that by fully exploiting British inventions, the nation's industrial efficiency could be enhanced, making British products more attractive on the world market and thus providing England with a more favorable balance of payments. *Id.* at 2676.

76. This would occur not only as a result of the modern conveniences developed to improve the quality of life but also by the expansion of industry and employment to produce these goods. No mention was made in the parliamentary debates of the increased employment which might result from the Act. Nor was any mention made of the increased tax revenues that might result from the improved state of industry. 451 PARL. DEB., H.C. (5th ser.) 2676-745 (1948); 155 PARL. DEB., H.L. (5th ser.) 568-90, 753-54 (1948); 157 PARL. DEB., H.L. (5th ser.) 1206-08 (1948).

The NRDC appears to have focused primarily on revitalizing British industry after the war and secondarily on affecting the economy. The British, however, were not unaware of the economic ills the NRDC could help to remedy. "A 1943 British White Paper concluded that insufficient British private investment was being made to convert pure research into commercially applicable innovations. This failure to make sufficient investment in the research development was determined to be sufficiently costly to the growth and development of the British economy to warrant a public investment in NRDC." 1978 WORKING PAPERS, *supra* note 3, at 142.

The Connecticut Product Development Corporation, which is modeled after the NRDC, does, however, state that its purpose is to expand employment and increase tax revenues. *See* notes 106-07 *infra* and accompanying text.

77. *The Work of the NRDC, supra* note 72, at 287. "Between these two limits [the NRDC] can do practically anything to fill any gap in the development of the inventions from the laboratory stage to the point at which they can be used industrially." *Id.* The NRDC was viewed by Parliament as a gap filler between basic research and production. 451 PARL. DEB., H.L. (5th ser.) 2694-95 (1948).

78. *The Work of the NRDC, supra* note 72, at 287. Financial assistance might be given where the research would be likely to lead to an invention which is in the public interest, such as a new medicine.

79. *Id.* The Board might permit the NRDC to produce a product when the product is in the public interest and is not presently being produced privately.

80. Development of Inventions Act 1967, c.32, § 2(1).

held or disposed of when public interest is not a factor.[81] The typical functions that require a public interest include development and exploitation of inventions resulting from public research, or any other invention which is not being sufficiently developed or exploited;[82] promotion and assistance in new research for satisfying specific practical requirements;[83] and assisting in the continuation of research which may lead to inventions of practical importance."[84]

The NRDC is funded by advances from the Treasury,[85] which may not exceed fifty million pounds.[86] These advances are used to make grants to carry out the NRDC's corporate functions. The royalties that flow to the NRDC are expected to make it self-sustaining, covering not only administrative expenses but also the advances made to the corporation.[87]

Although the Developement of Inventions Act does not specify that the NRDC should use the royalty financing method, the NRDC has adopted this method to provide grants[88] to finance these functions set forth in the Act. If the grant results in the development of a product or process, the corporation holds a patent on that product or process. The NRDC then ordinarily licenses the patent to private industry in return for a stream of royalties from the sales of the product.[89] The inventions that the NRDC develops

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81. *Id.* § 2(1)(b). The NRDC was designed to focus primarily on inventions from the public sector, but may also deal with private inventions, when the public interest so requires.

82. *Id.* § 2(1)(a).

83. *Id.* § 2(1)(c). Before this function is carried out the Board must find that the research is likely to lead to an invention. *Id.* The statute provides no criteria for determining the likelihood that research will lead to an invention.

84. *Id.* § 2 (1)(d). Before this function is carried out the Board must find the the continued research is likely to lead to an invention. *Id.* As with § (c), *see* note 110 *infra*, the statute provides no standards for determining whether the continued research will lead to an invention.

85. *Id.* § 7(1).

86. *Id.* § 7(2), *as amended by* Industrial Expansion Act, 1968, § 11. The initial limit on advances from the treasury was £ 5,000,000. 11 & 12 Geo. 6, § 7(2).

87. 451 PARL. DEB., H.C. (5th ser.) 2676, 2685 (1948), "[The Corporation] should conduct its activities in such a way as to pay its way and, in due course, it should repay the Government. . . ." *Id.*

88. *Id.* Developement of Inventions Act, 1967, c.32, § 2.

