

# السلطة الوطنية الفلسطينية الجهاز المركزي للإحصاء الفلسطيني

مشروع النشر والتحليل لبيانات التعداد الزراعي، 2010

تفتت الحيازات الزراعية الفلسطينية واثّر ذلك على  
الانتاج والإنتاجية

إعداد

معهد أبحاث السياسات الاقتصادية (ماس)

آب/أغسطس، 2013

تم إعداد هذا التقرير حسب الإجراءات المعيارية المحددة في ميثاق الممارسات  
للإحصاءات الرسمية الفلسطينية 2006

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جميع الحقوق محفوظة.

في حالة الاقتباس، يرجى الإشارة إلى هذه المطبوعة كالتالي:

الجهاز المركزي للإحصاء الفلسطيني، 2013. مشروع النشر والتحليل لبيانات التعداد الزراعي 2010، تفتت الحيازات  
الزراعية واثّر ذلك على الانتاج والإنتاجية. رام الله - فلسطين.

جميع المراسلات توجه إلى:

الجهاز المركزي للإحصاء الفلسطيني  
ص.ب. 1647، رام الله - فلسطين

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## شكر وتقدير

تم تمويل هذه الدراسة من البنك الدولي (WB)، يتقدم الجهاز المركزي للإحصاء الفلسطيني بجزيل الشكر والتقدير إلى البنك الدولي (WB)، على مساهمته القيمة بإعداد وطباعة هذه الدراسة.



## فريق العمل

• إعداد التقرير  
د. فتحي السروجي

• سكرتاريا  
ايمان فرهود

• تصميم جرافيك  
احمد سوالمه

• تدقيق معايير النشر  
حنان جناجره

• المراجعة الأولية  
محمد قلاوة  
أحمد مرداوي  
محمود عبد الرحمن

• المراجعة النهائية  
محمود جرادات

• الإشراف العام  
علا عوض

رئيس الجهاز





## تنويه للمستخدمين

- الآراء والأفكار الواردة في هذه الدراسة تعبر عن رأي معدها، ولا تعبر بالضرورة عن رأي الجهاز المركزي للإحصاء الفلسطيني أو موقفه الرسمي.
- اعتمد معد هذه الدراسة على بيانات الجهاز المركزي للإحصاء الفلسطيني والمصادر الأخرى ولا يتحمل الجهاز مسؤولية أي خطأ في البيانات.



## تقديم

تعتبر التعدادات من أهم مصادر البيانات حيث قام الجهاز المركزي للإحصاء الفلسطيني بتنفيذ التعداد الزراعي الأول عام 2010، وقد تم الحصول من خلاله على مجموعة متكاملة من البيانات المتعلقة بخصائص الحائزين الزراعيين والحيازات الزراعية والتكنولوجيا الزراعية المستخدمة في الحيازات، كما قام الجهاز بتنفيذ المسوح الزراعية وهي المسح الزراعي الهيكلي ومسح البستنة الشجرية وقد اعتمدت هذه الدراسة على نتائج تلك المصادر حيثما أمكن.

وحرصاً منه على الاستفادة القصوى من هذه البيانات قام الجهاز بإصدار سلسلة من التقارير الإحصائية من بيانات التعداد الزراعي والمسوح المختلفة ومنها التقارير التفصيلية للنتائج النهائية للتعداد الزراعي.

واستكمالاً لعمليات نشر وتعميم بيانات التعداد ولتحقيق الاستخدام الأمثل لهذه البيانات يقوم الجهاز المركزي للإحصاء الفلسطيني بتنفيذ مشروع النشر والتحليل لبيانات التعداد الزراعي، ويشمل هذا المشروع إعداد سلسلة من التقارير التحليلية لنتائج التعداد، لإتاحة المجال لأفراد المجتمع لفهم وإدراك أفضل لبيانات التعداد الزراعي.

يسرنا أن نقدم هذه الدراسة التحليلية كأحد مخرجات المشروع كي تكون مرجعاً للمخططين ومتخذي القرارات في القطاعين العام والخاص وجميع فئات المستخدمين من أجل بناء الدولة الفلسطينية على أسس علمية سليمة.

علا عوض

رئيس الجهاز

آب، 2013



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(Economies of Scale)

**1.1**

2010

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2.1

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( )

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(Gini Coefficient)

- 
- 

3.1

2010

4.1



(One-way (t-test) ANOVA)  
( )

(Normality)  
.05

**5.1**

(2011 ) %71

( )

**6.1**



.(Bizimana, et al., 2004)

.(Partikh and Nagaragan, 2004)

1.01

**1.2**

(1)

97,069

%34

32,873

%71.7

%28.3

1,202,723.51

%80

956,466.45

(9.99-5)

%11

130,738.44

%90

%10

%51.6

%9.6

%80

%28.4

(2)

(1)

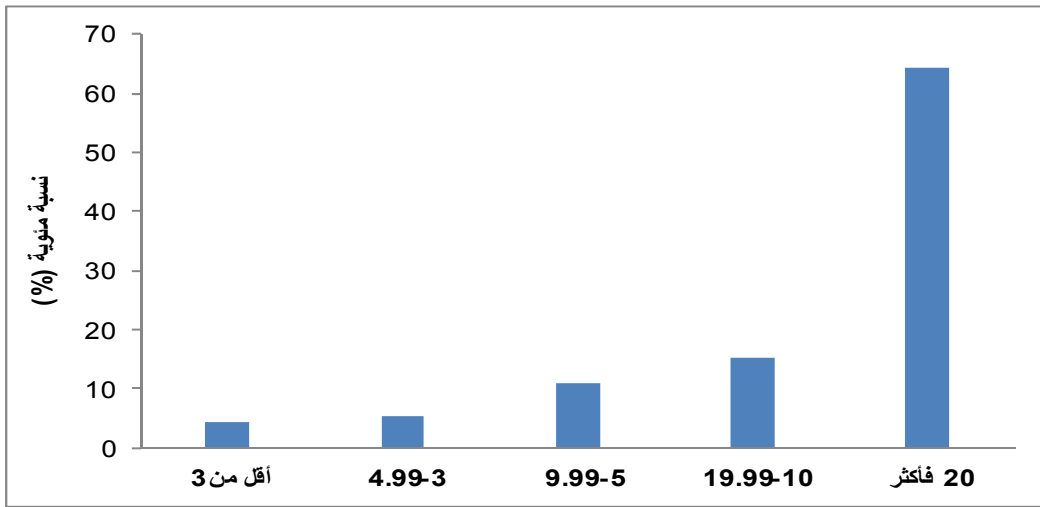
2010

:1

						( )
4.4	4.4	53,353.14	33.9	33.9	32,873	3
9.6	5.2	62,165.48	51.6	17.7	17,219	4.99-3
20.5	10.9	130,738.44	71.7	20.1	19,487	9.99-5
35.8	15.3	184,337.30	85.8	14.2	13,747	19.99-10
100	64.2	772,129.15	100	14.2	13,743	20
	<b>100</b>	<b>1,202,723.51</b>		<b>100</b>	<b>97,069.00</b>	

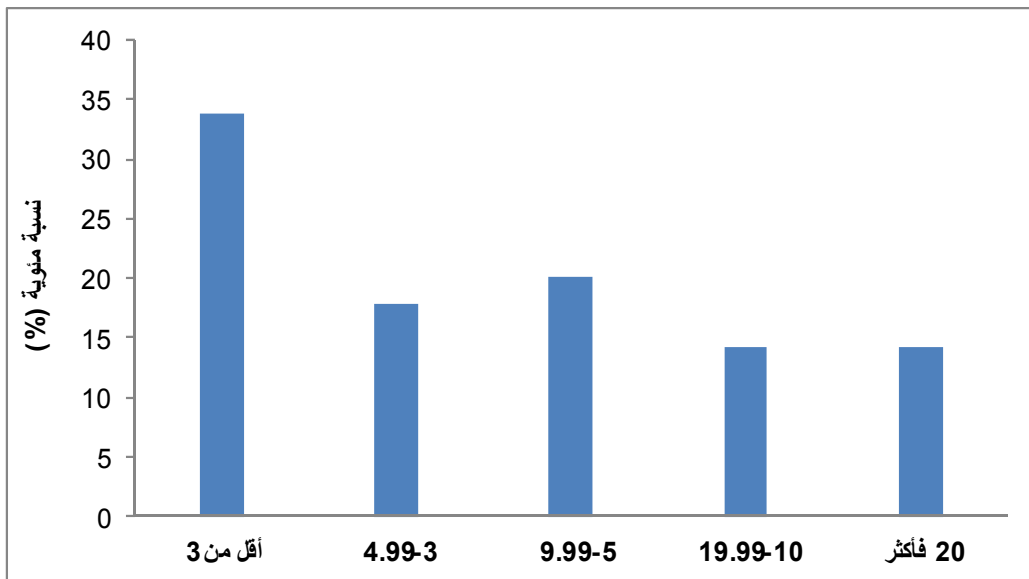
2010

:1



2010

:2



)	(	)	(	(	(2)
			%91.6	1,101,693.5	
	%8.4		101,030.01		
%55.4 :				%91.6	
			%21.8	%14.3	
			12.4		
	13.8				
15.1				5.9	
				11.3	13.6
/	450	2010			
	.(2012		)	4,279	
		179			
	.(2012		)	26	
	4.5				
		3		5	
		4		5	6
				1	
		.(2007	) %20		
		%1			
					.%3

[100\*( / )]

%2.1 %1.0

.%1.2

%2.3

%3.0

2010

:2

<b>4.5</b>	<b>0.9</b>	<b>0.12</b>	<b>36.42</b>	<b>12.4</b>	<b>100</b>	<b>1,202,723.51</b>	
<b>5</b>	<b>1.0</b>	<b>0.14</b>	<b>39.26</b>	<b>13.8</b>	<b>91.6</b>	<b>1,101,693.50</b>	
6	1.2	0.18	36.85	15.1	55.4	666,856.05	
5	3.0	0.41	45.80	13.6	14.3	172,429.53	
4	2.3	0.26	39.69	11.3	21.8	262,407.92	
<b>3</b>	<b>2.1</b>	<b>0.13</b>	<b>16.41</b>	<b>5.9</b>	<b>8.4</b>	<b>101,030.01</b>	

(2)

36.42

2

12.4

16.41

5.9

2.7

45.80

13.6

36.85)

( 15.1

.( 11.3

39.69)

(3)

%17

209,675.42

%17

207,395.97

%1

15,410.71

%8

%9

%13

%5

%6

%8

%5

%2

%3

%4

%1

49.4

5.3

12.4

12.4

(3)

36.42

8.53

1.6

152.44



## 2010

<b>0.9</b>	<b>0.12</b>	<b>36.42</b>	<b>12.4</b>	<b>100</b>	<b>1,202,723.51</b>	
6.0	0.30	34.47	15.8	17	207,395.97	
9.0	1.49	73.16	29.5	6	70,646.59	
5.1	0.34	29.55	13.1	8	98,243.89	
5.0	0.34	37.29	13.2	13	159,723.03	
6.7	0.50	33.88	16.9	6	76,257.34	
5.6	0.34	22.69	12.2	5	54,589.23	
5.0	0.25	24.72	11.5	9	113,445.18	
13.5	5.36	152.44	49.4	3	39,913.06	
4.0	0.43	19.35	9.5	2	19,071.29	
3.0	0.34	26.52	8.5	4	52,732.50	
4.0	0.33	43.49	12.4	17	209,675.42	
2.5	0.27	16.29	5.5	2	20,220.65	
2.5	0.56	26.81	6.8	1	15,410.71	
3.1	0.45	22.54	7.3	2	18,494.04	
3.0	0.12	8.53	5.3	2	29,186.91	
3.0	0.18	9.70	5.8	1	17,717.70	

