INTERMEDIATE

8TH EDITION

MICROECONOMICS

HAL R. VARIAN

8

Slutsky Equation

Effects of a Price Change

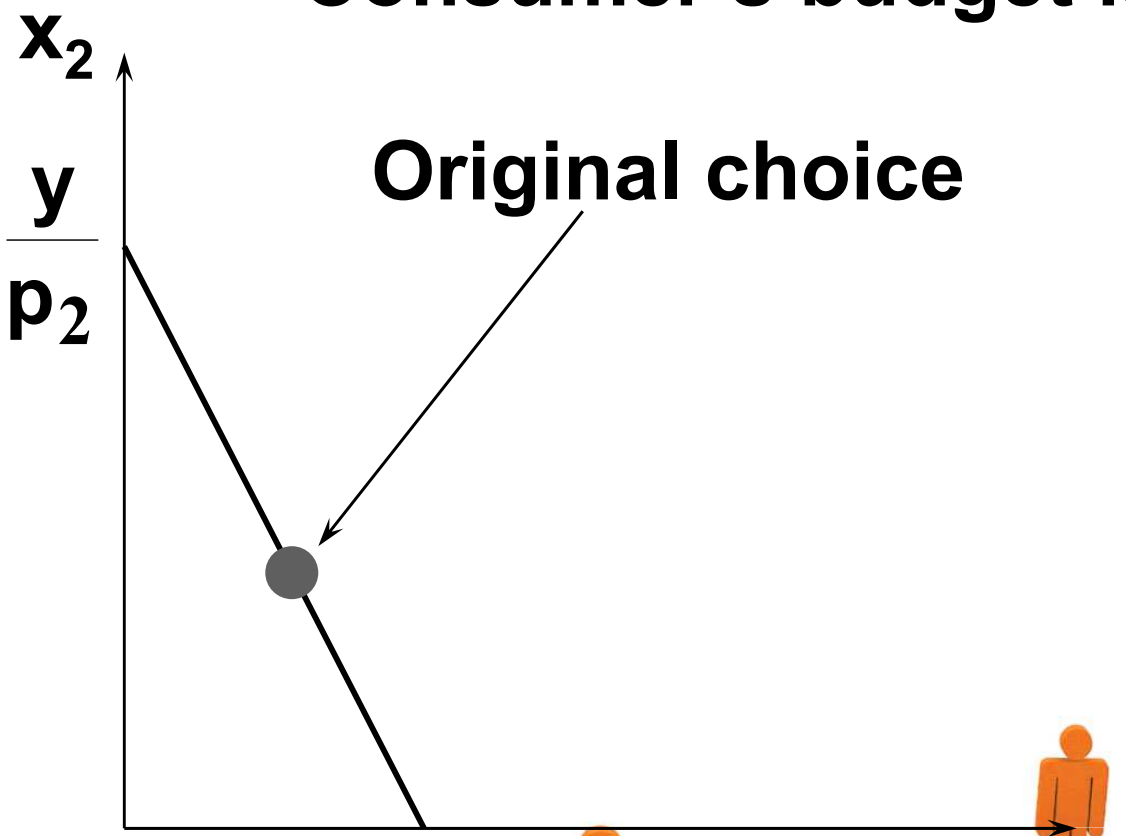
- **What happens when a commodity's price decreases?**
  - **Substitution effect: the commodity is relatively cheaper, so consumers substitute it for now relatively more expensive other commodities.**

Effects of a Price Change

- **Income effect: the consumer's budget of $y can purchase more than before, as if the consumer's income rose, with consequent income effects on quantities demanded.**

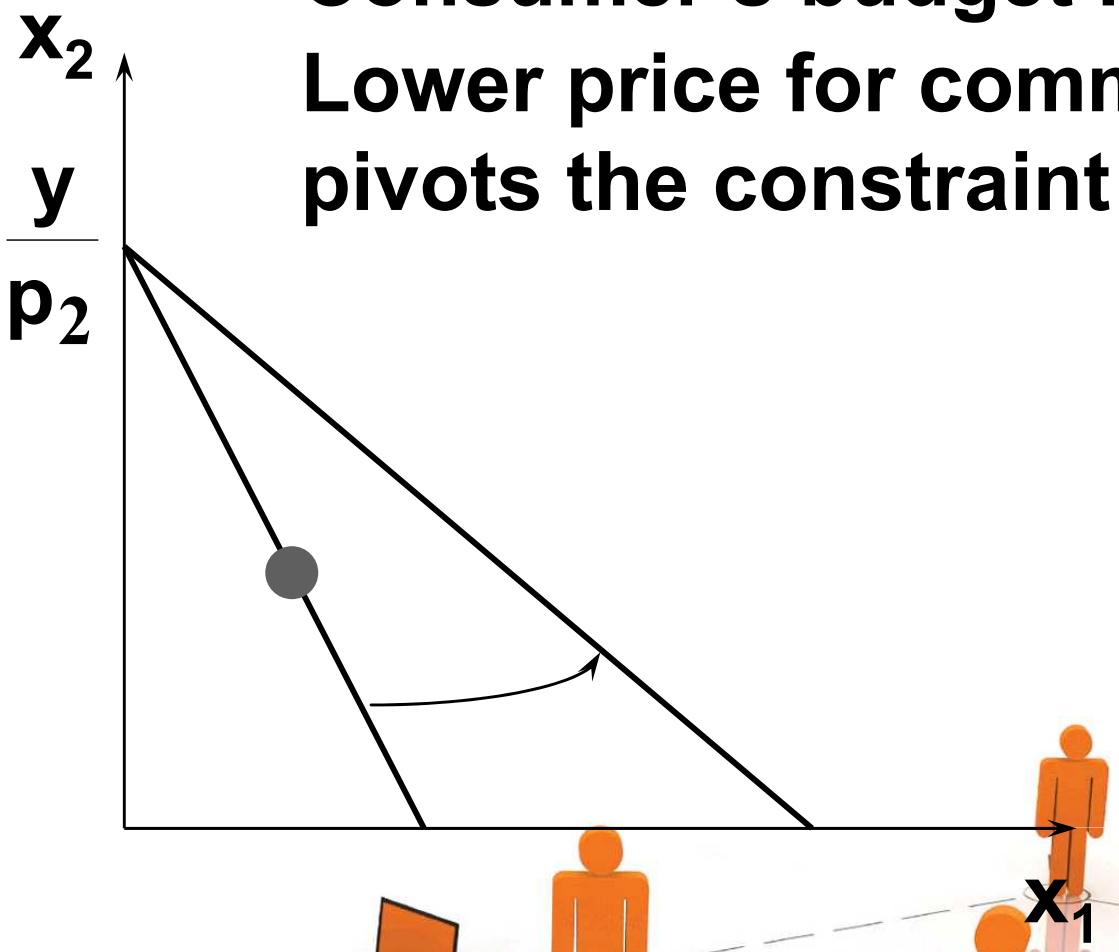
Effects of a Price Change

Consumer's budget is $y.



Effects of a Price Change

Consumer's budget is $y.
Lower price for commodity 1 pivots the constraint outwards.

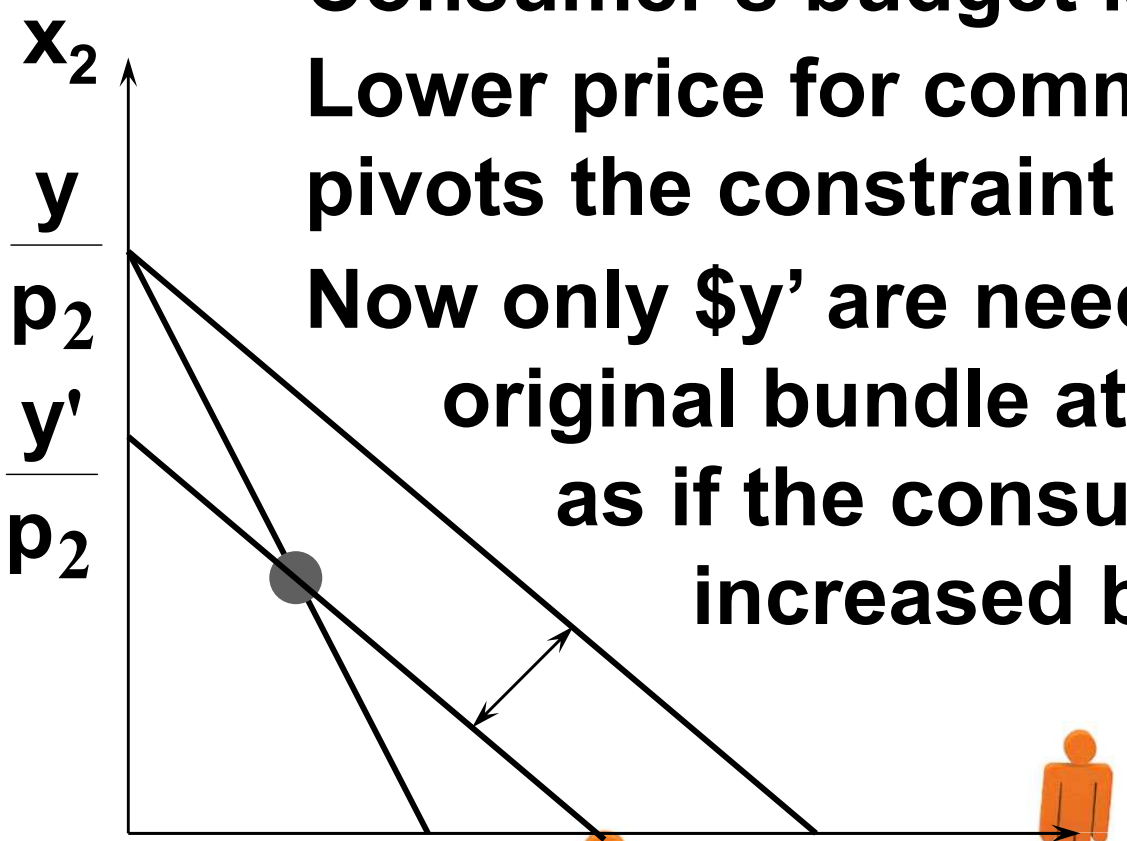


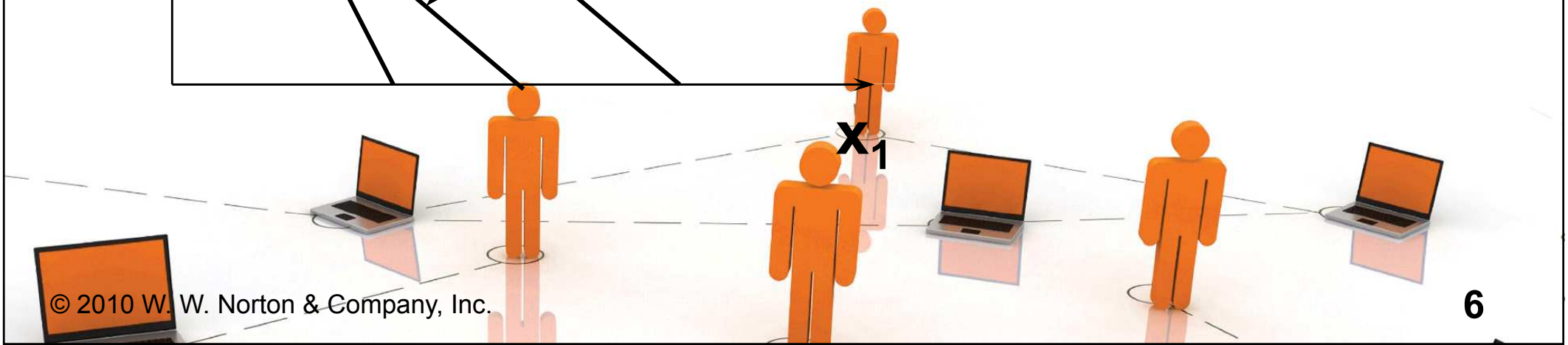
Effects of a Price Change

Consumer's budget is $y.

Lower price for commodity 1 pivots the constraint outwards.

Now only $y' are needed to buy the original bundle at the new prices, as if the consumer's income has increased by $y - $y'.





Effects of a Price Change

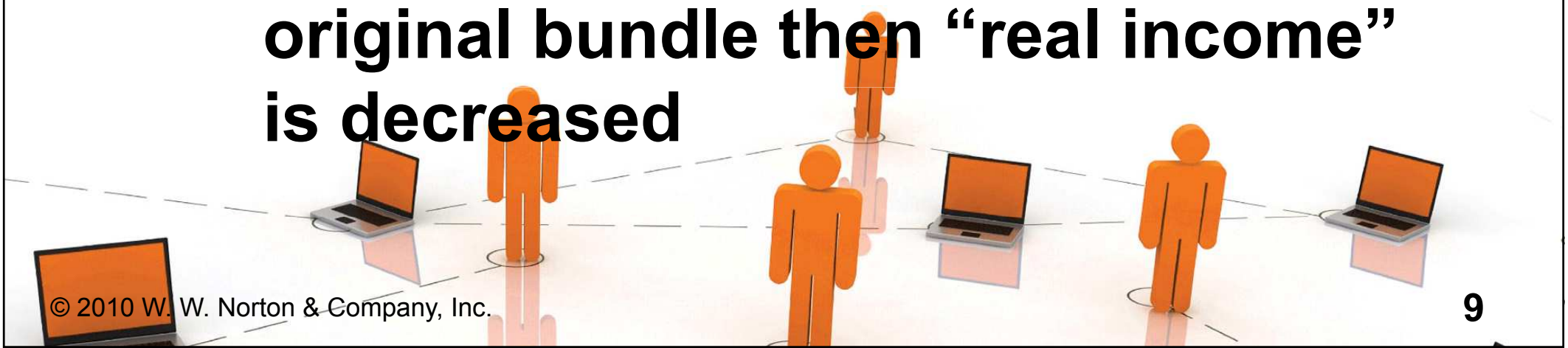
- **Changes to quantities demanded due to this ‘extra’ income are the income effect of the price change.**

Effects of a Price Change

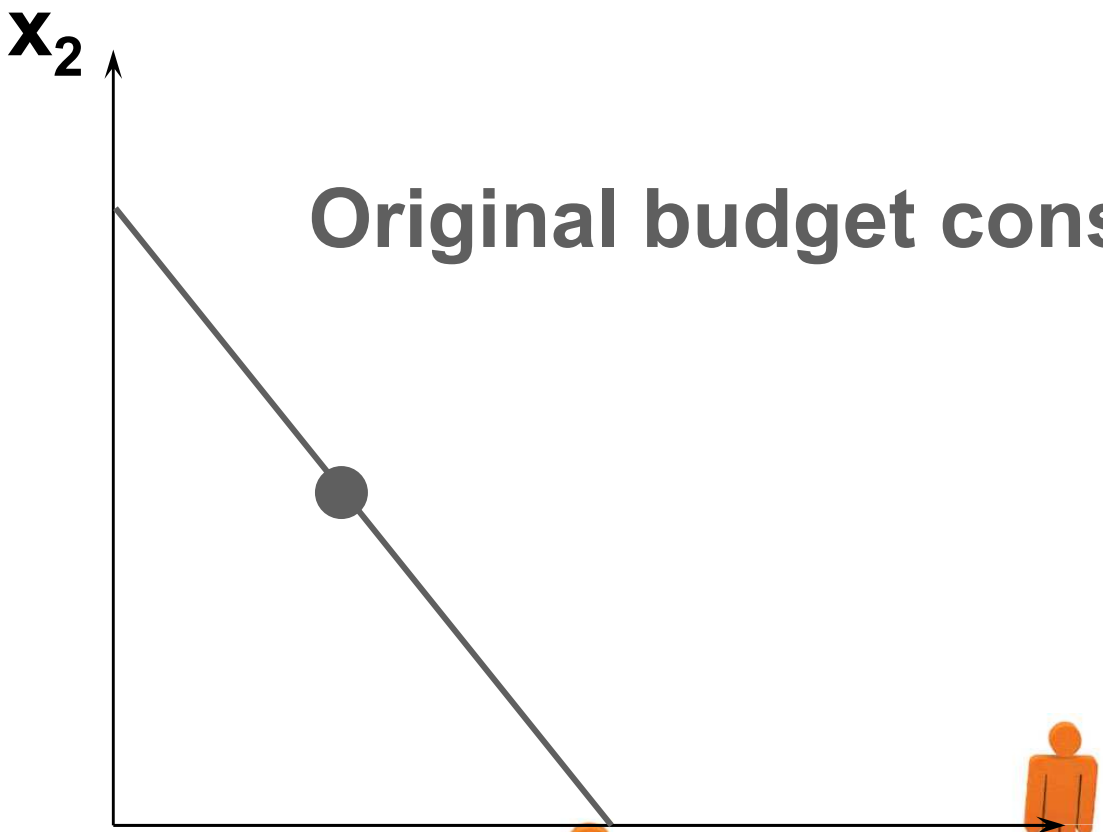
- **Slutsky discovered that changes to demand from a price change are always the sum of a pure substitution effect and an income effect.**

