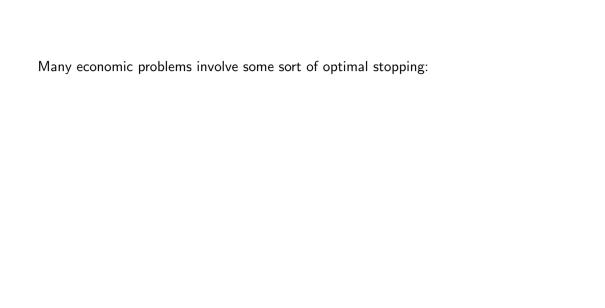


To start with, let's discuss the theory of optimal stopping
Gives mathematical context for maximizing rewards or minimizing costs

Optimal stopping problems are by definition dynamic



Many economic problems involve some sort of optimal stopping:
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- Replacement problems (e.g. machines, infrastructure)

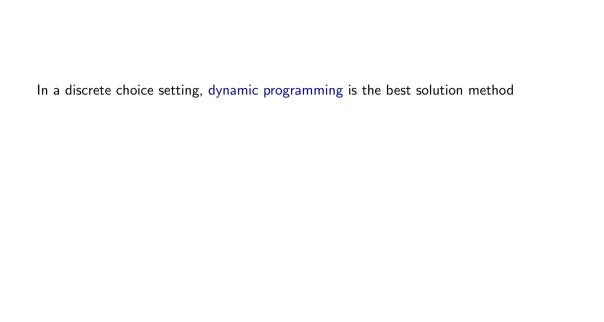
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Optimal stopping problems	inherently	have a	tension	between	costs	and b	enefits:

It is costly to interview job candidates

• But it is also costly to miss out on the best candidate



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• If continuous time: use Hamiltonians and Differential Equations

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Within a discrete choice setting, time can be either continuous or discrete:

- If continuous time: use Hamiltonians and Differential Equations
- If discrete time: use recursive methods



Solution method also depends on the time horizon:
• If the time horizon is finite: then we can use dynamic programming

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• If the time horizon is finite: then we can use dynamic programming

• If the time horizon is infinite: then need to (also) solve for a fixed point



All four combinations represent viable solution approaches for discrete choice problems

	Finite Time Horizon	Infinite Time Horizon
Continuous Time	Hamiltonians & Diff. Eq., Finite Differences	Hamiltonians & Diff. Eq., Fin. Diff. & Fixed Point
Discrete Time	Dynamic Programming, Backwards Recursion	Dynamic Programming, Bkw. Recursion & Fixed Point

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Continuous Time		
Discrete Time	Dynamic Programming, Backwards Recursion	