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Comparing the Economic and Conventional Approaches to Financial Planning

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I. Introduction

The conventional approach to retirement and life insurance planning asks households how much they want to spend after retirement and in the event of the untimely death of the head of household or spouse. It then determines the amounts of saving and life insurance needed to achieve these targets. This approach, which is used throughout the financial planning industry, has received remarkably little attention from economists. This is surprising not only because of the importance of understanding how people formulate their financial plans, but also because traditional financial planning may generate recommendations that are at odds with the economic approach.

The economic approach is based on the life-cycle model of saving developed by Ando and Modigliani (1963) and the canonical model of life insurance developed by Yaari (1965). The goal of the economic approach is to smooth households' living standards over their life cycles and to ensure comparable living standards for potential survivors. In the economic approach, spending targets are endogenous. The targets are derived by calculating the most that each household can afford to consume in the present given that it wants to preserve that living standard into the future. And as stressed by Hubbard and Judd (1987) among others, a household's ability to consume may in the short term also be circumscribed by its ability to borrow.

Although spending targets under the conventional approach can be adjusted to approximate those derived under the economic approach, there are practical limits to such "trial and error" retargeting. Because of the complexity of the relevant factors, these limits especially exist for households experiencing changing demographics,

enjoying economies to shared living, or facing borrowing constraints. This chapter illustrates the different saving and insurance recommendations provided by economic financial planning software and conventional financial planning software. The economic financial planning software, Economic Security Planner (ESPlanner), is developed by Economic Security Planning, Inc., and the conventional financial planning software, Quicken Financial Planner (QFP), is developed by Intuit, Inc. Each program is run on twenty-four cases, twenty of which are stylized and four of which are actual households.

We used both programs in a manner that did not require data or information external to the program beyond that provided in direct interrogatives from the programs. In particular, for QFP, we tried to emulate how a somewhat sophisticated household might use the program. QFP begins by asking a household what it is currently spending and whether it wants to continue spending that amount in the future. We expect that most households would answer the latter question in the affirmative. Next, QFP asks the household to enter earnings, net worth, and a variety of other data. Finally, QFP determines if the household's specified time-path of expenditure is feasible. If its plan puts the household into debt (or further into debt if the household started in debt) at any point in the future, QFP tells the household that its plan has failed. A plan can also fail if there are insufficient resources to finance consumption in retirement.[1] By contrast, if a household saves lots of money, it will almost certainly get a passing grade. We then expect that the household would adjust its initial consumption spending to, as closely as possible, "die broke," that is, to end up with zero financial net worth at the end of its planning horizon. Thus, in running QFP on the twenty-four cases, we choose the level of consumption expenditure by iterating until the household's terminal net worth is close to zero. This "trial and error" iteration process is time-consuming, which reinforces our view that even sophisticated households are unlikely to further fine-tune their expenditure plans to deal with demographic change, particularly the arrival and departure of children from the household, or with borrowing constraints.

The two software programs recommend dramatically different levels of saving and life insurance in each of the twenty-four cases with the discrepancies between the two sets of recommendations generally increasing with the complexity of the case. In some cases ESPlanner recommends substantially more saving in early years and substantially less saving in later years than does QFP. In other cases, the opposite is true. The differences in life insurance recommendations are more systematic, with ESPlanner generally recommending significantly less life insurance than QFP.

The different saving recommendations primarily reflect ESPlanner's adjustments for household demographics, economies in shared living, and borrowing constraints, as well as its different, and more detailed, approach to the calculation of federal and state income taxes and social security retirement benefits. The two programs' different life insurance recommendations reflect these factors, ESPlanner's contingent planning, and ESPlanner's integration in its life insurance calculations of social security survivor benefits.

Our comparison of ESPlanner and QFP illustrates some, but certainly not all, of the differences in the conventional and economic approaches. There is a plethora of financial planning software programs adopting the conventional approach. Many of these programs have specific features that differ from those of QFP. Hence in comparing ESPlanner with just QFP, we may be over- or understating typical differences between the two approaches. In addition, although ESPlanner captures the essential items that economists would stress in financial planning, it does not incorporate labor earnings uncertainty, rate of return uncertainty, and other nonlife contingencies that can influence life-cycle consumption choice.[2] ESPlanner does not explicitly consider the premiums, paid whether by the employer or by the household, for health and long-term care insurance, nor the expenditures arising from uninsured health and long-term care contingencies. Nor does ESPlanner optimize, subject to legal constraints, contributions to tax-deferred retirement accounts. Furthermore, although ESPlanner considers life contingencies for the purpose of determining the optimal amount of life insurance, it does not evaluate the optimal amount of life annuities to hold in the retirement period of the life cycle. Hence in comparing ESPlanner only with QFP, which also does not consider these uncertainties and factors, we may be understating the differences between the two approaches.

