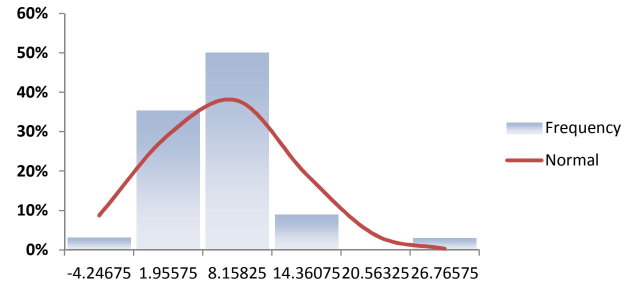
Year	Inflation	Inflation
1980	-7.348	-7.3%
1981	14.9	14.9%
1982	10.879	10.9%
1983	9.733	9.7%
1984	7.908	7.9%
1985	5.201	5.2%
1986	29.867	29.9%
1987	7.697	7.7%
1988	10.326	10.3%
1989	3.968	4.0%
1990	5.632	5.6%
1991	13.921	13.9%
1992	8.597	8.6%
1993	1.81	1.8%
1994	3.922	3.9%
1995	-0.48	-0.5%
1996	2.674	2.7%
1997	1.994	2.0%
1998	3.03	3.0%
1999	3.902	3.9%
2000	6.094	6.1%
2001	8.694	8.7%
2002	10.794	10.8%
2003	11.452	11.5%
2004	11	11.0%
2005	8.3	8.3%
2006	6.4	6.4%
2007	5.9	5.9%
2008	10.4	10.4%
2009	1.4	1.4%
2010	3.6	3.6%
2011	6.3	6.3%
2012	1.2	1.2%
2013	0.7	0.7%

Descriptive Statistics	
AVERAGE:	6.7755
STD DEV:	6.12016
SKEW:	1.33
EXCESS-KURTOSIS:	5.53
MEDIAN:	6.197
MIN:	-7.348
MAX:	29.867
Q 1:	3.1725
Q 3:	10.17775

Significance Test			5.00%
Target	**P-Value**	**SIG?**	
0.000	0.00%	TRUE	
0.000	0.20%	TRUE	
0.000	0.00%	TRUE	

Test	p-value	SIG?
White-noise	89.39%	TRUE
Normal Distributed?	0.00%	FALSE
ARCH Effect?	99.91%	FALSE

