# HOW LONG DOES IT TAKES FOR A POOR STATE TO CATCH-UP TO A RICHER STATE IN MALAYSIA? A NOTE

Muzafar Shah Habibullah\*

Universiti Putra Malaysia

Nur Azura Sanusi Universiti Malaysia Terengganu

Lazim Abdullah Universiti Malaysia Terengganu

Suhal Kusairi Universiti Malaysia Terengganu

Asan Ali Golam Hassan Universiti Tekonolgi Malaysia

Normi Azura Ghazali Universiti Malaysia Terengganu

## ABSTRACT

The objective of the present paper is to address the question whether the less developed states, namely; Kedah, Kelantan, Pahang, Perlis, Sabah, Sarawak and Terengganu are catching-up with the more richer state of Selangor. In this study, we determine the time required for the less developed states to converge to the level of economic development of a richer state, Selangor. In terms of real GDP, the less developed states will take longer to converge to the state of Selangor, however, in terms of per capita real GDP, the less developed states can converge at a faster rate to the level of economic development of Selangor if these states can grow more than double than the growth in Selangor. In this respect, the state government has an important role to play in enhancing growth by continuously providing stable economic environment for investment and other productive economic activities. This will ensure full convergence can take place at a faster rate in the future.

Keywords: Income disparity; Convergence; Time to convergence; Sates GDP, Malaysia

## 1. INTRODUCTION

One of the important issues in the economic agenda of many countries is equitable and sustains economic growth. Despite different countries having different perceptions of what equitable is and how best to achieve it, there is a general consensus that extreme inequality of income, wealth or opportunity is unfair and those efforts should be made to raise the income of the poorest members

<sup>\*</sup>Corresponding author: Faculty of Economics and Management, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia. Tel: +603 8946 7635 *Email*: muzafar@upm.edu.my

of the society. Accordingly, to achieve both development and equity at the same time, policies and strategies are continuously being formulated and implemented across the globe. In Malaysia, regional income disparity has been a never ending story. For the last forty years narrowing the regional income gap has been a daunting task faced by the Malaysian government.

Malaysia comprises of a federation of thirteen states and three Federal Territories. The thirteen states in the Federation are Perlis, Kedah, Kelantan, Terengganu, Penang, Perak, Pahang, Selangor, Negeri Sembilan, Melaka, Johor, Sabah and Sarawak while the Federal Territories are Kuala Lumpur and Putrajaya in West Malaysia and Labuan in East Malaysia. These states can be categorized into two, namely; the more developed states and the less developed states. The more developed states are Johor, Melaka, Negeri Sembilan, Perak, Penang and Selangor; while the less developed states comprises of Kedah, Kelantan, Pahang, Perlis, Sabah, Sarawak and Terengganu. The Federal Territory of Kuala Lumpur and Putrajaya are categorized as more developed states, while the Federal Territory of Labuan is classified as less developed states. Between these states the income gap has been widening.

Arief (1982) argues that regional disparity do not benefit the population by depriving better socioeconomic conditions. Sundaram and Hui (2014) show that less developed states have higher unemployment rates and lower wages than the developed states. Therefore, poor states are most likely to have more inequality and social problems since fewer people participate in the earning process. The existence of disparities for example in per capita income does not only indicate that there are states where the average household is less wealthy and has fewer resources to spend on consumption, but more than that, income disparities are also go hand-in-hand with social disparities.

Aslam and Hassan (2003) assert that the government effort to promote development through the various programs (for example, the Five-Years Malaysia Plans), in the less developed regions has failed. Mohit (2009) found that the regional disparities in income and employment in Malaysia was due to unequal economic growth among the states. The unfair treatment of the Malaysian government relative to the less developed states leads to the unequal growth among the states (see also Sundaram and Hui, 2014). Mohit (2009: 42) concludes that the "federal government development expenditure and private investments in different states of Malaysia have not been proportionate to their shares of national population and this partially explains the reason for the growth of regional imbalances in the country despite that the national economy has undergone transformation".