The chapter proceeds as follows. Sections II and III describe ESPlanner and QFP, respectively. Section IV summarizes the main conceptual and technical differences between the two programs. Sections V and VI compare ESPlanner's and QFP's recommendations for the twenty stylized and four actual cases, respectively. Section VII summarizes the paper and draws conclusions.

II. Economic Security Planner

Economists Douglas Bernheim, Jagadeesh Gokhale, and Laurence Kotlikoff and software engineer Lowell Williams established Economic Security Planning, Inc. to develop ESPlanner, a software package whose primary goal is to foster appropriate saving and insurance decisions.[3] Their stimulus was the findings, in Kotlikoff, Spivak, and Summers (1982), Auerbach and Kotlikoff (1987, 1991), Bernheim (1991, 1995), and other studies, that a significant fraction of households undersaves and underinsures. Undersaving in these studies means that a household can't sustain its current living standard in the future, and underinsuring means it can't sustain its current living standard if the household head or spouse were to die. ESPlanner's objective is to permit households to achieve the highest living standard that they can afford to sustain both through time and in the event of the early death of the household head or spouse.

Unlike many other financial planning programs, ESPlanner's life insurance, consumption, and saving recommendations are fully integrated. The program's consumption and saving recommendations take into account the need to pay life insurance premiums, and its life insurance recommendations are set to ensure the same living standard through time for survivors as that afforded by the otherwise intact household.

What Factors Does ESPlanner Consider?

In determining the extent to which a household can smooth its living standard, ESPlanner takes into account the maximum amount of money the household says it can borrow apart from housing-related debt. It also considers the current and future labor, pension, social security, inheritance, and other income the household will receive and the federal and state income taxes and federal payroll taxes that it will pay. The appendix describes ESPlanner's tax and social security benefit calculations in detail. ESPlanner also takes account of 401(k), 403(b), and other tax-favored saving vehicles, housing plans, special expenditures, estate plans, and preferences about how the household would, if not borrowing constrained, like its living standard to change through time.[4] Finally, ESPlanner recognizes that a household's expenditures do not directly translate into its standard of living. Adjustments are made for household composition and household "economies of scale"—the fact that people can live more cheaply together than apart.[5] To be precise, ESPlanner provides for children until they reach age 19, and takes into account that children may cost more or less than adults and that the relative costs of children can vary by age. It also adjusts for the number of adult equivalents based on a user-specified degree of economies to scale in shared living.

ESPlanner's Recommendations

ESPlanner's principal outputs are recommended time-paths of consumption expenditure, taxable saving, and term-life insurance holdings (for each spouse in the case of married couples). All outputs are displayed in current-year (that is, real) dollars. Consumption in this context is everything the household gets to spend after paying for its "off-the-top" expenditures, that is, its housing expenses, special expenditures, life insurance premiums, taxes, and net contributions to tax-favored accounts. As mentioned, the amount of recommended consumption expenditures varies from year to year in response to changes in the household's composition. It also rises when the household moves from a situation of being liquidity constrained to one of being unconstrained. Finally, recommended household consumption will change over time if users intentionally specify that they want their living standard to change. For example, if users specify that they desire a 10 percent higher living standard after a certain year in the future, the software will incorporate that preference in making its recommendations, provided that it does not violate a borrowing constraint.

ESPlanner's recommended taxable saving in a particular year equals the household's total income (nonasset plus asset income) in that year minus that year's sum of (a) recommended spending on consumption and insurance premiums, (b) specified spending on housing and special expenditures, (c) taxes, and (d) net contributions to tax-favored accounts (contributions less withdrawals).