Real Income Changes

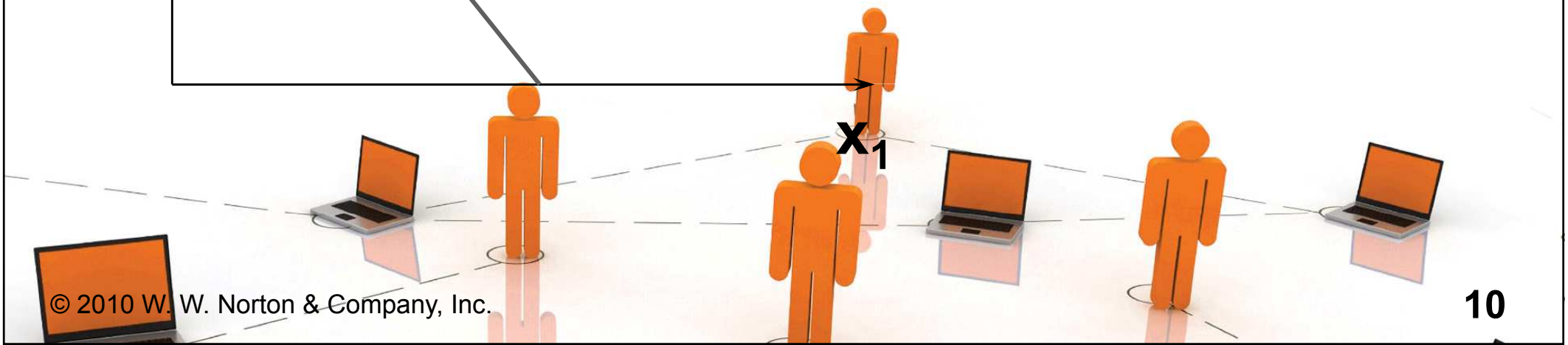
- **Slutsky asserted that if, at the new prices,**
  - **less income is needed to buy the original bundle then "real income" is increased**
  - **more income is needed to buy the original bundle then "real income" is decreased**



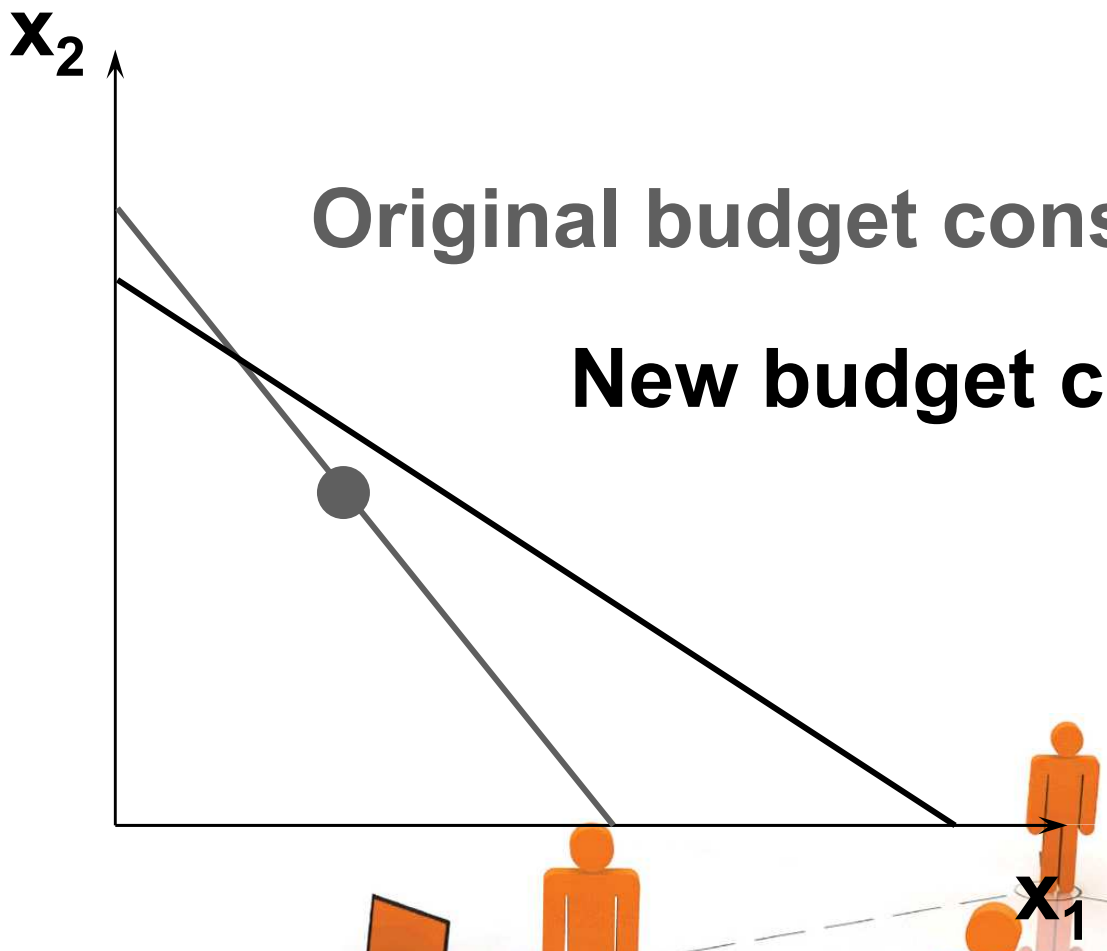
Real Income Changes



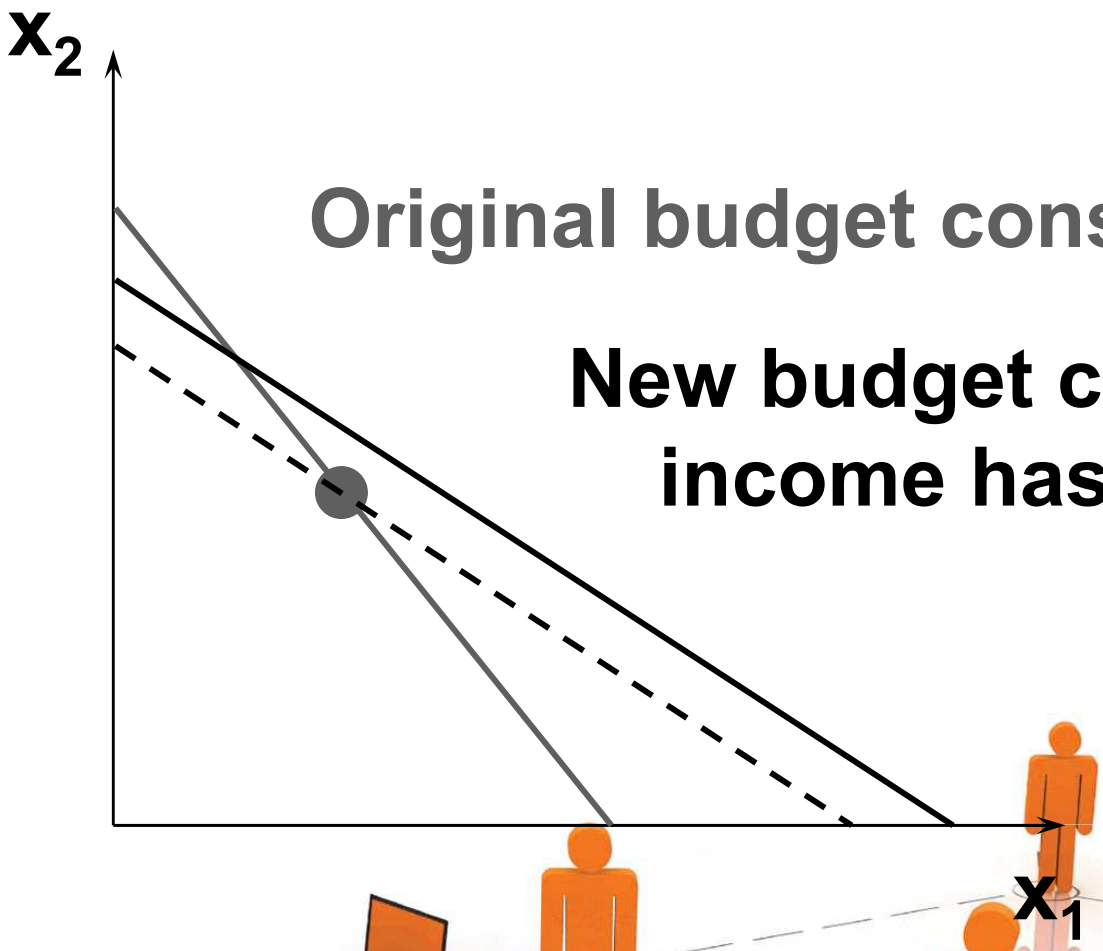
Original budget constraint and choice



Real Income Changes



Real Income Changes



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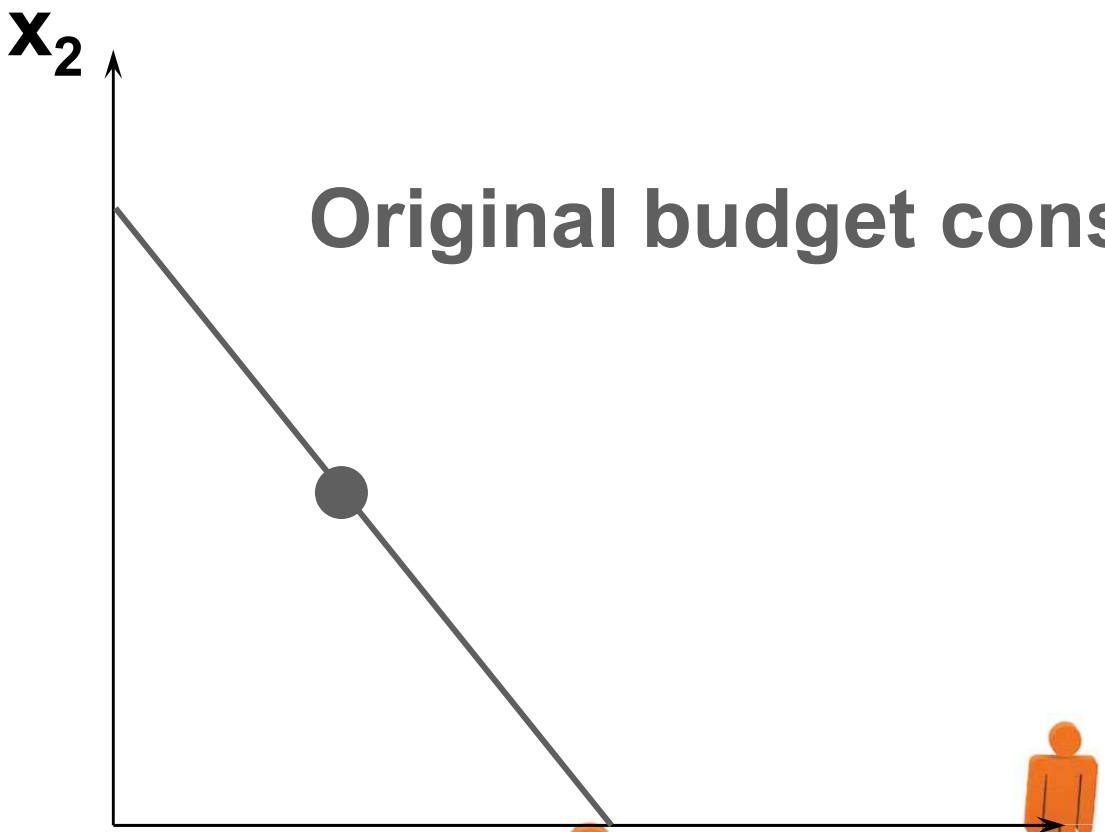
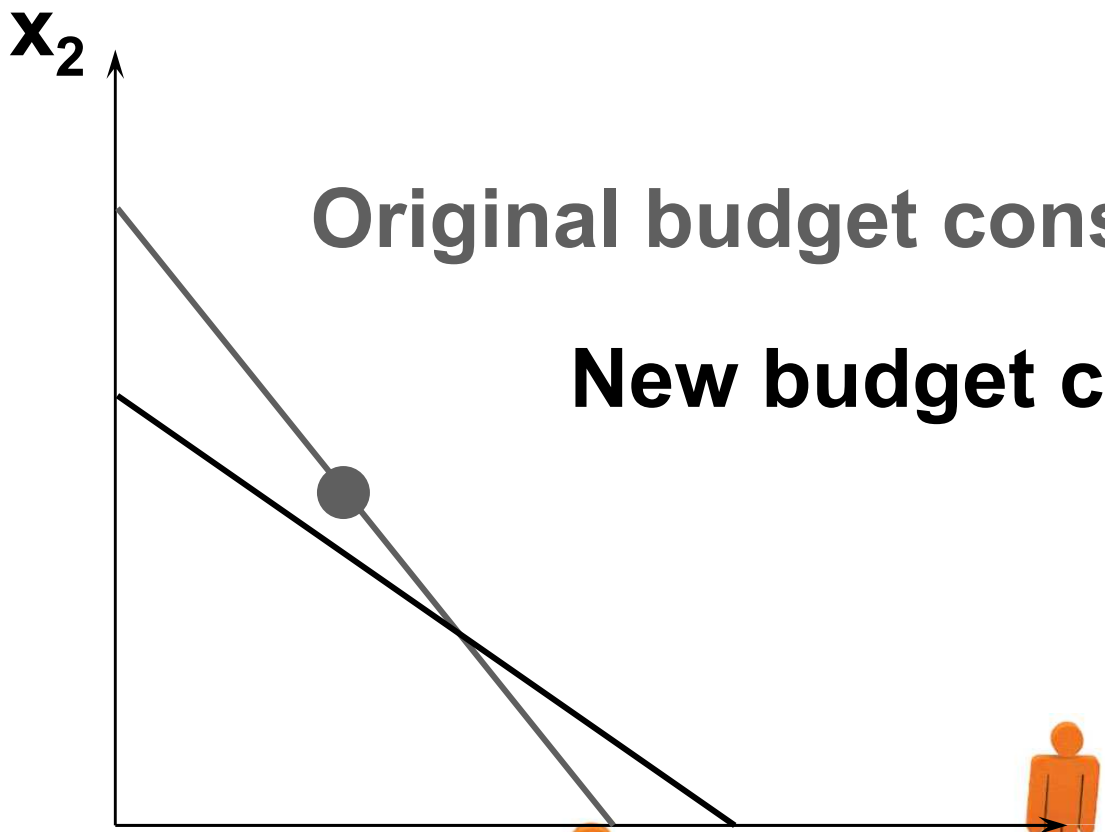


