Appendix

This appendix provides additional discussion of issues, noted only briefly in the paper, in four areas: 1) conceptual issues regarding the treatment of transfer income and earnings as components of social costs, 2) the role of taxes in the broad concept of social costs and perspectives adopted in the literature regarding taxes and government budgetary costs, 3) conceptual issues relating to measurement of the cost of providing IPS SE services, and 4) a more detailed review of the literature on IPS SE impacts on weeks worked.

1. Transfer Income and Earnings as Components of Social Cost Impacts

In the recent cost-effectiveness literature, the dollar value of transfer payments (e.g., SSI or SSDI benefits) has often been excluded from costs since transfers only consist of movement of purchasing power per se from taxpayers to an individual beneficiary. For example, in a recent cost-effectiveness analysis, Rosenheck et al. (1) state the following: "For transfer payments, only administrative costs were included because they alone represent consumed societal resources." (See also Frisman and Rosenheck (2) and Drummond et al. (3, p. 54) for further explanation of this position; for a similar approach to transfer payments in a cost-benefit analysis context, see Clark et al. (4)) From the standpoint of broad conceptualization of social cost applied here, however, there is indeed a correspondence between the value of transfer payments and "consumed societal resources." In particular, given the assumption that the recipients of the transfers do not use them to increase their savings and ultimately their bequests to their heirs (a reasonable assumption for SSI and SSDI recipients), the value of the transfer payments are simply an addition to the dollar value of net consumption of the recipients. For that reason, this value is included in item 5A (box).

The distinction between administrative costs and dollar value of transfers made by Rosenheck et al. (1) is useful although the magnitude of any program impact on such costs is presumably minimal. It is logically correct to include this administrative cost impact in item 4A (box).

Previous cost-effectiveness literature has treated positive earnings impacts (i.e., productivity gains) as deductions from overall social cost impacts of a program. (See, for example, Drummond et al. (3), Chapter 3.) In contrast, the

approached used here is to include positive earnings impacts <u>both</u> as a reduction in cost impact (item 5B) <u>and</u> as an element of total in total income. Note, however, that a program's impact on earnings may not translate into an equivalent impact on total income (item 5A), if the increase in income is in fact offset by concurrent reductions in non-earned income, with the result that the increase in earnings contributes to a reduction in net consumption. An example of this is the finding in Clark et al. (4) that, in the IPS group studied, the increase in income from baseline to follow-up was on average $992 less than the increase in earnings, suggesting that some portion of the earnings increase substituted for other income sources rather than adding to total net consumption.

In addition, note that several studies I have reviewed (4,5) have included earnings gains as benefits in the context of a cost-benefit analysis. While this procedure is subject to some debate in the economics literature (6, Chapter 11), my focus here is on societal cost-effectiveness analysis rather than cost-benefit analysis, so the debate is outside the scope of the current analysis.

2. <u>Tax Impacts on Social Costs and Social Cost vs. Government Budgetary Perspectives</u>

It may be useful to clarify the several ways in which program impacts on clients' tax payments fit into the broad concept of social cost in the box presented in the main article. Three types of tax payments are most relevant: sales taxes, income taxes, and payroll taxes. Since IPS SE services appear to have positive impacts on clients' income and earnings, and therefore on privately purchased consumer goods, all three types of tax payments are also presumably increased. The most straightforward way of incorporating these increased payments into the social cost impact calculations is as reductions in item 4A, costs of other government-provided goods and services to the clients. The one possible modification is for any segments of payroll tax payments that may simply be returned to the clients in the form of higher SSDI benefits. As a practical matter, since the positive earnings and income impacts of IPS SE services on an average per client basis are modest in size, a "back-of-the-envelope" approach to estimating the resulting increases in tax payments is a reasonable empirical strategy. For example, one could simply:
>   1) multiply the full (i.e., employer plus employee) payroll tax rate by the average increase in earnings,

2) multiply an estimate of the federal plus state plus local income marginal tax rates paid by very low-income persons by the average increase in earnings,

3) multiply an estimate of the average portion of income paid by very low income persons in sales taxes by the average increase in income, and

4) add items 1-3 to get a total estimated increase in tax payments. (Note that I assume throughout this discussion that the estimated earnings and income impact figures are pre-tax. Use of after-tax figures would simply modify upward the multiplication factors cited in items 1-3 above.)