ESPlanner's recommendations for annual term insurance are either positive or zero.[6] If recommended term insurance is positive for a particular potential decedent (the household head or, if married, spouse) in a particular year and if the decedent dies at the end of that year, the surviving household will have precisely the same living standard as the household would have had absent the decedent's

premature death. If the potential decedent's recommended insurance in a particular year is zero, the surviving household will have the same or higher living standard if the decedent dies in that year. These statements are, of course, conditional on the household actually buying the amounts of life insurance being recommended and on the correctness of its assumptions and information concerning future income, current asset holdings, rates of return, special expenditures, and so forth.

Checking ESPlanner's Recommendations

ESPlanner's algorithm is very complicated. But users of the software can check ESPlanner's reports to see that, given their data inputs, preferences, and borrowing constraints, the program recommends the highest and smoothest possible living standard over time. Take, as an example, case 1, the first and simplest of our twenty stylized cases. It involves a Massachusetts couple in which the husband, George, is initially age 29 and the wife, Jane, is initially age 27. (Cases appear at the end of the chapter, pp. 524–547.) George works through age 65 earning $50,000 each year in 1999 dollars. Jane doesn't work. They have no children, no special expenses, no housing expenses, no estate plans, no private defined benefit pension income, no self-employment income, no special receipts, no tax-favored saving accounts, no employer-funded defined contribution accounts, and no coverage under social security.

Turn, now, to table 14.1, which presents the nontax-favored balance sheet for case 1. All values reported in the table and all other ESPlanner reports are in 1999 dollars.[7] Because table 14.1 is a balance sheet, the changes from one year to the next in nontax-favored net worth equal the latter year's nontax-favored saving. Apart from this adding-up property, note that terminal nontax-favored net worth is zero, that is, the household's recommended time-path of spending precisely exhausts the household's economic resources assuming each spouse lives as long as possible. In this particular case, household spending simply includes consumption, life insurance premiums, and funeral expenses of $5,000 for each spouse. In general, spending also includes special expenditures and housing expenses.

This balance sheet tracks the evolution of the household's nontax-favored net worth assuming the household head and spouse both live to their maximum ages of life—assumed to be age 95. As just

Table 14.1
George's and Jane's nontax-favored balance sheet in case 1

Year	George's age	Jane's age	Income	Spending	Taxes	Nontax-favored saving	Nontax-favored net worth
1999	29	27	50,000	26,588	8,640	14,772	14,772
2000	30	28	50,430	26,562	8,872	14,996	29,769
2001	31	29	50,867	26,535	9,108	15,224	44,992
2002	32	30	51,310	26,509	9,347	15,454	60,446
2003	33	31	51,761	26,488	9,590	15,683	76,129
2004	34	32	52,217	26,460	9,837	15,920	92,049
2005	35	33	52,681	26,432	10,088	16,161	108,211
2006	36	34	53,152	26,435	10,342	16,375	124,586
2007	37	35	53,629	26,420	10,698	16,511	141,097
2008	38	36	54,110	26,422	11,083	16,605	157,702
2009	39	37	54,593	26,430	11,470	16,693	174,395
2010	40	38	55,079	26,421	11,859	16,799	191,195
2011	41	39	55,569	26,424	12,250	16,895	208,089
2012	42	40	56,061	26,437	12,644	16,980	225,069
2013	43	41	56,555	26,443	13,040	17,072	242,142
2014	44	42	57,053	26,445	13,437	17,171	259,312
2015	45	43	57,553	26,442	13,837	17,274	276,585
2016	46	44	58,056	26,425	14,240	17,391	293,976
2017	47	45	58,562	26,418	14,645	17,499	311,475
2018	48	46	59,072	26,388	15,053	17,631	329,106
2019	49	47	59,586	26,357	15,464	17,765	346,871
2020	50	48	60,103	26,320	15,878	17,905	364,777
2021	51	49	60,625	26,274	16,295	18,056	382,833
2022	52	50	61,150	26,218	16,716	18,216	401,050
2023	53	51	61,681	26,151	17,140	18,390	419,440
2024	54	52	62,217	26,063	17,569	18,585	438,025
2025	55	53	62,758	25,956	18,002	18,800	456,825
2026	56	54	63,306	25,820	18,440	19,046	475,871
2027	57	55	63,860	25,784	18,883	19,193	495,063
2028	58	56	64,419	25,784	19,331	19,304	514,368
2029	59	57	64,982	25,784	19,781	19,417	533,785
2030	60	58	65,547	25,784	20,233	19,530	553,316
2031	61	59	66,116	25,784	20,688	19,644	572,960
2032	62	60	66,688	25,784	21,146	19,758	592,719
2033	63	61	67,264	25,784	21,606	19,874	612,592
2034	64	62	67,842	25,784	22,069	19,989	632,582