Another reason for regional disparity is due to the disproportionate inflows of capital investment to the states. Ghani (2014) reveals that foreign direct investment (FDI) inflows was more focused on developed states in particular, Selangor, Johor, Penang, Perak, Negeri Sembilan and Melaka, and this bias towards the developed states hamper economic growth in the less developed states. Furthermore, Ghani (2014) argues that since Malaysia adopts the model of fiscal federalism, the states in Malaysia are heavily dependent on the fiscal transfers from the federal government to meet their budgetary needs. To meet their obligations to the society in their respective states, over the years due to their limited revenue and continuous increase in expenditure has led the states to experience widening deficits, and ultimately widening income among states. On the other hand, Abdullah et al. (2015) agree that the NEP was successful in reducing poverty and inequality at the national level, but it was not successful at reducing regional inequality. They also found out that

regional inequality rose gradually after the 1997-Asian financial crisis and the 2008-global economic crisis.

Figure 1 and Table 1 show some interesting observations on the performance of the fourteen states in Malaysia for the period 1970-2010. Figure 1 shows the trends in log per capita real GDP for all fourteen states in Malaysia. On one extreme we have Wilayah Persekutuan being having highest income per capita while on the extreme we have Kelantan being the lowest income per capita. All other states show upward trends in per capita income, and moving together over time.

Results on ranking states by their real GDP and per capita real GDP for 1970, 1980, 1990, 2000 and 2010 are presented in Table 1. In Panel A, we can observe that the state of Selangor has been the richest state in Malaysia for the last four decades. This is followed by Wilayah Persekutuan, and surprisingly Sarawak is in the third place. Sarawak has been the third richest state in Malaysia for the last decade or more. On the other hand, Panel B suggests that in terms of per capita income, the state of Selangor is second to Wilayah Persekutuan, except in the year 2000 that Selangor ranked fourth after Penang and Sarawak. Among the developed states, Perak has been falling behind for the last thirty years, and become the fifth poorest states in Malaysia. Other interesting observations are the states of Sabah and Sarawak. Sabah has been the third richest state in 1970; however, for the last decades or more, Sabah has been lagging behind and placing her as the third poorest state in Malaysia. Sarawak on the other hand, has an amazing economic performance, catching-up and position herself as the fourth richest state in Malaysia after Wilayah Persekutuan, Selangor and Penang.

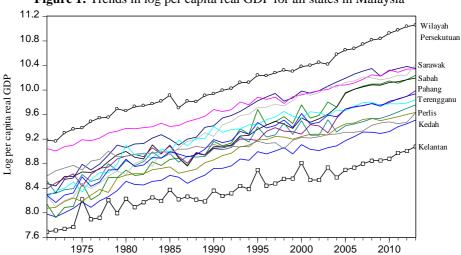


Figure 1: Trends in log per capita real GDP for all states in Malaysia

Nevertheless, our main concern is whether the less developed states in Malaysia showing any convergence with the more developed states for the last forty years? Economics convergence usually refers to a process in which national economies display increasing similarities in the patterns of their performance and eventually lead to similar living standards across regions. In the case of persistently large (or widening) gaps between poor and rich regions, there could be a need for economic policy measures to stimulate a catch-up process. Thus, the purpose of the present study is to determine how long will it takes for a less developed state to catch-up with a more developed state such as Selangor? In other words, for example, how many years does it takes for Kelantan to achieve Selangor's present level of economic development?

The remaining sections of the paper are organized as follows. Section 2 illustrates on determining the time required for convergence, section 3 discusses the main findings while section 4 contains our conclusion.

#### 2. TIME REQUIRED FOR CONVERGENCE WITH SELANGOR

As demonstrate in Figures 1 and 2, we observed that the less developed states exhibit (visually) catching-up and/or convergence with the richer state of Selangor. Our question is: what is the length of time needed for the less developed states to converge to the economy of Selangor. In other words, how long will it takes for the less developed states to catch-up with Selangor (in terms of both real GDP and per capita real GDP)?

To assess the convergence period between the less developed states and Selangor, we follow Iancu (2007) by specifying the following relationship (see also Bowman and Felipe, 2001; Hsiao and Hsiao, 2004),

$$y_i^0 (1+r_i)^t = y_i^0 (1+r_i)^t \tag{1}$$

Equation (1) suggests that at time *t* the economic development between the less developed states, *j* will equals the economic development of Selangor, *i*, given their respective initial level of GDP  $(y_j^0, y_i^0)$ ; when the less developed states are able to achieve annual average economic growth rate  $(r_j)$  much higher than those achieved by the state of Selangor  $(r_i)$ , that is,  $r_j > r_i$ . Transforming both sides of the above equations into logarithm and rearranging the terms, we can assess the period of time (t) when the convergence of the GDP (real GDP and per capita GDP) of the two states is achieved,

$$t = \frac{\log y_i - \log y_j}{\log(1+r_i) - \log(1+r_i)} \tag{2}$$

Equation (2) calculates the period of time (in years) when each of the developed states can catchup with Selangor.