3.2

(4)

12.4

1,202,722.5

10.17

957,156.9

72,078.1

3.17

3,451.3

2.1

495.8

5.53

68,137.0

2.7	28.3	( )	
			3.4
		3.1	10.9
	3.7	20.8	6.6
5.08		173,487.5	
	4.7		24.2
		0.22	4,320.4
	0.39	8,485.2	
	11.68	160,427.0	( )
3.6	0.8		
3.2			
		36.6	( )

2010

			( )	( )		
<b>0.9</b>	<b>0.12</b>	<b>36.42</b>	<b>12.4</b>	<b>1,202,722.5</b>	<b>97,069</b>	
0.92	0.10	30.5	10.60	1,029,235.0	97,066	
0.91	0.09	28.3	10.17	957,156.9	94,128	
10.46	0.33	10.9	3.17	3,451.3	1,089	
3.39	0.19	20.8	5.53	68,137.0	12,315	
20.31	0.43	6.6	2.10	495.8	236	
2.58	0.13	24.2	5.08	173,487.5	34,169	
2.50	0.01	0.8	0.22	4,320.4	19,555	
5.50	0.02	3.2	0.39	8,485.2	21,606	
2.67	0.31	36.6	11.68	160,427.0	13,740	( )
6.38	0.06	6.0	1.00	8,734.2	8,739	

(5)

127,256.8 ( )

957,156.9  
%13.3

%25.3

241,193.8

%56.7

542,345.4

(5)

28.12

7.6

12.17

37.54

6.4

13.54

:5

2010

			( )	( )		
3.318	0.252	28.12	7.609	94,398.3	12,406	
3.347	0.177	13.97	5.301	32,858.5	6,199	
2.890	0.206	26.08	7.132	114,147.8	16,006	
2.231	0.271	37.54	12.166	232,743.5	19,130	
8.540	0.653	22.64	7.645	9,189.3	1,202	
2.237	0.225	31.45	10.068	196,291.0	19,496	
0.755	0.048	13.54	6.353	506,052.4	79,658	
2.669	0.080	8.78	2.992	36,214.7	12,104	
21.559	0.511	2.71	2.372	66.4	28	
40.739	0.486	1.54	1.192	11.9	10	

1.3

(6)

%92

1,101,693.5

1,202,723.5

%8

%95

( 20)

.(%92)

%5

%85-75

%25-15

%80

%4

%82

%4

%55

%13

0.05

.( )

2

5.9

13.8

2010

:6

						( )
(4) 100	53,353.14	(13) 25	13,402.58	(4) 75	39,950.54	3
(5) 100	62,165.50	(11) 18	11,429.60	(5) 82	50,735.90	4.99-3
(11) 100	130,738.40	(20) 15	20,178.70	(10) 85	110,559.70	9.99-5
(15) 100	184,337.31	(19) 11	19,624.87	(15) 89	164,712.43	19.99-10
(64) 100	772,129.15	(36) 5	36,394.25	(67) 95	735,734.93	20
<b>(100) 100</b>	<b>1,202,723.50</b>	<b>(100) 8</b>	<b>101,030.00</b>	<b>(100) 92</b>	<b>1,101,693.50</b>	

(7)

%92

%22

%15

%55

%8

%59

%22

%15

20

%5

3

%37

%25

%27

%11

%55

%59-37

%15

%15-11

%22

%27-20

%70-6

%8

%78

%84

%3

%81

%3

%78

%5

%13 %55

)

0.05

.(

15.1

2

13.6

5.9

11.3

2010

:7

								( )
(13) 25	13,402.58	(5) 27	14,310.02	(3) 11	5,987.23	(3) 37	19,653.29	3
(11) 18	11,429.60	(6) 25	15,569.50	(5) 14	8,555.80	(4) 43	26,610.60	4.99 - 3
(20) 15	20,178.70	(11) 22	28,652.80	(11) 14	18,631.90	(9) 48	63,275.00	9.99 - 5
(19) 11	19,624.87	(14) 20	37,209.38	(15) 14	26,283.55	(15) 55	101,219.47	19.99-10
(36) 5	36,394.25	(64) 22	166,666.20	(66) 15	112,971.06	(68) 59	456,097.64	20
<b>(100) 8</b>	<b>101,030.00</b>	<b>(100) 22</b>	<b>262,407.90</b>	<b>15(100)</b>	<b>172,429.54</b>	<b>(100) 55</b>	<b>666,856.00</b>	

2.3

(8)

3

%77

883,028.6

%23

156,321.2

%10

%14

%58

%42

20

%10

%13

%77 :

3

%19

%69

(2007 )

%12

%81

%4

%76

%6

%81

%5

---

3



0.05

13.0

10.8

12.4

2010

:8

						( )
(5) 12	5,986.7	(6) 19	9,304.1	(4) 69	34,026.5	3
(5) 9	5,033.6	(6) 16	9,516.9	(5) 75	44,163.5	4.99-3
(9) 8	9,966.6	(12) 15	18,874.8	(11) 77	95,599.6	9.99-5
(13) 8	14,320.7	(14) 13	22,376.3	(17) 79	139,844.5	19.99-10
(68) 10	76,253.7	(62) 13	96,249.1	(64) 77	569,394.5	20
<b>(100) 10</b>	<b>111,561.2</b>	<b>(100) 14</b>	<b>156,321.2</b>	<b>(100) 77</b>	<b>883,028.6</b>	

3.3

(9)

1,101,837.6

92,146

(10)

%91

%80

%19

%1

%8

(10) (9) %5 %35

%79 10 %27  
%79 %35 %27 %5

%6 %75 10  
%6 %37 %25 %75

%1 %92 10  
%1 %92 %14  
%53

%2 (9) %88 10

%26 %2

%38

%88

%4 (9)  
%85

10

%39

%4

%29

%85

:9

**2010**

										( )
<b>(5) 100</b>	<b>51,679.9</b>	(4) 0.3	159.8	(2) 0.2	90.4	(1) 4	1,860.9	(6) 96	49,568.8	3
<b>(5) 100</b>	<b>59,570.1</b>	(3) 0.2	105.5	(2) 0.2	105.9	(2) 6	3,501.8	(6) 94	55,857.0	4.99-3
<b>(11) 100</b>	<b>123,830.5</b>	(8) 0.2	289.8	(7) 0.3	327.0	(5) 9	10,852.5	(13) 91	112,361.2	9.99-5
<b>(16) 100</b>	<b>171,531.7</b>	(10) 0.2	400.0	(10) 0.3	451.5	(10) 12	21,400.3	(17) 87	149,279.9	19.99-10
<b>(63) 100</b>	<b>695,225.4</b>	(75) 0.4	2,883.3	(78) 0.5	3,486.5	(82) 25	174,701.4	(58) 74	514,154.2	20
<b>(100) 100</b>	<b>1,101,837.6</b>	<b>(100) 0.3</b>	<b>3,838.4</b>	<b>(100) 0.4</b>	<b>4,461.3</b>	<b>(100) 19</b>	<b>212,316.8</b>	<b>(100) 80</b>	<b>881,221.0</b>	

:10

**2010**

										( )
<b>(35) 100</b>	<b>31,899</b>	(39) 0.3	90	(26) 0.2	54	(14) 3	1,113	(37) 96	30,642	3
<b>(18) 100</b>	<b>16,516</b>	(13) 0.2	29	(14) 0.2	29	(12) 6	956	(18) 94	15,502	4.99-3
<b>(20) 100</b>	<b>18,488</b>	(19) 0.2	43	(23) 0.3	47	(21) 9	1,613	(20) 91	16,785	9.99-5
<b>(14) 100</b>	<b>12,814</b>	(14) 0.2	31	(16) 0.3	33	(20) 12	1,580	(13) 87	11,170	19.99-10
<b>(13) 100</b>	<b>12,429</b>	(15) 0.3	35	(22) 0.4	45	(33) 20	2,535	(12) 79	9,814	20
<b>(100) 100</b>	<b>92,146</b>	<b>(100) 0.2</b>	<b>228</b>	<b>(100) 0.2</b>	<b>208</b>	<b>(100) 8</b>	<b>7,797</b>	<b>(100) 91</b>	<b>83,913</b>	

**4.3**

(11)

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1,199,983.4  
 %71 851,131.6  
 %3 38,685.2  
 %26 310,166.6  
 %70  
 ( 20)  
 %4 .(%71)  
 .(%3)  
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 %2  
 %81  
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 0.05  
 20.4

11.9

13.2

:11

**2010**

								( )
<b>(4) 100</b>	<b>53,242.0</b>	(4) 23	12,147.6	(2) 1	742.3	(5) 76	40,352.1	3
<b>(5) 100</b>	<b>62,037.5</b>	(5) 24	15,021.2	(3) 2	1,108.4	(5) 74	45,908.0	4.99-3
<b>(11) 100</b>	<b>130,496.6</b>	(10) 25	32,365.0	(7) 2	2,561.2	(11) 73	95,570.4	9.99-5
<b>(15) 100</b>	<b>184,015.0</b>	(15) 26	47,028.2	(12) 2	4,584.1	(16) 72	132,402.6	19.99-10
<b>(64) 100</b>	<b>770,192.3</b>	(66) 26	203,604.6	(77) 4	29,689.2	(63) 70	536,898.5	20
<b>(100) 100</b>	<b>1,199,983.4</b>	<b>(100) 26</b>	<b>310,166.6</b>	<b>(100) 3</b>	<b>38,685.2</b>	<b>(100) 71</b>	<b>851,131.6</b>	

**5.3**

(12)

1,188,046.2

718,568.3

%60

%40

469,478

%79

%4

%74

%6

%2

%89

0.05

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**2010**

						( )
<b>(4) 100</b>	<b>51413.42</b>	(2) 18	9330.96	(6) 82	42082.46	3
<b>(5) 100</b>	<b>60,787.22</b>	(3) 21	12,866.60	(7) 79	47,920.62	4.99-3
<b>(11) 100</b>	<b>128,624.82</b>	(7) 25	31,708.59	(13) 75	96,916.23	9.99-5
<b>(15) 100</b>	<b>182003.13</b>	(12) 30	54135.56	(18) 70	127867.57	19.99-10
<b>(64) 100</b>	<b>765217.63</b>	(77) 47	361436.24	(56) 53	403781.39	20
<b>(100) 100</b>	<b>1,188,046.56</b>	<b>(100) 40</b>	<b>469,477.95</b>	<b>(100) 60</b>	<b>718,568.27</b>	

**6.3**

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**2010**

						( )
<b>10</b>	16	6	5	9	3	
<b>13</b>	28	8	7	12	4.99-3	
<b>16</b>	33	11	10	15	9.99-5	
<b>22</b>	43	16	12	23	19.99-10	
<b>36</b>	52	31	25	38	20	
<b>17</b>	<b>25</b>	<b>11</b>	<b>11</b>	<b>19</b>		

(14)