89. For a discussion of the licensing process, see *Selling Inventions*, THE TIMES REVIEW OF INDUSTRY at 5, 7. (Feb. 1963) [hereinafter cited as *Selling Inventions*].

are often risky ones,[90] but because the NRDC has a large pool of patents, it is expected that the revenue from successful projects will exceed the losses on unsuccessful ventures and result in a net gain.[91]

The NRDC is generally acknowledged to be a success.[92] Although it is difficult to determine exactly what effect the NRDC has had on the British economy,[93] it appears that the corporation has achieved its goal of greater exploitation of British inventions.[94] For example, the NRDC has been instrumental in the development

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90. The NRDC will develop inventions which show promise of national significance, but which private industry is not willing to sponsor at their current stage of development. *Id.* at 7-8.

91. *Id.* at 8.

> The substantial risks inherent in an innovation are illustrated by the small number of inventions that become revenue earning and in particular the very small numbers which yield substantial income when compared with the number submitted. The risks, however, can be reduced if the scale of activities is large enough to cover a significant number of inventions so that, at least, some of these are likely to be successful.

Id. The NRDC undertakes risk-spreading activities by encouraging industry to adopt new products and processes invented in the United Kingdom, providing funds when necessary to bring the invention to a commercially viable stage and by entering into joint ventures with firms to develop their inventions. 1978 WORKING PAPERS, note 7 *supra*, at 190-91.

92. "For some time the [NRDC] was shunned by industry as a socialist device for back door nationalization. But endorsement by the Conservative Governments together with the cost and complexity of innovation brought a change of heart. Even the Federation of British Industries recommended state pump priming for civil research." *The Project Pushers*, TIMES REV. INDUSTRY & TECH. 28 (Sept. 1965). *See also Catalytic Corporation*, ENGINEERING 653 (Nov. 21, 1958).

93. Some commentators, including Belden Daniels and Michael Kieschnick, have suggested that the NRDC has resulted in an overall economic benefit. *See* 1978 WORKING PAPERS, *supra* note 7, at 142.

> The risk spreading of the citizens of the United Kingdom generated through the public investment of tax dollars as forced savings was projected to be a high-risk investment with substantial future profit potential and benefit to the British economy. This has turned out to be true. Primarily because of two extremely successful and profitable investments, in the creation of the Hovercraft and the antibiotic Cephalosporn, NRDC now has a substantial internal return on investment which is providing an income stream sufficient to cover hundreds of other R&D investments and losses.

Id. See also Selling Inventions, supra note 89, at 8. The economic benefit of a product may continue long after its royalty flow has ended. The product may help a firm build up good will in a particular market, or eventually lead to a new generation of products. *Selling Inventions, supra* note 89, at 8.

94. The NRDC has been largely responsible for the development of the computer industry in Britain. *Catalytic Corporation*, ENGINEERING 653 (Nov. 21, 1958). Of the 10,500 inventions submitted from 1949-62, 2,600 were assigned for exploitation, and about 1000 license agreements were completed at home and abroad. *Selling Inventions, supra* note 89, at 7.

of the computer industry,[95] the Ricardo Engine[96] and various medical products.[97] Although the royalties received by the NRDC have not been sufficient to repay funds advanced to the corporation,[98] the royalties have been sufficient to cover the NRDC's administrative expenses.[99] Moreover, the benefits of new products may continue long after the royalty payments have ceased.[100] For example, in addition to new products developed, a new generation of related products may be marketed based on the goodwill generated by the original product.

V. The Connecticut Product Development Corporation

England's success with the royalty method led the Connecticut legislature to study[101] and eventually to establish the Connecticut Product Development Corporation ("CPDC") in 1972.[102] The CPDC is the only financial intermediary in the United States that used the royalty financing method.[103] The CPDC is designed to stimulate the development of new products by providing aid to firms unable to obtain financing from conventional sources.[104]

The Connecticut legislature had determined that there was a

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95. *The Work of the NRDC, supra* note 72, at 288. During the corporation's first seven years the NRDC had 160 computer patents outstanding. *Id.*

96. *Id.* at 290. The Ricardo engine is a steam engine which runs on low grade fuels such as sawdust. *Id.*

97. *Id.* For example, the NRDC financed the development of hecogenin, a raw material used in the production of cortisone. *Id.*

98. During the NRDC's first 15 years, it received revenues of £3,300,000 which covered its administrative expenses, but did not cover development advance of £6,000,000. *The Project Pushers*, TIMES REV. INDUSTRY & TECH. 28 (Sept. 1965).

99. *Id.*

100. *Selling Inventions, supra* note 89, at 7.

101. *See* REPORT OF GOVERNOR'S STRIKE FORCE FOR FULL EMPLOYMENT 25 (July 15, 1972) [hereinafter cited as FULL EMPLOYMENT REPORT]. This study was authorized by Conn. Ex. Order 8. The Report examines the NRDC and determines that such a corporation could provide substantial benefits for Connecticut.

