Microeconomics A

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Requirements for passing the course

- Passing the course, two elements:
  - 1st element: exam (70 points)
  - 2nd element: grade from tutorials (30 points).

To pass you need:

- at least 35 points from the exam AND
- at least 50 points from exam + tutorials

Final test

- The exam will be held the exam period,
- The exam – multiple choice test (five answers proposed to each question, only one is correct).
- The test must be passed with a positive result (at least 50% of the total points).
- It will be organized only once. Absence at the final test (on the required date) results in failing the course (NC grade).

Exam Retake

- In the retake exam period (in March) there will be only one final test organized, taking the same form as the normal final test.
- All participants of the course are allowed to take the retake test, regardless of the result from the first approach.
- Taking the retake exam cancels the result obtained from the first approach.

Other rules

- **All tests are organized according to the rules of "Zero tolerance for cheating".**
- **There are no other possibilities (neither new dates nor rules) for passing the course.**

Grades

Points	Grade
<0,50)	2
<50,60)	3
<60,70)	3,5
<70,80)	4
<80,90)	4,5
<90,100>	5

Readings

- Varian H. R., Intermediate Microeconomics: A Modern Approach, W. W. Norton & Co Ltd., New York, London, 2006

- Bergstrom T. C., Varian, H. R., Workouts in Intermediate Microeconomics, W. W. Norton & Co Ltd., New York, London, 2006

- **http://coin.wne.uw.edu.pl/~mgiergiczny/**
- **Tests examples**
- **password: mgwne**

Extra Reading

- Besanko, D., Braeutigam, R. R., Microeconomics, John Wiley&Sons, 2008
- Browning, E. K., Zupan, M. A., Microeconomics: Theory and Applications, John Wiley&Sons, 2009
- Case, K. E., Fair, R. C., Principles of Microeconomics, Prentice Hall, 2006
- Hubbard, G., O'Brien, A. P., Microeconomics, Prentice Hall, 2007
- Jehle, G. A., Reny, P. J., Advanced Microeconomic Theory, Addison Wesley, 2000
- Mansfield E., Yohe G., Microeconomics: Theory and Applications, W. W. Norton & Co, 2004
- McConnell, C. R., Brue, S. L., Microeconomics, Irwin/McGraw-Hill, 2008

- Nicholson, W., Microeconomic Theory: Basic Principles and Extensions, South-Western College Pub, 2004
- O'Sullivan, A., Sheffrin, S., Perez, S., Microeconomics: Principles, Applications, and Tools, Prentice Hall, 2006
- Perloff, J. M., Microeconomics: Theory and Applications with Calculus, Addison-Wesley, 2007
- Pindyck, R. S., Rubinfeld, D. L., Microeconomics, Pearson Education, Inc., New Jersey, 2005
- Mas-Colell A., Whinston M. D., Green J., Microeconomic Theory, Oxford University Press, New York, Oxford 1995

Mathematics

- Sydsaeter, K. P., Hammond, A., Essential Mathematics for Economic Analysis, Prentice Hall, 2008
- Sydsaeter, K. P., Hammond, A., Seierstad, A., Strom., A., Further Mathematics for Economic Analysis, Prentice Hall, 2008

Chapter Two

Budgetary and Other Constraints on Choice

Consumption Choice Sets

- A **consumption choice set** is the collection of all consumption choices available to the consumer.
- What constrains consumption choice?
  - Budgetary, time and other resource limitations.

Budget Constraints

- A **consumption bundle** containing x_1 units of commodity 1, x_2 units of commodity 2 and so on up to x_n units of commodity n is denoted by the vector $(x_1, x_2, \ldots, x_n)$.
- Commodity prices are $p_1, p_2, \ldots, p_n$.

Budget Constraints

- **Q: When is a consumption bundle $(x_1, \ldots, x_n)$ affordable at given prices $p_1, \ldots, p_n$?**

Budget Constraints

- **Q: When is a bundle $(x_1, \ldots, x_n)$ affordable at prices $p_1, \ldots, p_n$?**
- **A: When**

$$p_1x_1 + \ldots + p_nx_n \leq m$$

where *m* is the consumer's (disposable) income.

Budget Constraints

- **The bundles that are only just affordable form the consumer's budget constraint. This is the set**

$$\{ (x_1,\ldots,x_n) \mid x_1 \geq 0, \ldots, x_n \geq 0 \text{ and } p_1x_1 + \ldots + p_nx_n = m \}.$$

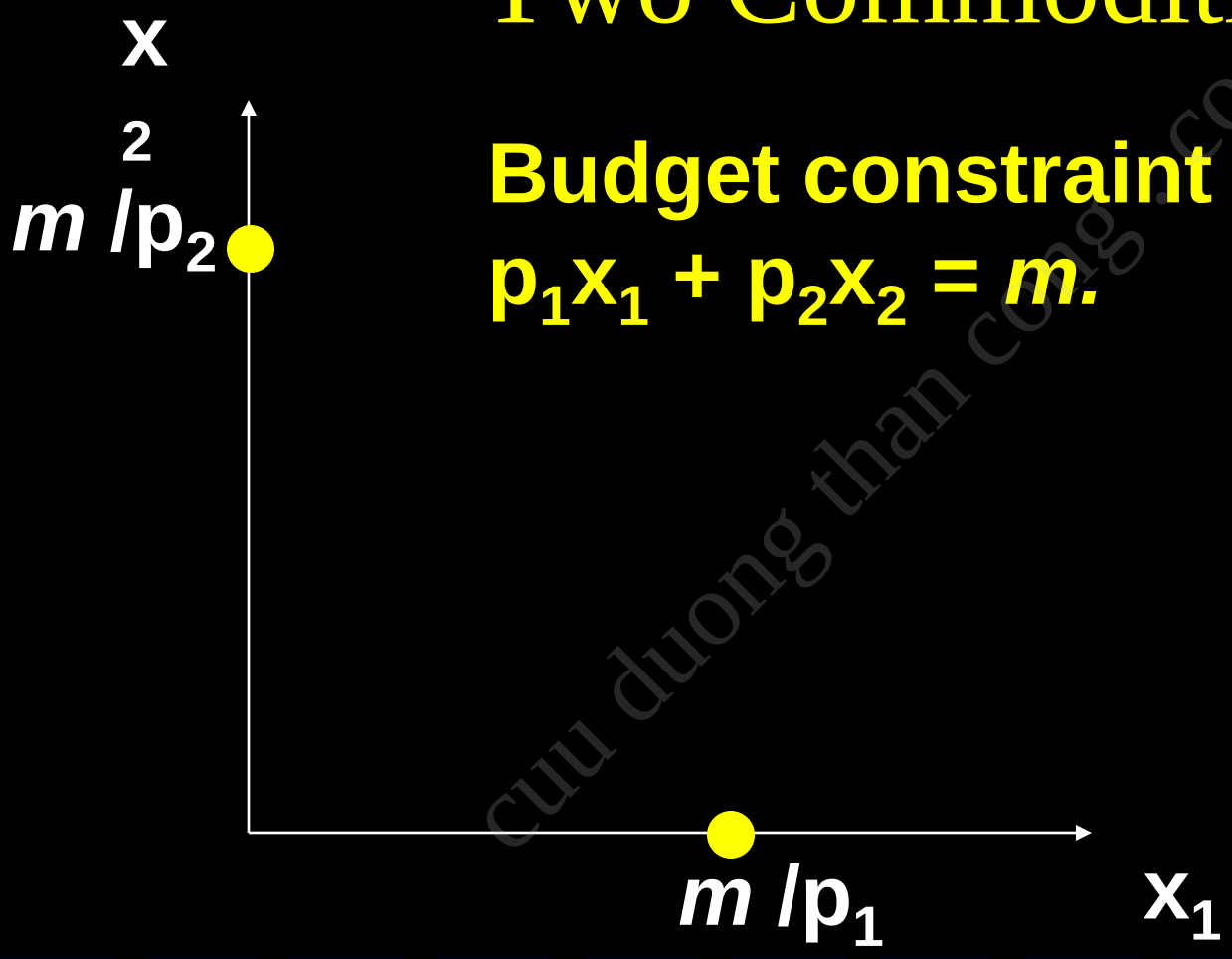
Budget Constraints

- The consumer's **budget set** is the set of all affordable bundles;