Table 14.1 (continued)

Year	George's age	Jane's age	Income	Spending	Taxes	Nontax-favored saving	Nontax-favored net worth
2035	65	63	18,425	25,784	8,018	−15,377	617,205
2036	66	64	17,977	25,784	7,776	−15,583	601,622
2037	67	65	17,523	25,784	7,531	−15,792	585,830
2038	68	66	17,063	25,784	7,283	−16,004	569,826
2039	69	67	16,597	25,784	7,031	−16,218	553,608
2040	70	68	16,125	25,784	6,776	−16,435	537,173
2041	71	69	15,646	25,784	6,517	−16,655	520,518
2042	72	70	15,161	25,784	6,256	−16,879	503,639
2043	73	71	14,669	25,784	5,990	−17,105	486,534
2044	74	72	14,171	25,784	5,721	−17,334	469,201
2045	75	73	13,666	25,784	5,448	−17,566	451,635
2046	76	74	13,154	25,784	5,172	−17,802	433,833
2047	77	75	12,636	25,784	4,892	−18,040	415,793
2048	78	76	12,110	25,784	4,608	−18,282	397,512
2049	79	77	11,578	25,784	4,321	−18,527	378,985
2050	80	78	11,038	25,784	4,029	−18,775	360,210
2051	81	79	10,492	25,784	3,734	−19,026	341,184
2052	82	80	9,937	25,784	3,435	−19,282	321,903
2053	83	81	9,376	25,784	3,132	−19,540	302,363
2054	84	82	8,807	25,784	2,824	−19,801	282,562
2055	85	83	8,230	25,784	2,513	−20,067	262,495
2056	86	84	7,645	25,784	2,197	−20,336	242,159
2057	87	85	7,053	25,784	1,877	−20,608	221,551
2058	88	86	6,453	25,784	1,553	−20,884	200,667
2059	89	87	5,845	25,784	1,403	−21,342	179,326
2060	90	88	5,223	25,784	1,254	−21,815	157,511
2061	91	89	4,588	25,784	1,101	−22,297	135,214
2062	92	90	3,938	25,784	945	−22,791	112,424
2063	93	91	3,274	25,784	786	−23,296	89,129
2064	94	92	2,596	25,784	623	−23,811	65,318
2065	95	93	1,902	30,784	457	−29,339	35,980
2066		94	1,048	16,115	286	−15,353	20,627
2067		95	601	21,115	113	−20,627	0

suggested, ESPlanner's planning horizon extends through the maximum ages of life of the household head and, if married, his or her spouse. The emphasis here on the maximum, rather than the expected, length of life is a part of ESPlanner's general philosophy, namely to plan conservatively.

Consumption spending in this case is constant at $25,784 until George reaches age 95. It then declines to $16,115, the amount Jane gets to spend on herself after George has passed away. The former value is 1.6 times the latter value, reflecting the assumed degree of economies in shared living, namely that two can live as cheaply as 1.6. Hence, the household's living standard remains the same until its last possible year, when Jane reaches age 95. Table 14.1's total spending amounts differ from $25,784 when both George and Jane are alive by annual amounts equal to the life insurance premiums on George's recommended holdings of life insurance and their funeral expenses, $5,000 per person.

The fact that (a) the household just exhausts its resources when Jane dies at age 95 (i.e., does not die in debt) and that (b) the recommended consumption expenditure path entails a uniform living standard for all household members in each year the household exists means that ESPlanner has maximized the household's sustainable living standard given the household's economic resources. That is, raising consumption spending in each year to produce a slightly higher uniform living standard would lower saving in each year and leave the household in debt in its last period of existence. Married users can also check ESPlanner's survivor reports to verify that surviving spouses who follow ESPlanner's life insurance recommendations will, if the household's inputs assumptions prove correct, be able to maintain as high a living standard as the household would have had if the spouse had not died early.