102. Connecticut Product Development Act, CONN. GEN. STAT. ANN. §§ 32-47 (West Supp. 1980). The Act's constitutionality was challenged in Wilson v. Connecticut Product Dev. Corp., 167 Conn. 111, 355 A.2d 72 (1974), in which the Supreme Court of Connecticut held that the Act contained adequate standards to guide the discretion of the officers of the CPDC in their administration of the program, and thus was not an unconstitutional delegation of legislative authority. The court further concluded that establishing the CPDC was a valid exercise of legislative authority because the CPDC served a public purpose. 167 Conn. at 117-18, 122-23, 355 A.2d at 76, 78.

103. ROYALTY FINANCING, *supra* note 7, at 4.

104. CONN. GEN. STAT. ANN. § 32-39 (West Supp. 1980).

shortage of venture capital available to develop and exploit inventions and products, resulting in a serious decrease in the development of new businesses and job opportunities in Connecticut.[105] By providing capital to deserving firms through the CPDC,[106] the legislature hoped to provide and maintain employment and increase tax revenues.[107] The CPDC was also devised to induce businesses to locate and remain in the state.[108] The CPDC's Board consists of seven directors, five of whom must be familiar with the development of technological inventions.[109] The Corporation is financed with state bonds,[110] the amount of bonds outstanding at one time not to exceed ten million dollars.[111] Unlike its British counterpart,[112] the CPDC has no dollar limitation on the investment it may make in any one firm. The State Bond Commission may require the repayment of bonds issued to fund the CPDC "as shall seem desirable consistent with the purposes of this chapter."[113]

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105. *Id.* § 32-39.

106. *Id.* § 32-40. In determining whether a firm is deserving the CPDC will consider the firm's history, wage standards, job opportunities, stability of employment, past and present financial condition and structure, present and future market prospects, and integrity of management as well as the feasibility and commercial viability of the product. *Id.*

107. *Id.* § 32-33.

108. *Id.* The Connecticut legislature found "[t]hat the availability of financial assistance is an important inducement to industrial and commercial enterprises to remain or locate in the state. . . . *Id.* The cost of capital, however, does not weigh heavily in a firm's locational choice. *New Development Finance Techniques, supra* note 1, at 18.

109. CONN. GEN. STAT. ANN. § 32-35 (West Supp. 1980).

110. *Id.* § 41. The CPDC is financed by general obligation bonds. Ordinarily these are not an appropriate source of funds, because debt service payments must be made regularly on the bonds, while royalty income will fluctuate. Connecticut has circumvented this problem by providing that the CPDC's debt service come out of general tax revenue. FINANCING NEW BUSINESS DEVELOPMENT, *supra* note 7, at 14.

111. CONN. GEN. STAT. ANN. § 32-41 (West Supp. 1980).

112. Development of Inventions Act, 1967, c.32, § 4(2)(b) *as amended by* Industry Act, 1975, c.68, § 26. The NRDC's grants generally are limited to £20,000 but a greater amount may be awarded with special permission of the Minister of Technology. *Id.*

113. CONN. GEN. STAT. ANN. §§ 32-32 to 32-41 (West Supp. 1980). The state's option to require repayment is a problem which the CPDC and NRDC share. Because funding is only provided when necessary, the CPDC has a difficult time planning, and cannot adequately finance its operations out of portfolio income. As a result, it is likely to be too dependent on the other concerns of the state treasury. FINANCING NEW BUSINESS DEVELOPMENT, *supra* note 7, at 15. If the legislature is the intermediary's only source of funds, the intermediary will be very vulnerable, because executives of the corporation will structure their behavior in a way consistent with these external funding relationships. The corporation will therefore be subjected to the annual budget cycle of the legislature and will have to deal with an extraordinary range of irrelevant issues in order to obtain funds. A vulnerable institution will either

However, the terms for repayment may include the waiver of interest or an extension for the repayment of principal or interest or both.[114]

The CPDC provides grants to existing companies for purposes of developing a specific new product.[115] In return, the CPDC receives royalties on the sales of these products.[116] The royalty rate necessary for CPDC to recapture its investment is based on the sales figures for firms in the relevant geographic area or industry.[117]

The CPDC has not been as successful as the NRDC. The CPDC was devised primarily to bolster the economy and to attract new business to Connecticut.[118] Although the most effective mechanism for creating new jobs under the CPDC is to aid new, small firms,[119] the CPDC makes most of its grants to existing firms.[120] Furthermore, although the inventors who occupy five of the seven seats on the CPDC's Board of Directors may be well qualified to determine whether an invention can be developed into a product, they may lack the business expertise to determine which combination of products will maximize the royalty returns.[121] The CPDC has also

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exercise excessive fiscal restraint or will conform its views to those currently in power in order to survive. *1978 Working Papers, supra* note 3, at 146.