  $B(p_1, \ldots, p_n, m) =$

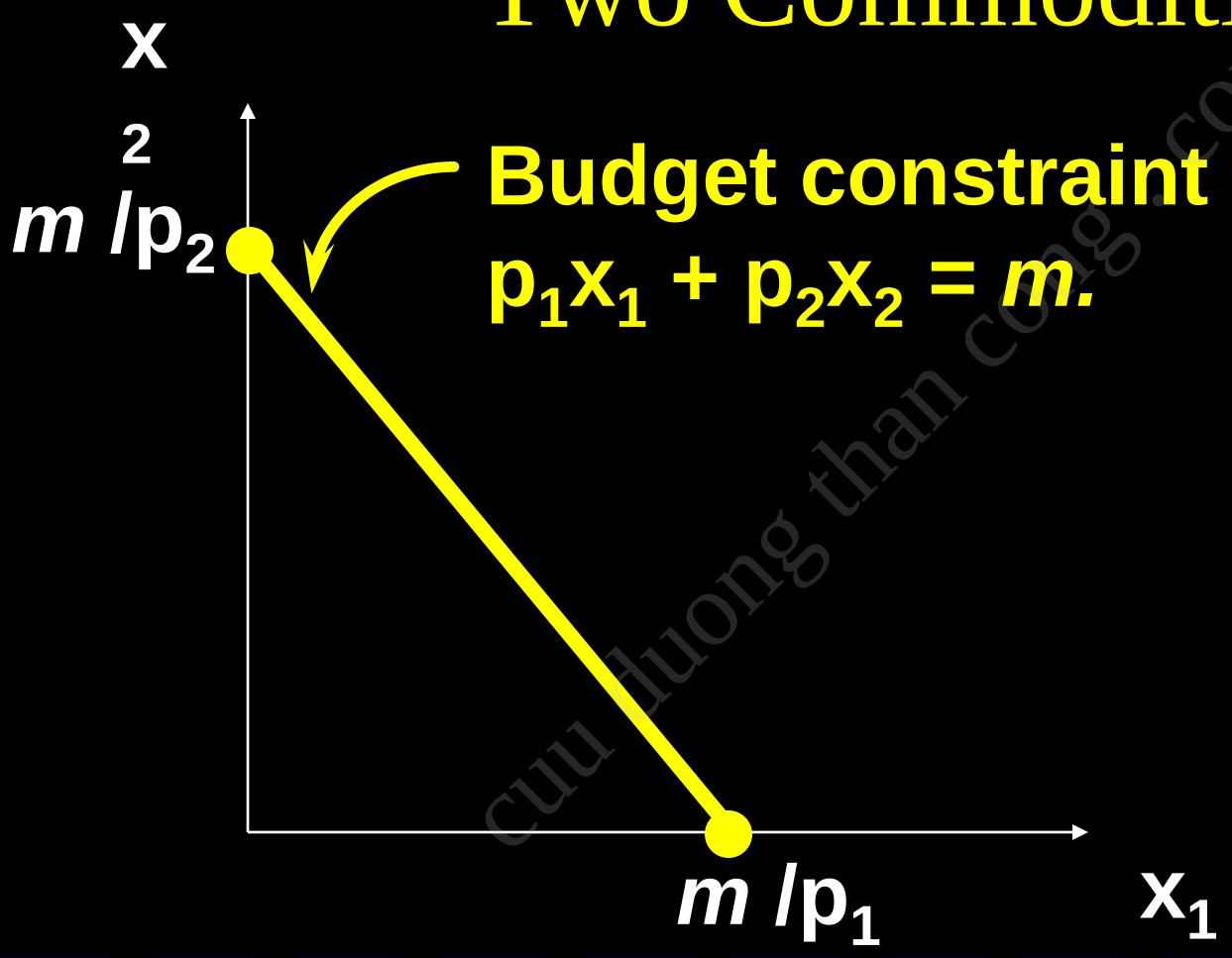
  $\{ (x_1, \ldots, x_n) \mid x_1 \geq 0, \ldots, x_n \geq 0 \text{ and } p_1x_1 + \ldots + p_nx_n \leq m \}$
- The budget constraint is the upper boundary of the budget set.

Budget Set and Constraint for Two Commodities



Budget constraint is
$p_1x_1 + p_2x_2 = m.$

Budget Set and Constraint for Two Commodities



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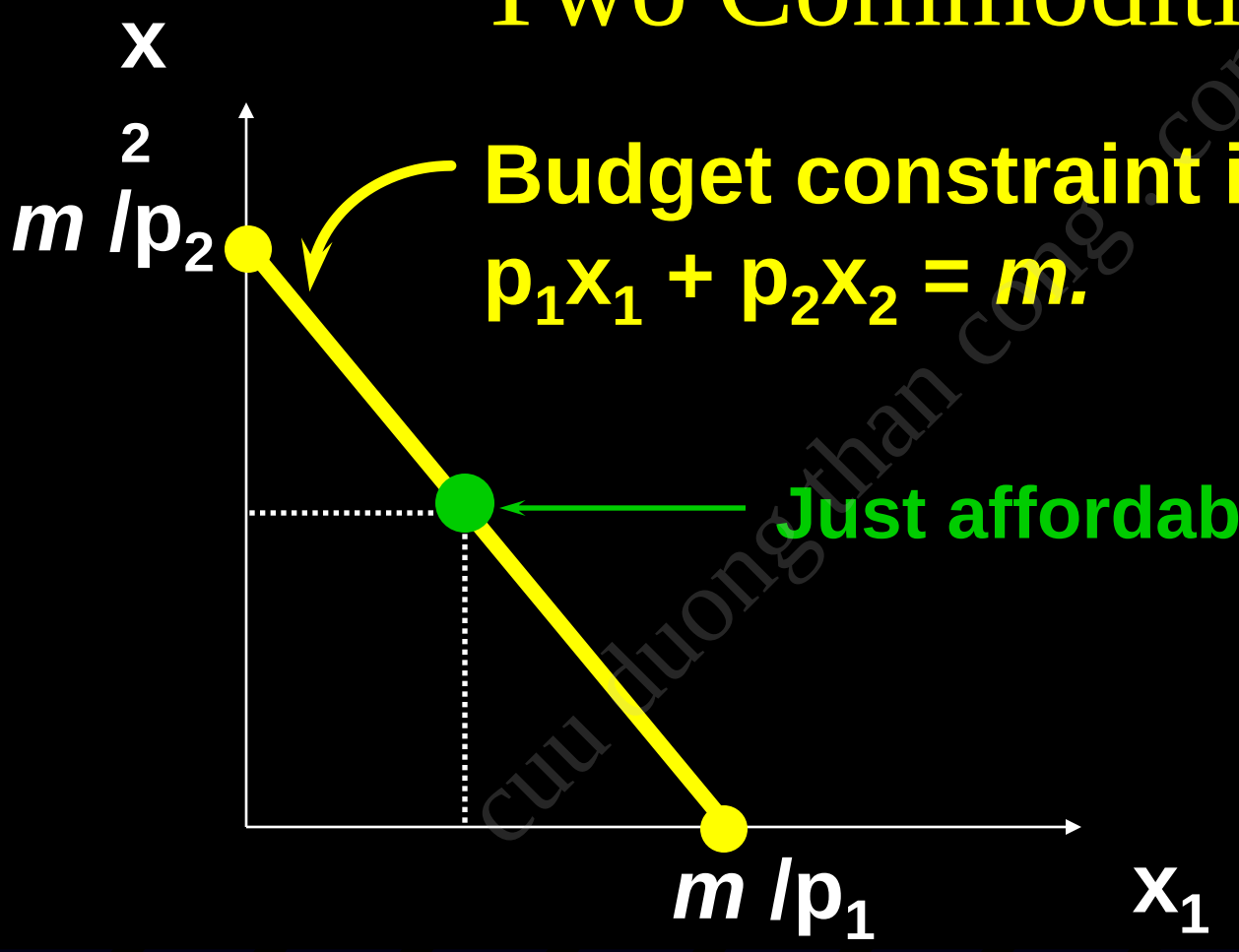

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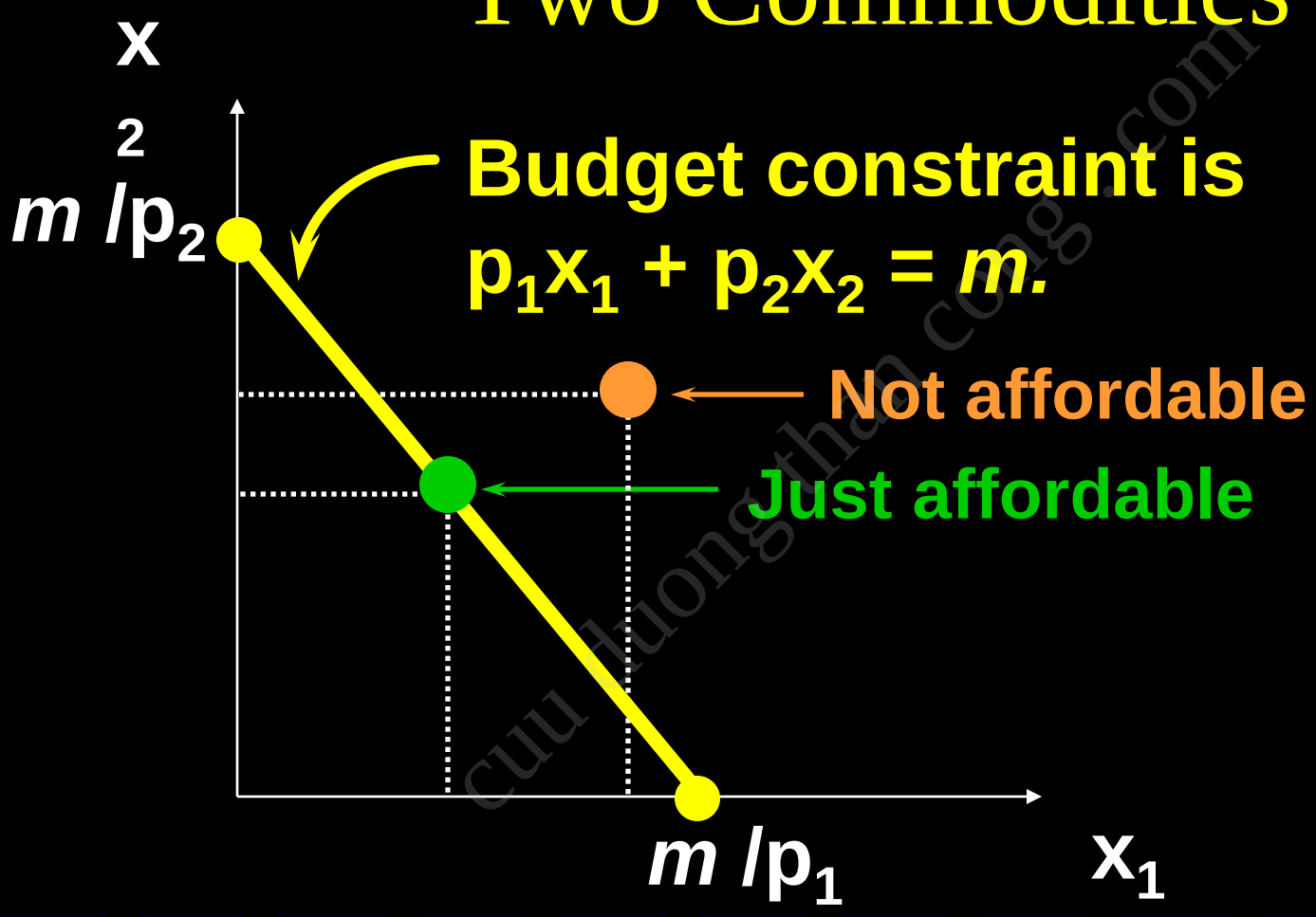