415,650.6

255,067.8

%61

%11

46,897

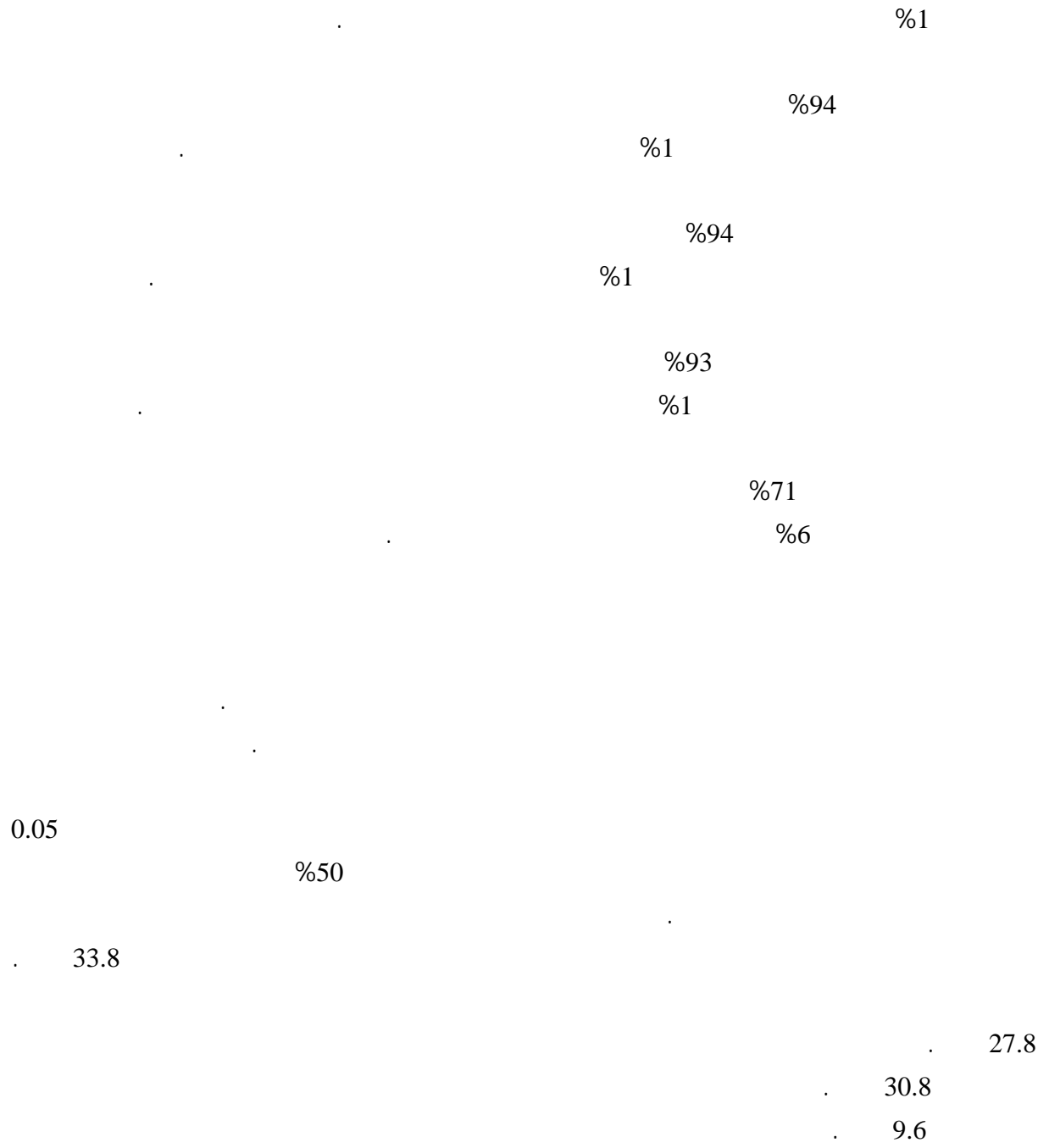
%17

72,098.8

%10

41,587.1

%91





## 2010

										( )
<b>(1) 100</b>	<b>5,362.0</b>	(6) 44	2,338.1	(1) 15	802.4	(1) 6	341.8	(1) 35	1,879.8	3
<b>(2) 100</b>	<b>8,285.9</b>	(8) 39	3,269.2	(2) 16	1,288.2	(1) 8	622.6	(1) 37	3,105.9	4.99-3
<b>(5) 100</b>	<b>21,757.7</b>	(16) 31	6,723.6	(4) 15	3,243.6	(4) 9	1,960.5	(4) 45	9,830.1	9.99-5
<b>(10) 100</b>	<b>42,023.8</b>	(21) 20	8,596.2	(9) 15	6,263.1	(7) 8	3,375.7	(9) 57	23,788.8	19.99-10
<b>(81) 100</b>	<b>338,221.2</b>	(50) 6	20,659.9	(84) 18	60,501.5	(87) 12	40,596.5	(85) 64	216,463.3	20
<b>(100) 100</b>	<b>415,650.6</b>	<b>(100) 10</b>	<b>41,587.1</b>	<b>(100) 17</b>	<b>72,098.8</b>	<b>(100) 11</b>	<b>46,897.0</b>	<b>(100) 61</b>	<b>255,067.8</b>	



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17.9 26.0 10.6 .(

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**2010**

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<b>(0) 0</b>	8.3	<b>(2) 9</b>	5,013.5	<b>(1) 3</b>	1,658.4	<b>(6) 87</b>	46,668.0	3
<b>(0) 0</b>	<b>19.3</b>	<b>(3) 11</b>	6,610.8	<b>(2) 5</b>	2,971.6	<b>(6) 85</b>	52,555.7	4.99-3
<b>(1) 0</b>	<b>72.9</b>	<b>(8) 12</b>	15,985.2	<b>(5) 5</b>	7,166.5	<b>(13) 82</b>	107,508.8	9.99-5
<b>(1) 0</b>	83.5	<b>(12) 14</b>	25,433.0	<b>(10) 8</b>	14,494.2	<b>(17) 78</b>	144,310.6	19.99-10
<b>(98) 1</b>	9,025.2	<b>(74) 20</b>	151,936.6	<b>(82) 15</b>	116,702.3	<b>(58) 64</b>	494,465.0	20
<b>(100) 1</b>	<b>9,209.2</b>	<b>(100) 17</b>	<b>204,979.1</b>	<b>(100) 12</b>	<b>142,993.0</b>	<b>(100) 70</b>	<b>845,508.1</b>	

**2.4**

(16)

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(9.99-5)

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(19.99-10)

%18

(4.99-3)

%21

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%17

%26

%14

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**2010**

										( )
<b>18</b>	<b>5,864</b>	31	2,634	11	965	9	330	16	1,935	3
<b>21</b>	<b>3,581</b>	43	1,334	14	605	9	213	20	1,429	4.99-3
<b>25</b>	<b>4,885</b>	50	1,514	18	797	12	324	24	2,250	9.99-5
<b>31</b>	<b>4,195</b>	54	818	26	728	18	356	31	2,293	19.99-10
<b>40</b>	<b>5,470</b>	53	448	36	952	31	608	42	3,462	20
<b>25</b>	<b>23,995</b>	<b>40</b>	<b>6,748</b>	<b>17</b>	<b>4,047</b>	<b>14</b>	<b>1,831</b>	<b>26</b>	<b>11,369</b>	

(17)

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%62

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(9.99-5)

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(19.99-10)

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(4.99-3)

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**2010**

										( )
<b>18</b>	<b>9,776.56</b>	32.7	4,377.25	11	1,592.60	9	549.01	17	3,257.70	3
<b>21</b>	<b>12,981.78</b>	43.0	4,878.62	14	2,181.52	9	747.79	19	5,173.85	4.99-3
<b>25</b>	<b>33,065.16</b>	50.0	10,093.85	19	5,343.03	12	2,232.26	24	15,396.02	9.99-5
<b>31</b>	<b>56,794.84</b>	54.2	10,627.50	26	9,854.00	18	4,794.97	31	31,518.37	19.99-10
<b>45</b>	<b>34,7478.07</b>	49.8	18,133.06	40	65,888.00	38	43,103.34	48	220,353.67	20
<b>38</b>	<b>460,096.47</b>	<b>48</b>	<b>48,110.28</b>	<b>32</b>	<b>84,859.15</b>	<b>30</b>	<b>51,427.37</b>	<b>41</b>	<b>275,699.61</b>	

**3.4**

(18)

1,193,514.3

%4  
(45-31) 44,773.2 30

443,171.4 %26 (60-46) 310,611.1

%33 394,958.7

%37

%3

( 20)

%24 .(%4)

.(%26) (45-31)

.(%37) %36  
 (60-46) %31  
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 %79  
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 %74  
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 %74 (45-31)  
 %7  
 %77 (60-46)  
 %5  
 %86  
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 0.05  
 60  
 17.0  
 11.7 (60-46)  
 10.0 (45-31)  
 9.3 30

2010

										( )
		60		60-46		45-31		30		
<b>(4) 100</b>	<b>53,344.89</b>	(2) 17	9,229.92	(5) 38	20,413.32	(7) 38	20,309.21	(8) 6	3,392.44	3
<b>(5) 100</b>	<b>62,146.14</b>	(3) 22	13,478.80	(6) 40	25,132.44	(7) 33	20,547.10	(7) 5	2,987.80	4.99-3
<b>(11) 100</b>	<b>130,665.49</b>	(8) 26	33,467.47	(12) 41	53,458.21	(12) 29	38,416.70	(12) 4	5,323.11	9.99-5
<b>(15) 100</b>	<b>184,253.84</b>	(15) 31	57,310.13	(16) 39	72,516.71	(15) 26	47,847.92	15) 4	6,579.08	19.99-10
<b>(64) 100</b>	<b>763,103.91</b>	(71) 31	28,1472.38	(61) 36	271,650.68	(59) 24	183,490.10	(59) 3	26,490.75	20
<b>(100) 100</b>	<b>1,193,514.33</b>	<b>(100) 33</b>	<b>394,958.70</b>	<b>(100) 37</b>	<b>443,171.36</b>	<b>(100) 26</b>	<b>310,611.03</b>	<b>(100) 4</b>	<b>44,773.18</b>	

4.4

(19)

( )

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2010

					( )
9	7	6	11	11	3
8	6	6	10	10	4.99-3
8	5	5	10	10	9.99-5
8	4	6	9	10	19.99-10
8	5	5	8	9	20
8	6	6	10	10	

(20)

90,922.1  
 %62  
 56,505.2  
 14,094  
 14,328  
 %16  
 %7  
 %16  
 5,995  
 %77  
 %5  
 %80  
 %4  
 %76  
 %4  
 %76  
 %6  
 %57

%16

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**2010**

										( )
<b>(5) 100</b>	<b>14,621.27</b>	(16) 21	980.98	(6) 20	910.38	(4) 14	624.70	(4) 46	12,105.21	3
<b>(6) 100</b>	<b>5,083.39</b>	(11) 13	670.40	(7) 18	931.49	(6) 17	867.20	(5) 51	2,614.30	4.99-3
<b>(12) 100</b>	<b>10,948.97</b>	(16) 9	957.02	(11) 14	1,550.10	(13) 17	1,872.84	(12) 60	6,569.01	9.99-5
<b>(17) 100</b>	<b>15,404.78</b>	(13) 5	762.06	(14) 13	2,076.99	(17) 16	2,428.21	(18) 66	10,137.52	19.99-10
<b>(60) 100</b>	<b>54,863.69</b>	(44) 5	2,624.51	(62) 16	8,859.00	(59) 15	8,301.07	(62) 64	35,079.11	20
<b>(100) 100</b>	<b>100,922.10</b>	<b>(100) 7</b>	5,994.97	<b>(100) 16</b>	14,327.96	<b>(100) 16</b>	14,094.02	<b>(100) 62</b>	66,505.15	