Table 1: States' Rankin	ng by Real GDP	and Per Cap	pita Real GI	DP, 1970-20	010
States	1970	1980	1990	2000	2010
Panel A: Ranking by real GDP:					
Less developed states:					
Kedah	8	9	10	8	10
Kelantan	13	12	13	13	13
Pahang	10	8	9	9	8
Perlis	14	14	14	14	14
Sabah	6	6	6	7	6
Sarawak	5	7	4	3	3
Terengganu	11	10	8	10	12
Developed states:					
Johor	4	4	3	4	4
Melaka	12	13	12	12	11
Negeri Sembilan	9	11	11	11	9
Perak	1	3	5	6	7
Penang	7	5	7	5	5
Selangor	2	1	1	1	1
Wilayah Persekutuan	3	2	2	2	2
Panel B: Ranking by per capita real	GDP:				
Less developed states:					
Kedah	13	13	13	13	13
Kelantan	14	14	14	14	14
Pahang	9	6	10	10	8
Perlis	12	12	12	11	11
Sabah	3	7	8	12	12
Sarawak	7	11	5	3	4
Terengganu	8	3	4	8	9
Developed states:					
Johor	10	8	6	6	7
Melaka	11	10	7	5	5
Negeri Sembilan	4	5	9	7	6
Perak	5	9	11	9	10
Penang	6	4	3	2	3
Selangor	2	2	2	4	2
Wilayah Persekutuan	1	1	1	1	1

Notes: Authors' calculation.

Sources: Five Year Malaysia Plans and Department of Statistics Malaysia, various issues.

#### 2.1 Sources of Data

The data used in this study are annual observations on states per capita gross domestic product (GDP) in constant 2005 prices. The sample covers the period 1970 to 2013. Data for states GDP at constant 2005 prices are collected from the various issues of the Five-Year Malaysia Plans (Government of Malaysia, 1971, 1973, 1976, 1981, 1986, 1991, 1996, 2001, 2006) and Department of Statistics Malaysia. A complete range of time-series data for states per capita real GDP were interpolated using information on time, time-squared and one-year lagged Malaysia's per capita real GDP. These states are Perlis, Kedah, Kelantan, Terengganu, Penang, Perak, Pahang, Selangor, Negeri Sembilan, Melaka, Johor, Sabah, Sarawak and Wilayah Persekutuan. In Appendix A we present the Malaysia's states real GDP per capita for the year 1970 to 2013 used in the analysis. In this study, throughout the analysis all variables were transformed into natural logarithm.

### 3. THE RESULTS

Panel A in Table 2 illustrates the time required for convergence in real GDP; while in Panel B is the time required for the less developed states to converge with Selangor in per capita real GDP. In this study we simulated alternatives annual average growth rates for the less developed states, with  $r_{\forall j}=3\%$ ;  $r_{\forall j}=4\%$ ;  $r_{\forall j}=5\%$ ;  $r_{\forall j}=6\%$ ; and  $r_{\forall j}=7\%$ ; while assuming the economic growth of Selangor to be sustained at 5.2% in real GDP and 2.1% in per capita real GDP.