Original budget constraint and choice

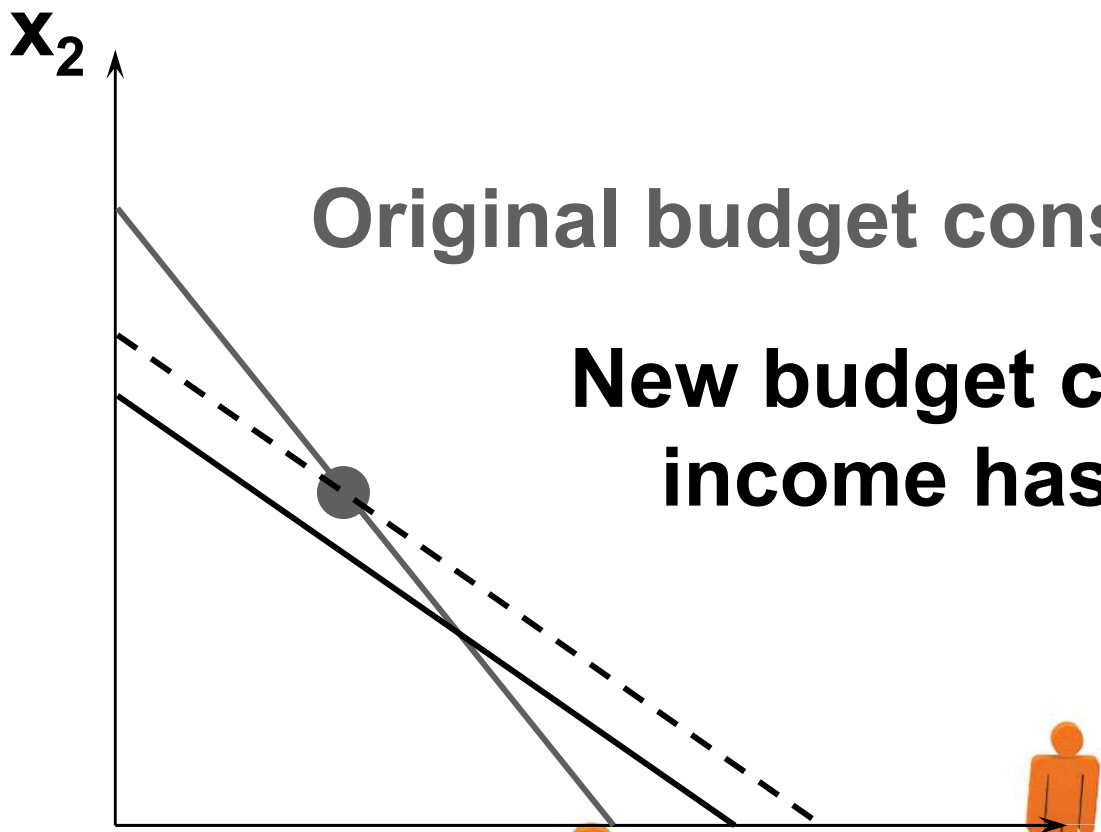
Real Income Changes



Original budget constraint and choice

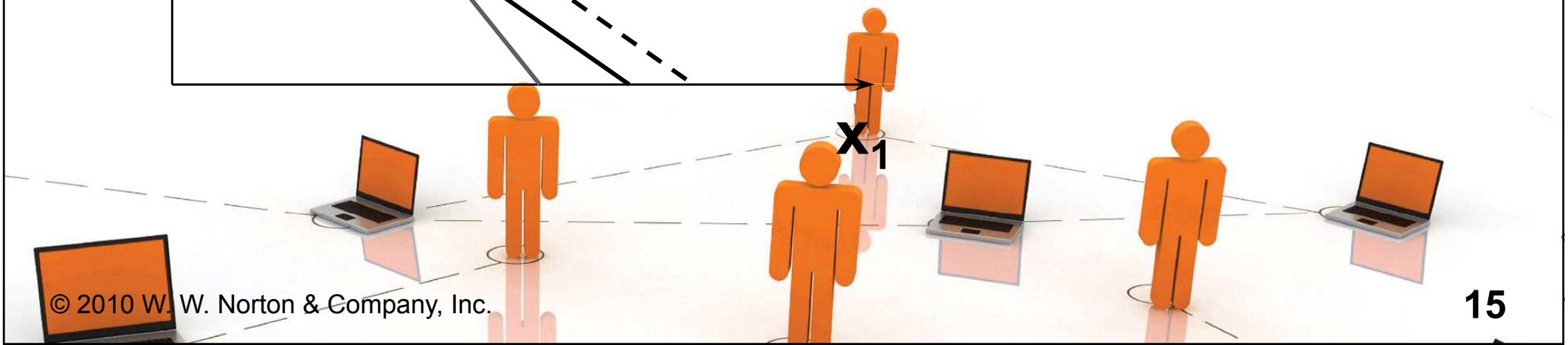
New budget constraint

Real Income Changes



Original budget constraint and choice

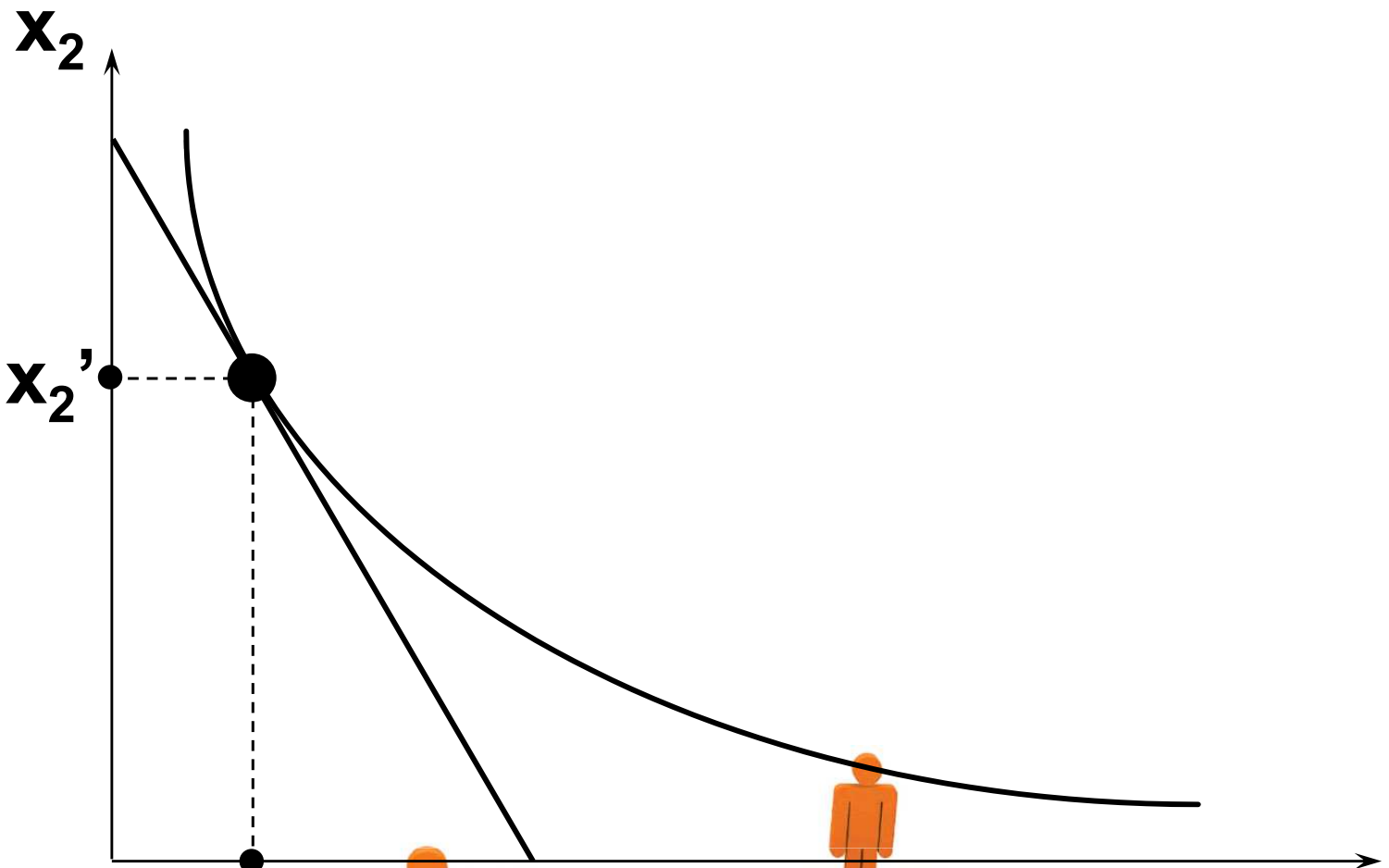
New budget constraint; real income has fallen



Pure Substitution Effect

- **Slutsky isolated the change in demand due only to the change in relative prices by asking "What is the change in demand when the consumer's income is adjusted so that, at the new prices, she can only just buy the original bundle?"**

Pure Substitution Effect Only



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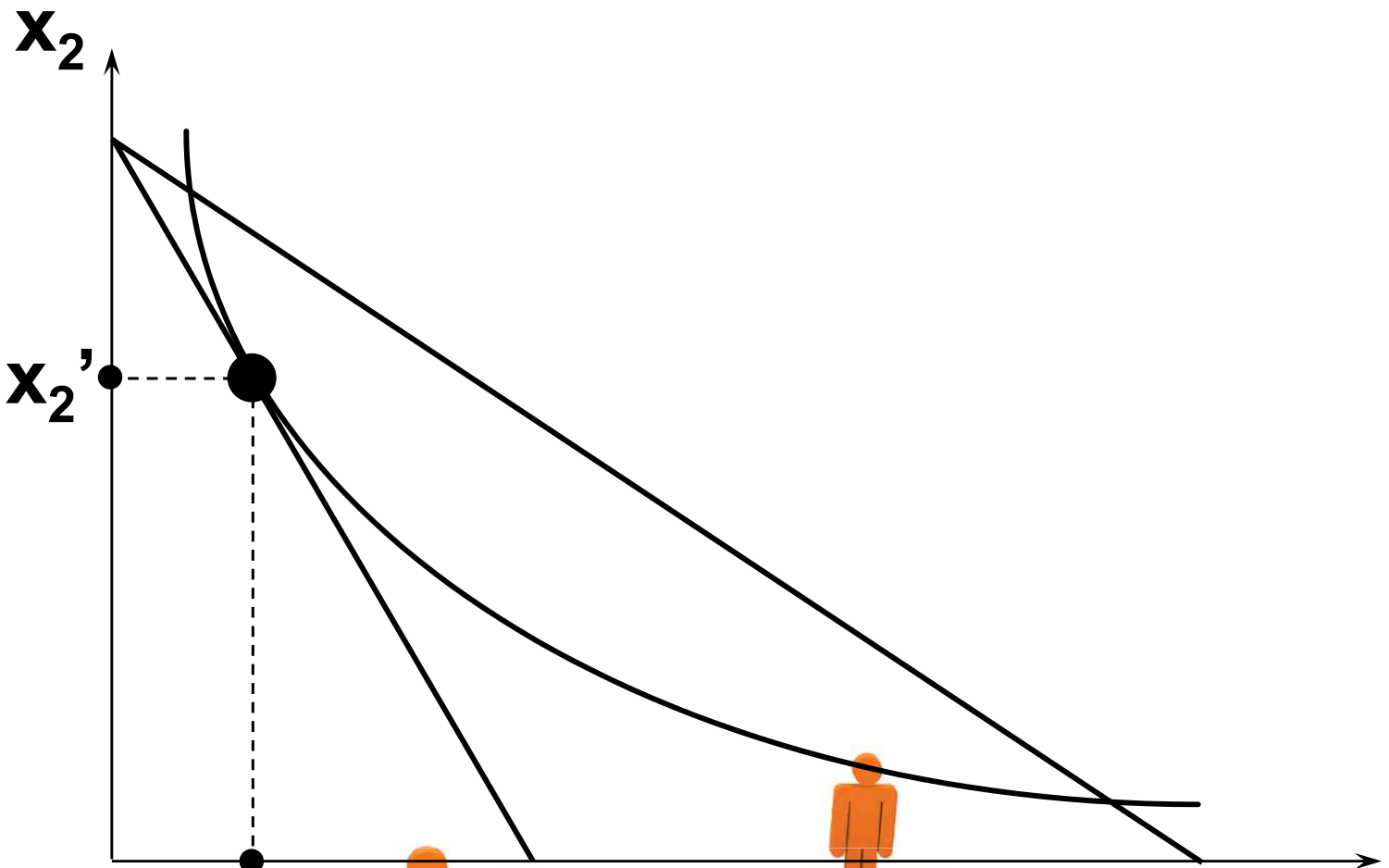

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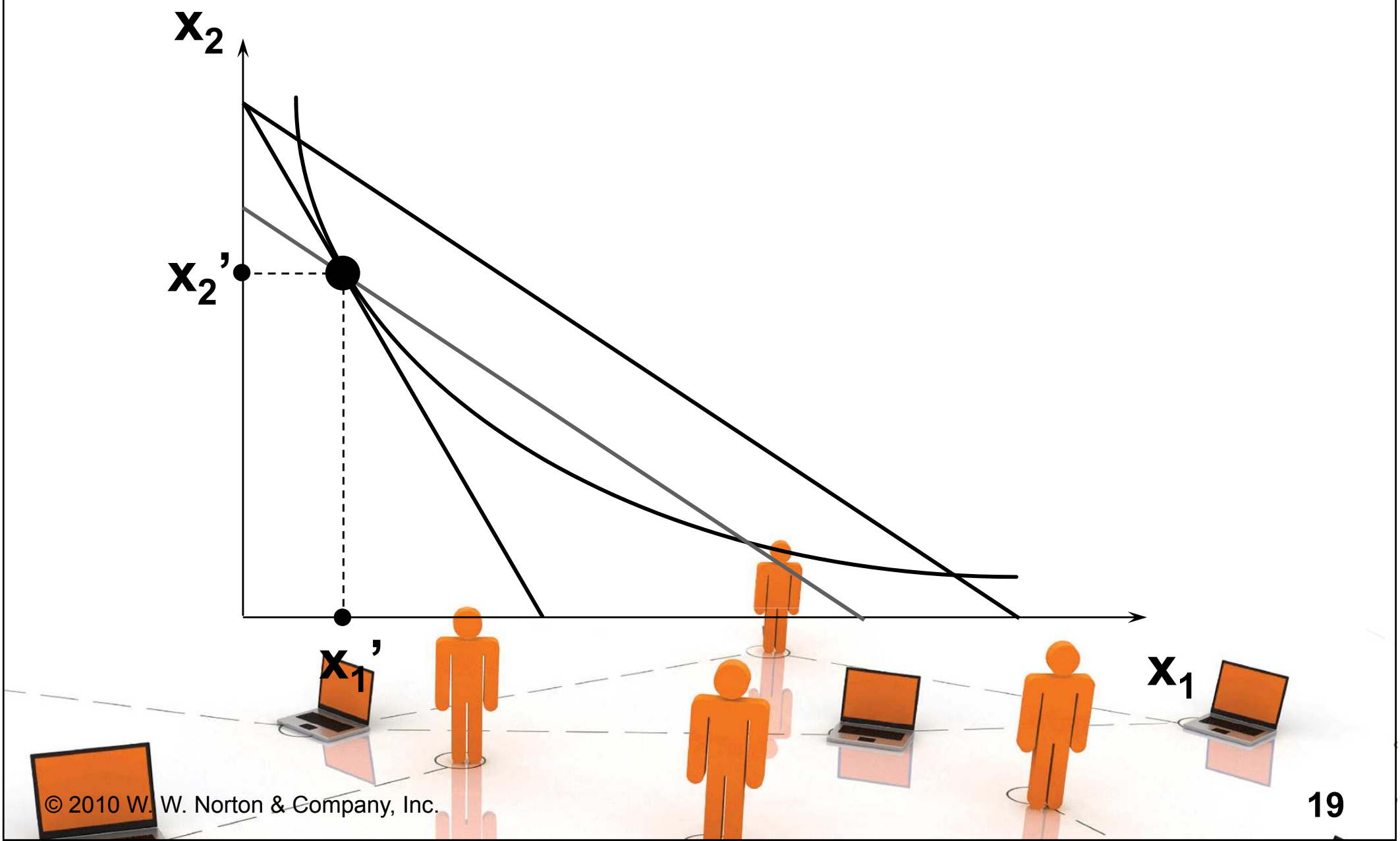