0.05

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12.8

11.3

10.6

**5.4**

(21)

290,231.8

1,192,617.6

%24

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636,188.1

232,276.6

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%19

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33,921.1

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14.5

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2010

										( )
(4) 100	53,310.1	(4) 2	1,310.5	(4) 19	10,339.6	(5) 60	32,035.5	(3) 18	9,624.5	3
(5) 100	62,115.3	(4) 2	1,365.1	(5) 19	11,504.8	(6) 59	36,879.7	(4) 20	12,365.8	4.99-3
(11) 100	130,594.0	(9) 2	3,124.7	(11) 19	25,308.7	(12) 57	75,071.0	(9) 21	27,089.6	9.99-5
(15) 100	184,139.8	(15) 3	5,018.1	(16) 20	36,016.3	(16) 55	100,514.0	(15) 23	42,591.4	19.99-10
(64) 100	762,458.4	(68) 3	23,102.7	(64) 20	149,107.2	(62) 51	391,687.9	(68) 26	198,560.6	20
(100) 100	1,192,617.6	(100) 3	33,921.1	(100) 19	232,276.6	(100) 53	636,188.1	(100) 24	290,231.9	

6.4

(22)

) 1,193,514.3

. %2 23,647.3 (

233,163.9 (3-2)

. %19

. %21 244,935.6 (5-4)

543,518.9 (9-6)

. %46

. %13 158,248.7 10

%2

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%20

(3-2) ( 20)

%21 .(%19)

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%43 (5-4)

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11.1 (

## 2010

												( )
		10	9-6	5-4	3-2							
<b>(4) 100</b>	<b>53,344.9</b>	(4) 12	6,565.2	(5) 52	27,873.7	(4) 20	10,899.9	93) 13	6,994.4	(4) 2	1,011.7	3
<b>(5) 100</b>	<b>62,146.2</b>	(5) 13	7,936.7	(6) 50	31,165.5	(5) 20	12,674.9	(4) 15	9,047.3	(6) 2	1,321.8	4.99-3
<b>(11) 100</b>	<b>130,665.5</b>	(10) 12	15,321.0	(12) 49	64,636.0	(11) 21	26,855.1	(9) 16	20,965.2	(12) 2	2,888.2	9.99-5
<b>(15) 100</b>	<b>184,253.8</b>	(13) 11	20,523.7	(16) 48	88,494.0	(15) 21	37,929.2	(15) 18	33,421.9	(16) 2	3,885.1	19.99-10
<b>(64) 100</b>	<b>763,103.9</b>	(68) 14	107,902.1	(61) 43	331,349.7	(64) 21	156,576.5	(68) 20	152,735.1	(61) 2	14,540.5	20
<b>(100)100</b>	<b>1,193,514.3</b>	<b>(100) 13</b>	<b>158,248.7</b>	<b>(100) 46</b>	<b>543,518.9</b>	<b>(100) 21</b>	<b>244,935.6</b>	<b>(100) 19</b>	<b>223,163.9</b>	<b>(100) 2</b>	<b>23,647.3</b>	

(Barrow, 2001)

%20

%40

(Bellu' and Liberati, 2006)

$$G = \frac{\frac{1}{2} - \frac{1}{2} \sum_i [(q_i + q_{i-1})(p_i - p_{i-1})]}{\frac{1}{2}} = 1 - \sum_i [(q_i + q_{i-1})(p_i - p_{i-1})]$$

:q<sub>i</sub>

:P<sub>i</sub>

**1.5**

(3)

%2

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1997

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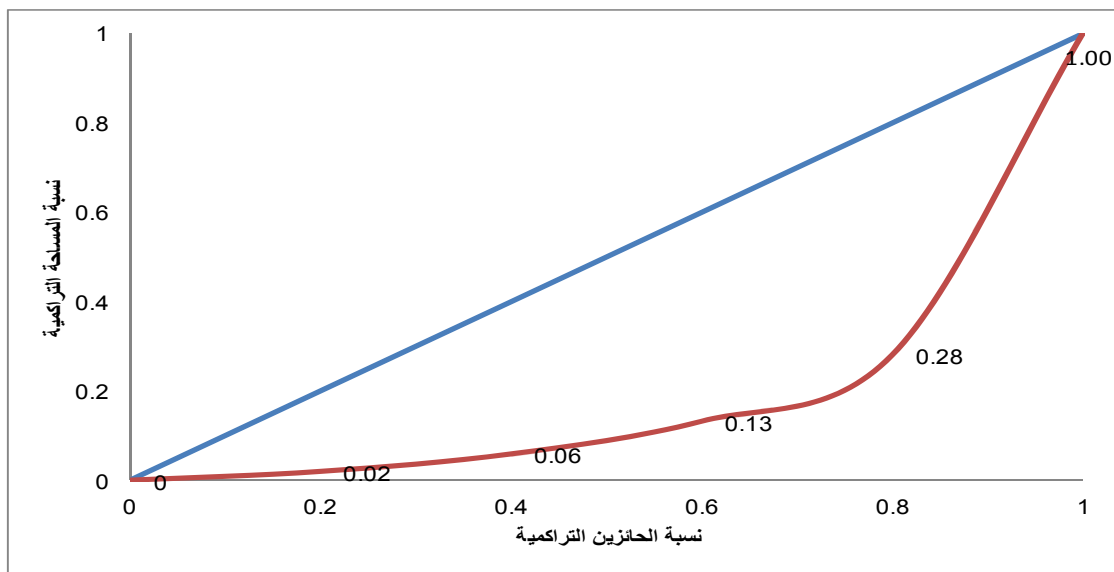
1983

.2007

(2007 )  
0.76

0.68

2010 ( ) :3



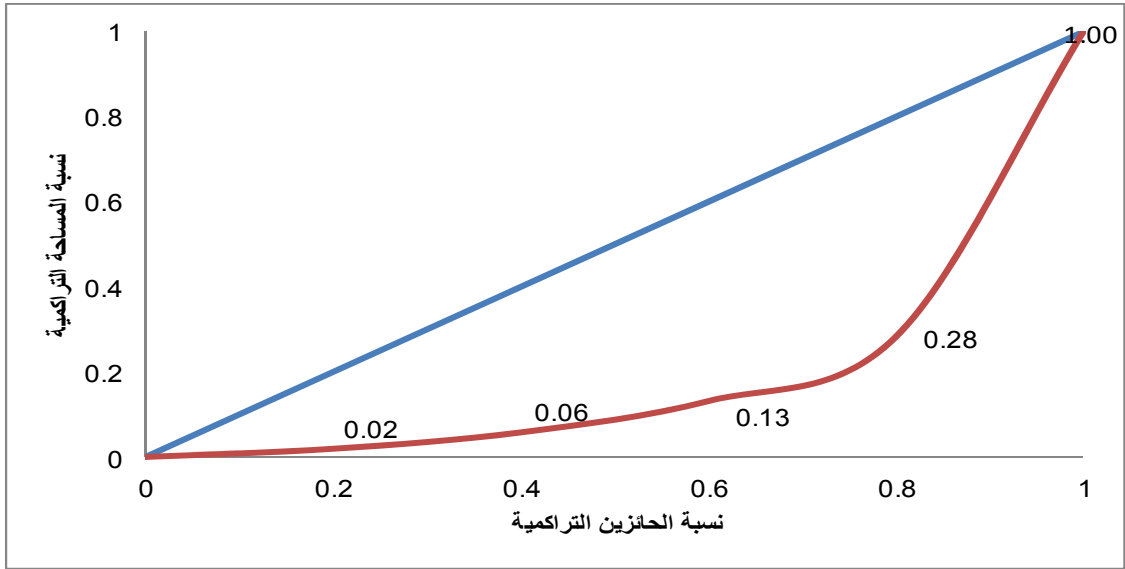
(4)

%2                                  %20  
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 0.60

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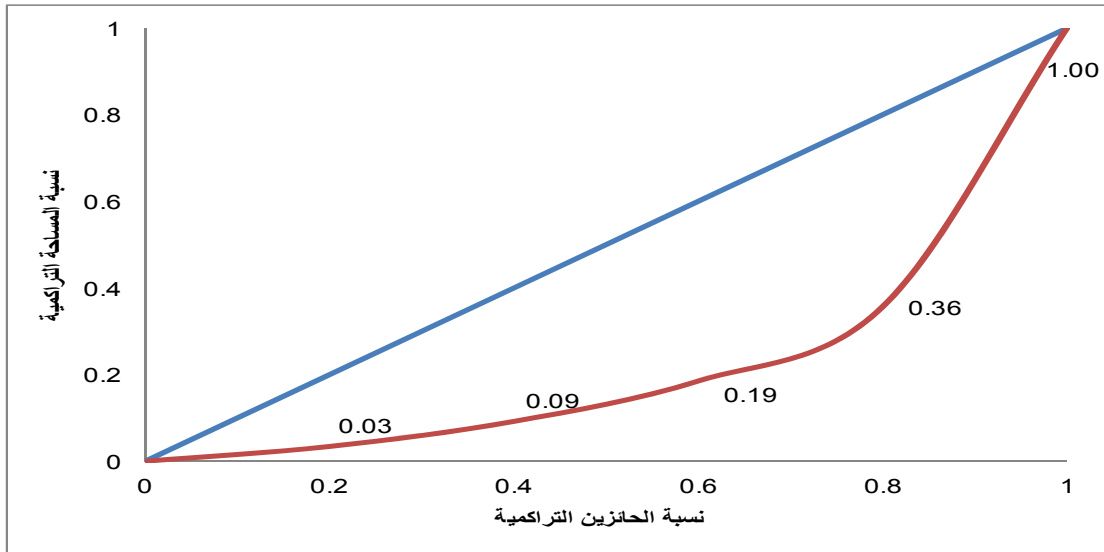
2010 ( ) :4



(5)

%20 ) ) %40 %3 %20 ( )  
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2010 ( ) :5

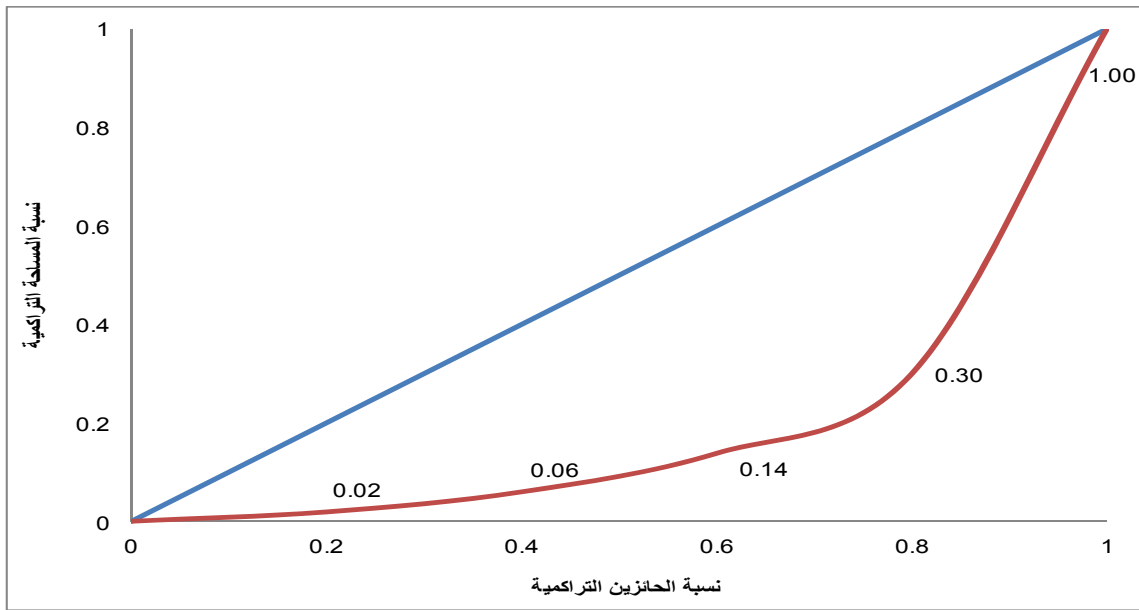


(6)