Histogram Plot



ARCH Effect Test

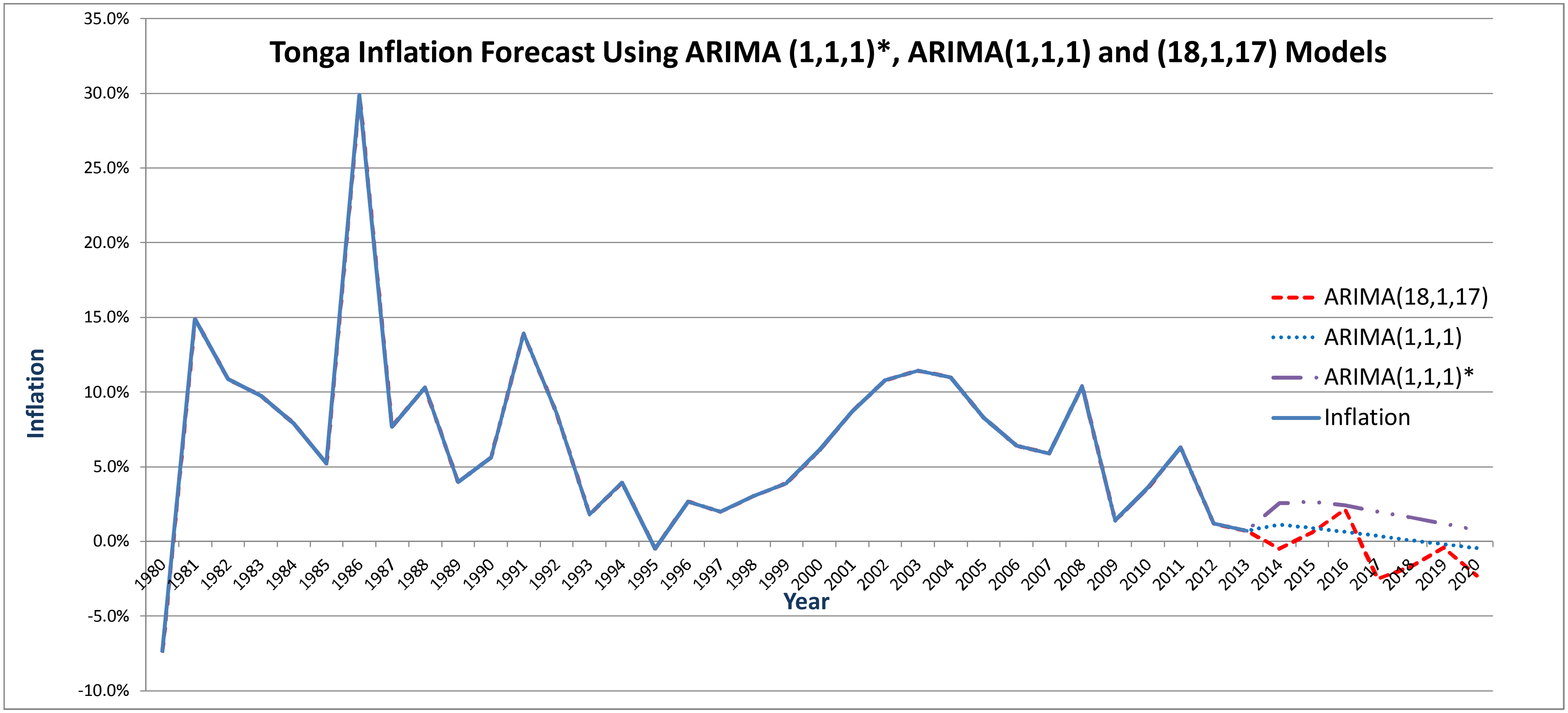
Lag	Score	C.V.	P-Value	Present?	5.0%
1	0.00	3.84	94.8%	FALSE	
2	0.07	5.99	96.4%	FALSE	
3	0.09	7.81	99.4%	FALSE	
4	0.09	9.49	99.9%	FALSE	

Stationary Test

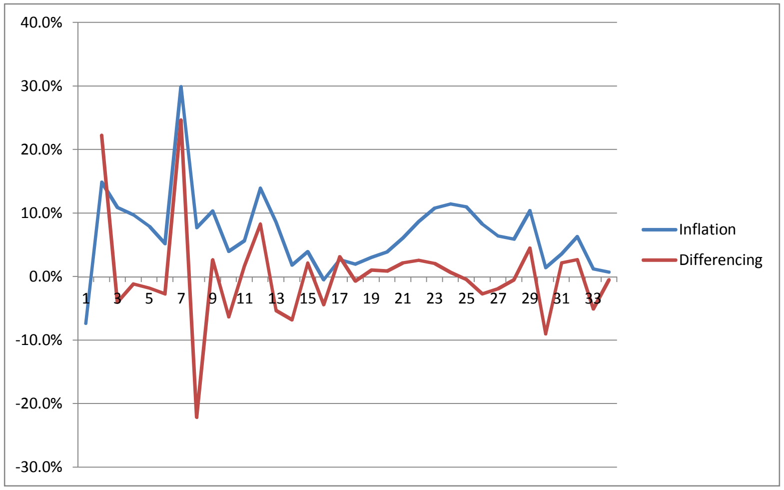
Test	Stat	P-Value	C.V.	Stationary?	5.0%
ADF					
No Const	-1.0	28.0%	-2.0	FALSE	
Const-Only	-5.6	0.1%	-3.2	TRUE	
Const + Trend	-6.2	0.0%	-1.6	TRUE	
Const+Trend+Trend^2	-6.2	0.0%	-1.6	TRUE	