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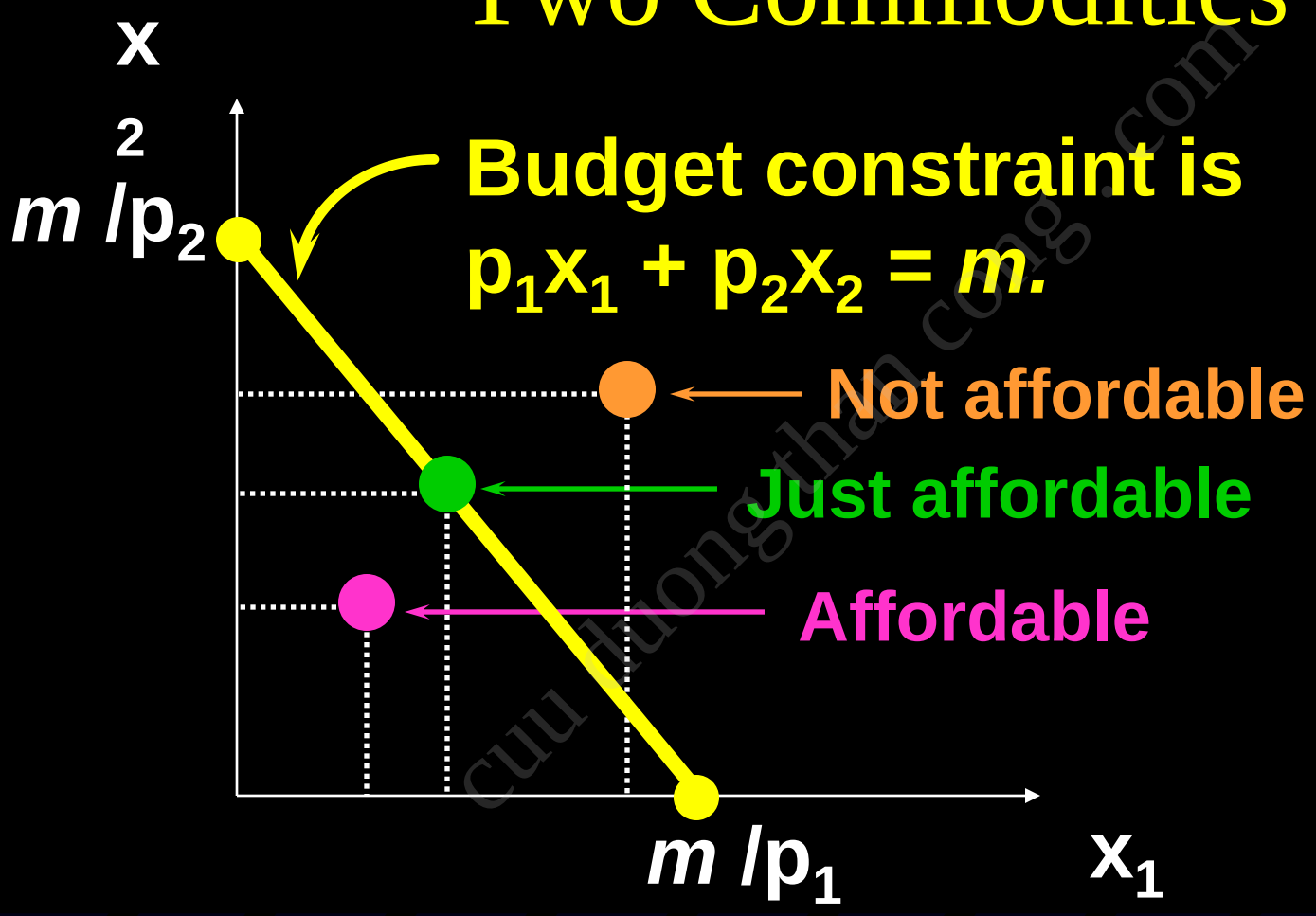

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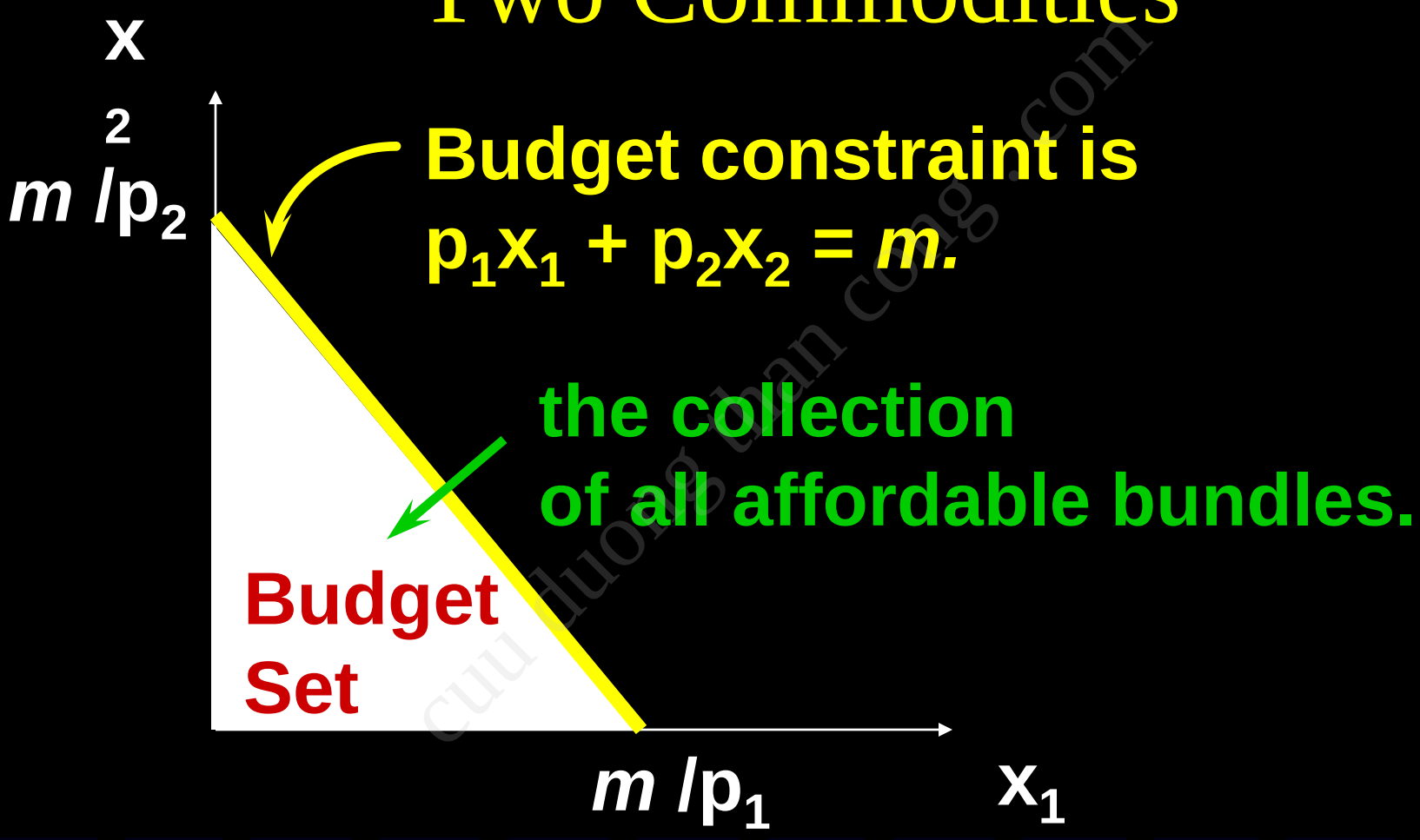

