

# History Suggests a High Chance of Recession over the Next 24 Months

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As the Federal Reserve moves this week to raise interest rates by a quarter of a percentage point, there is much discussion over the likelihood that the central bank can achieve a soft landing in the economy. While engineering a soft landing is historically very rare, Fed Chair Jerome Powell told lawmakers in early March that he believes achieving a soft landing is “more likely than not.” The Fed’s latest forecast, as well as the consensus forecast from the Federal Reserve Bank of Philadelphia’s Survey of Professional Forecasters (SPF), supports this claim: in both forecasts, inflation recedes to below 3 percent and unemployment remains below 4 percent over the next year.

To examine the plausibility of these forecasts, we look at quarterly data going back to the 1950s and calculate the probability that the economy goes into a recession within the next 12 and 24 months, conditioning on alternative measures of inflation and unemployment. **We find that, given the current inflation level of nearly 8 percent and unemployment below 4 percent, historical evidence suggests a very substantial likelihood of recession over the next year or two.**

Table 1 shows the historical probability of a recession occurring within the next 12 and 24 months, conditional on contemporaneous measures of CPI inflation and the unemployment rate. The results indicate that lower unemployment and higher inflation significantly increase the probability of a recession over the next 12 and 24 months. Historically, when average quarterly inflation rises above 5 percent, the probability of a recession over the next two years is above 60 percent, and when the unemployment rate drops below 4 percent, the probability of a recession over the next two years approaches 70 percent.

Since 1955, there has never been a quarter with average inflation above 4 percent and unemployment below 5 percent that was not followed by a recession within the next two years.

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**Table 1:** Historical probability of a recession conditional on different levels of CPI inflation and unemployment, using data from 1955-2019

	Avg quarterly inflation above:	Avg quarterly UR below:	Probability of recession over next 4-quarters	Probability of recession over next 8-quarters	Number of quarters	When did US economy most recently cross threshold?
Inflation only	3%	#N/A	27%	48%	95	Q2 2021
	4%	#N/A	37%	59%	51	Q2 2021
	5%	#N/A	45%	62%	29	Q3 2021
UR only	#N/A	6%	25%	47%	142	Q2 2021
	#N/A	5%	31%	57%	83	Q4 2021
	#N/A	4%	42%	69%	26	Q1 2022
Inflation and UR	3%	6%	43%	75%	53	Q2 2021
	3%	5%	54%	85%	26	Q4 2021
	3%	4%	54%	85%	13	Q1 2022
	4%	6%	59%	89%	27	Q2 2021
	4%	5%	73%	100%	11	Q4 2021
	4%	4%	57%	100%	7	Q1 2022
	5%	6%	83%	100%	12	Q3 2021
	5%	5%	100%	100%	5	Q4 2021
	5%	4%	100%	100%	3	Q1 2022

**Note:** The calculation for the probability of recession over the next 4-quarters and 8-quarters excludes quarters when the US economy is already in a recession. Recession is defined using NBER based recession indicators for the United States from the period following the peak through the trough. The measure of inflation used is the Consumer Price Index for all urban consumers.

**Sources:** Bureau of Labor Statistics via FRED; authors' calculations

The above results do not reflect our use of the CPI rather than alternative inflation measures, or the use of the unemployment rate rather than alternative labor market tightness measures. Measuring labor market tightness with the job vacancy rate, which we have advocated for in our prior work (Domash and Summers 2022), suggests an even higher probability of recession over the next 12 and 24 months. Similarly, using Core PCE inflation or wage inflation rather than the CPI also yields the same conclusions. These results are included in tables A.1 and A.2 in the Appendix.

Some may argue that the historical data presented in these tables overstate the probability of recession, since there has been a trend towards greater business cycle stability in recent decades. Motivated by this concern, and to make maximum use of available information, we use a probit model to predict the probability of a future recession based on current economic conditions and controlling for a time trend.

Table 2 presents the results from our probit models. The predicted probability of a recession over the next 12 months in Q1 2022 is highlighted in blue, and is very high across all our model specifications. In our baseline model, we use a four-quarter trailing average of inflation and a one-quarter lag of unemployment as our main explanatory variables. To allow for the possibility that recession probabilities have declined over time, we also have specifications that include a time trend (column 2) and a dummy for years after 1982 (column 3). We find that a trend towards greater business cycle stability does not appear in any significant way once one controls for economic conditions. Finally, we include a specification with a dummy for whether the economy is more than 6 quarters into an economic expansion (column 4), and with the time trend and expansion dummy (column 5).