Histogram Table **6** **6.7755** **6.12016**

Bin	LL	UL	Center	Freq	Cum. Freq	Normal
1	-7.348	-1.1455	-4.24675	2.9%	2.9%	8.7%
2	-1.1455	5.057	1.95575	35.3%	38.2%	29.2%
3	5.057	11.2595	8.15825	50.0%	88.2%	37.9%
4	11.2595	17.462	14.36075	8.8%	97.1%	19.1%
5	17.462	23.6645	20.56325	0.0%	97.1%	3.8%
6	23.6645	29.867	26.76575	2.9%	100.0%	0.3%


Tonga Inflation Forecast Using ARIMA (1,1,1)*, ARIMA(1,1,1) and (18,1,17) Models
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
-5.0%
-10.0%
Inflation
Year
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
ARIMA(18,1,17)
ARIMA(1,1,1)
ARIMA(1,1,1)*
Inflation

Year	Inflation	Inflation	Differencing
1980	-7.348	-7.3%	#N/A
1981	14.9	14.9%	22.2%
1982	10.879	10.9%	-4.0%
1983	9.733	9.7%	-1.1%
1984	7.908	7.9%	-1.8%
1985	5.201	5.2%	-2.7%
1986	29.867	29.9%	24.7%
1987	7.697	7.7%	-22.2%
1988	10.326	10.3%	2.6%
1989	3.968	4.0%	-6.4%
1990	5.632	5.6%	1.7%
1991	13.921	13.9%	8.3%
1992	8.597	8.6%	-5.3%
1993	1.81	1.8%	-6.8%
1994	3.922	3.9%	2.1%
1995	-0.48	-0.5%	-4.4%
1996	2.674	2.7%	3.2%
1997	1.994	2.0%	-0.7%
1998	3.03	3.0%	1.0%
1999	3.902	3.9%	0.9%
2000	6.094	6.1%	2.2%
2001	8.694	8.7%	2.6%
2002	10.794	10.8%	2.1%
2003	11.452	11.5%	0.7%
2004	11	11.0%	-0.5%
2005	8.3	8.3%	-2.7%
2006	6.4	6.4%	-1.9%
2007	5.9	5.9%	-0.5%
2008	10.4	10.4%	4.5%
2009	1.4	1.4%	-9.0%
2010	3.6	3.6%	2.2%
2011	6.3	6.3%	2.7%
2012	1.2	1.2%	-5.1%
2013	0.7	0.7%	-0.5%



Steps:
1. enter Diff formula and copy down.
2. highlight the D2 to D35
3. Press F2 key
4. Press Ctril+Shit and press Enter