 Table 2: Time required for convergence for less developed states to Selangor

States	Initial GDP 2013 (RM	Average growth 2009-		-		e the converg owth rates fo states	-
	million)	2013	3%	4%	5%	6%	7%
		(%)					
Panel A: Time	to convergenc	e in real					
GDP							
Kedah	27,129	5.1	-	-	-	16.0	7.5
Kelantan	14,707	5.6	-	-	-	21.2	10.0
Pahang	34,285	5.4	-	-	-	14.1	6.6
Perlis	3,672	2.5	-	-	-	33.0	15.5
Sabah	53166	6.5	-	-	-	10.3	4.8
Sarawak	87,824	6.4	-	-	-	6.1	2.8
Terengganu	21,170	2.8	-	-	-	18.1	8.5
Selangor	179,682	5.2	-	-	-	-	-
Panel B: Time t	o convergenc	e in per capit	a real GDF	,			
Kedah	13,480	4.1	3.2	1.7	1.3	1.0	0.9
Kelantan	8,780	4.8	4.9	2.6	1.9	1.5	1.3
Pahang	21,814	4.4	1.4	0.7	0.5	0.4	0.4
Perlis	15,289	2.0	2.7	1.5	1.1	0.9	0.7
Sabah	15,205	4.4	2.7	1.5	1.1	0.9	0.7
Sarawak	33,530	4.8	-0.3	-0.2	-0.1	-0.1	-0.1
Terengganu	18,818	0.9	1.9	1.0	0.8	0.6	0.5
Selangor	31,059	2.1	-	-	-	-	-

Source: Authors' calculations

Interestingly as presented in Panel A, while Perlis takes 33 years to catch-up with Selangor, Sarawak only takes about 6 years to be at par with the state of Selangor, if both states be able to sustain an average annual growth rate of 6%. On the other hand, if each of the less developed states can sustain an average annual growth rate of 7%, the less developed states can shorten the time period for convergence to the state of Selangor by one-half compared to an average annual growth rate of 6%. For example, with a 6% average annual growth rate it will take Kelantan 21 years to reach the economy of Selangor; but with an average annual growth rate of 7%, Kelantan will be able to converge to the economy of Selangor in 10 years, that is the catch-up rate has been shorten by one-half. The same conclusion can be reach for other less developed states.

On the other hand, in Panel B, in terms of per capita real GDP, with a 3% average annual growth rate, Kedah will converge to the same level of economic development as Selangor in per capita real GDP in 3 years; while Sabah will take about more than 4 years to reach the per capita real GDP of the state of Selangor. However, the state of Sarawak has reached convergence or surpassed Selangor as shown by the negative figure of -0.3. This fact can be observed in Figure 2, as the per capita real GDP for Sarawak has surpassed the per capita real GDP of Selangor (horizontal line) since 1999. The results for convergence in Panel B suggest that it will be much faster for the less developed states to catch-up with the richer state of Selangor in terms of per capita real GDP than real GDP. Further, for the less developed states to catch-up with the state of Selangor with less than one year; Kedah needs an average annual growth rate of 7%; Pahang 4%; Perlis and Sabah 6%; Terengganu 5%; while Kelantan probably needs between 8-10% average annual growth rates; when given that Selangor's average annual growth rate sustained at 2.1% for the whole period.

## 4. CONCLUSION

The last forty years has made the state of Selangor the richest state in Malaysia in terms of gross domestic product. Selangor has benefited from the strategies and policies of the Malaysia's five-year plans and has able to attract investors to invest in the states. Unfortunately, many other states in Malaysia are lagging behind in particular the less developed states of Kedah, Kelantan, Perlis, Pahang, Sabah and Terengganu; except for the state of Sarawak which has shown an amazing catching-up to Selangor.

In the present study, we investigate the time required for the less developed states to converge to the level of economic development of Selangor. In terms of real GDP, the less developed states will take longer to converge to the state of Selangor, however, in terms of per capita real GDP, the less developed states can converge at a faster rate to the level of economic development of Selangor if these states can grow more than double than the growth in Selangor. In this respect, the state government has an important role to play in enhancing growth by continuously providing stable economic environment for investment and other productive economic activities. This will ensure full convergence can take place at a faster rate in the future.