%20 ( %20 )  
 %40 %4 ( %20 )  
 %70 %6 ( %20 )  
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 )  
 0.59  
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 .0.60  
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2010

:6



(7)

%40 %2 %20  
%4 ( %20 )  
%6 ( )  
%71 %20

0.60

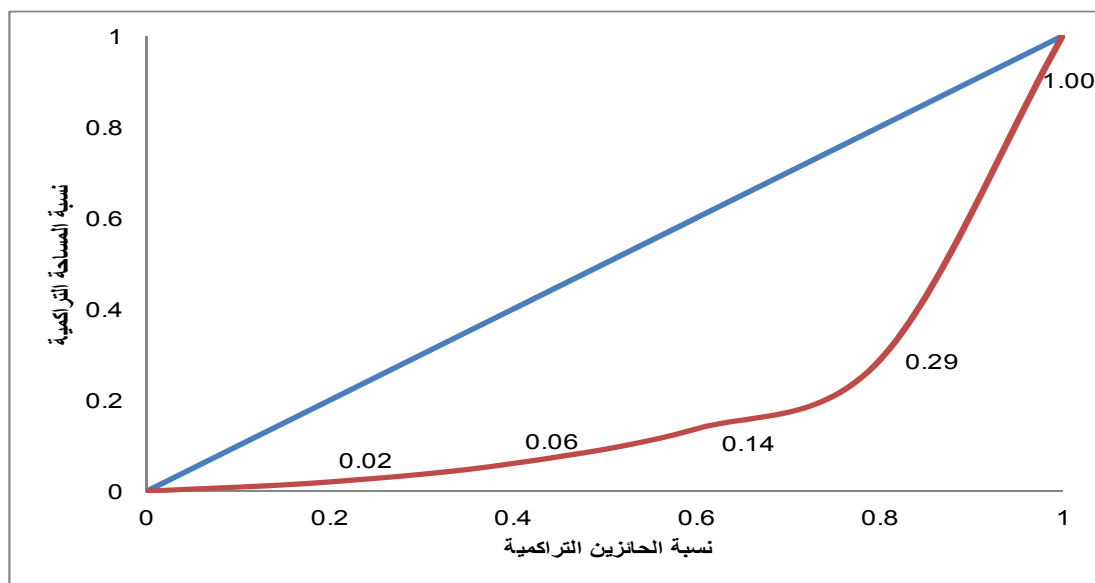
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(0.59)

.0.53

2010

:7

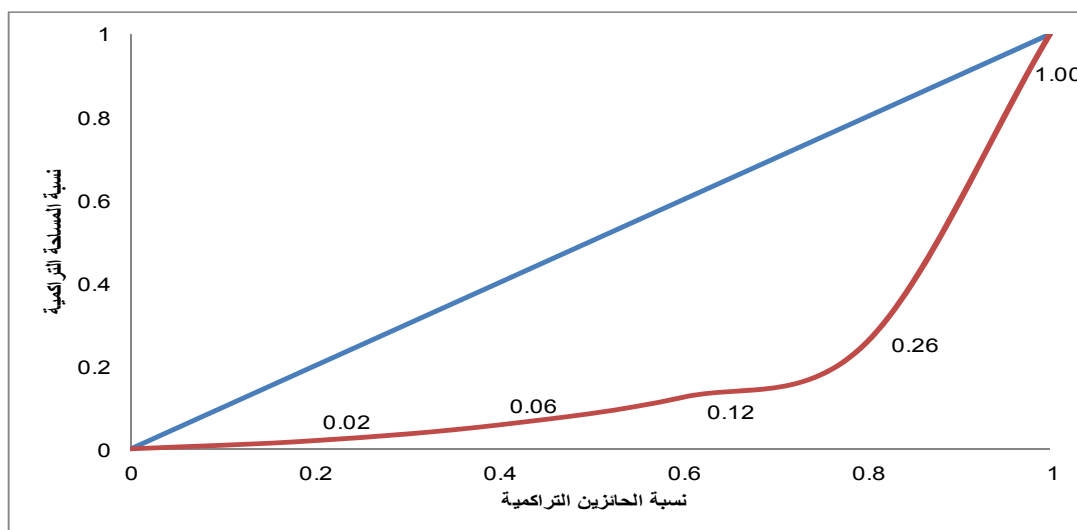


(8)

%2    %20  
  %4            (    %20 )  
%6    (     )    %40  
%74    %20  
  0.62

2010

:8



				2.5
			(23)	
		%8	%40	0.60
			%69	%20
0.49			0.66	
	%11	%40	%58	%20
	%3	%40	%77	%20
	(0.60)			
(0.53)		(.0.58)	(0.56)	(0.53)
(0.57)	(0.56)	(0.55)		(.0.60)
	(.0.59)	(0.58)		

(0.66)

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**2010**

	<b>%20</b>	<b>%40</b>		<b>%20</b>	<b>%20</b>	
<b>0.60</b>	<b>72</b>	<b>6</b>		<b>4</b>	<b>2</b>	
0.58	69	6		4	2	
0.65	76	4		3	1	
0.58	68	6		4	2	
0.59	70	6		4	2	
0.59	70	6		4	2	
0.55	65	8		5	3	
0.56	66	8		5	3	
0.66	77	3		2	1	
0.57	68	7		5	2	
0.58	70	6		4	2	
0.63	76	6		4	2	
0.53	65	10		6	4	
0.58	71	8		5	3	
0.56	68	8		5	3	
0.49	58	11		7	4	
0.53	64	9		6	3	

(Parikh and Nagarajan,

(Austin et al., 2012)

2004)

.(Ruttan, 1980)

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%32 356,127.2  
 %38 6,542  
 %49 49,284.9

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**2010**

						( )	
<b>11,302.3</b>	<b>6,955</b>	4,121.3	2,505	7,181.0	4,450	القيمة	3
<b>21</b>	<b>21</b>	31	29	18	18	النسبة	
<b>14,211.7</b>	<b>3,883</b>	4,694.9	1,280	9,516.8	2,603	القيمة	4.99-3
<b>23</b>	<b>23</b>	41	41	19	18	النسبة	
<b>33,892.5</b>	<b>5,031</b>	9,948.0	1,495	23,944.5	3,536	القيمة	9.99-5
<b>26</b>	<b>26</b>	49	49	22	22	النسبة	
<b>52,748.7</b>	<b>3,898</b>	10,346.2	792	42,402.5	3,106	القيمة	19.99-10
<b>29</b>	<b>28</b>	53	52	26	25	النسبة	
<b>293,256.9</b>	<b>4,628</b>	20,174.5	470	273,082.5	4,158	القيمة	20
<b>38</b>	<b>34</b>	55	55	37	32	النسبة	
<b>405,412.1</b>	<b>24,395</b>	<b>49,284.9</b>	<b>6,542</b>	<b>356,127.2</b>	<b>17,853</b>	القيمة	
<b>34</b>	<b>25</b>	<b>49</b>	<b>38</b>	<b>32</b>	<b>22</b>	النسبة	

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2010

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<b>11,302.3</b>	<b>6,955</b>	4,121.3	2,505	3,154.1	1,979	768.1	459	3,258.8	2,012	3
<b>21</b>	<b>21</b>	31	29	22	22	13	4	17	17	
<b>14,211.7</b>	<b>3,883</b>	4,694.9	1,280	3,629.5	999	1,137.4	314	4,749.8	1,290	4.99-3
<b>23</b>	<b>23</b>	41	41	23	23	13	13	18	18	
<b>33,892.5</b>	<b>5,031</b>	9,948.0	1,495	7,988.7	1,195	2,524.9	368	13,430.9	1,973	9.99-5
<b>26</b>	<b>26</b>	49	49	28	28	14	13	21	21	
<b>52,748.7</b>	<b>3,898</b>	10,346.2	792	11,018.9	820	4,848.1	358	26,535.6	1,928	19.99-10
<b>29</b>	<b>28</b>	52	52	30	29	18	18	26	26	
<b>293,256.9</b>	<b>4,628</b>	20,174.5	470	61,951.5	898	41,899.5	565	169,231.5	2,695	20
<b>38</b>	<b>34</b>	55	55	37	34	37	29	37	33	
<b>405,412.1</b>	<b>24,395</b>	<b>49,284.9</b>	<b>6,542</b>	<b>87,742.7</b>	<b>5,891</b>	<b>51,178.0</b>	<b>2,064</b>	<b>217,206.6</b>	<b>9,898</b>	
<b>34</b>	<b>25</b>	<b>49</b>	<b>38</b>	<b>33</b>	<b>25</b>	<b>30</b>	<b>16</b>	<b>33</b>	<b>22</b>	

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2010

	20	19.99-10	9.99-5	4.99-3	3	
<b>34</b>	<b>38</b>	<b>26</b>	<b>26</b>	<b>23</b>	<b>21</b>	
40	46	32	24	18	18	
57	59	54	44	44	39	
21	22	21	21	21	20	
24	29	19	14	11	9	
33	33	31	30	28	31	
16	17	16	15	11	10	
12	12	14	10	11	11	
80	82	71	53	65	44	
28	34	24	21	16	15	
25	28	23	24	17	18	
36	39	32	29	25	24	
43	51	46	44	37	26	
29	34	24	26	30	21	
53	61	55	48	39	34	
56	68	63	56	44	34	
57	65	59	57	50	36	

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**2010**

								( )
<b>10,786.5</b>	<b>6,955</b>	5,938.8	4,568	1,238.0	1,074	4,169.5	3,022	3
<b>21</b>	<b>21</b>	15	17	38	40	74	68	
<b>13,446.1</b>	<b>3,883</b>	6,969.1	2,772	2,260.3	1,080	4,422.9	1,703	4.99-3
<b>23</b>	<b>23</b>	17	19	41	41	76	68	
<b>31,712.4</b>	<b>5,031</b>	15,802.8	3,779	6,291.8	1,902	9,025.8	2,355	9.99-5
<b>26</b>	<b>26</b>	19	22	44	44	77	68	
<b>48,868.9</b>	<b>3,898</b>	22,433.8	3,047	11,413.3	1,899	11,701.9	1,766	19.99-10
<b>29</b>	<b>28</b>	22	25	46	46	77	68	
<b>259,394.2</b>	<b>4,628</b>	80,746.1	3,579	77,558.2	2,787	64,712.5	2,223	20
<b>41</b>	<b>34</b>	29	30	52	49	85	73	
<b>364,208.1</b>	<b>24,395</b>	<b>131,890.6</b>	<b>17,745</b>	<b>98,761.6</b>	<b>8,742</b>	<b>94,032.6</b>	<b>11,069</b>	
<b>35</b>	<b>25</b>	<b>24</b>	<b>21</b>	<b>50</b>	<b>45</b>	<b>82</b>	<b>69</b>	