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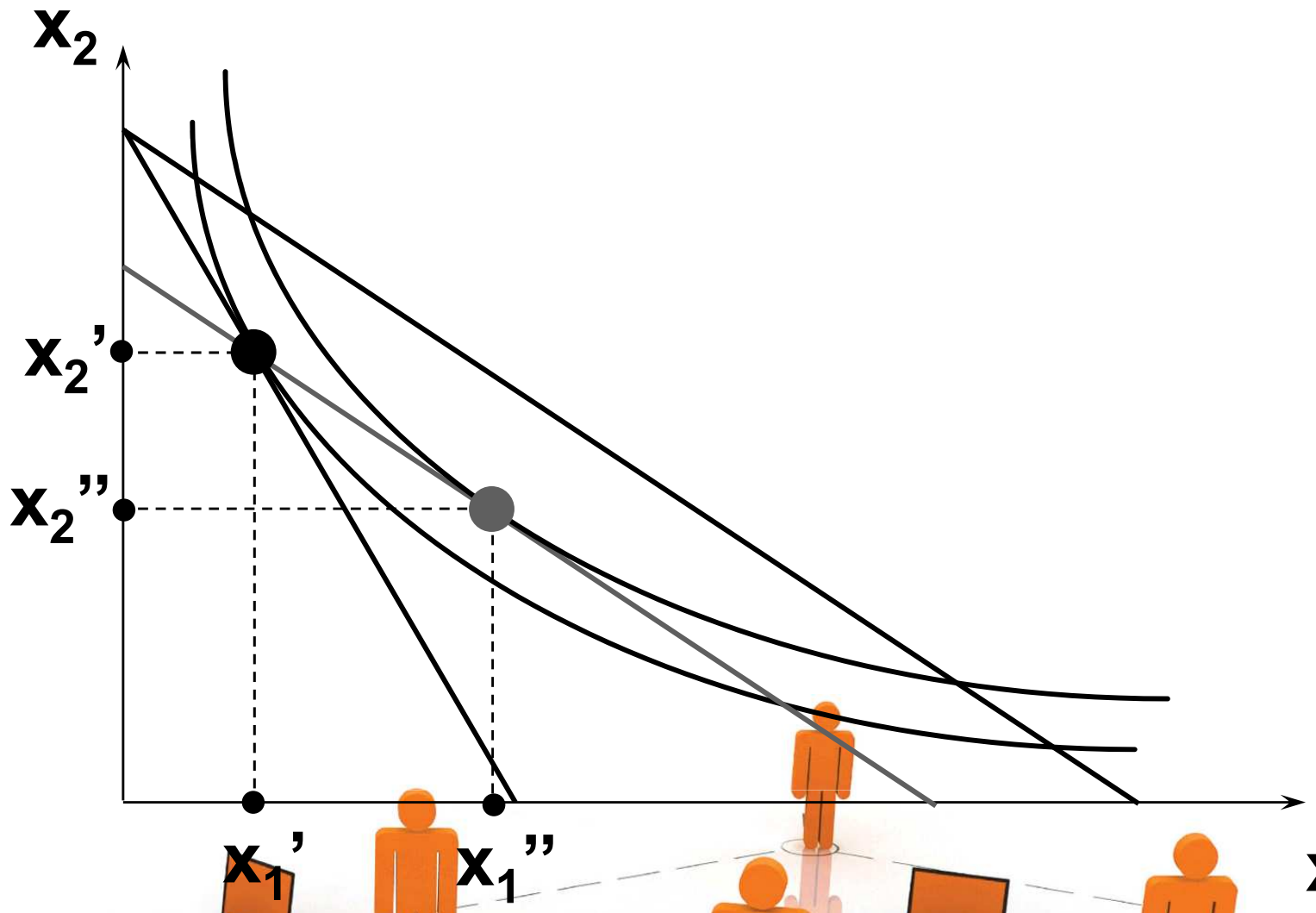

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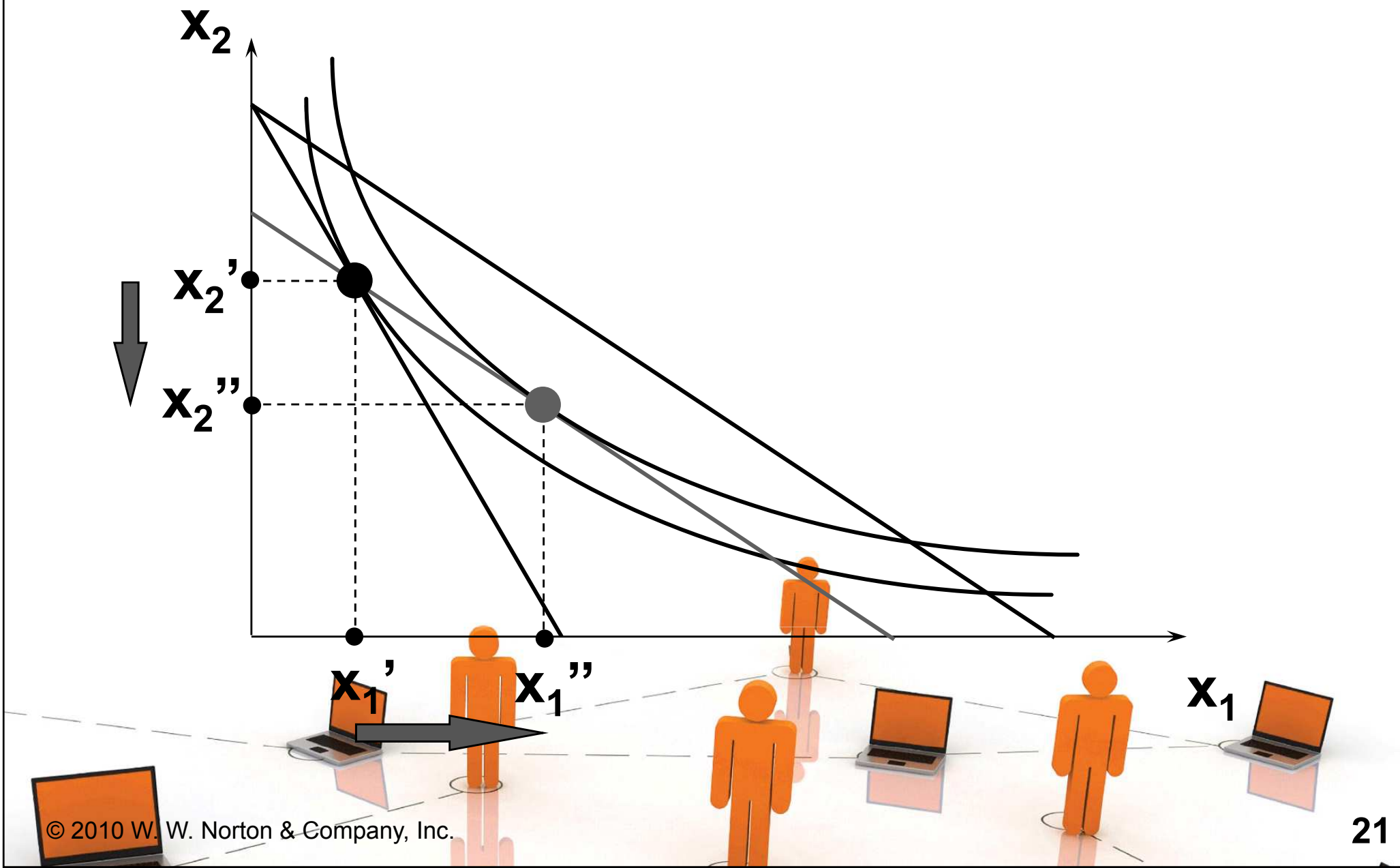

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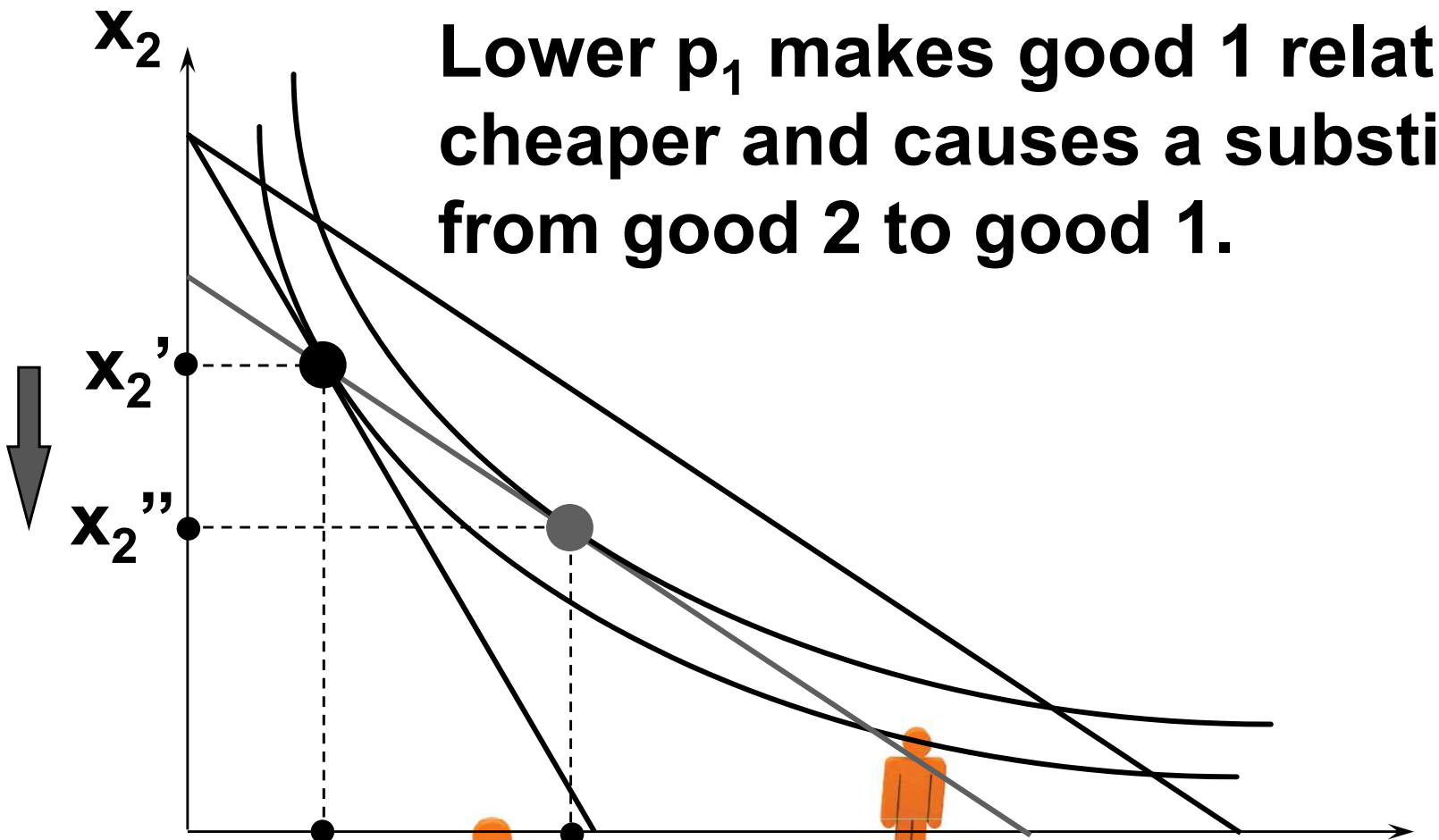
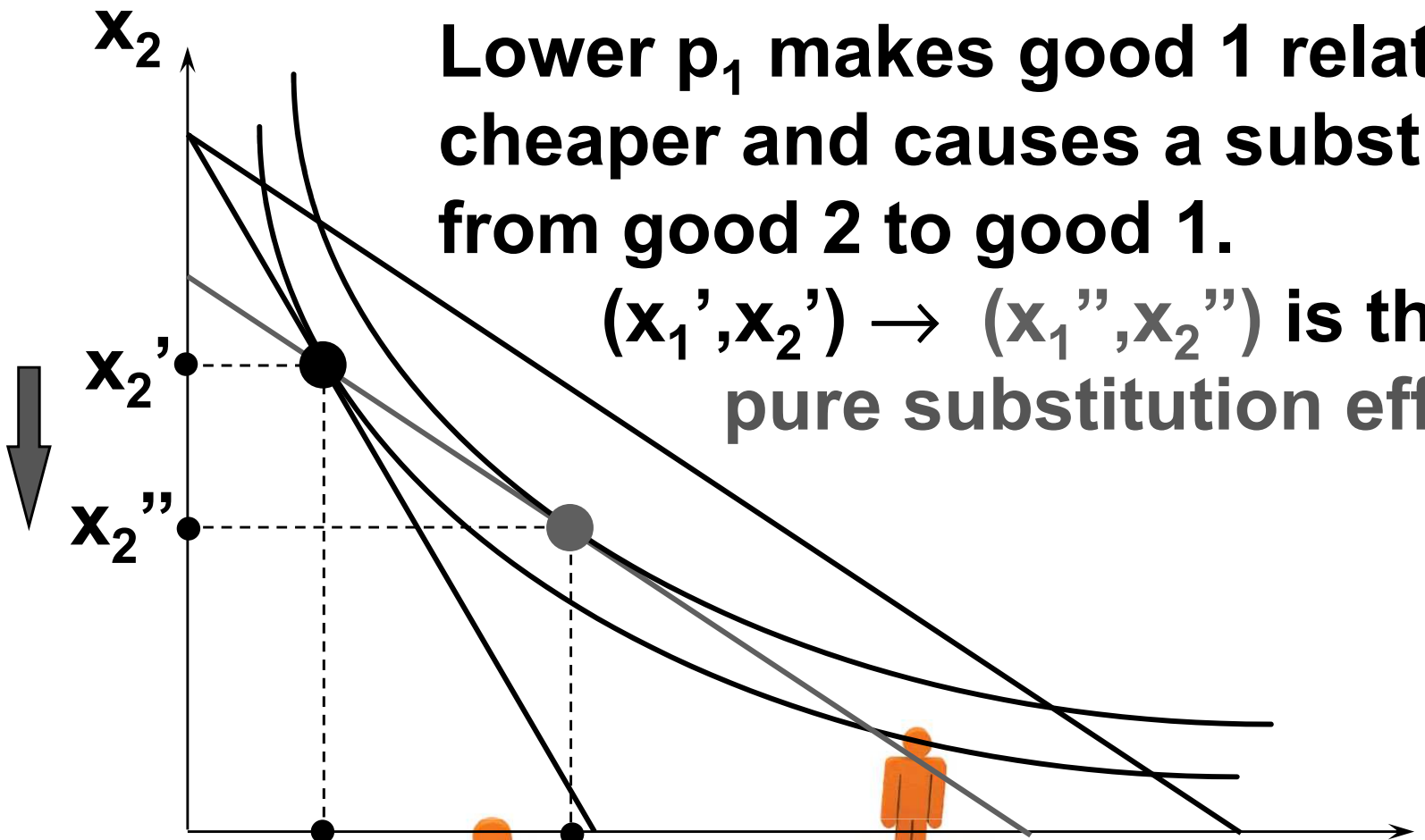


Lower p_1 makes good 1 relatively cheaper and causes a substitution from good 2 to good 1.