**Table 2: Probit models of predicted probability of recession over the next four quarters, using data from 1955 -2019**

	(1)	(2)	(3)	(4)	(5)
<i>Dependent variable: Predicted probability of recession over next 4 quarters</i>	Baseline	W/ time trend	W/ post-1982 dummy	W/ expansion dummy	W/ time trend + expansion dummy
Inflation, 4-quarter trailing average	0.26*** (0.050)	0.25*** (0.050)	0.25*** (0.052)	0.26*** (0.050)	0.25*** (0.050)
Unemployment rate, 1-quarter lag	-0.62*** (0.10)	-0.61*** (0.10)	-0.61*** (0.11)	-0.65*** (0.12)	-0.64*** (0.12)
Time trend		-0.0033 (0.0056)			-0.0026 (0.0058)
Post-1982 dummy			-0.19 (0.24)		
> 6 quarters into expansion dummy				-0.24 (0.37)	-0.20 (0.38)
Constant	1.49*** (0.48)	1.57*** (0.50)	1.56*** (0.49)	1.87** (0.77)	1.87** (0.76)
Observations	230	230	230	230	230
R-squared	0.28	0.29	0.29	0.29	0.29
<b>Predicted probability of recession over next 4 quarters in 2022Q1</b>	<b>67%</b>	<b>61%</b>	<b>62%</b>	<b>66%</b>	<b>62%</b>

**Note:** The baseline model specification includes only the 4-quarter trailing average of CPI inflation and the 1-quarter lag of the unemployment rate. The second specification (column 2) also includes a time trend, the third specification (column 3) includes a dummy for time periods after 1982, the fourth specification (column 4) includes a dummy for whether the economy is more than 6 quarters into an expansion, and the fifth specification (column 5) includes a time trend and the expansion dummy. The regressions exclude quarters when the US economy is already in a recession. Recession is defined using NBER based recession indicators for the United States from the period following the peak through the trough.

**Sources:** Bureau of Labor Statistics via FRED; authors' calculations

Table 3 presents the same models, using instead the predicted probability of a recession over the next 8 quarters as the dependent variable. The results suggest a strikingly high probability of recession over the next two years, given current levels of inflation and unemployment. We also repeat the above analysis using a quadratic model, and find similar predicted probabilities of a recession over the next 4 and 8 quarters.

**Table 3: Probit models of predicted probability of recession over the next eight quarters, using data from 1955 -2019**

	(1)	(2)	(3)	(4)	(5)
<i>Dependent variable: Predicted probability of recession over next 8 quarters</i>	Baseline	W/ time trend	W/ post-1982 dummy	W/ expansion dummy	W/ time trend + expansion dummy
Inflation, 4-quarter trailing average	0.35*** (0.058)	0.36*** (0.061)	0.34*** (0.060)	0.36*** (0.059)	0.37*** (0.061)
Unemployment rate, 1-quarter lag	-0.85*** (0.11)	-0.89*** (0.12)	-0.86*** (0.11)	-0.96*** (0.13)	-0.96*** (0.13)
Time Trend		-0.014** (0.0056)			-0.011** (0.0058)
Post-1982 dummy			-0.46** (0.22)		
> 6 quarters into expansion dummy				-0.61* (0.31)	-0.43 (0.33)
Constant	3.14*** (0.51)	3.78*** (0.60)	3.46*** (0.55)	4.20*** (0.78)	4.44*** (0.81)
Observations	230	230	230	230	230
R-squared	0.39	0.41	0.40	0.40	0.41
<b>Predicted probability of recession over next 8 quarters in 2022Q1</b>	<b>95%</b>	<b>89%</b>	<b>92%</b>	<b>96%</b>	<b>91%</b>

**Note:** The baseline model specification includes only the 4-quarter trailing average of CPI inflation and the 1-quarter lag of the unemployment rate. The second specification (column 2) also includes a time trend, the third specification (column 3) includes a dummy for time periods after 1982, the fourth specification (column 4) includes a dummy for whether the economy is more than 6 quarters into an expansion, and the fifth specification (column 5) includes a time trend and the expansion dummy. The regressions exclude quarters when the US economy is already in a recession. Recession is defined using NBER based recession indicators for the United States from the period following the peak through the trough.

**Sources:** Bureau of Labor Statistics via FRED; authors' calculations

Table 4 below summarizes the predicted probabilities of a recession occurring over the next 12 and 24 months for each of the 5 model specifications. The results suggest a very high likelihood of recession in the coming years, and are robust across all our specifications. Moreover, the findings do not reflect our choice to use the CPI as the inflation measure or the unemployment rate as the slack measure. Using wage inflation, rather than the CPI, results in higher predictions of the probability of recession, and using Core PCE inflation results in similar predictions. Replacing the unemployment rate with the vacancy rate (which we believe to be a better slack indicator) also yields higher predicted probabilities of a recession over the next years.