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390,648.7 %26

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**2010**

						( )
<b>17,801.9</b>	<b>11,053</b>	9,334.4	5,832	8,467.5	5,221	3
<b>33</b>	<b>34</b>	70	69	21	21	
<b>20,743.6</b>	<b>5,670</b>	8,669.2	2,363	12,074.4	3,307	4.99-3
<b>33</b>	<b>33</b>	76	75	24	23	
<b>45,573.4</b>	<b>6,784</b>	16,410.8	2,464	29,162.6	4,320	9.99-5
<b>35</b>	<b>35</b>	81	81	26	26	
<b>65,114.9</b>	<b>4,849</b>	16,208.1	1,247	48,906.8	3,602	19.99-10
<b>35</b>	<b>35</b>	83	82	30	29	
<b>323,051.0</b>	<b>5,390</b>	31,013.5	707	292,037.5	4,683	20
<b>42</b>	<b>39</b>	85	83	40	36	
<b>472,284.8</b>	<b>33,746</b>	<b>81,636.0</b>	<b>12,613</b>	<b>390,648.8</b>	<b>21,133</b>	
<b>39</b>	<b>35</b>	81	74	35	26	

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2010

										( )	
17,801.9	11,053	9,334.4	5,832	3,051.1	1,945	773.3	474	4,643.1	2,802		3
33	34	70	69	21	22	13	4	24	24		
20,743.6	5,670	8,669.2	2,363	3,583.8	986	1,185.0	333	7,305.6	1,988		4.99-3
33	33	76	75	23	23	14	14	27	27		
45,573.4	6,784	16,410.8	2,464	7,159.3	1,068	2,881.9	424	19,121.4	2,828		9.99-5
35	35	81	81	25	25	15	15	30	30		
65,114.8	4,849	16,208.1	1,247	9,789.6	737	4,294.5	320	34,822.6	2,545		19.99-10
35	35	82	82	26	26	16	16	34	34		
323,050.9	5,390	31,013.5	707	36,594.3	631	39,229.2	534	216,213.9	3,518		20
42	39	85	83	22	24	35	27	47	43		
472,284.6	33,746	81,636.0	12,613	60,178.1	5,367	48,363.9	2,085	282,106.6	13,681		
39	35	81	74	23	23	28	16	42	31		

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2010

	20	19.99-10	9.99-5	4.99-3	3
<b>39</b>	<b>42</b>	<b>35</b>	<b>35</b>	<b>33</b>	<b>33</b>
<b>50</b>	57	39	31	25	22
<b>59</b>	62	48	40	34	33
<b>40</b>	42	39	37	37	33
<b>32</b>	38	25	21	17	14
<b>37</b>	37	35	36	42	45
<b>32</b>	34	30	32	29	21
<b>11</b>	10	12	12	12	10
<b>79</b>	80	71	63	66	56
<b>25</b>	29	22	22	15	17
<b>21</b>	23	20	19	17	15
<b>23</b>	22	28	27	25	24
<b>72</b>	77	73	72	72	62
<b>80</b>	83	77	81	76	71
<b>89</b>	94	89	88	79	78
<b>83</b>	89	88	84	78	69
<b>79</b>	83	80	79	74	73

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**2010**

								( )
16,988.3	11,052	11,531.7	8,493	1,445.8	1,148	4,463.2	3,021	3
33	34	30	31	45	42	79	68	
19,703.1	5,670	12,381.8	4,471	2,375.2	1,135	4,811.8	1,747	4.99-3
33	33	29	30	43	43	83	70	
42,736.1	6,784	24,874.0	5,409	6,729.5	1,974	9,644.7	2,379	9.99-5
35	35	30	32	47	46	83	69	
60,504.1	4,849	32,128.2	3,941	11,574.8	1,866	12,990.8	1,822	19.99-10
36	35	31	33	47	45	85	70	
284,986.3	5,390	108,465.5	4,334	75,892.0	2,723	68,562.4	2,250	20
45	39	39	37	51	48	90	74	
<b>424,917.9</b>	<b>33,745</b>	<b>189,381.2</b>	<b>26,648</b>	<b>98,017.3</b>	<b>8,846</b>	<b>100,472.9</b>	<b>11,219</b>	
<b>41</b>	<b>35</b>	<b>35</b>	<b>32</b>	<b>50</b>	<b>45</b>	<b>88</b>	<b>70</b>	

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48,276  
 679,962  
 35,665  
 598,790.9  
 12,611  
 81,171.1

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**2010**

						( )
24,441.5	14,971	9,387.1	5,875	15,054.4	9,096	3
46	46	70	69	38	37	
29,422.6	8,061	8,636.2	2,352	20,786.4	5,709	4.99-3
47	47	76	75	41	41	
66,598.0	9,895	16,265.0	2,440	50,333.0	7,455	9.99-5
51	51	81	80	46	45	
98,936.1	7,336	16,095.3	1,240	82,840.8	6,096	19.99-10
54	53	82	82	50	50	
460,563.8	8,013	30,787.5	704	429,776.3	7,309	20
60	58	85	83	58	57	
679,962.0	48,276	81,171.1	12,611	598,790.9	35,665	
57	50	80	74	54	45	

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2010

										( )
<b>24,441.5</b>	<b>14,971</b>	9,387.1	5,875	6,050.7	3,768	1,187.4	712	7,816.3	4,616	3
<b>46</b>	<b>46</b>	70	69	42	42	20	6	40	39	
<b>29,422.6</b>	<b>8,061</b>	8,636.2	2,352	7,109.4	1,963	1,587.0	439	12,090.0	3,307	4.99-3
<b>47</b>	<b>47</b>	76	75	46	45	19	18	45	45	
<b>66,598.0</b>	<b>9,895</b>	16,265.0	2,440	14,336.6	2,142	3,721.1	549	32,275.3	4,764	9.99-5
51	51	81	80	50	49	20	20	51	51	
<b>98,936.1</b>	<b>7,336</b>	16,095.3	1,240	19,612.3	1,472	6,112.6	451	57,115.9	4,173	19.99-10
54	53	82	82	53	52	23	23	56	56	
<b>460,563.9</b>	<b>8,013</b>	30,787.5	704	76,660.2	1,352	51,260.1	698	301,856.1	5,259	20
60	58	85	83	46	51	45	35	66	64	
<b>679,962.1</b>	<b>48,276</b>	<b>81,171.1</b>	<b>12,611</b>	<b>123,769.2</b>	<b>10,697</b>	<b>63,868.2</b>	<b>2,849</b>	<b>411,153.6</b>	<b>22,119</b>	
57	50	80	74	47	46	37	22	62	50	

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## 2010

	20	19.99-10	9.99-5	4.99-3	3	
<b>57</b>	<b>60</b>	<b>51</b>	<b>51</b>	<b>47</b>	<b>46</b>	
<b>67</b>	73	59	51	42	37	
<b>73</b>	76	65	59	52	50	
<b>69</b>	72	68	65	61	51	
<b>46</b>	51	41	36	32	27	
<b>67</b>	67	70	66	61	66	
<b>51</b>	52	52	50	47	41	
<b>17</b>	18	18	15	15	16	
<b>94</b>	94	89	90	80	65	
<b>37</b>	44	31	31	24	23	
<b>47</b>	50	51	45	39	35	
<b>47</b>	45	53	52	48	45	
<b>74</b>	77	74	74	75	64	
<b>81</b>	83	80	83	81	74	
<b>89</b>	92	91	89	81	80	
<b>79</b>	87	82	79	72	67	
<b>80</b>	83	82	80	74	73	

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**2010**

								( )
23,374.1	14,970	17,179.6	12,271	1,504.3	1,262	4,922.3	3,544	3
46	46	45	45	47	46	88	80	
27,860.7	8,061	19,178.1	6,817	2,671.0	1,323	5,126.8	2,002	4.99-3
47	47	46	46	49	50	88	80	
62,174.7	9,895	39,954.9	8,407	8,156.1	2,505	10,585.6	2,774	9.99-5
51	51	49	49	57	58	91	81	
90,819.0	7,336	54,189.7	6,339	14,956.7	2,536	14,066.6	2,136	19.99-10
54	53	52	52	61	62	92	82	
397,415.1	8,013	169,000.4	6,811	99,663.2	3,740	71,870.8	2,635	20
63	58	61	58	67	66	95	86	
<b>601,643.6</b>	<b>48,275</b>	<b>299,502.7</b>	<b>40,645</b>	<b>126,951.3</b>	<b>11,366</b>	<b>106,572.1</b>	<b>13,091</b>	
<b>58</b>	<b>50</b>	<b>55</b>	<b>49</b>	<b>65</b>	<b>58</b>	<b>93</b>	<b>82</b>	

**3.6**

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58,702

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47,208

813,196.8

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11,494

%67

%79

80,702

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**2010**

						( )
<b>26,764.4</b>	<b>16,031</b>	7,832.6	4,738	18,931.8	11,293	3
<b>50</b>	<b>49</b>	58	56	47	46	
<b>36,625.1</b>	<b>10,058</b>	8,517.0	2,316	28,108.1	7,742	4.99-3
<b>59</b>	<b>58</b>	75	74	55	55	
<b>84,678.3</b>	<b>12,577</b>	16,308.6	2,456	68,369.7	10,121	9.99-5
<b>65</b>	<b>65</b>	81	81	62	62	
<b>128,193.0</b>	<b>9,517</b>	16,395.9	1,263	111,797.1	8,254	19.99-10
<b>70</b>	<b>69</b>	84	83	68	68	
<b>616,936.2</b>	<b>10,519</b>	31,016.9	721	585,919.3	9,798	20
<b>80</b>	<b>77</b>	85	85	80	76	
<b>893,197.0</b>	<b>58,702</b>	<b>80,071.0</b>	<b>11,494</b>	<b>813,126.0</b>	<b>47,208</b>	
<b>74</b>	<b>60</b>	79	67	74	59	

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%59 (4.99-3)

%65 (9.99-5)

%80 (19.99-10) %70

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 %79  
 %59  
 %78 %30  
 %47



## 2010

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<b>26,764.4</b>	<b>16,031</b>	7,832.6	4,738	6,661.9	4,078	1,367.7	797	10,902.2	6,418	3
<b>50</b>	<b>49</b>	58	56	47	45	23	7	55	55	
<b>36,625.1</b>	<b>10,058</b>	8,517.0	2,316	8,977.9	2,493	2,302.8	632	16,827.4	4,617	4.99-3
<b>59</b>	<b>58</b>	75	74	58	57	27	26	63	63	
<b>84,678.3</b>	<b>12,577</b>	16,308.6	2,456	19,217.9	2,888	5,440.8	801	43,711.0	6,432	9.99-5
65	65	81	81	67	67	29	29	69	69	
<b>128,193.0</b>	<b>9,517</b>	16,395.9	1,263	27,351.7	2,062	9,087.4	676	75,358.0	5,516	19.99-10
70	69	83	83	74	73	35	35	74	74	
<b>616,936.2</b>	<b>10,519</b>	31,016.9	721	141,555.1	2,157	63,251.0	946	381,113.2	6,695	20
80	77	85	85	85	81	56	48	84	81	
<b>893,197.0</b>	<b>58,702</b>	<b>80,071.0</b>	<b>11,494</b>	<b>203,764.5</b>	<b>13,678</b>	<b>81,449.7</b>	<b>3,852</b>	<b>527,911.8</b>	<b>29,678</b>	
74	60	79	67	78	59	47	30	79	67	