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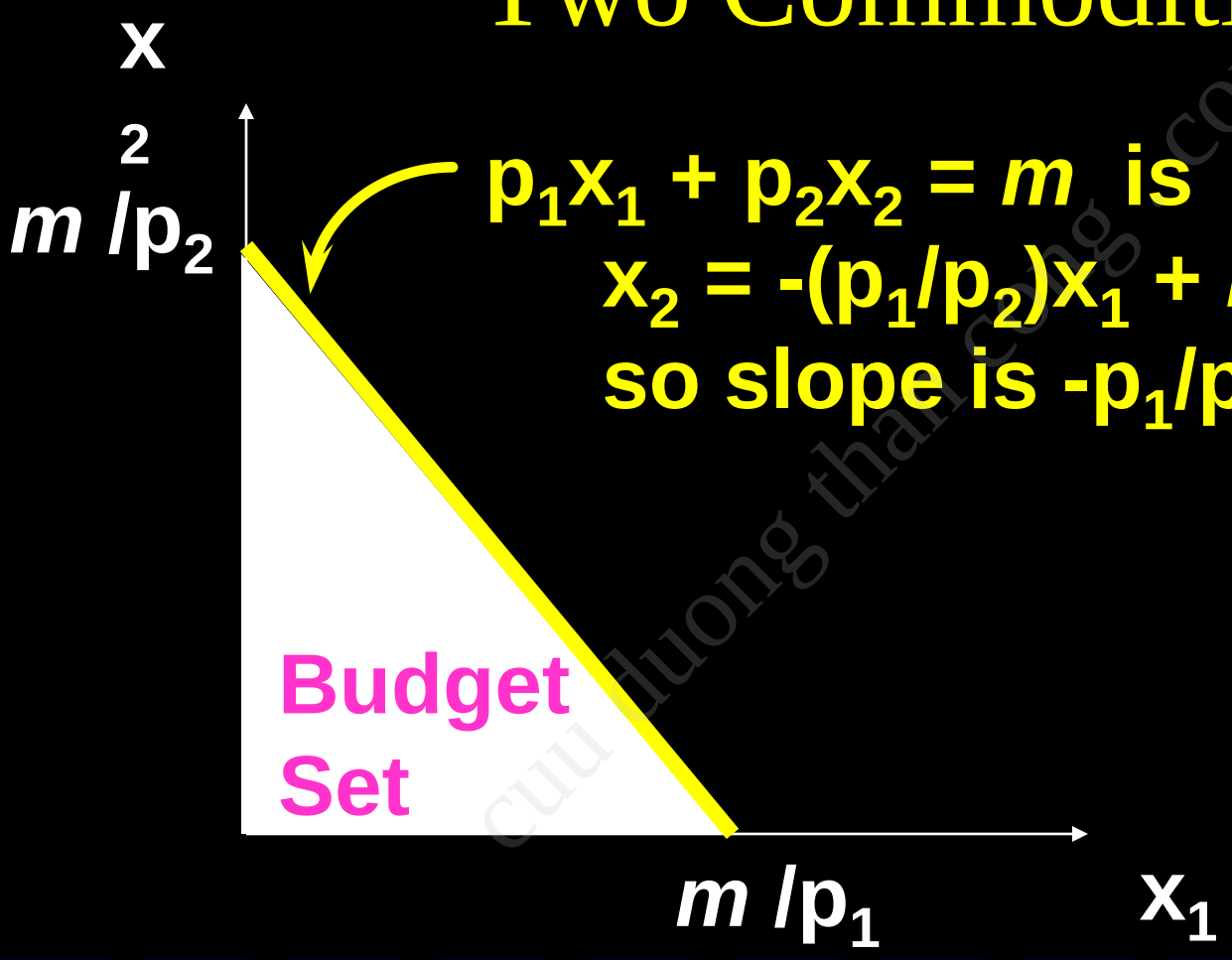


$p_1x_1 + p_2x_2 = m$ is

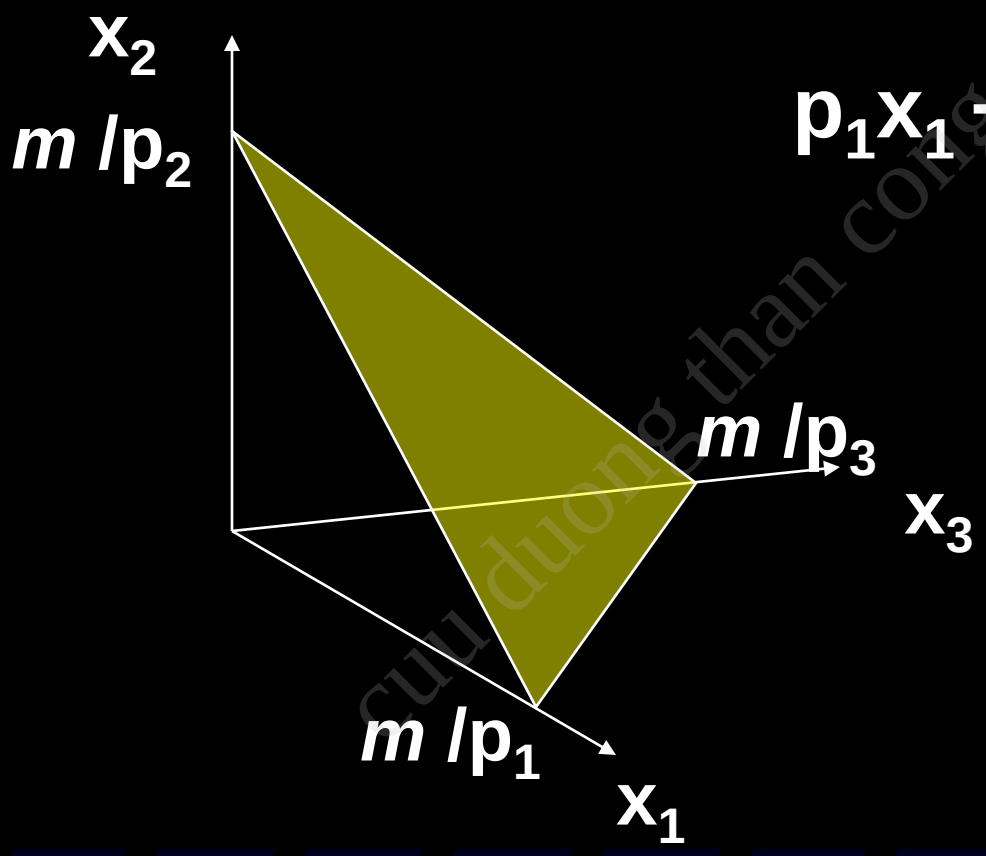
$x_2 = -(p_1/p_2)x_1 + m/p_2$

so slope is $-p_1/p_2$.

Budget Constraints

- **If n = 3 what do the budget constraint and the budget set look like?**

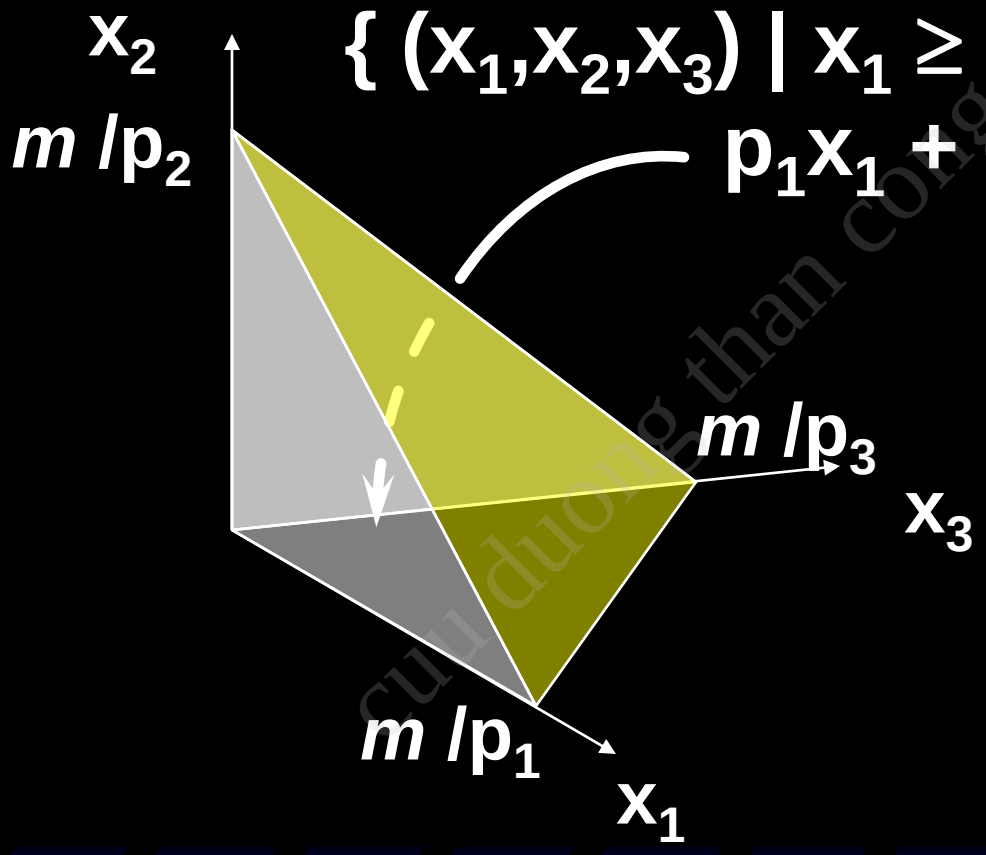
Budget Constraint for Three Commodities



$$p_1x_1 + p_2x_2 + p_3x_3 = m$$

Budget Set for Three Commodities

$\{ (x_1,x_2,x_3) \mid x_1 \geq 0, x_2 \geq 0, x_3 \geq 0$ and $p_1x_1 + p_2x_2 + p_3x_3 \leq m\}$