**Table 4:** Summary table of predicted probabilities of a recession occurring over the next 12 and 24 months

<i>Model used:</i>	Inflation and unemployment only	W/ Time trend	W/ post-1982 Dummy	W/ expansion dummy	W/ Time trend + expansion dummy
Predicted probability of recession over next 4 quarters	<b>67%</b>	<b>61%</b>	<b>62%</b>	<b>66%</b>	<b>62%</b>
Predicted probability of recession over next 8 quarters	<b>95%</b>	<b>89%</b>	<b>92%</b>	<b>96%</b>	<b>91%</b>

**Note:** All regressions use a probit model and include all non-recessionary quarters between 1955 – 2019. Predictions are calculated in 2022Q1 using the 4-quarter trailing average of CPI inflation and the one-quarter lag of the unemployment rate. The second specification (column 2) also includes a time trend, the third specification (column 3) includes a dummy for time periods after 1982, the fourth specification (column 4) includes a dummy for whether the economy is more than 6 quarters into an expansion, and the fifth specification (column 5) includes a time trend and the expansion dummy. Recession is defined using NBER based recession indicators for the United States from the period following the peak through the trough.

**Sources:** Bureau of Labor Statistics via FRED; authors' calculations

Overall, the evidence we present in this note suggests that engineering a soft landing is a very difficult thing to do in a rapidly growing, inflation economy. Arguably the only time the Fed has been successful in achieving a soft landing occurred in 1994-1995 when the Fed doubled interest rates to 6 percent and was able to slow economic growth without triggering a recession.

But with inflation nearing 8 percent and unemployment below 4 percent, the Fed today is way behind the curve, and now has to play catch-up to try to tame price increases. The historical evidence indicates that when inflation is as high as it is today, and the unemployment rate is as low as it is today, the probability of a recession over the next one and two years is extraordinarily high. Moreover, none of this evidence accounts for the recent supply shocks associated with the war in Ukraine, which will only increase the probability of recession even further. We therefore believe that the likelihood that the Fed achieves a soft landing in the economy is low.

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## REFERENCES

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## APPENDIX

**Table A.1:** Historical probability of a recession conditional on different levels of Core PCE inflation and unemployment, using data from 1960-2019

	Avg quarterly inflation above:	Avg quarterly UR below:	Probability of recession over next 4-quarters	Probability of recession over next 8-quarters	Number of quarters	When did US economy most recently cross threshold?
Inflation only	3%	#N/A	23%	43%	77	Q2 2021
	4%	#N/A	26%	49%	47	Q4 2021
	5%	#N/A	26%	41%	27	Q1 2022
UR only	#N/A	6%	23%	42%	128	Q2 2021
	#N/A	5%	29%	54%	65	Q4 2021
	#N/A	4%	40%	68%	25	Q1 2022
Inflation and UR	3%	6%	42%	75%	36	Q2 2021
	3%	5%	43%	71%	14	Q4 2021
	3%	4%	33%	66%	12	Q1 2022
	4%	6%	45%	85%	20	Q4 2021
	4%	5%	63%	100%	8	Q4 2021
	4%	4%	57%	100%	7	Q1 2022
	5%	6%	57%	71%	7	Q1 2022
	5%	5%	#N/A	#N/A	0	Q1 2022
5%	4%	#N/A	#N/A	0	Q1 2022	

**Note:** The calculation for the probability of recession over the next 4-quarters and 8-quarters excludes quarters when the US economy is already in a recession. Recession is defined using NBER based recession indicators for the United States from the period following the peak through the trough. The measure of inflation used is the Personal Consumption Expenditures Excluding Food and Energy.

**Sources:** Bureau of Labor Statistics and Federal Reserve Bank of St. Louis via FRED; authors' calculations

**Table A.2:** Historical probability of a recession conditional on different levels of wage inflation and unemployment, using data from 1965 -2019

	Avg quarterly wage inflation above:	Avg quarterly UR below:	Probability of recession over next 4-quarters	Probability of recession over next 8-quarters	Number of quarters	When did US economy most recently cross threshold?
Wage Inflation only	3%	#N/A	28%	51%	110	Q3 2021
	4%	#N/A	33%	55%	67	Q3 2021
	5%	#N/A	37%	66%	41	Q3 2021
UR only	#N/A	6%	24%	46%	115	Q2 2021
	#N/A	5%	30%	55%	64	Q4 2021
	#N/A	4%	40%	68%	25	Q1 2022
Wage inflation and UR	3%	6%	35%	63%	80	Q3 2021
	3%	5%	37%	63%	51	Q4 2021
	3%	4%	44%	65%	23	Q1 2022
	4%	6%	43%	70%	44	Q3 2021
	4%	5%	41%	62%	29	Q4 2021
	4%	4%	33%	60%	15	Q1 2022
	5%	6%	52%	91%	23	Q3 2021
	5%	5%	64%	100%	11	Q4 2021
	5%	4%	50%	100%	8	Q1 2022

**Note:** The calculation for the probability of recession over the next 4-quarters and 8-quarters excludes quarters when the US economy is already in a recession. Recession is defined using NBER based recession indicators for the United States from the period following the peak through the trough. The measure of wage inflation used is the average hourly earnings of private-sector production and non-supervisory employees.

**Sources:** Bureau of Labor Statistics and Federal Reserve Bank of St. Louis via FRED; authors' calculations