The survivor reports for Jane (George) can be produced for any hypothetical ages at which George (Jane) might die. As an example, table 14.2 shows Jane's survivor nontax-favored balance sheet if George dies at age 51. Note that Jane's spending as a survivor, which, in this case, consists only of consumption, equals $16,115, precisely 62.5 (1 divided by 1.6) percent of the amount Jane and George would jointly spend on consumption were George not to die. Hence, Jane's recommended consumption as a widow entails the same living standard as she would have had when married. Table 14.2 also shows that Jane can, as a survivor, afford to spend this

Table 14.2
Jane's Survivor nontax-favored balance sheet in case 1

Year	Jane's age	Income	Spending	Taxes	Nontax-favored saving	Nontax-favored net worth
2021	49	518,691	0	0	518,691	518,691
2022	50	15,108	16,115	7,084	−8,091	510,599
2023	51	14,872	16,115	6,957	−8,200	502,399
2024	52	14,633	16,115	6,828	−8,310	494,090
2025	53	14,391	16,115	6,697	−8,421	485,668
2026	54	14,146	16,115	6,565	−8,534	477,134
2027	55	13,897	16,115	6,431	−8,649	468,486
2028	56	13,645	16,115	6,295	−8,765	459,722
2029	57	13,390	16,115	6,157	−8,882	450,840
2030	58	13,131	16,115	6,017	−9,001	441,839
2031	59	12,869	16,115	5,876	−9,122	432,718
2032	60	12,603	16,115	5,732	−9,244	423,475
2033	61	12,334	16,115	5,587	−9,368	414,107
2034	62	12,061	16,115	5,439	−9,493	404,615
2035	63	11,785	16,115	5,290	−9,620	394,995
2036	64	11,505	16,115	5,139	−9,749	385,246
2037	65	11,221	16,115	4,985	−9,879	375,366
2038	66	10,933	16,115	4,830	−10,012	365,354
2039	67	10,641	16,115	4,673	−10,147	355,208
2040	68	10,346	16,115	4,513	−10,282	344,926
2041	69	10,046	16,115	4,351	−10,420	334,507
2042	70	9,743	16,115	4,187	−10,559	323,947
2043	71	9,435	16,115	4,021	−10,701	313,247
2044	72	9,124	16,115	3,853	−10,844	302,402
2045	73	8,808	16,115	3,682	−10,989	291,413
2046	74	8,488	16,115	3,510	−11,137	280,276
2047	75	8,163	16,115	3,334	−11,286	268,990
2048	76	7,835	16,115	3,157	−11,437	257,553
2049	77	7,502	16,115	2,977	−11,590	245,963
2050	78	7,164	16,115	2,795	−11,746	234,217
2051	79	6,822	16,115	2,610	−11,903	222,314
2052	80	6,475	16,115	2,423	−12,063	210,252
2053	81	6,124	16,115	2,233	−12,224	198,028
2054	82	5,768	16,115	2,041	−12,388	185,640
2055	83	5,407	16,115	1,846	−12,554	173,086
2056	84	5,041	16,115	1,649	−12,723	160,364
2057	85	4,671	16,115	1,448	−12,892	147,472

Table 14.2 (continued)

Year	Jane's age	Income	Spending	Taxes	Nontax-favored saving	Nontax-favored net worth
2058	86	4,295	16,115	1,246	−13,066	134,406
2059	87	3,915	16,115	1,040	−13,240	121,166
2060	88	3,529	16,115	847	−13,433	107,733
2061	89	3,138	16,115	753	−13,730	94,003
2062	90	2,738	16,115	657	−14,034	79,969
2063	91	2,329	16,115	559	−14,345	65,625
2064	92	1,911	16,115	459	−14,663	50,963
2065	93	1,484	16,115	356	−14,987	35,976
2066	94	1,048	16,115	251	−15,318	20,658
2067	95	602	21,115	144	−20,657	0

amount each year on consumption and not end up in debt even if she lives to her maximum ago of life, 95. Also note that the initial amount of nontax-favored wealth with which Jane begins widowhood is $518,691. This amount equals (up to rounding error) the sum of George's and Jane's $382,833 in nontax-favored assets at age 50, plus the $140,858 amount of term insurance recommended for George at age 50, less $5,000 for George's funeral. Were ESPlanner to recommend even a dollar less in life insurance for George at age 50, Jane would not be able to finance the same living standard as a survivor without ending up in debt at age 95 if she were to live that long.