(38)

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%91

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**2010**

	20	19.99-10	9.99-5	4.99-3	3	
<b>74</b>	<b>80</b>	<b>65</b>	<b>65</b>	<b>59</b>	<b>50</b>	
<b>96</b>	98	95	94	89	83	
<b>97</b>	97	95	94	91	79	
<b>64</b>	69	59	54	47	40	
<b>79</b>	84	78	72	62	52	
<b>78</b>	81	72	65	66	57	
<b>22</b>	25	18	17	12	11	
<b>34</b>	38	32	27	25	23	
<b>91</b>	92	80	72	59	33	
<b>36</b>	42	31	30	32	21	
<b>56</b>	64	55	48	40	32	
<b>83</b>	89	79	74	64	53	
<b>63</b>	71	64	66	61	41	
<b>79</b>	86	79	77	77	59	
<b>83</b>	89	91	82	72	58	
<b>86</b>	91	92	89	82	69	
<b>82</b>	90	84	81	78	63	

(39)

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%81

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%48 %83

%96                      20

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.(                      20)                      %96                      (4.99-3)

%83

.(                      20)                      %95                      (4.99-3)                      %89

%48

.(                      20)                      %76                      (4.99-3)                      %56

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**2010**

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25,700.9	16,031	18,585.3	12,893	2,689.7	2,140	4,432.2	3,070	3
50	49	48	47	83	79	79	70	
34,847.5	10,058	23,381.3	8,343	4,880.0	2,245	5,156.7	2,010	4.99-3
59	58	56	56	89	85	89	80	
79,146.7	12,577	50,216.7	10,628	12,916.1	3,784	10,791.0	2,882	9.99-5
65	65	61	62	90	87	92	84	
117,524.8	9,517	68,614.2	8,112	22,798.5	3,643	14,373.2	2,240	19.99-10
70	69	66	67	93	89	94	86	
520,697.8	10,519	210,087.8	8,749	141,521.9	5,231	72,428.3	2,735	20
82	77	76	74	95	92	96	90	
<b>777,917.7</b>	<b>58,702</b>	<b>370,885.3</b>	<b>48,725</b>	<b>184,806.2</b>	<b>17,043</b>	<b>107,181.4</b>	<b>12,937</b>	
<b>76</b>	<b>60</b>	<b>68</b>	<b>59</b>	<b>94</b>	<b>87</b>	<b>94</b>	<b>81</b>	

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(2007 )

(40)

%18

17,834

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273,282.1

12,664

233,161.6

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2010

						( )
<b>8,865.2</b>	<b>5,427</b>	3,240.5	1,978	5,624.7	3,449	3
<b>17</b>	<b>17</b>	24	23	14	14	
<b>10,909.7</b>	<b>2,976</b>	3,803.2	1,036	7,106.5	1,940	4.99-3
<b>18</b>	<b>17</b>	33	33	14	14	
<b>24,904.6</b>	<b>3,703</b>	7,526.1	1,136	17,378.5	2,567	9.99-5
<b>19</b>	<b>19</b>	37	37	16	16	
<b>36,301.0</b>	<b>2,696</b>	8,198.0	632	28,103.0	2,064	19.99-10
<b>20</b>	<b>20</b>	42	42	17	17	
<b>192,301.6</b>	<b>3,032</b>	17,352.6	388	174,949.0	2,644	20
<b>25</b>	<b>22</b>	48	46	24	21	
<b>273,282.1</b>	<b>17,834</b>	<b>40,120.4</b>	<b>5,170</b>	<b>233,161.7</b>	<b>12,664</b>	
<b>23</b>	<b>18</b>	<b>40</b>	<b>30</b>	<b>21</b>	<b>16</b>	

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<b>8,865.3</b>	<b>5,427</b>	3,240.5	1,978	1,910.4	1,198	556.1	332	3,158.3	1,919	3
<b>17</b>	<b>17</b>	24	23	13	13	9	3	16	16	
<b>10,909.6</b>	<b>2,976</b>	3,803.2	1,036	2,152.9	591	737.3	205	4,216.2	1,144	4.99-3
<b>18</b>	<b>17</b>	33	33	14	14	9	9	16	16	
<b>24,904.6</b>	<b>3,703</b>	7,526.1	1,136	4,516.7	677	1,977.8	287	10,884.0	1,603	9.99-5
<b>19</b>	<b>19</b>	37	37	16	16	11	10	17	17	
<b>36,301.0</b>	<b>2,696</b>	8,198.0	632	6,277.3	471	3,060.2	231	18,765.5	1,362	19.99-10
<b>20</b>	<b>20</b>	42	42	17	17	12	12	19	18	
<b>192,301.6</b>	<b>3,032</b>	17,352.6	388	32,302.5	496	33,234.3	407	109,412.2	1,741	20
<b>25</b>	<b>22</b>	48	46	19	19	29	21	24	21	
<b>273,282.1</b>	<b>17,834</b>	<b>40,120.4</b>	<b>5,170</b>	<b>47,159.8</b>	<b>3,433</b>	<b>39,565.7</b>	<b>1,462</b>	<b>146,436.2</b>	<b>7,769</b>	
<b>23</b>	<b>18</b>	<b>40</b>	<b>30</b>	<b>18</b>	<b>15</b>	<b>23</b>	<b>12</b>	<b>22</b>	<b>18</b>	

(42)

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%19                      %17  
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20)                      %70                      (19.99-10)                      %51                      %47  
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**2010**

	20	19.99-10	9.99-5	4.99-3	3	
<b>23</b>	<b>25</b>	<b>19</b>	<b>19</b>	<b>18</b>	<b>17</b>	
<b>19</b>	21	15	12	9	9	
<b>33</b>	34	29	26	27	27	
<b>20</b>	20	18	20	18	18	
<b>38</b>	42	33	30	28	27	
<b>3</b>	3	4	4	5	5	
<b>4</b>	4	3	5	3	2	
<b>10</b>	10	10	10	9	9	
<b>69</b>	70	51	50	47	47	
<b>4</b>	5	3	4	2	2	
<b>18</b>	21	16	15	14	13	
<b>18</b>	19	17	16	14	13	
<b>45</b>	49	50	45	44	29	
<b>20</b>	24	21	18	18	10	
<b>48</b>	53	53	43	38	33	
<b>36</b>	51	36	33	27	22	
<b>49</b>	63	47	45	38	27	

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8,473.6	5,427	5,806.3	4,057	594.7	526	2,559.0	1,657	3
17	17	15	15	18	19	46	38	
10,356.9	2,976	6,277.7	2,275	1,123.6	552	2,930.5	1,027	4.99-3
18	17	15	15	20	21	51	41	
23,250.0	3,703	13,557.9	2,925	3,399.2	1,054	5,738.0	1,313	9.99-5
19	19	17	17	24	24	49	38	
33,436.4	2,696	17,837.4	2,177	6,007.6	1,026	7,560.9	1,017	19.99-10
20	20	17	18	24	25	50	39	
167,241.2	3,032	54,635.1	2,362	45,270.8	1,595	47,021.6	1,341	20
26	22	20	20	30	28	62	44	
<b>242,758.1</b>	<b>17,834</b>	<b>98,114.4</b>	<b>13,796</b>	<b>56,395.9</b>	<b>4,753</b>	<b>65,810.0</b>	<b>6,355</b>	
<b>24</b>	<b>18</b>	<b>18</b>	<b>17</b>	<b>29</b>	<b>24</b>	<b>58</b>	<b>40</b>	

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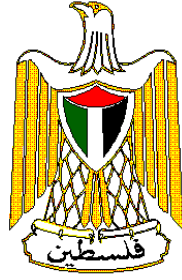
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**Palestinian National Authority  
Palestinian Central Bureau of Statistics**

**Dissemination and Analysis of Agricultural Census – 2010**

**Fragmentation of Agricultural Holdings and its  
Impact on Production and Productivity**

**Prepared by**

**Palestine Economic Policy Research Institute-MAS**

**August, 2013**

**This document is prepared in accordance with the standard procedures stated in the Code of Practice for Palestine Official Statistics 2006**

August, 2013.

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## Executive Summary

This study aims to employ the results of the agricultural census, which was carried out in both the West Bank and Gaza Strip cooperatively by the Palestinian Central Bureau of Statistics and the Ministry of Agriculture in 2010, to study fragmentation in agricultural holdings and the equality of their distribution in the occupied Palestinian Territory. In particular, the study seeks to achieve a number of objectives, most notably identifying the size of the agricultural land holdings (numbers and areas); classifying them in terms of area; comparing the size of agricultural holdings in the West Bank (north, center and south) to those in Gaza Strip; drawing a comparison between these holdings in different Palestinian governorates; analyzing the differences in the average size of the agricultural holdings in terms of their features; analyzing the differences in the average size of the agricultural holdings in terms of the socio-economic characteristics of the holders; analyzing the differences in the average size of agricultural holdings in terms of agricultural technological types; drawing Lorenz Curve to obtain a graphical representation of the cumulative distribution of the possession of agricultural holdings in the entire Palestinian Territory as a whole, in the West Bank and in Gaza Strip, as well as in different governorates; measuring the equality of distribution of holdings by calculating the Gini Coefficient in the entire Palestinian Territory, in the West Bank and in Gaza Strip, as well as in different governorates; and proposing recommendations to mitigate the effects of fragmentation of agricultural holdings and fight inequality in holdings distribution.

This study is important in the sense that it employs the results of the agricultural census to analyze the fragmentation of agricultural holdings and the equality/inequality in their distribution. It also studies the impact of the size of agricultural land holdings on management of holdings, the effects of size on the objectives of the production process and implications on types of technology used. Several groups of concerned people are expected to benefit from the results of this study, particularly 1) farmers; 2) decision makers (informing appropriate decision-making in terms of the consolidation of agricultural holdings, which will improve productivity of land, enhance the total production, increase income of farmers and ensure a Palestinian food security; 3) agricultural cooperatives, especially those interested in consolidating agricultural holdings; 4) private agricultural companies (in terms of the types of technology used in each category of holdings).

To analyze the results of the census, the study adopts the descriptive and analytical statistical approach. Descriptively, the study calculates frequencies and percentages to describe the numbers and areas of holdings, as well as the differences between them in the entire Palestinian Territory, in the West Bank and Gaza Strip, as well as in different governorates. To understand the deviation of the areas of the holdings from the arithmetic mean (as a tool to measure fragmentation), the study also calculates the average, median, standard deviation, standard error and the relative standard error of the sampling. To illustrate equality in the distribution of agricultural holdings in the occupied Palestinian Territory, the paper utilizes two approaches. First, it draws Lorenz Curve to study the distribution of areas of agricultural holdings between holders in the Occupied Palestinian Territory, and in the West Bank and in Gaza Strip separately, as well as across the different Palestinian governorates. Second, it calculates the Gini Coefficient so as to measure the equality of distribution of agricultural holdings among holders in the Occupied Palestinian Territory, in the West Bank and in Gaza Strip separately, as well as in the different governorates. Analytically, the study conducts (t-tests) and one-way *analysis of variance* (ANOVA) to analyze the differences in the average areas of holdings according to region (in the West Bank and Gaza Strip as well as across

governorates), and according to the characteristics of holdings, characteristics of the holders, and the types of agricultural technology.