Budget Constraints

- For n = 2 and x_1 on the horizontal axis, the constraint's slope is $-p_1/p_2$. What does it mean?

$$x_2 = -\frac{p_1}{p_2}x_1 + \frac{m}{p_2}$$

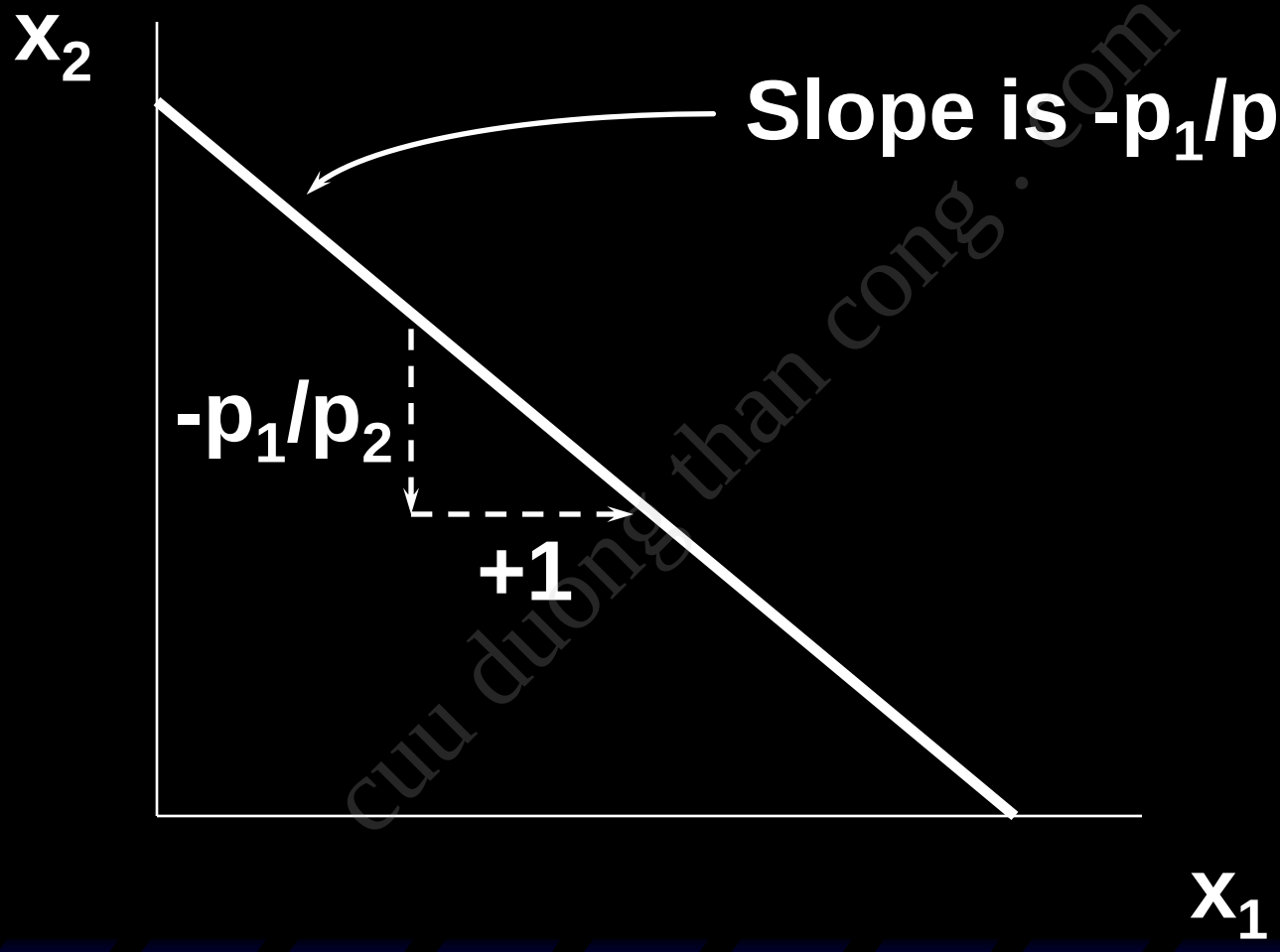
Budget Constraints

- For n = 2 and x_1 on the horizontal axis, the constraint's slope is $-p_1/p_2$. What does it mean?

$$x_2 = -\frac{p_1}{p_2}x_1 + \frac{m}{p_2}$$

- Increasing x_1 by 1 must reduce x_2 by p_1/p_2.

Budget Constraints



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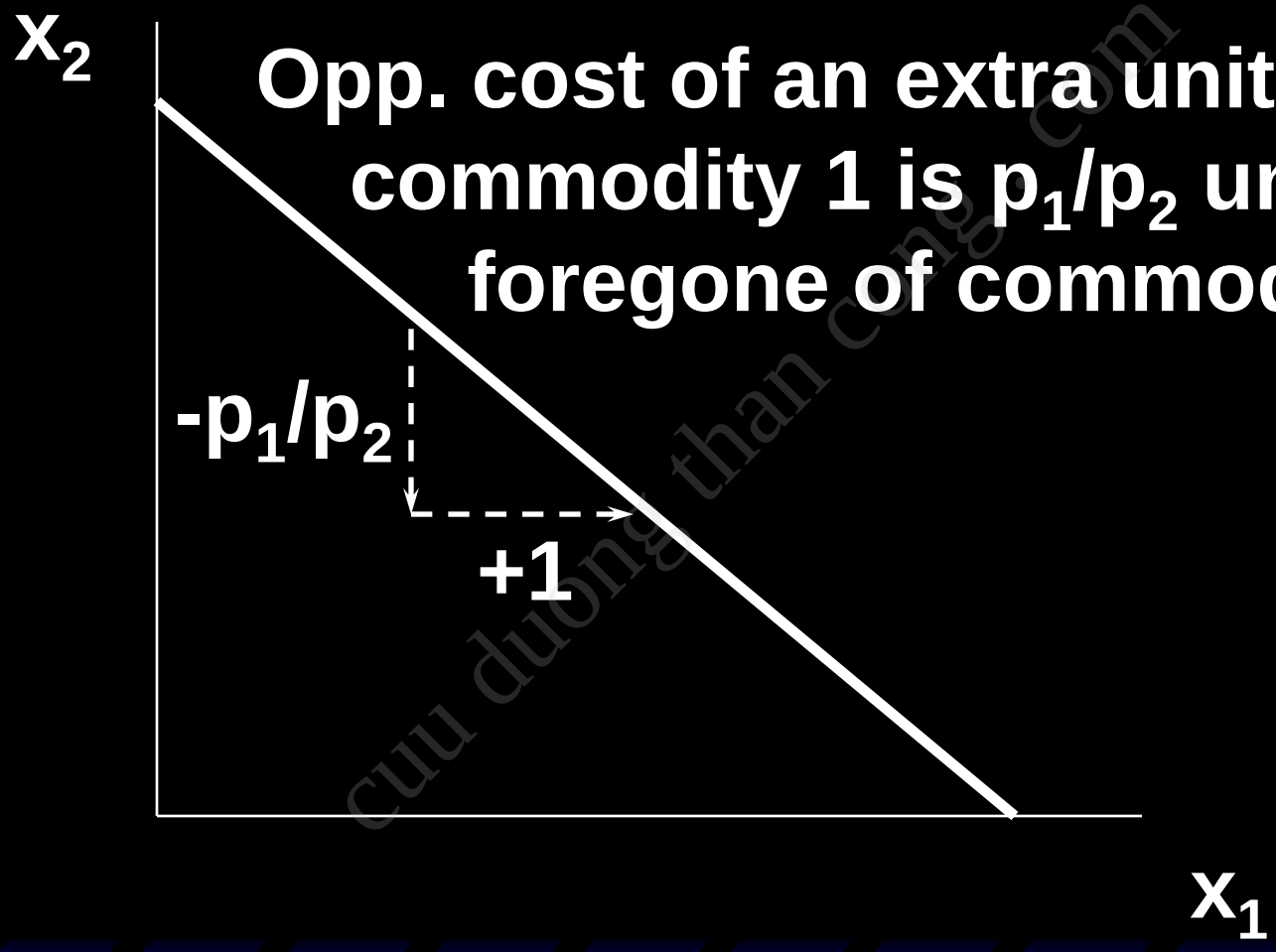
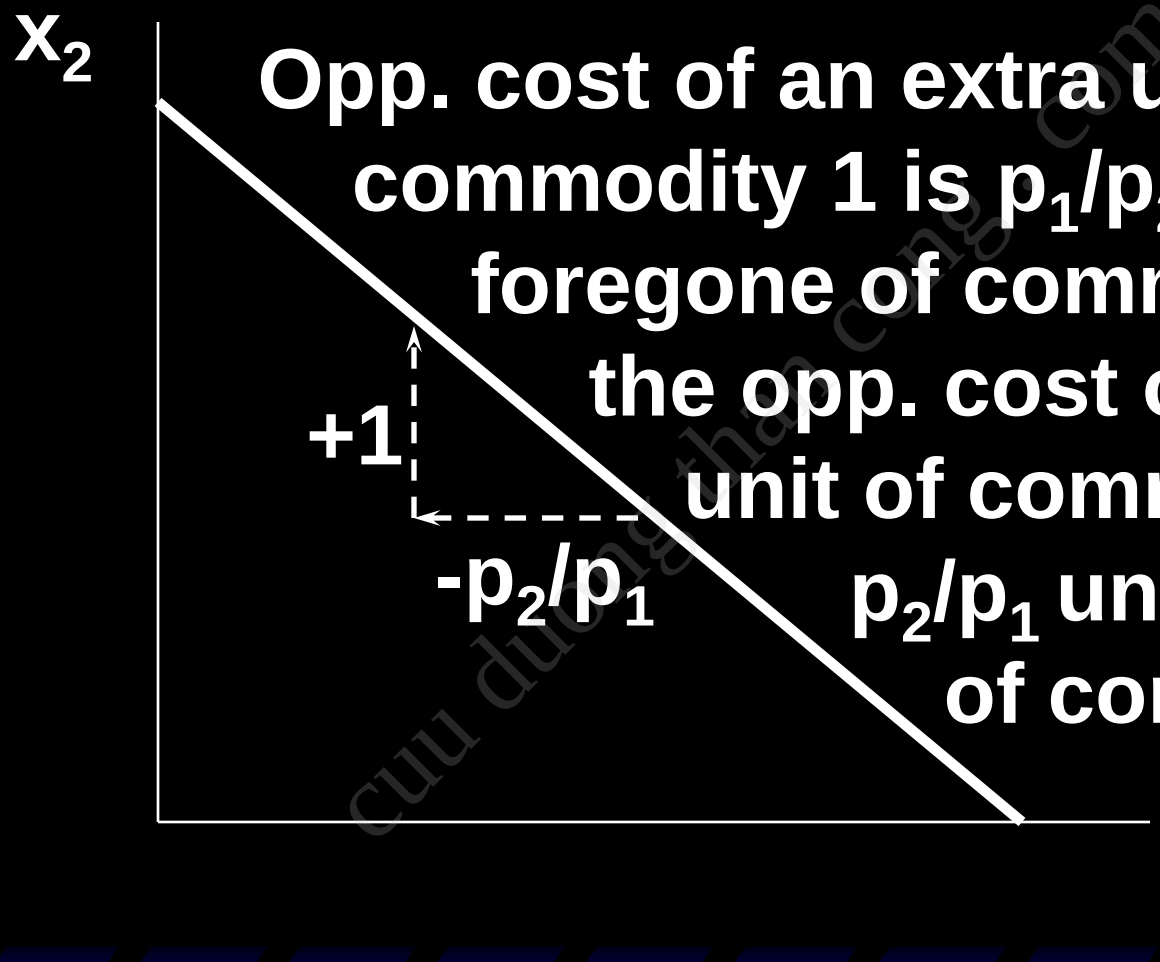