114. CONN. GEN. STAT. ANN. § 32-41 (West Supp. 1980).

115. *Royalty Financing, supra* note 7, Abstract. The CPDC usually makes its grants to well-established firms with five to fifty employees with sales of $.5 to $2.5 million. FINANCING NEW BUSINESS DEVELOPMENT, *supra* note 7, at 9. The CPDC does not support basic research, which is the province of the Connecticut Research Commission. Rather, the CPDC finances the development of a product once the basic research has been completed. The CPDC's province does not extend to actual production; it acts as a gap filler, as does the NRDC. *See* FULL EMPLOYMENT REPORT, *supra* note 101, at 32. Although the CPDC is not usually involved in production or research, it is getting more involved in marketing and production because this financing is not easily obtainable from private sources. FINANCING NEW BUSINESS DEVELOPMENT, *supra* note 7, at 9-10.

116. ROYALTY FINANCING, *supra* note 7, Abstract. For a discussion of the benefits of the royalty method, see notes 62-68 *supra* and accompanying text.

117. *Id.* Generally the CPDC pays 60% of the product development costs in return for a five percent royalty on the net sales of the product. The flow of royalties ceases when the CPDC has received five times its contribution. FINANCING NEW BUSINESS DEVELOPMENT, *supra* note 7, at 13.

118. *See* notes 107-08 *supra* and accompanying text.

119. *See* note 3 *supra* and accompanying text.

120. *See* note 115 *supra* and accompanying text.

121. Venture capitalists might be best able to select the proper pool of products because they normally calculate risk when they finance new companies. ROYALTY FINANCING, *supra* note 7, at 2. Bankers may be no improvement over scientists because they have the same concerns as conventional debt lenders and may not be aggressive enough in locating ap-

failed to ally itself with a consulting firm to screen potential applicants.[122] This failure is consistent with the CPDC's emphasis on supporting existing firms,[123] rather than financing new, more risky ventures.

Since 1974 the CPDC has committed only $1.4 million to development and has approved only nineteen projects.[124] Because it uses the royalty finance method, however, the CPDC provides the benefits inherent in the approach. The CPDC provides patient money, it does not force the firm to be bought out against its will, it yields an increased return if the venture is successful and permits a return to be realized without liquidation of the investment.[125]

VI. Conclusion

Traditional sources of capital—debt, equity and venture capital funds—have not provided adequate financing for new firms; therefore, governments have intervened to channel capital to these firms. As a result of the ineffectiveness of existing government programs, new methods of financing have been sought.

The royalty method is a desirable way to finance new, small firms because it provides a firm with patient money, while providing the investor with a potentially greater return if the venture is successful, without forcing the investor to liquidate his investment.

The royalty method has been implemented in England by the NRDC and in Connecticut by the CPDC. In England, the method has been successful as a tool for developing new products, although no figures are available to show the NRDC's impact on the economy. In Connecticut, where the method has been used primarily as an economic stimulus, it has not been as successful, because the

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propriate firms. INNOVATIONS IN DEVELOPMENT FINANCE, *supra* note 3, at 84.

122. FINANCING NEW BUSINESS DEVELOPMENT, *supra* note 7, at 17. The development corporations in Massachusetts and Kentucky, which rely on consulting firms, are considered to be the most successful of the state corporations. A consulting firm may be better able to evaluate the risk associated with the various grant applicants. *Id.* at 17-18. *See also* INNOVATIONS IN DEVELOPMENT FINANCE, *supra* note 3, at 85. For an example of public and private sources acting jointly, see Economic Capital Corporation of New York City, *Fact Sheet* at 1 (the corporation was formed to create jobs by combining the resources of private financial institutions with the resources of public programs and agencies to provide better access to financing for New York City businesses).

123. FINANCING NEW BUSINESS DEVELOPMENT, *supra* note 7, at 18.

124. *Id.*

125. *See* notes 62-68 *supra* and accompanying text.

CPDC has failed to provide financing to those firms that can most benefit by the method — new, small firms. Because the CPDC has not financed new, small firms, it has not fulfilled the principal objective of the Connecticut Product Development Act. The CPDC assumes too much risk to be successful as a traditional lending institution, and accepts too little risk to be an effective economic stimulus. Properly applied to new, small firms, however, the royalty method would be an effective method to stimulate industrial development and increase employment and tax revenues.

Michael Katovitz