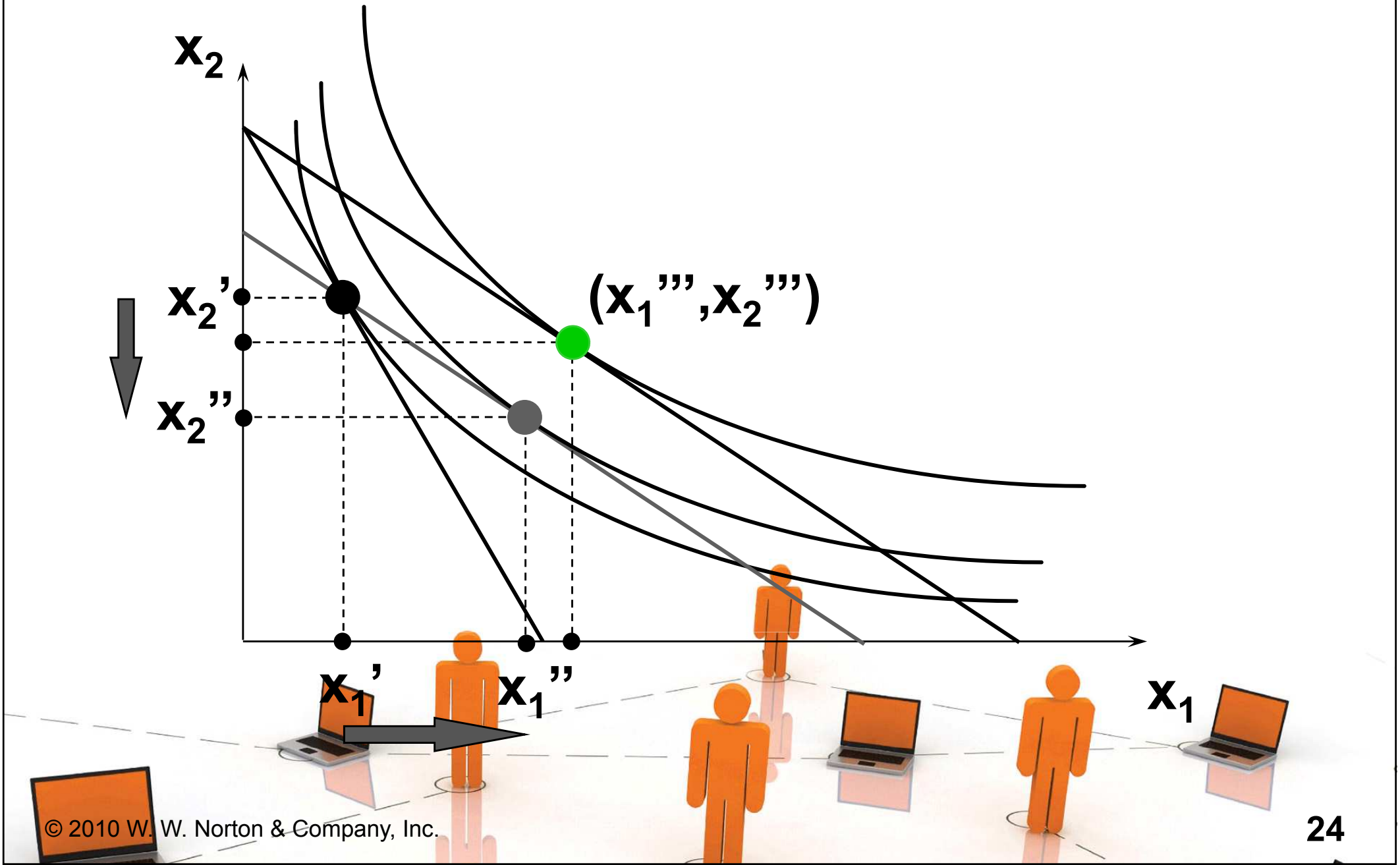
Pure Substitution Effect Only



Lower p_1 makes good 1 relatively cheaper and causes a substitution from good 2 to good 1.

$(x_1', x_2') \rightarrow (x_1'', x_2'')$ is the pure substitution effect.

And Now The Income Effect



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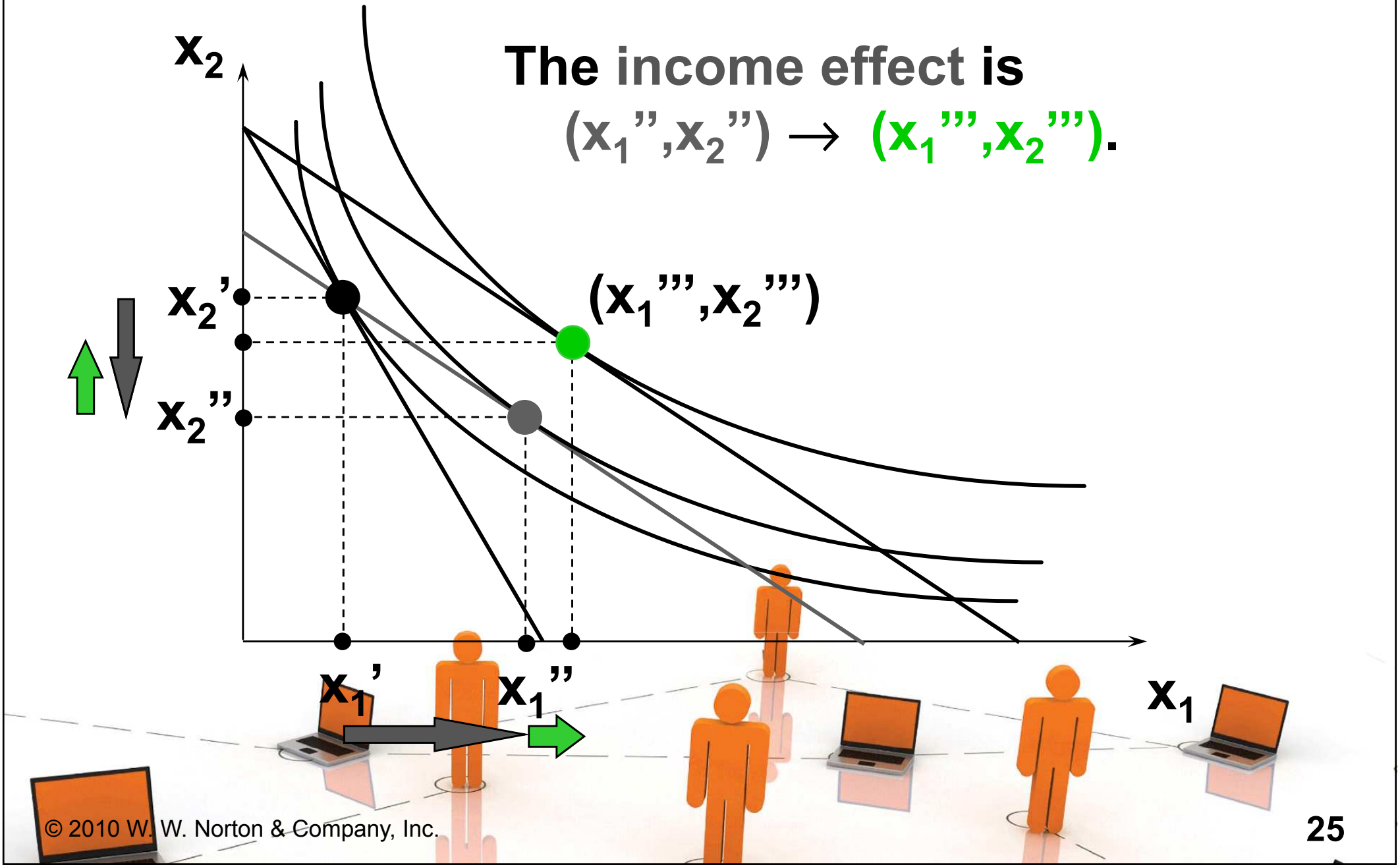
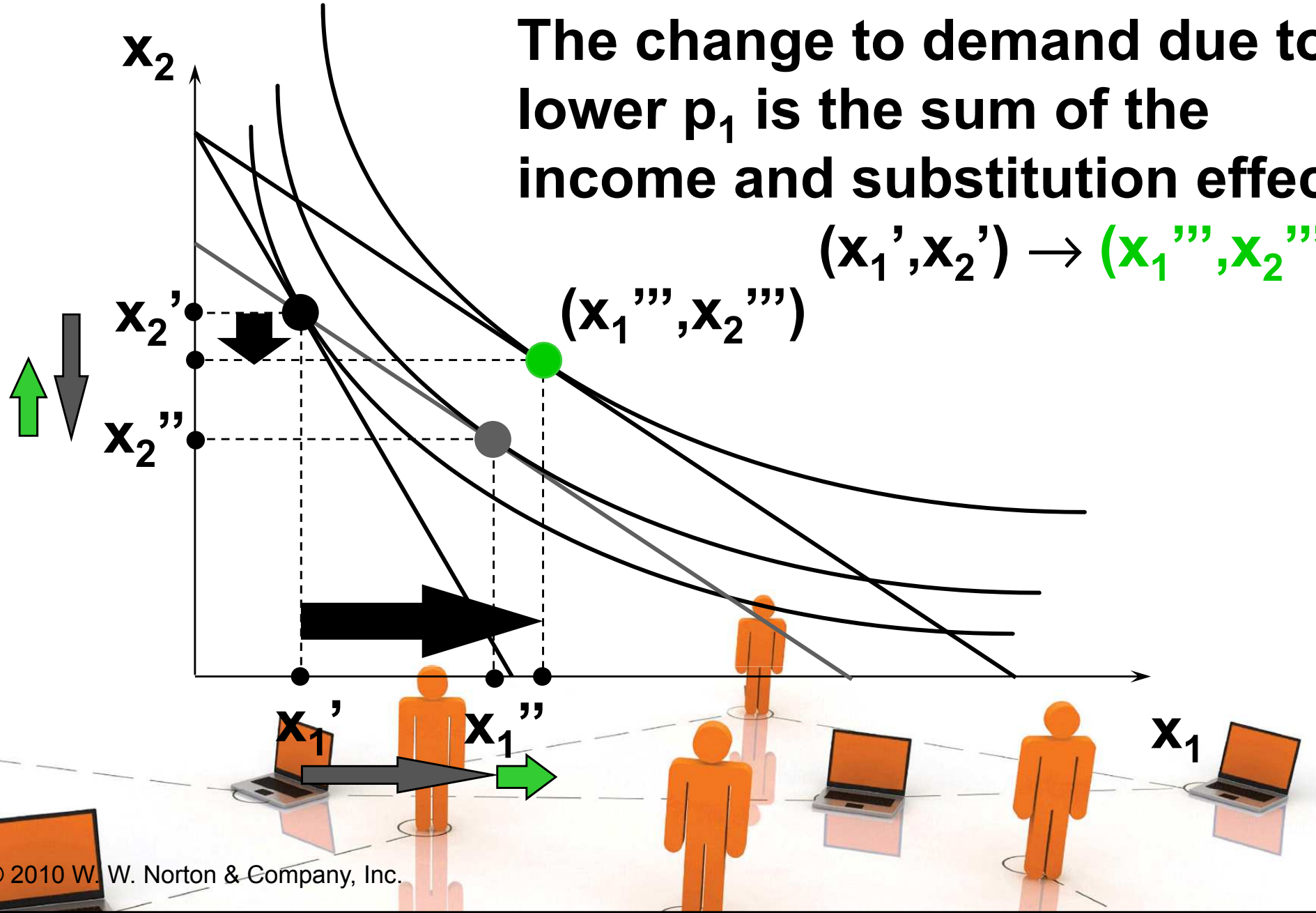


The Overall Change in Demand

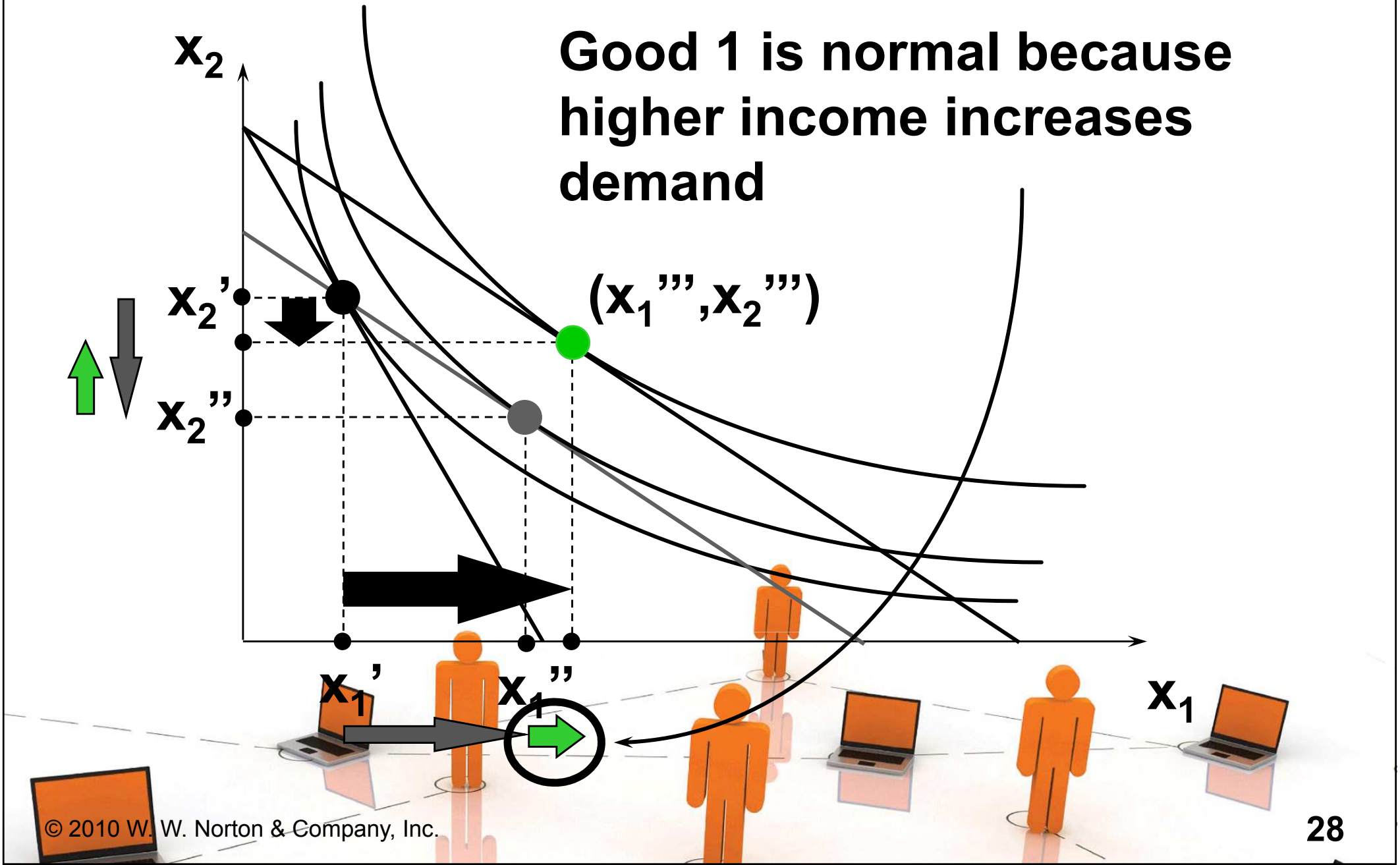
The change to demand due to lower p_1 is the sum of the income and substitution effects, $(x_1', x_2') \rightarrow (x_1''', x_2''')$.