Budget Constraints

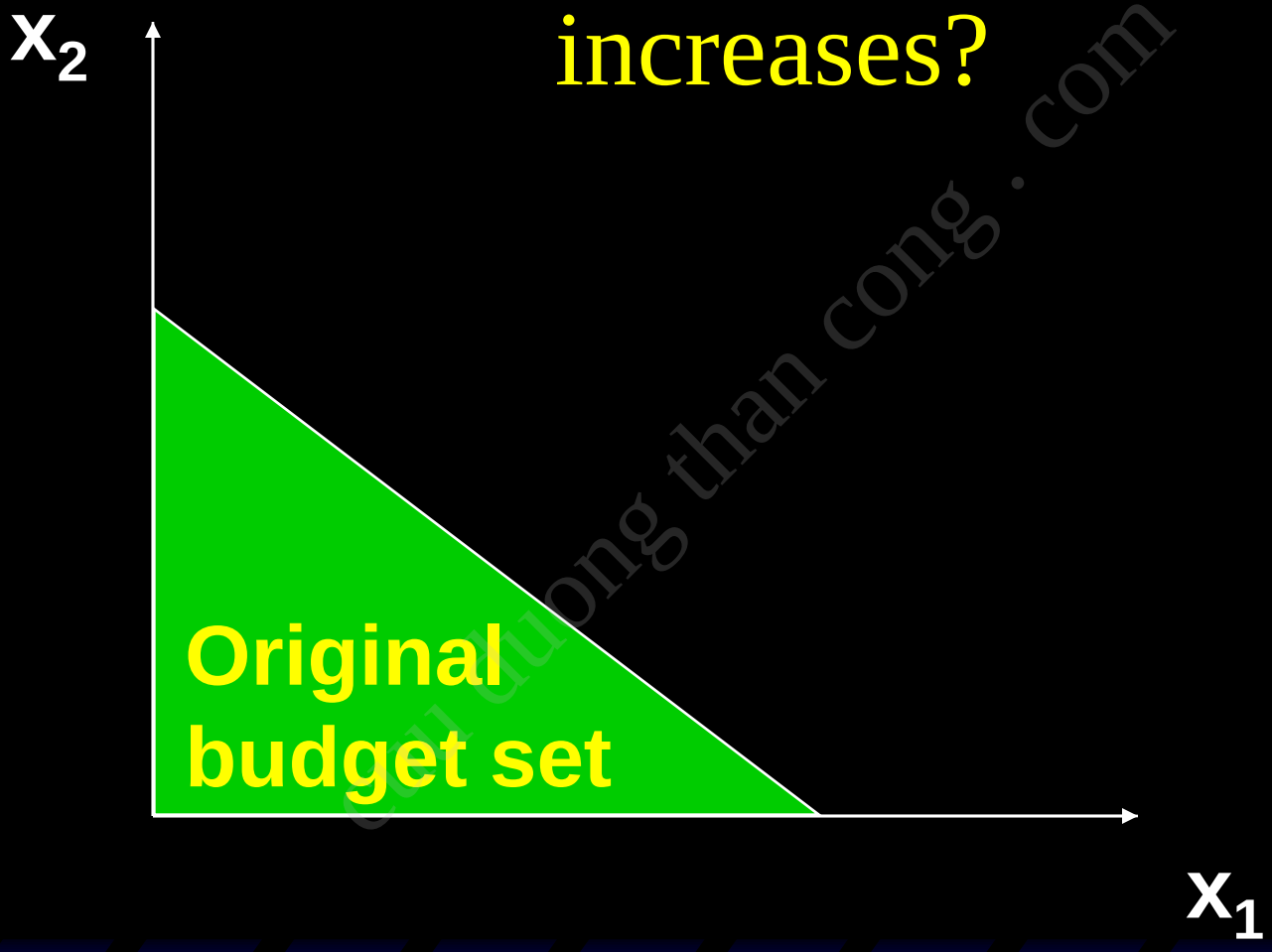


Opp. cost of an extra unit of commodity 1 is p_1/p_2 units foregone of commodity 2. And the opp. cost of an extra unit of commodity 2 is p_2/p_1 units foregone of commodity 1.