Empirical support for the presumption that tax impacts will be small in size is provided by Clark et al. (4) in their comparative before-after study of IPS vs. GST interventions. They reported that over their 18-month follow-up, taxes paid by the IPS group averaged $706 on a total average income of $15,552 and an earned income of $3,185. For the GST group, the corresponding averages were $415 in taxes, $14,276 in income and $1,800 in earnings. Thus, the differential IPS impact on taxes of +$291 amounted to about less than 2 per cent of average income. Similarly, the change from baseline to follow-up in average taxes paid was only $144 greater for the IPS group. (All figures in this paragraph are in 1992 dollars.)

Finally, several papers discussed in this literature review adopted a different overall perspective on the decision framework for which they cast their analyses. The current paper has focused on estimation of an overall social impact figure that could be used as the denominator in calculating a cost-per-QALY ratio for comparing an IPS SE expansion program with other mental health or health programs. Apart from the measure of overall social cost impact used here, the framework for this analysis if a standard cost-effectiveness analysis from a societal perspective that would use a "league table" approach of ranking alternative programs in terms of this ratio. (3, Chapter 10). In contrast, Drake et al. (5) discuss a hybrid approach in which the decision criteria are 1) earnings impacts as a measure of benefit and 2) budgetary cost as a measure of cost. Clark et al. (4) provide estimates for cost-benefit analyses from three different perspectives: individual client, societal, and governmental.

It is helpful to use the listing of social cost components in the box presented in the main article to clarify the differences in approach specifically for the measurement of cost. In estimating governmental budgetary impact, Drake et

al. (5) include implementation cost (item 1 in box) and cost impacts on mental health rehabilitation and treatment services as well as somatic health services (items 2 and 3 in box), under the reasonable assumption that all relevant implementation costs and mental health and health services costs are borne by the government. In addition they include governmental transfer payments, which are a component in item 5A in in the box in the main article. They do not specifically include any tax impacts, which is a reasonable first approximation given the evidence for expecting such impacts to be quite small. The approach to defining governmental cost in Clark et al. (4) is similar, though cost impacts on somatic health care services are not included. Earnings impacts are treated solely as a benefit measure to clients and society but not to the government. As noted above, impacts on tax revenues are included as a governmental cost, as well as a cost from the clients' perspective, but not from a societal perspective.

3. Four Conceptual and Practical Issues in Measuring Provider Costs of Implementing Expansions of IPS Services

In this discussion, I consider several issues relating to defining these costs. First, although relevant empirical evidence is minimal, we assume that economies or diseconomies of scale are insubstantial; this allows us to focus on empirical findings regarding average unit costs rather than total costs. (Note, however, that data from the Latimer et al. study of 7 IPS SE programs do imply economies of scale, with the smallest agency having the highest cost per client. (7))

The unit of output could be defined as an individual contact with a client or service, but such contacts and services vary substantially in time and content. A more tractable approach is to use the client as the unit of output.