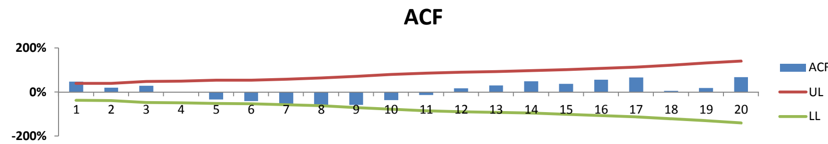
Year

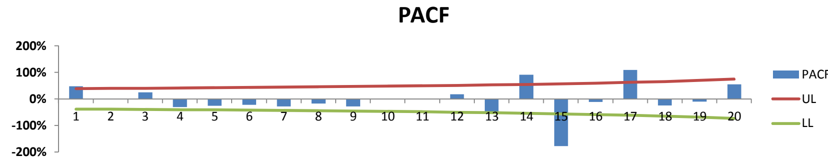
Year	Inflation	ARIMA(1,1,1)
1980	-7.348	
1981	14.9	
1982	10.879	
1983	9.733	
1984	7.908	
1985	5.201	
1986	29.867	
1987	7.697	7.7%
1988	10.326	10.3%
1989	3.968	4.0%
1990	5.632	5.6%
1991	13.921	13.9%
1992	8.597	8.6%
1993	1.81	1.8%
1994	3.922	3.9%
1995	-0.48	-0.5%
1996	2.674	2.7%
1997	1.994	2.0%
1998	3.03	3.0%
1999	3.902	3.9%
2000	6.094	6.1%
2001	8.694	8.7%
2002	10.794	10.8%
2003	11.452	11.5%
2004	11	11.0%
2005	8.3	8.3%
2006	6.4	6.4%
2007	5.9	5.9%
2008	10.4	10.4%
2009	1.4	1.4%
2010	3.6	3.6%
2011	6.3	6.3%
2012	1.2	1.2%
2013	0.7	0.7%
2014	1.10796	1.1%
2015	0.895218	0.9%
2016	0.630796	0.6%
2017	0.362071	0.4%
2018	0.092988	0.1%
2019	-0.17612	-0.2%
2020	-0.44524	-0.4%

ARIMA (1,1,1) - Without Outliers (figures from 1980 to 1986)

Correlogram Analysis

Lag	ACF	UL	LL	PACF	UL	LL
1	46.88%	38.44%	-38.44%	48.47%	38.44%	-38.44%
2	19.50%	39.20%	-39.20%	-0.45%	39.20%	-39.20%
3	28.83%	47.38%	-47.38%	24.66%	40.01%	-40.01%
4	-0.55%	49.38%	-49.38%	-30.99%	40.87%	-40.87%
5	-33.85%	52.67%	-52.67%	-26.18%	41.79%	-41.79%
6	-41.36%	53.91%	-53.91%	-22.05%	42.77%	-42.77%
7	-59.47%	57.92%	-57.92%	-28.40%	43.83%	-43.83%
8	-61.46%	62.87%	-62.87%	-16.78%	44.96%	-44.96%
9	-58.06%	70.69%	-70.69%	-27.59%	46.20%	-46.20%
10	-35.96%	78.75%	-78.75%	1.28%	47.54%	-47.54%
11	-12.93%	85.39%	-85.39%	0.82%	49.00%	-49.00%
12	17.80%	89.59%	-89.59%	18.16%	50.61%	-50.61%
13	29.77%	92.89%	-92.89%	-52.92%	52.38%	-52.38%
14	49.22%	96.60%	-96.60%	91.59%	54.36%	-54.36%
15	37.27%	101.05%	-101.05%	-177.41%	56.58%	-56.58%
16	56.83%	107.12%	-107.12%	-11.47%	59.10%	-59.10%
17	66.94%	113.28%	-113.28%	109.39%	61.98%	-61.98%
18	5.06%	121.58%	-121.58%	-24.72%	65.33%	-65.33%
19	19.10%	131.32%	-131.32%	-10.12%	69.30%	-69.30%
20	68.45%	140.39%	-140.39%	54.88%	74.08%	-74.08%





ARIMA(1,1,1)

Param	Value
μ	-0.27
ϕ_1	0.08
θ_1	-0.45
σ	3.61
d	1

Goodness-of-fit

LLF	AIC	CHECK
-70.79	151.58	1

Residuals (standardized) Analysis

	AVG	STDEV	SKEW	KURTOSIS	Noise?	Normal?	ARCH?
	0.01	1.02	-0.13	0.10	TRUE	TRUE	FALSE
Target	0.00	1.00	0.00	0.00			
SIG?	FALSE	FALSE	FALSE	FALSE			

Step	Mean	STD	UL	LL
1	1.10796	3.612072	8.187491	-5.97157
2	0.895218	3.988706	8.712938	-6.9225
3	0.630796	4.397616	9.249966	-7.98837
4	0.362071	4.766462	9.704166	-8.98002
5	0.092988	5.109146	10.10673	-9.92075
6	-0.17612	5.430215	10.4669	-10.8192
7	-0.44524	5.733335	10.79189	-11.6824