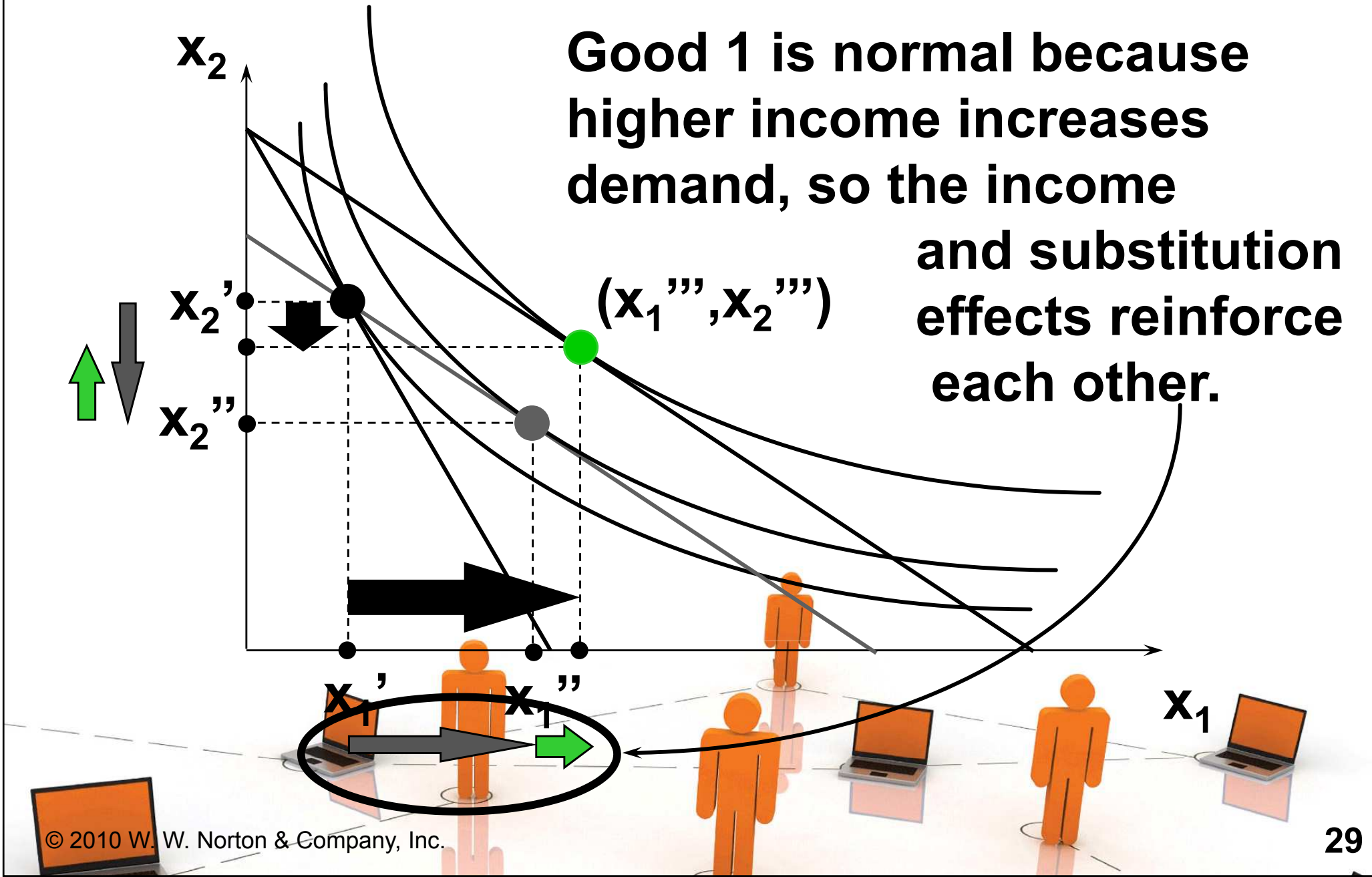
Slutsky's Effects for Normal Goods

- **Most goods are normal (i.e. demand increases with income).**
- **The substitution and income effects reinforce each other when a normal good's own price changes.**

Slutsky's Effects for Normal Goods



Slutsky's Effects for Normal Goods



Good 1 is normal because higher income increases demand, so the income and substitution effects reinforce each other.

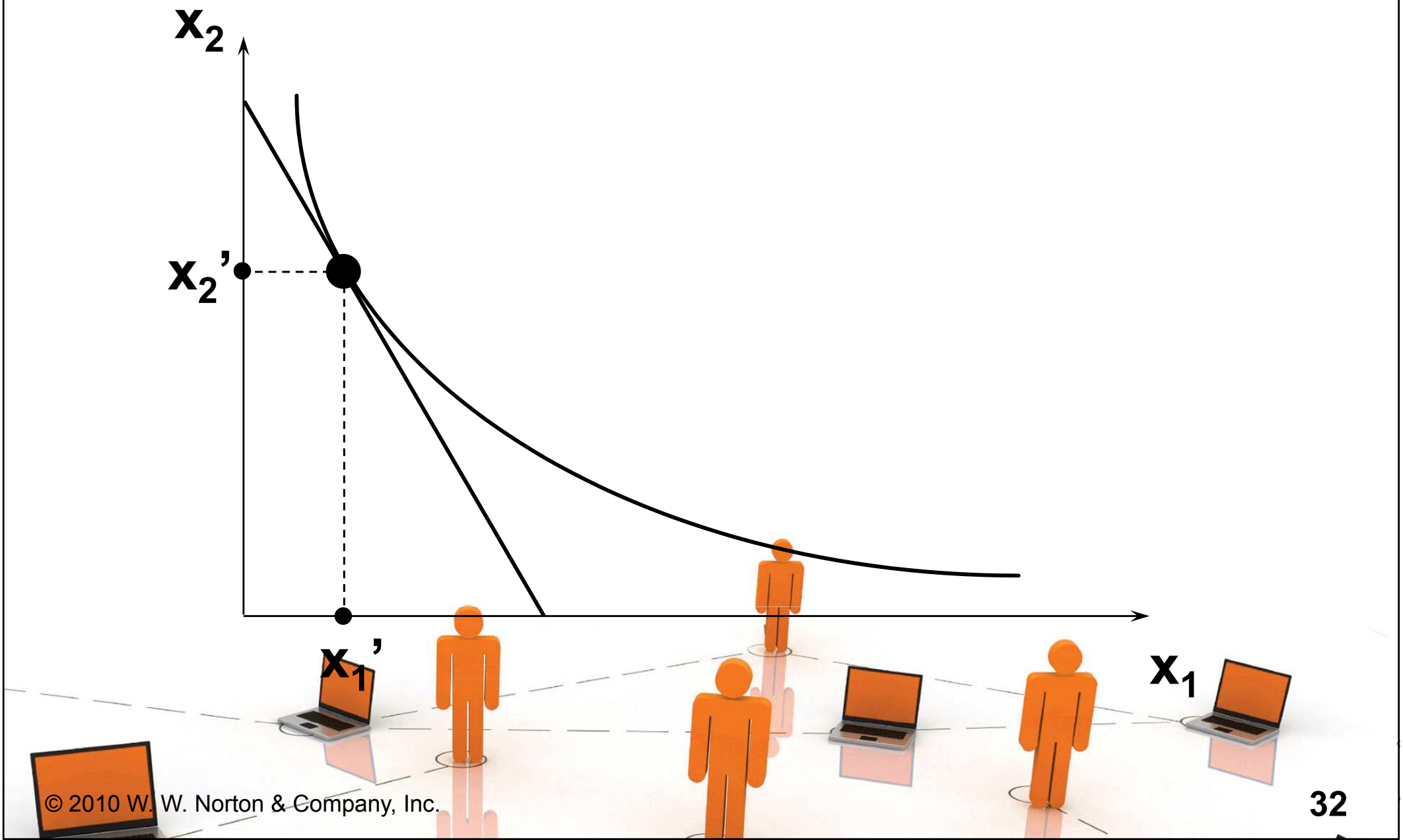
Slutsky's Effects for Normal Goods

- **Since both the substitution and income effects increase demand when own-price falls, a normal good's ordinary demand curve slopes down.**
- **The Law of Downward-Sloping Demand therefore always applies to normal goods.**

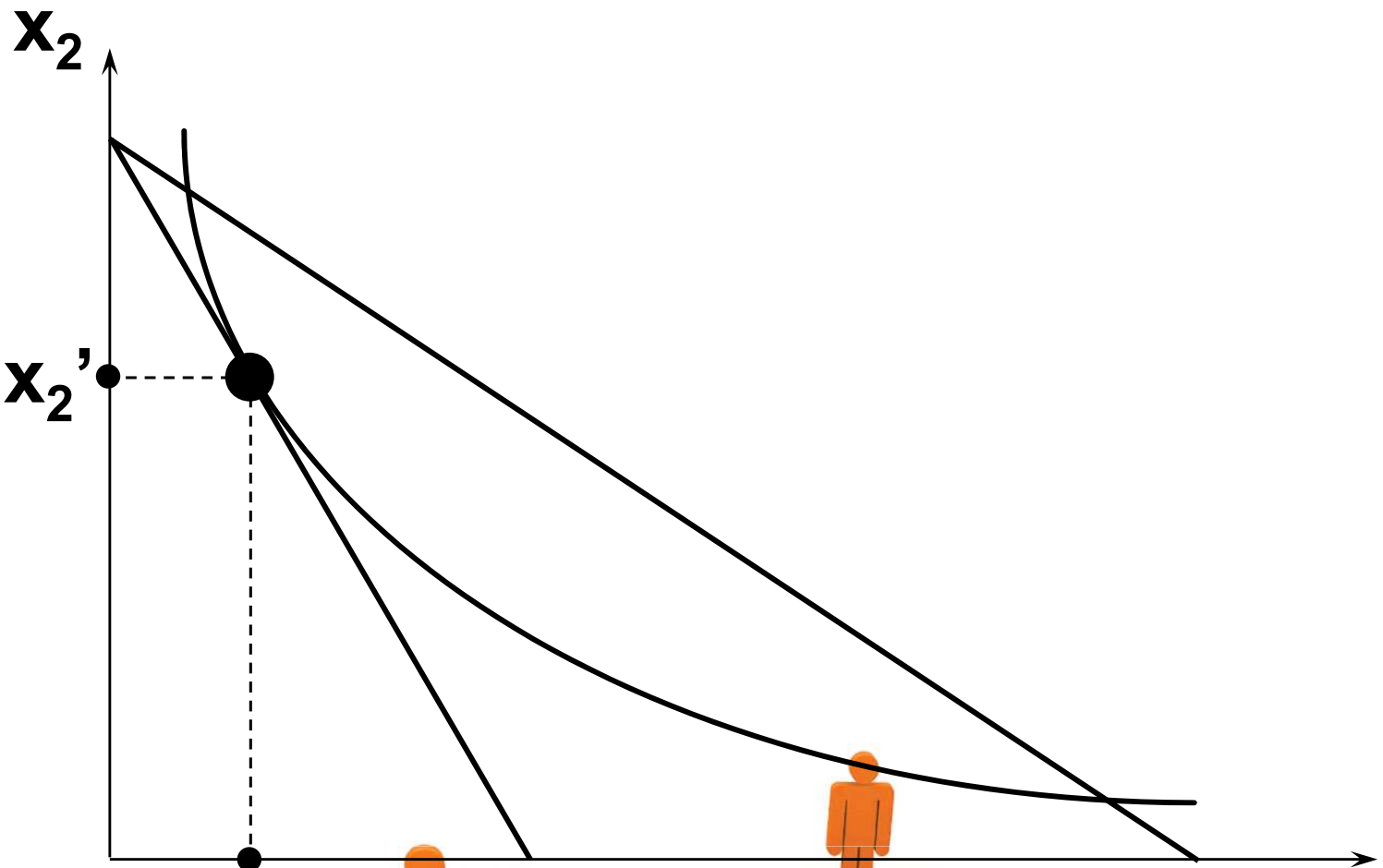
Slutsky's Effects for Income-Inferior Goods

- **Some goods are income-inferior (i.e. demand is reduced by higher income).**
- **The substitution and income effects oppose each other when an income-inferior good's own price changes.**

Slutsky's Effects for Income-Inferior Goods



Slutsky's Effects for Income-Inferior Goods



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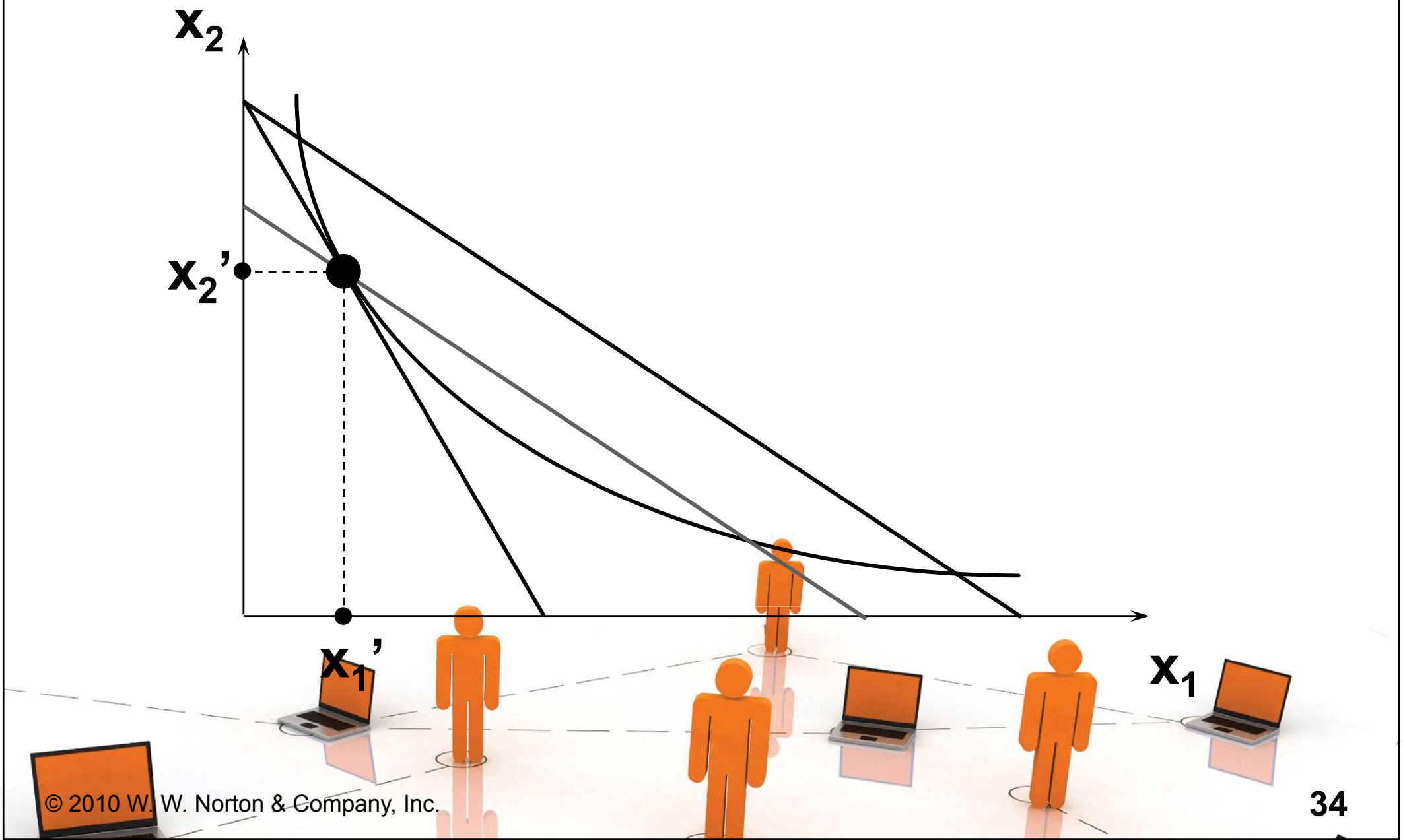