III. Quicken Financial Planner

There is an expanding universe of financial planning software programs and Internet sites available to the general public that offer advice on saving for retirement and other goals, as well as on asset allocation. These programs include proprietary packages offered by mutual-fund and insurance companies with investment and insurance products to sell, as well as independent packages marketed by financial experts and consumer software companies. In addition, there are packages sold to professional financial advisors who use these programs in the course of financial planning sessions given to clients.

The packages on the market differ in focus, sophistication, and level of detail. As mentioned above, however, they all share certain conceptual features. A goal is set by the household for the desired income or expenditure flow in retirement (usually a set percentage of earned income expected to be received just prior to retirement). Then the appropriate saving rate (usually assumed to be level over the work life) and optimal asset allocation are calculated by the program, given certain assumptions, preferences, and information provided by the household, to enable the household to reach its goal. This conventional approach is consistent with the way actuaries traditionally have designed pension plans, that is, a retirement income goal (a replacement rate) is set and the contribution rate (usually level) necessary to achieve that goal is calculated.

We employ the Quicken Financial Planner (QFP), which is representative of the conventional approach. QFP is manufactured by Intuit, Inc., makers of Quicken and Turbo Tax software. To our knowledge, QFP is the most sophisticated and comprehensive planning package available to the general public; it rivals professional software in its detail and use of advanced techniques. QFP seems appropriate for households at most income and wealth levels, perhaps with the exclusion of those households with unusual financial circumstances and those at the bottom and the very top of the income and wealth distributions. (QFP, and ESPlanner for that matter, provide little detail on government assistance programs and estate taxes.)

Inputs and Outputs of QFP

A detailed description of QFP is provided in the appendix of Warshawsky and Ameriks (2001, forthcoming). Here we summarize that discussion and highlight certain features of QFP that we employ in our analysis.

QFP is designed to aid in financial planning for retirement, children's college education, and life insurance needs; we ignore here its advice on asset allocation. Basic demographic and economic (both current and expected future) information is collected about the household. In the "income taxes" section, the respondent household inputs combined federal and state average income tax rates expected in the periods before and after retirement. The respondent is given a choice of two methods to do this estimation: (1) the "demographic average," that is, the average tax rate paid by the average person in the respondent's state of residence within the same range of household income and demographic situation, or (2) the "tax return" approach, that is, the average tax rate calculated based on the household's adjusted gross income and the actual taxes paid in the prior year. Because we do not know actual taxes paid in the prior year, we employ QFP's demographic average method in our analysis; an actual user might input his or her own tax information using the tax return approach.

QFP asks for a myriad of details concerning the household's current and expected future pension coverage, current investment, real estate holdings, loans, and mortgages outstanding. In the "living expenses" section, the respondent household is given a choice of two estimation methods, "rough estimate" and "itemized list." In the first method, QFP simply asks for the household's estimated living expenses before and after retirement, and offers as guidance an abbreviated statement for the current year of cash flow less "off-the-top" expenditures like taxes, loan payments, housing expenses, and planned contributions to pension and savings plans. In the second approach, the household fills out a detailed budget for the current and future years, and QFP sums up pre- and postretirement living expenses from this list. We employ the first method.

In the "social security estimated benefits" section, QFP again gives the user two choices in estimation methods, "rough estimate" and "Social Security Administration estimate." In the first method, the respondent household is asked to sort itself into one of four earnings bands; an estimate of social security benefits is then generated based on planned age at retirement. In the second method, the respondent is simply invited to input the number from the official response to the Request for Personal Earnings and Benefits Estimate Statement form mailed to the Social Security Administration. We employ the first method in our analysis.

QFP has certain advanced planning options allowing for more sophisticated modeling. In particular, in "cash shortfalls," the respondent household is asked whether it plans to sell investments to cover preretirement shortages; although the default answer, which is conservative, is no, in our analysis, we respond yes.[8] In "realized gains," the respondent is asked to estimate the percentage of the gains in the taxable investment portfolio subject to taxes every year; we employ the default answer of 100 percent. In "sweep," the respondent is asked what percent of surplus cash flow is swept into