The study has no geographical limits. It covers all the occupied Palestinian Territory, as the agricultural census surveyed the West Bank and its eleven governorates, and the Gaza Strip and its five governorates. However, because the census found that 71% of the holdings are plant holdings, and because many of the live-stock holdings are non-land holdings, the analysis will be limited to agricultural holdings which involve land holdings (plant and mixed). Finally, the study excludes observations that do not give a definitive answer to a question, and this explains the minor differences in the total figures of the holders and holdings when discussing a specific property of the holders or a specific characteristic of the agricultural holdings, both in terms of number and area.

The study found that areas of agricultural holdings are fragmented and that they are inequitably distributed. This is clearly featured by several indicators. First, the average areas of holdings are relatively small (with an average area of plant and mixed holding of 12.4 dunums). The results also suggest that the average area of a holding in the West Bank is scantily larger than the average area in the Palestinian Territory (about 13.8 dunums in the West Bank compared to 5.9 dunums in Gaza Strip). The average areas of holdings in the northern West Bank, Central West Bank and southern West Bank are 15.1, 13.6 and 11.3 dunums, respectively. By governorate, the results of the analysis indicate that the average area of holdings varies across governorates, down from 5.3 dunums in Khan Younis up to 49.4 dunums in Jericho and Al-Agwar. The results also suggest that, in addition to Khan Younis, the average area of holdings in Jerusalem, Bethlehem, North Gaza, Gaza, Ramallah and Al-Bireh, Salfit, Rafah and Deir Al-Balah is below the of average on national level. The results also found that, in addition to Jericho and Al-Agwar, the average area of holdings in Nablus, Qalqilya, Tulkarm, Jenin and Tubas is larger than the average on the national level.

Second, standard deviation is higher than the arithmetic mean, where data indicate that the value of the standard deviation of the areas in the occupied Palestinian Territory as a whole is 36.42 dunums- which is almost three times the arithmetic mean (12.4 dunums), which is, of course, a sign of fragmentation. On the other hand, there is an evident disparity between different regions. The results of the analysis reveal that the standard deviation in the Gaza Strip is 16.41 dunums, which is the lowest among all regions. This value is quite double the arithmetic mean in the Strip (5.9 dunums). In the Central West Bank, the standard deviation is 45.8 dunums, i.e. more than three times the value of the arithmetic mean (13.6 dunums). In the rest of the regions, these values significantly vary (particularly between the Central West Bank and the Gaza Strip). Whereas the standard deviation of the area of holdings in the northern West Bank is more than double the value of their arithmetic mean (36.85 compared to 15.1 dunums), the standard deviation in the southern West Bank is more than three and a half times the value of the arithmetic mean (39.69 compared to 11.3 dunums). By governorate, the standard deviation values are relatively high, suggesting dispersion from the arithmetic mean. This, in turn, means that areas are fragmented and inequitably distributed within governorates. The results indicate that the lowest value of the standard deviation is found in Khan Younis (8.53 dunums), 1.6 times the value of the arithmetic mean- suggesting less fragmentation and more equitable distribution. By contrast, the highest value of standard deviation is found in Jericho and Al-Agwar (152.44 dunums), more than three times the value of the arithmetic mean- suggesting more fragmentation and less equitable distribution of holdings. The situation in other governorates is somewhere within these two extremes, Khan Younis and Jericho.

Third, the number of small-size agricultural holdings is large, while the total area of these holdings is relatively small. On the other hand, the number of large-size agricultural holdings is small, while the total area of them is large. Particularly, 34% of the small-size holdings, smaller than three dunums, have total area of barely 4.4% of the total area of the holdings. In contrast, 14% of the large-size holdings, twenty dunums or more, have total area of 64% of the total area of the holdings.

Fourth, *the curvature of the Lorenz curve* suggests inequality in distribution. This applies to the area of holdings in the occupied Palestinian Territory as a whole as well as to different regions (north, center and south), but with a relative disparity between regions. This inequality also appears in each governorate, with a conspicuous disparity between various governorates.

Fifth, the Gini coefficient for holdings is overall relatively high in the occupied Palestinian Territory; it does however, show a clear difference between the regions and governorates. Specifically, the results show that the value of the Gini coefficient at the national level is 0.60, which is an indication of a relative inequality in the distribution of plant and mixed holdings overall in the occupied Palestinian territory. The results also show that the value of this coefficient in the West Bank is 0.60 versus 0.53 in Gaza Strip. This is due to the relative inequality in the distribution of holdings in the two regions; however the inequality in the Gaza Strip itself is less than that in the West Bank. In the three regions of the West Bank, the results show that the value of the Gini coefficient in the north is 0.59, while it is 0.60 in the center and 0.62 in the south. This accentuates the relative inequality in the distribution of holdings in the center and south of the West Bank which is incidentally also the worst overall in the Palestinian Territory.

At the governorate level, the value of the Gini coefficient ranges from 0.49 in Khan Younis, up to 0.66 in the Jericho and Al-Agwar governorate. These values demonstrate that Khan Younis is suffering the least from inequality in the distribution of holdings, while Jericho and Al-Agwar suffer the most from this phenomenon. The results show that most of the Gaza Strip governorates have a low Gini coefficient relative to those in the West Bank. It is noted that the Gini coefficient in all of the governorates of the Gaza Strip is less than its value at the national level (0.60). The value of the Gini coefficient in those governorates is as follows: North Gaza (0.53), Rafah (0.53), Deir Al-Balah (0.56), and Gaza governorate (0.58).

In the West Bank, the Gini coefficient value varies strongly between governorates, where some fall below the national level and the West Bank level of (0.60). These governorates are: Jerusalem (0.57), Jenin, Tulkarm, Bethlehem (0.58 in each of them), Salfit (0.55), Qalqilya, Nablus (0.59 in each of them), and Ramallah and Al-Bireh governorate (0.56). This demonstrates that these governorates suffer from relative inequality in the distribution of holdings, but to a lesser extent than that of the national or the West Bank levels. In the rest of the West Bank governorates, the Gini coefficient value exceeds the national benchmark which is an indication that these governorates are suffering more inequality than other governorates. In addition to the Jericho and Al-Agwar governorate, where the value of the Gini coefficient is (0.66), the results show that the coefficient value in Hebron is 0.63, and 0.64 in Tubas.

In order to correlate areas of holdings, on the one hand, and their productivity and production on the other, the study analyzed the relationship between different categories of holding areas and the use of modern agricultural technology. In this regard, a larger area category suggests

more intensive use of biotechnology, represented by the use of improved seeds, bulbs, tubers and seedlings. The positive relationship between the plot area and the extent of used technology also applies to the use of chemical and mechanical technology as well as integrated pest management. The results indicate that a larger area category is more intensive in the use of chemical fertilizers and chemical pesticides. In addition, a larger area category suggests a more intense use of mechanical technology, represented by the use of heavy agricultural machinery. In the same line, a larger area category suggests a more intensive use of integrated pest management results in. In the order of the most used type of technology, mechanical technology is used more intensively than chemical technology which is used more intensively than biotechnology and finally the least intensive use is the use of integrated pest management.

Using biotechnology, chemical and integrated pest management leads to increase in yields, and hence an increase in agricultural production on the microeconomic level (agricultural holdings) and on the macroeconomic levels (the contribution of agriculture to GDP). The reason for using mechanical technology, on the other hand, is not linked to an increase of productivity and production, but facilitates agricultural operations, especially in countries that suffer from scarcity of human resources as labor force. This is the basis on which the study discusses the phenomenon of fragmentation of agricultural holdings and the inequality in their distribution. The aim of such a discussion is to enable the search for possible solutions and recommendations in order to consolidate and improve the equality in the distribution of holdings among the holders. Before suggesting recommendations, we must discuss the possible reasons behind this phenomenon. Unfortunately, the census does not include questions regarding the reasons for this situation; however, previous studies can help in this regard. For example, a study by the Ministry of Agriculture and Agrarian Reform in Syria found that the reasons for the fragmentation of holdings in Rural Damascus are social, economic, natural and legislative.

The social factors represent 31% of the causes of fragmentation, with the inheritance system ranking first among these factors. Other social factors include distribution of lands among the children before their father's death. The economic factors constitute 42% of the causes and the main reason for this is that farmers can gain a higher return on their land from selling it due to the increase in land prices. Another economic factor, which comes after the sale of agricultural land, is the high cost of production inputs. Hence farmers abandon part of their land to be able to maintain the rest of it. Moreover, working as a farmer outside the village is often given as reason to abandon farm land which is either sold in whole or in part. The natural factors constitute 15% of the causes, the major one being the condition of drought in the last ten years. Finally, the regulations factors constitute 12% of the causes, mainly the expansion of organizational charts which led to the acquisition of land and contributed to the fragmentation of agricultural holdings, being the main one.

The results of another study by the Palestinian Economic Research Institute (MAS) indicate that land fragmentation in Palestine can be a result of three reasons, multiple heirs, the relative importance of the land under consideration and the small areas that are meant to be split. The study advocates that these factors are interrelated, especially when the intended land is small and of great importance in terms of location. Thus, it is a very valuable asset and if there is a large number of heirs, it will eventually lead to the fragmentation of the land.

In light of the above discussion, the study lists some recommendations and proposals to reduce the phenomenon of fragmentation and dispersion of areas of agricultural holdings. The principal recommendation is to consolidate individual small holdings into larger ones. In this

regard, the study recommends, based on the results that have been obtained, that; first, consolidate holdings of individual small area, where a family is the legal entity that administers the holding. However, areas of family holdings do not exceed 15% of the total areas. Secondly, consolidate holdings of individual small areas on the basis of agricultural associations (cooperatives), where the results indicate that cooperatives tend to use different types of modern agricultural technology more intensively than individual and family farming. Thirdly, consolidate holdings of individual small area on the basis of agricultural companies, as the results indicate that companies tend to use different types of modern agricultural technology more intensively than individual and family farming.

The process of consolidating agricultural areas can be enforced by issuing the necessary legislation that could encourage the establishing of large agricultural farms, in the form of family, cooperative and company farms. The study suggests a package of such legislation, including; First, cancel the VAT on the purchases of agricultural inputs that are necessary for agricultural production. Secondly, abolish the income tax on farmers, even if they are in the form of agricultural companies. Thirdly, facilitate the exports of agricultural products, including the cancellation of all export fees on agricultural products. Fourthly, facilitate the import of supplies and components of modern agricultural technology, especially biological, chemical and integrated pest management. The study also encourages the establishing of legislation which sets a minimum size threshold on the registration of agricultural land areas. In this regard, the current median size of holdings in each region is recommended. The values of the median are: 6 dunums in the north of the West Bank, 5 dunums in the center, 4 dunums in the south and 3 dunums in the Gaza Strip. Special attention should be given to the following governorates in the consolidation process; Jericho and Al-Agwar, Tubas and Hebron, where the smallest 40% of the holders in these governorates only possess 1%, 1% and 2% of the area of holdings in each of them, respectively.

Regarding holdings of large areas which cause an inequality in the distribution of holdings, the study proposes the following; first, assist large holdings that are utilized fully and effectively, in order to encourage the private sector to engage in the agricultural sector. Secondly, the study calls to encourage holders of large holdings that are not effectively utilized to dispose of areas that constitute a burden on them either leasing or selling the unutilized areas to others who are willing to invest in the agricultural sector (individuals, families, associations, companies). Lastly, the study calls on the government to issue the necessary legislation and governing processes that promote the leasing and selling of unutilized tracts of holdings.