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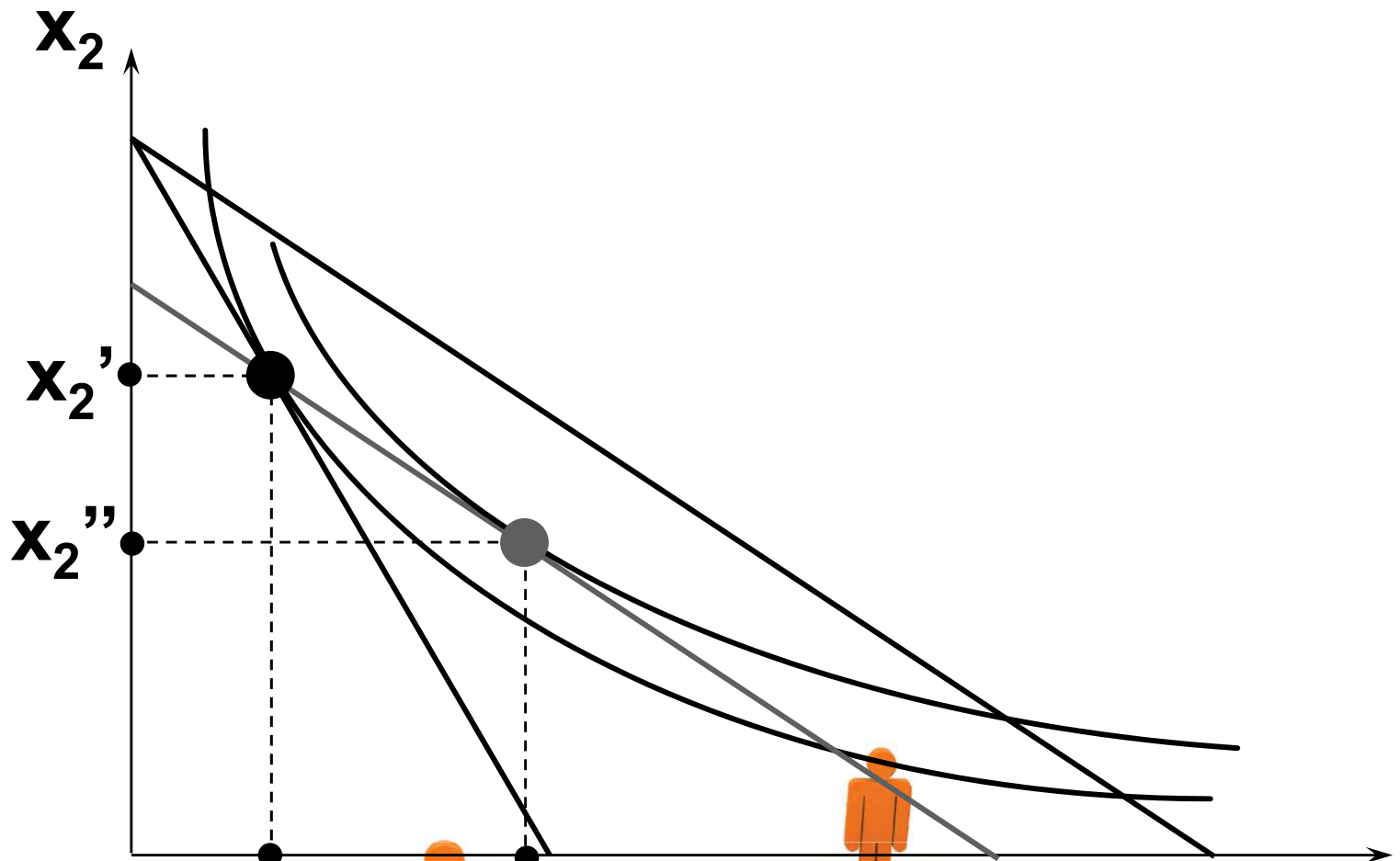
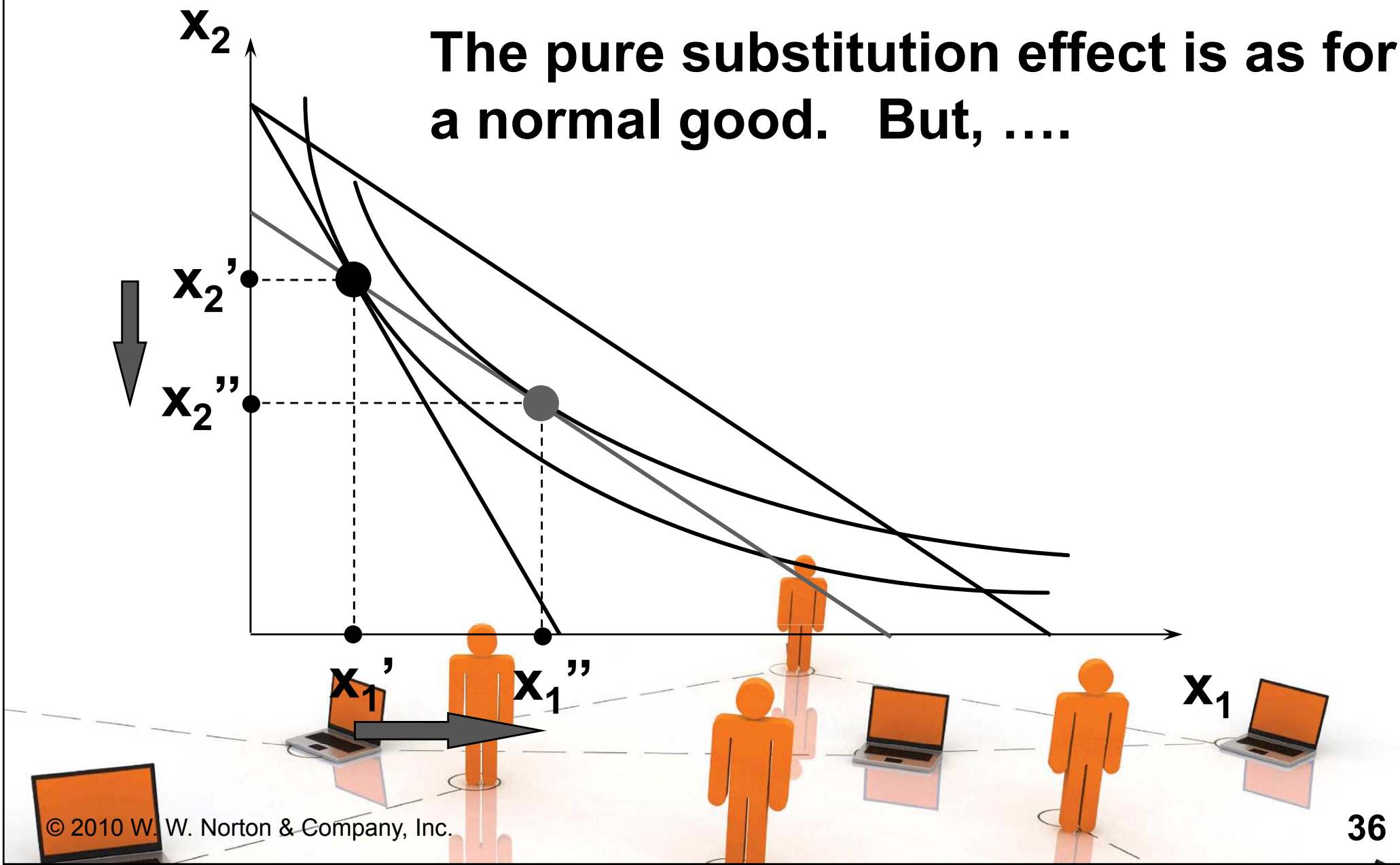


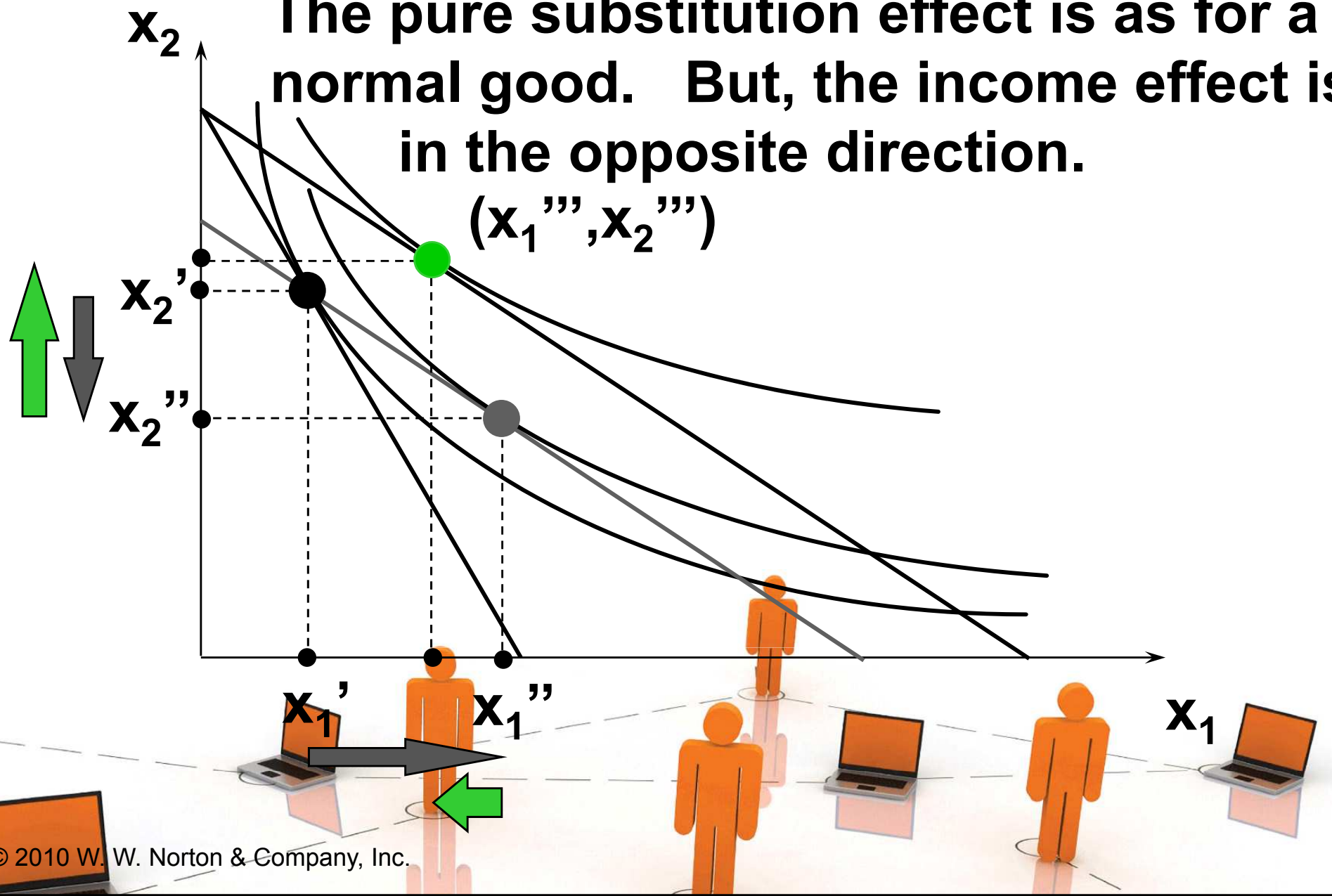
Slutsky's Effects for Income-Inferior Goods



The pure substitution effect is as for a normal good. But, ….

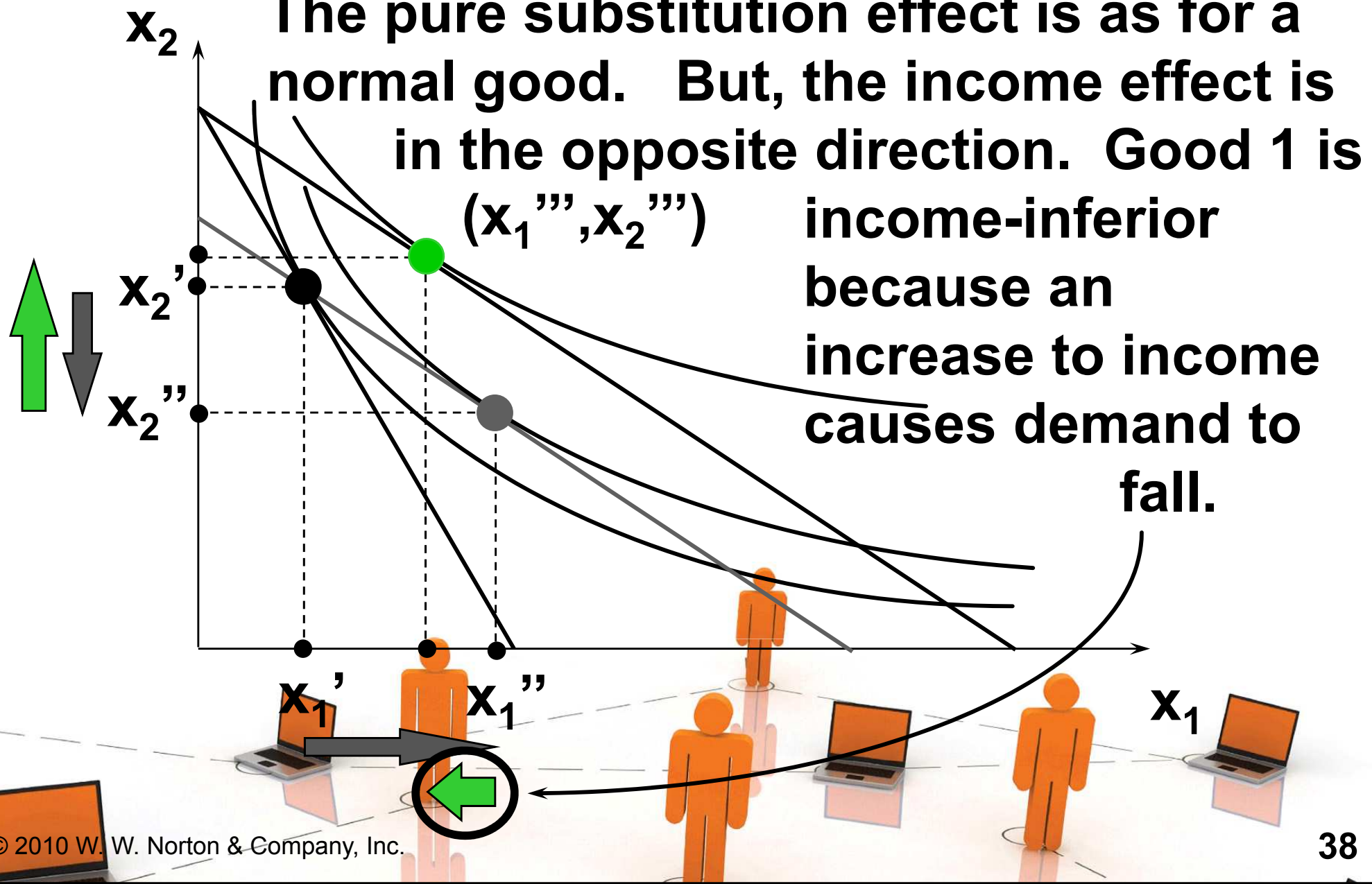
Slutsky's Effects for Income-Inferior Goods

The pure substitution effect is as for a normal good. But, the income effect is in the opposite direction.