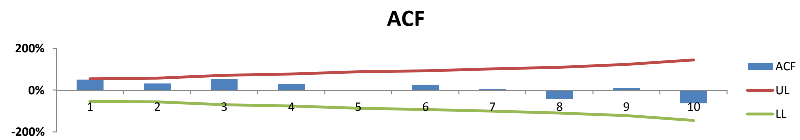
Year

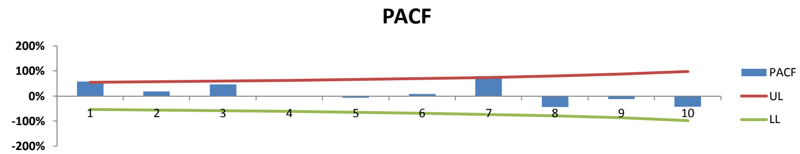
Year	Inflation	ARIMA(1,1,1)*
1980	-7.348	
1981	14.9	
1982	10.879	
1983	9.733	
1984	7.908	
1985	5.201	
1986	29.867	
1987	7.697	
1988	10.326	
1989	3.968	
1990	5.632	
1991	13.921	
1992	8.597	
1993	1.81	
1994	3.922	
1995	-0.48	
1996	2.674	
1997	1.994	
1998	3.03	
1999	3.902	
2000	6.094	6.1%
2001	8.694	8.7%
2002	10.794	10.8%
2003	11.452	11.5%
2004	11	11.0%
2005	8.3	8.3%
2006	6.4	6.4%
2007	5.9	5.9%
2008	10.4	10.4%
2009	1.4	1.4%
2010	3.6	3.6%
2011	6.3	6.3%
2012	1.2	1.2%
2013	0.7	0.7%
2014	2.556553	2.6%
2015	2.677045	2.7%
2016	2.388327	2.4%
2017	2.003151	2.0%
2018	1.59524	1.6%
2019	1.18197	1.2%
2020	0.767437	0.8%

ARIMA (1,1,1)* - Using Figures from 2000 to 2013

Correlogram Analysis

Lag	ACF	UL	LL	PACF	UL	LL
1	51.53%	54.36%	-54.36%	57.71%	54.36%	-54.36%
2	32.54%	56.58%	-56.58%	18.71%	56.58%	-56.58%
3	54.06%	70.53%	-70.53%	47.06%	59.10%	-59.10%
4	29.79%	76.88%	-76.88%	1.30%	61.98%	-61.98%
5	1.35%	87.27%	-87.27%	-6.34%	65.33%	-65.33%
6	26.30%	92.96%	-92.96%	8.11%	69.30%	-69.30%
7	4.44%	101.08%	-101.08%	80.19%	74.08%	-74.08%
8	-40.88%	109.82%	-109.82%	-44.17%	80.02%	-80.02%
9	11.86%	122.93%	-122.93%	-12.26%	87.65%	-87.65%
10	-62.20%	144.90%	-144.90%	-42.48%	98.00%	-98.00%





ARIMA(1,1,1)

Param	Value
μ	-0.41
ϕ_1	0.24
θ_1	-1.00
σ	2.62
d	1

Goodness-of-fit

LLF	AIC	CHECK
-33.38	79.77	1

Residuals (standardized) Analysis

	AVG	STDEV	SKEW	KURTOSIS	Noise?	Normal?	ARCH?
	0.01	1.10	-0.54	-0.44	TRUE	TRUE	FALSE
Target	0.00	1.00	0.00	0.00			
SIG?	FALSE	FALSE	FALSE	FALSE			

Step	Mean	STD	UL	LL
1	2.556553	2.623855	7.699215	-2.58611
2	2.677045	2.695701	7.960522	-2.60643
3	2.388327	2.699651	7.679545	-2.90289
4	2.003151	2.699867	7.294793	-3.28849
5	1.59524	2.69988	6.886907	-3.69643
6	1.18197	2.69988	6.473638	-4.1097
7	0.767437	2.69988	6.059105	-4.52423