Second, our unit cost definition requires a time frame; we focus on the cost per client per year. While not addressed here, heterogeneity in unit costs for individual clients over the year may also be important (8). There is also evidence that cost per client-year diminishes with the time in SE programs, since first-year service requirements are more substantial. Cook et al. (8) report a modest decline in vocational service hours per client from approximately 3 hours per month initially to approximately 2 hours per month after 24 months. Drake et al. (9) reported, in a randomized clinical trial (RCT) of IPS SE versus enhanced vocational rehabilitation (EVR)

services, that both groups experienced declines from the 2-month point to the 18-month point in percent receiving vocational services (95% to 61% for IPS, 84% to 57% for EVR), though some of the decline for IPS SE clients may have been due to declines in IPS service availability in the latter phase of the study. (10) Bush et al. (11) observe that in several previous studies "participants [in SE] relied on vocational services less over time". Bond and Kukla (12) studied 142 IPS clients who were employed at least 10 hours per week in a competitive job and had begun a competitive job within 6 months prior to their study observation period of 24 months. They observed an initial contact rate for clients with their employment specialists (ES's) of three per month and a decline to approximately 1 per month during the first 7 months of observation, with little further change in rate the remaining 17 months of study. An earlier study with a similar research design (13) followed enrollees in both IPS and an alternative vocational program for 24 months after an initial 18-month study period. Those enrollees who chose to use vocational services in the follow-up only used on average 1 hour of service per month. (Separate figures were not reported for the IPS enrollees.) A similar pattern was reported (14) for 91 persons over a 24-month period following randomization to an IPS treatment arm. The average number of IPS contacts dropped from 9.04 in the first quarter of study treatment to a range of 4.98-5.70 per quarter for quarters 3-8. The Salyers et al. (15) long-term follow-up study of 36 clients (n = 36) from two SE programs in New Hampshire found that after 10 years 86% of these clients were still receiving SE services.

In summary, available evidence relating to trajectories of service use per client over time suggests a decline is average client cost per year over time. With more evidence of the time pattern of costs and of the attrition rate of IPS clients, one could apply an appropriate discount rate and thereby estimate the "lifetime" average IPS cost for newly recruited clients, but currently available empirical evidence does not support development of such an estimate. (A purely hypothetical example illustrating this calculation is presented in Salkever (16).

A related issue is defining the end of a period of client service. Many SE programs may not have a well-defined process for designating client discharges, and thus may not have accurate data on the number of clients being served at any point in time. Records of payments to the SE agency, presumably by third parties, could be used as indicators of numbers of clients for whom an SE agency is being paid; however, it may be difficult to

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obtain data about length of time (within the year) on the reimbursement rolls for each client, and therefore about average length of time (within the year) per client.

Third, several dynamic considerations may lead to higher average unit costs when an agency is relatively new at providing IPS services. These include the possibility of start-up costs (including delays in initially reaching the projected "steady-state" client caseload); and learning-by-doing.

Fourth, variation in cost may result from variation in the scope of services, even among IPS high-fidelity providers, when additional services (e.g., cognitive remediation) are "bundled" in the IPS program. (16)

4. Additional Information on Reviewed Literature Pertaining to IPS SE impacts on Weeks Worked

Seven of the RCT's in the Bond et al. review (17) reported information on IPS SE impacts on annual weeks worked. The review cites Drake et al. (9) as reporting 10.1 mean annual weeks in competitive jobs for the IPS group versus 0.8 weeks for the comparison (EVR) group; it also cites Lehman et al. (18) as reporting 6.0 mean weeks worked in competitive jobs for IPS versus 1.6 weeks for the control group. Neither Bond et al. (17) nor the original studies report total weeks for either IPS or the controls including non-competitive jobs. Mueser et al. (19) reported that the IPS group averaged 15.09 weeks worked per year versus 5.7 weeks for the group assigned to PSR and 9.52 weeks per year for the control group with "standard services." They also report mean annual weeks of work in competitive jobs of 14.86, 1.69, and 9.52 for IPS, PSR and standard services respectively.

Bond et al. (20) reported mean annual weeks worked of 17.31 for the IPS group versus 21.94 for the comparison (DPA) group; when the comparison was restricted to weeks worked in competitive jobs, the IPS group averaged 16.15 versus 8.17 hours for the DPA group. (Bond et al. (17) also reported comparisons in competitive weeks worked for two international studies (21, 22) and one combination ACT-IPS RCT (23).)

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