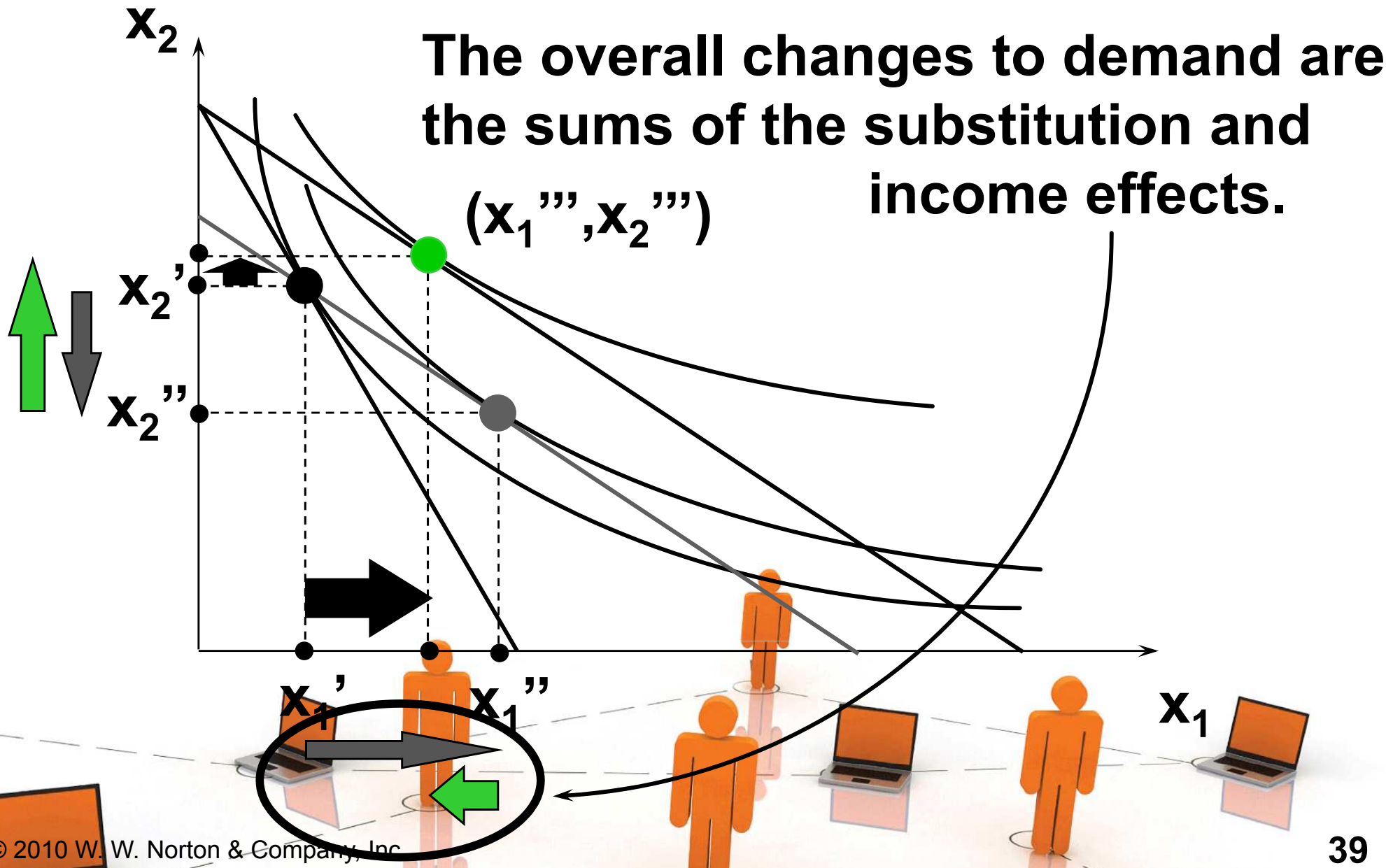


Slutsky's Effects for Income-Inferior Goods

The pure substitution effect is as for a normal good. But, the income effect is in the opposite direction. Good 1 is income-inferior because an increase to income causes demand to fall.



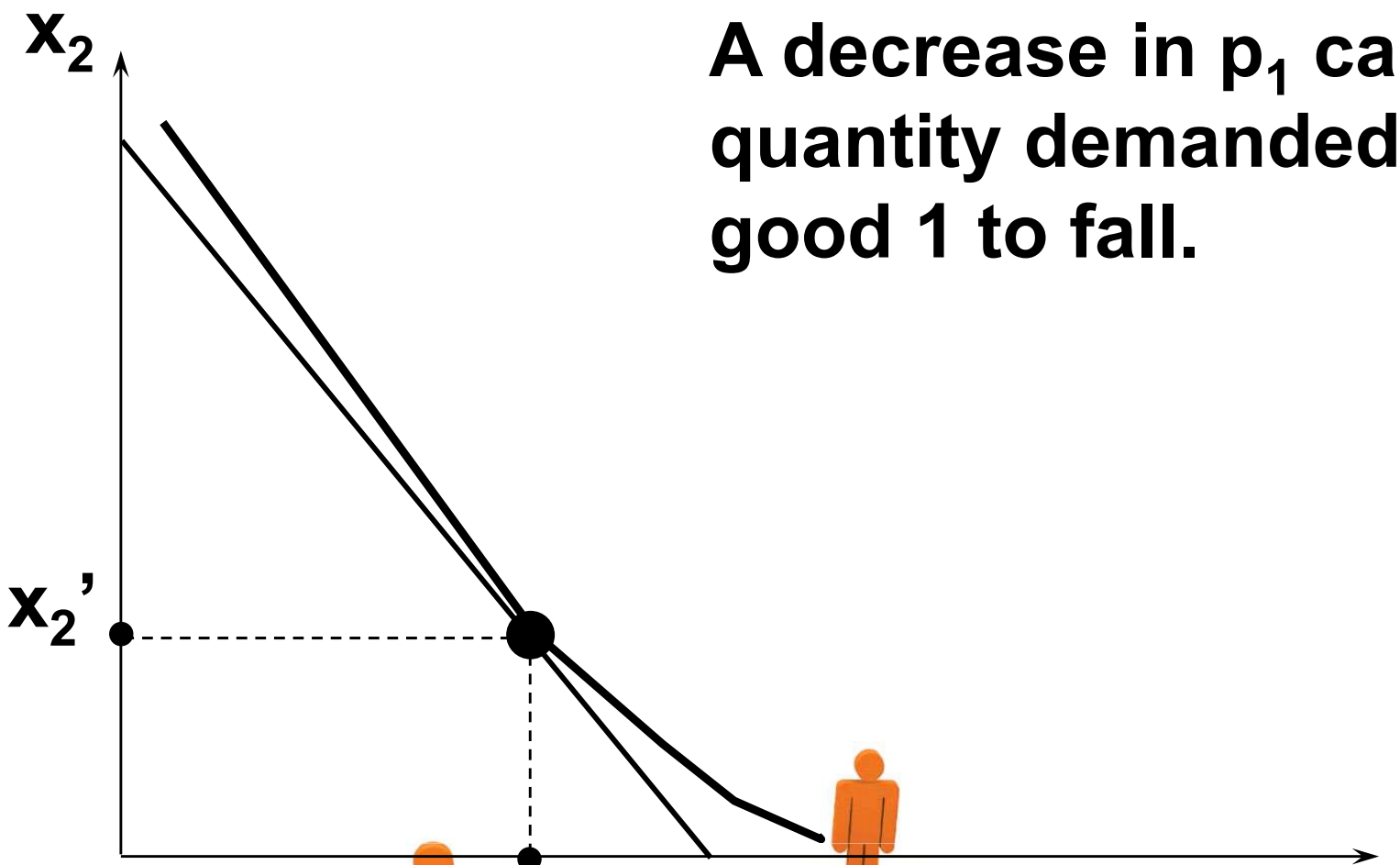
Slutsky's Effects for Income-Inferior Goods



Giffen Goods

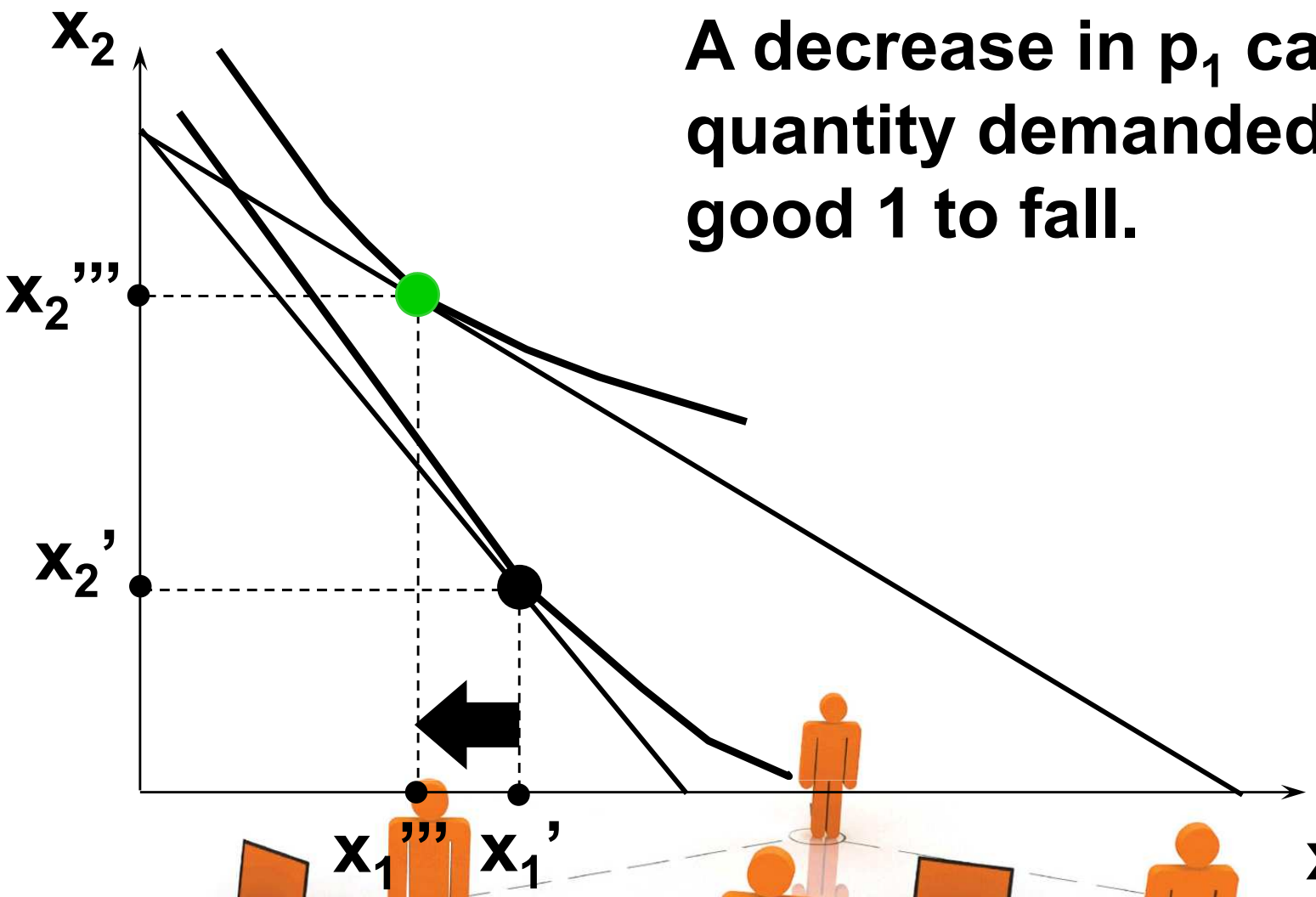
- **In rare cases of extreme income-inferiority, the income effect may be larger in size than the substitution effect, causing quantity demanded to fall as own-price rises.**
- **Such goods are Giffen goods.**

Slutsky's Effects for Giffen Goods



A decrease in p_1 causes quantity demanded of good 1 to fall.

Slutsky's Effects for Giffen Goods



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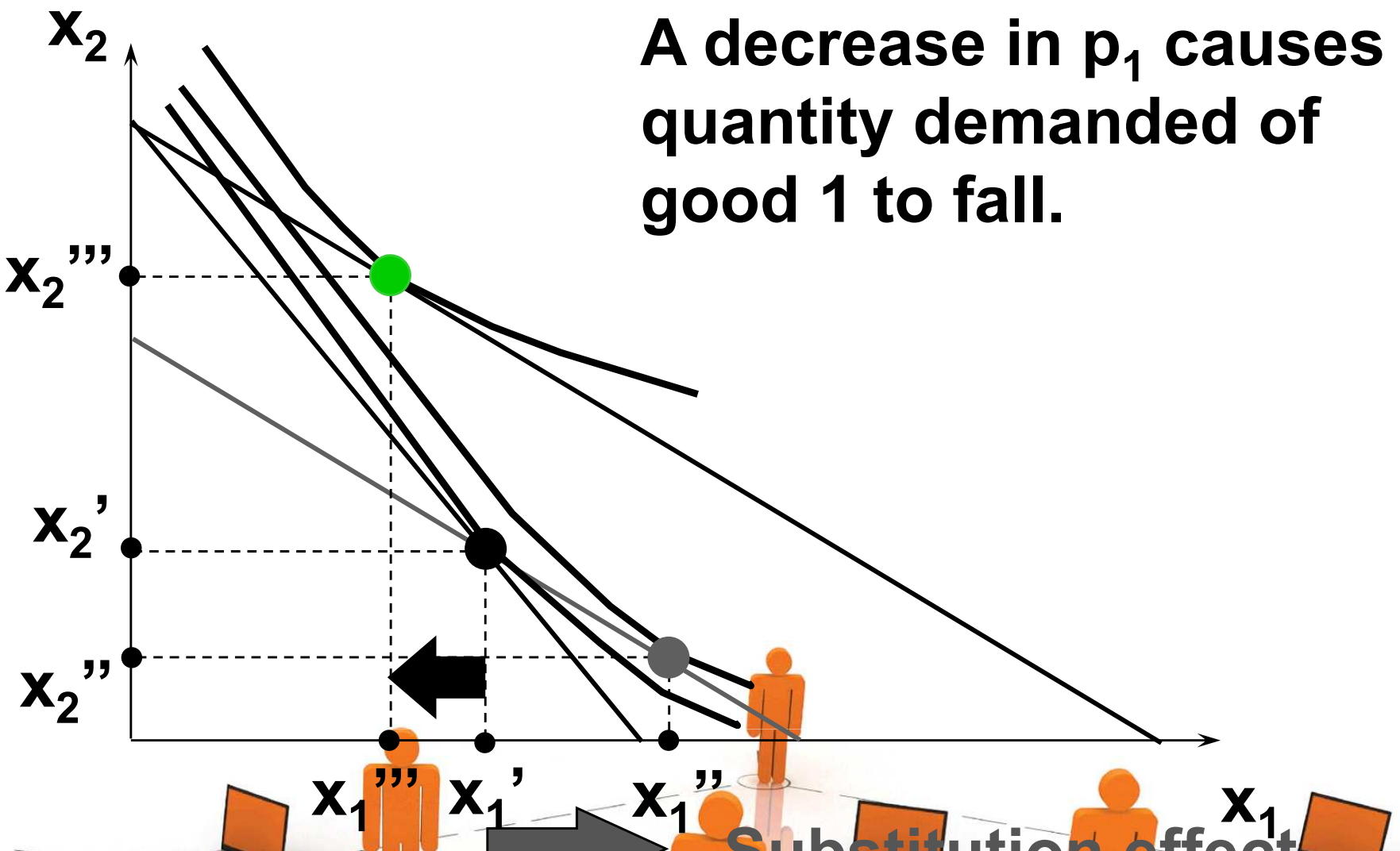

A decrease in p_1 causes quantity demanded of good 1 to fall.

Slutsky's Effects for Giffen Goods

- **Slutsky's decomposition of the effect of a price change into a pure substitution effect and an income effect thus explains why the Law of Downward-Sloping Demand is violated for extremely income-inferior goods.**