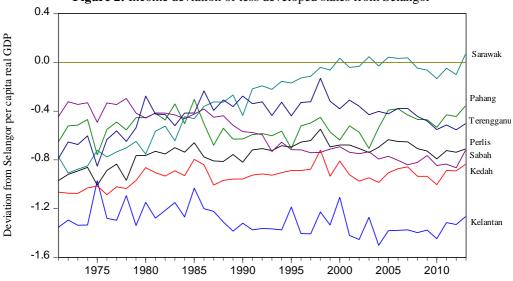


Figure 2: Income deviation of less developed states from Selangor

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			Apper	ndix A:	Appendix A: Malaysia's states real GDP per capita (2005=100) 1970 - 2013	's states	real GL	DP per c	apita (2	005=100	) 1970 -	- 2013		
	Johor	Kedah	Kelantan	Melaka	Negeri Sembilan	Perak	Pahang	Perlis	Penang	Selangor	Sabah	Sarawak	Terengganu	Wilayah Persekutuan
1970	3214.9	2813.3	1781	3171.7	4250.1	4209.7	3656.6	2928.4	3825.5	6337.4	4816.7	3742.7	3661.9	7244.8
1971	3964.3	2917.5	2185	3421.5	4786.1	5016.7	4413.5	3208.8	4015.2	8467.6	5427.9	3897.8	3847.6	9729.9
1972	3524.1	2787.8	2236	2752.7	4609.7	4103.7	4845.3	3256.7	4118.8	8165.7	5909.8	3291.9	4247.9	9553.1
1973	3975.2	2982	2294.5	3249.2	5394.1	4339.9	5222.7	3583.5	5139.1	8738.1	6186	3636	4451.9	10933.7
1974	4115.5	3205.4	2362.9	3302.8	5398.7	4419.7	5619.8	3793.3	5254.9	8986.2	6453.3	3841.8	4915.7	11652.6
1975	5345.7	3551.1	3707.8	4813.6	5795.9	5551.9	4585.9	3577.6	6562.1	9801.4	5991.2	4759.5	4178.6	11866
1976	4591.2	3254	2678.2	3688.1	5744.3	4973.2	5562.9	3971.9	5985.2	9643.4	6913.9	4436.4	5119.8	13174.4
1977	4922.4	3618.3	2748.8	4015.4	6083.1	5180.4	6161.2	4358	6591.9	10051.6	7110.4	4821.9	5728.2	13986.8
1978	5985.5	3881.8	3659.9	5297	6864.1	6611.3	6278.7	4152.3	7637.3	10931.1	8126.3	5415.6	5711.5	14090.8
1979	6011.6	4271.1	2955.1	5284.5	7678.2	5945.9	7160.6	5244	8980.8	11275	7431.8	5894.5	6584.4	16191.3
1980	7134.8	4974.9	3740.6	5970.6	8100.8	6979.3	7494.8	5498.3	8638.9	11802.4	7470.6	5558.1	8953.7	15688.3
1981	6330.7	4733.3	3260.3	5473	7361.1	6428.2	7712.7	5641.6	9143	11712.3	7732.1	6653	7663.1	16808.6
1982	6486.2	4687.2	3535.2	5568.8	7166.8	6851.1	7434	5621.6	9203.3	11924.8	7864.4	7064.6	7771.5	17057.4
1983	7327	4968.3	3825.9	6849.7	9018.1	8036.3	8595.2	6003.4	10069.6	12092.7	7852.8	6350	7191.3	17575.4
1984	7263.6	5054.1	3603.2	6442.8	7846.4	7245.3	7757.7	6136.3	10641.5	12820.2	8078.6	8202.6	8449.9	18334.7
1985	8045.9	5487.8	4333.1	7103.5	8884.2	7805.5	8979.4	6288.3	9892.4	12167	7961	7674.7	8029.1	20209.4
1986	7757.3	5318.8	3708.3	7260.5	7287.3	6801.5	7452.2	5673.3	8971	12331.2	8411.6	8591.9	9758.7	16456.4
1987	7411.3	4814.4	3878.4	6362.7	6435.7	7503.5	6675.6	5864.3	9911.3	13177.9	8400.5	9526	8882.7	18385.8
1988	7673.6	5189.3	3690	7862	7866.7	7372.2	7967	6065.3	10198.4	13682.7	8825.1	9872.2	10049.7	18176.1
1989	8403.6	5503.9	3588	7628	7631.6	7465.6	7643.9	6735.9	11993.5	14350.7	8558.2	10983.2	9982.5	20115.2
1990	9814.1	6142.8	4274.4	9541.1	8746.8	8480.8	8538.5	7057.8	12286.9	16007	9064.2	10351.1	12140.1	20716.5