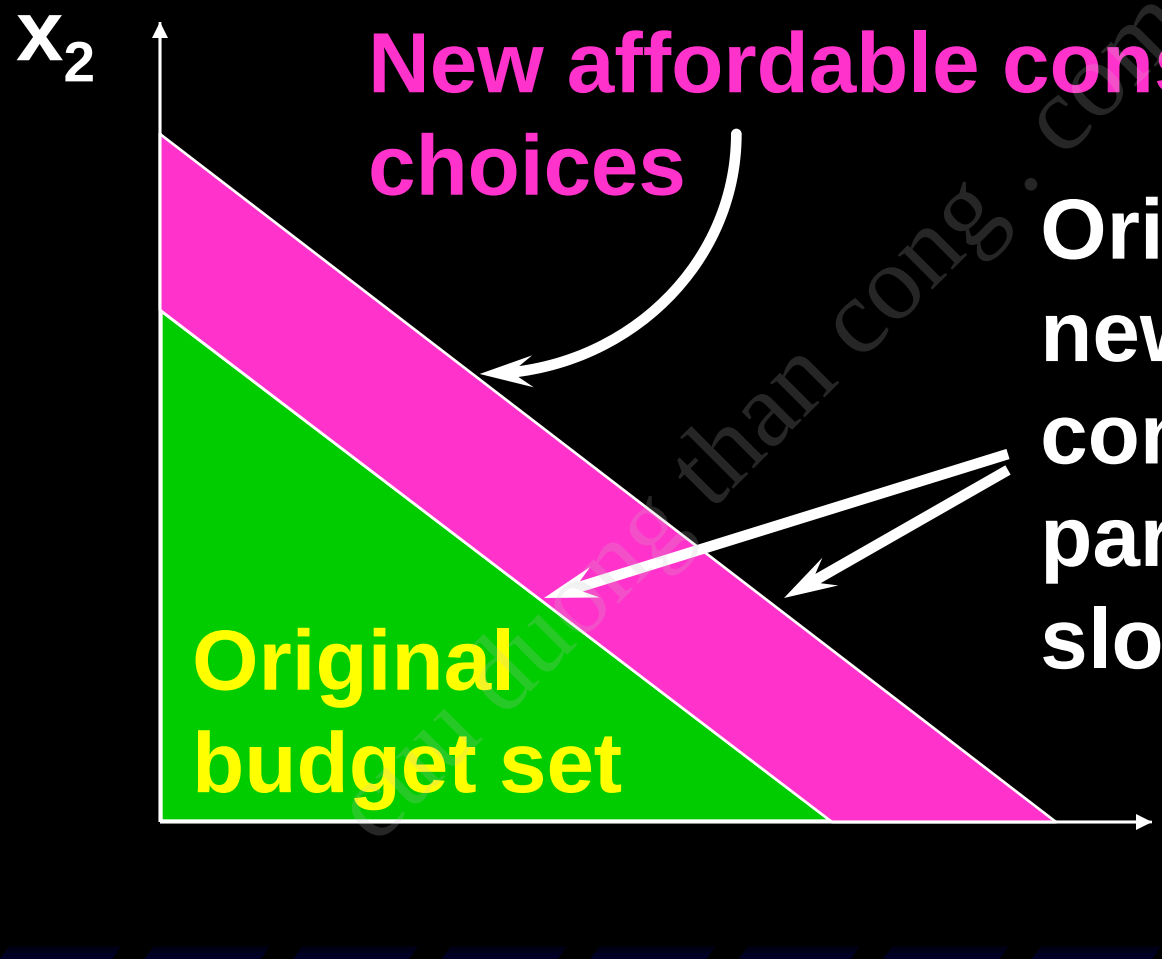
Budget Sets & Constraints; Income and Price Changes

- **The budget constraint and budget set depend upon prices and income. What happens as prices or income change?**

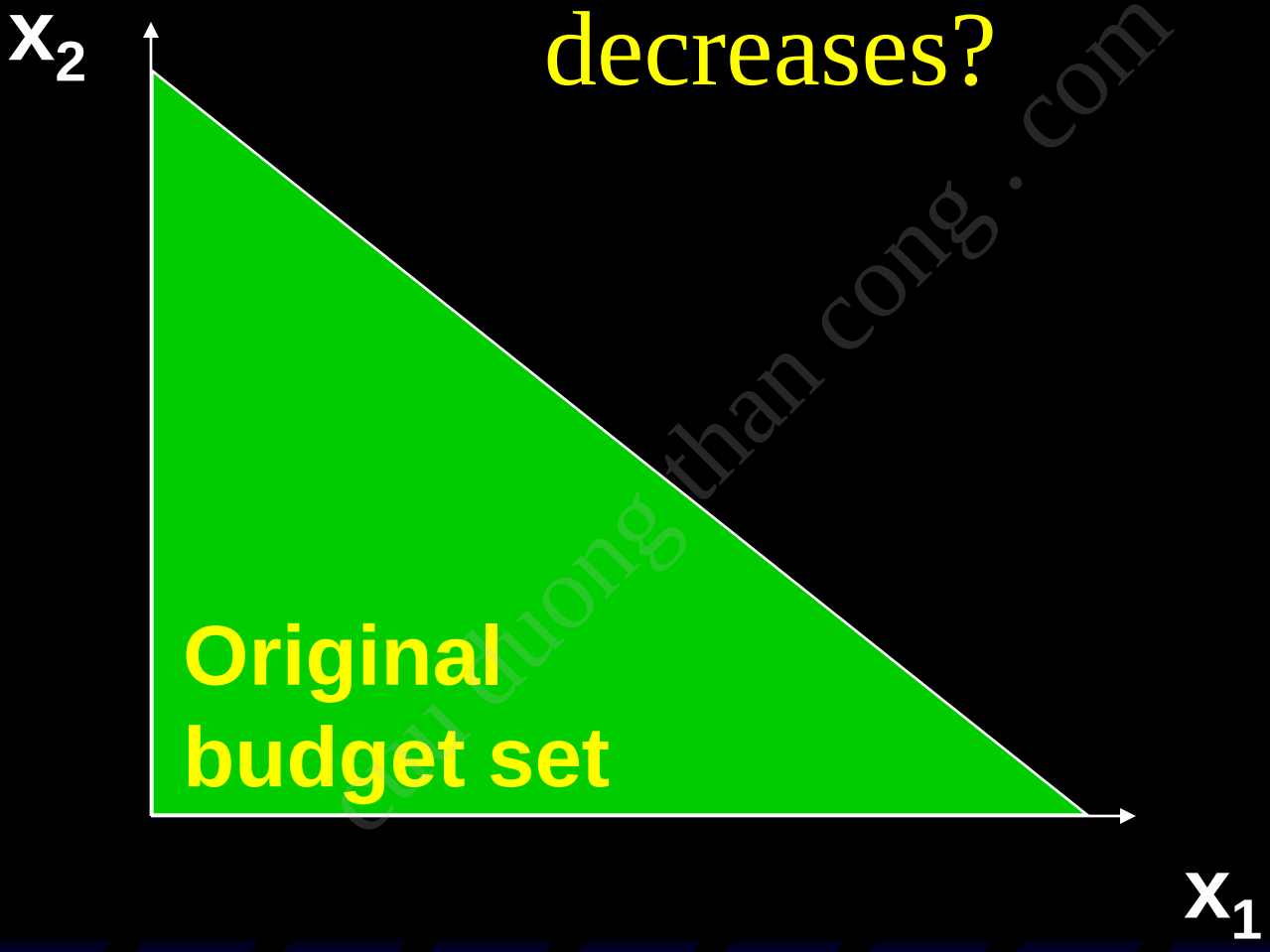
How do the budget set and budget constraint change as income *m* increases?



Higher income gives more choice



How do the budget set and budget constraint change as income *m* decreases?



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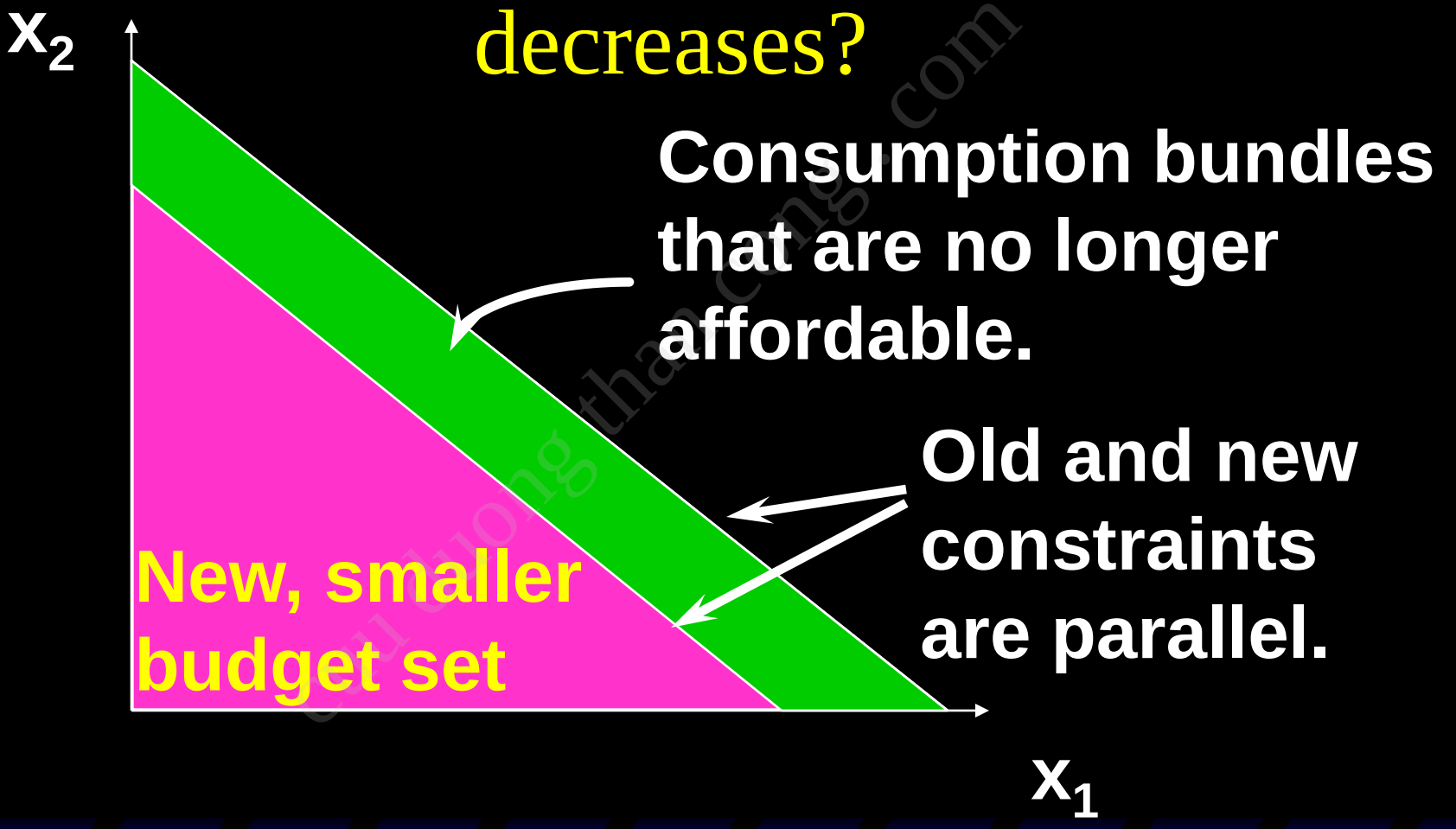