## APPENDIX

	Johor	Kedah	Kelantan	Melaka	Negeri Sembilan	Perak	Pahang	Perlis	Penang	Selangor	Sabah	Sarawak	Terengganu	Wilayah Persekutuan
1661	9342.9	6152.7	3921.8	8862.9	8759.4	8310.8	8573.2	7567.5	13965.9	15517.7	8721.2	12486.9	11053.9	21895
1992	9662.9	6396.7	4084.6	9285.9	9000.5	8633.4	8902.5	7865.5	14553.9	15975.6	8814.6	13187.1	11554.8	22595.4
1993	11217.5	7162.4	4609.6	11714	10413.2	10262.8	9909.1	8772.4	15530.4	18098.4	8702.4	14503.8	11705.3	24830.4
1994	10703.2	7008	4379.1	10742.8	10508.4	9441.2	9862.7	8742.1	16900.8	17336.7	6.6668	14847.9	12495.4	24903
1995	12968	8069.8	5982.4	16030.3	11610	12085.9	9674.9	9788.2	18476.3	19609.6	9571.3	16564.6	12637.1	28005.6
1996	11860.3 777	7776.2	4632.9	12425.4	12424.1	10223.9	11217.3	9814.5	19655.7	18891.8	9213	16634.2	13596.3	27736.5
1997	12346.7	12346.7 8156.3	4800.1	13159.8	13223.4	10609.5	11926.9	10320.2	20807.6	19611.2	9340.1	17501.3	14192	29128.4
1998	13481.2	8610.9	5182.8	14247.2	12638.2	12862.2	11268.9	10225.9	18376.6	17693.1	8447.8	16999.1	15533.7	30396.2
1999	11973.2 7764.9	7764.9	5202.6	12765.8	11781.4	10682.9	11174.5	9884.4	19351.9	19773.9	6696	18559.6	14370.2	29799
2000	15024.6 9040.2	9040.2	6713.2	17302.8	13974.3	13359.7	13359.7 10744.3 10313.9	10313.9	21651.6	20326.1	10167.6	21032.8	13891.7	32243.6
2001	12645.7	12645.7 8375.3	5087.9	13934.5	13016.4	10538.5	12515.4	10695.6	20918.9	21068.3	10072.8	20214.9	15463.2	32802.1
2002	13004.5	13004.5 8205.9	5080.7	14580.8	13774.5	10535.5	12274.7	10732.3	21770.3	21767.1	10287.1	21064.7	15186.9	34520.1
2003	14608.5 8604.3	8604.3	6221.3	18125.2	14791.7	13575.8	10954.6	10586.3	23471.5	22186.4	10653.5	23261.7	14439.9	33479.1
2004	14232.6 8872.6	8872.6	5293.1	16663	16689.3	11119.5	13912.4	11852.3	25059.1	23782.9	10753.7	23075.7	15906.5	39346.6
2005	16141.5	16141.5 9647.2	5998.3	21106.6	20856	12290.8	16160.5	12672.6	26678.9	23898.4	11060.8	24950.3	15670.1	42249.8
2006	16646.3	16646.3 10307.3	6212.9	22291.5	22287.3	12676.6	16864.5	12882.8	28504.5	24677.9	11043	25506.8	16917.8	43196.6
2007	17119	17119 111109.2	6628.7	23470.3	23190.2	13138.7	17013.8	13648.9	29962.4	26212	11300.7	27212.6	17951.5	46385.6
2008	17633.6	17633.6 11057.3	6961.4	24271.8	23917.7	13803.8	17656.3	13883	31209.3	28186.8	12401.4	26887.1	18094.7	49659.4
2009	16906.2	16906.2 10857.6	6977.4	24254.2	23796.9	13881.2	17276.3	13358.6	27611.4	27662.1	12873.3	25972.6	17107.5	50840.5
2010	18354.8	18354.8 11184.1	7178.1	25520.4	24885.8	14533.8	17907.2	13819.2	30159.1	30521.5	13098.4	26709.4	17593.3	55490.1

	Johor	Kedah	Kelantan Melaka	Melaka	Negeri Sembilan	Perak	Pahang	Perlis	Penang	Penang Selangor	Sabah	Sarawak	Terengganu	J Wilayah Persekutuan
2011	18931.5 121	12102.1	7889.2	24582.3	25212	15389.9	19116.5	14252	31247.3	29392.2	12752.7	28015.7	17579.2	58491.3
2012	19900.8	12687.8	8166.1	26050.8	26035.1	16330.3	19829.8	14790.8	32310.2	30927.3	13003.8	27994.9	17787.7	62020.5
2013	20705.5 134	13480.4	8779.7	28021.9	26799.9	17296.6	21814	15288.9	31361.8	31361.8 31058.9	15205.1	33529.8	18818.1	63285.1