Budget Constraints - Income Changes

- **Increases in income *m* shift the constraint outward in a parallel manner, thereby enlarging the budget set and improving choice.**

Budget Constraints - Income Changes

- **Increases in income *m* shift the constraint outward in a parallel manner, thereby enlarging the budget set and improving choice.**
- **Decreases in income *m* shift the constraint inward in a parallel manner, thereby shrinking the budget set and reducing choice.**

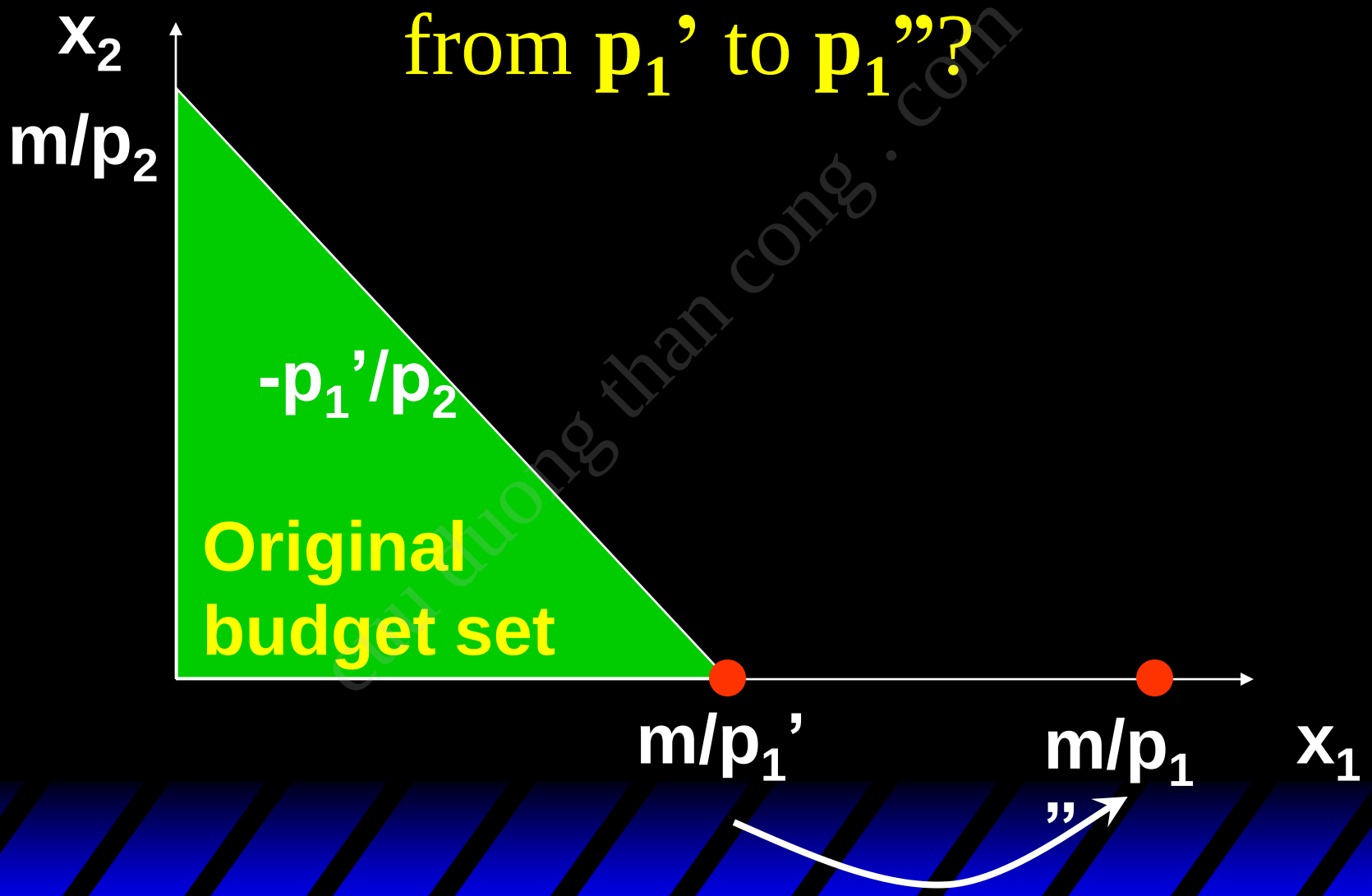
Budget Constraints - Income Changes

- **No original choice is lost and new choices are added when income increases, so higher income cannot make a consumer worse off.**
- **An income decrease may (typically will) make the consumer worse off.**

Budget Constraints - Price Changes

- **What happens if just one price decreases?**
- **Suppose p_1 decreases.**

How do the budget set and budget constraint change as p_1 decreases from p_1' to p_1"?



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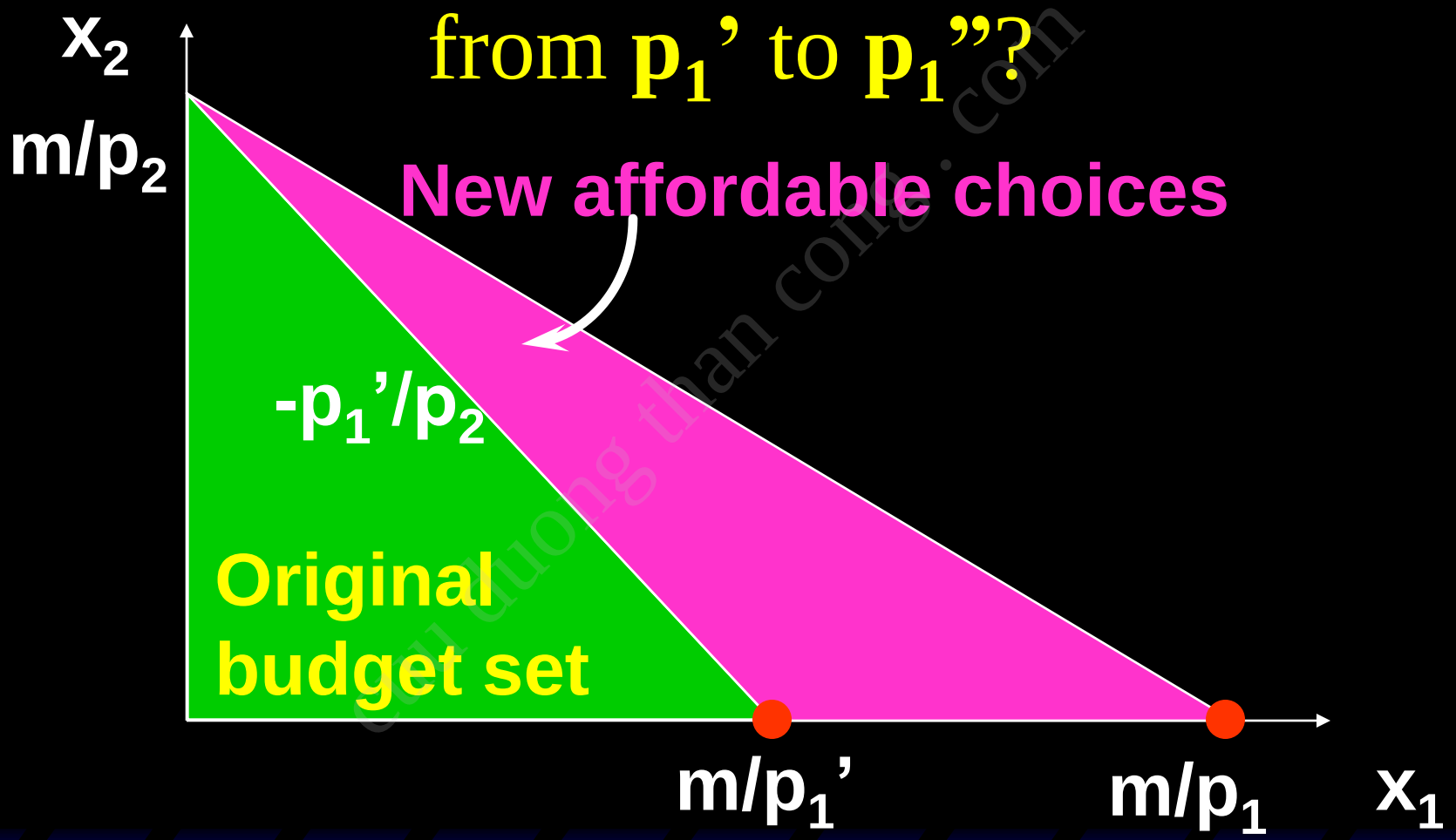

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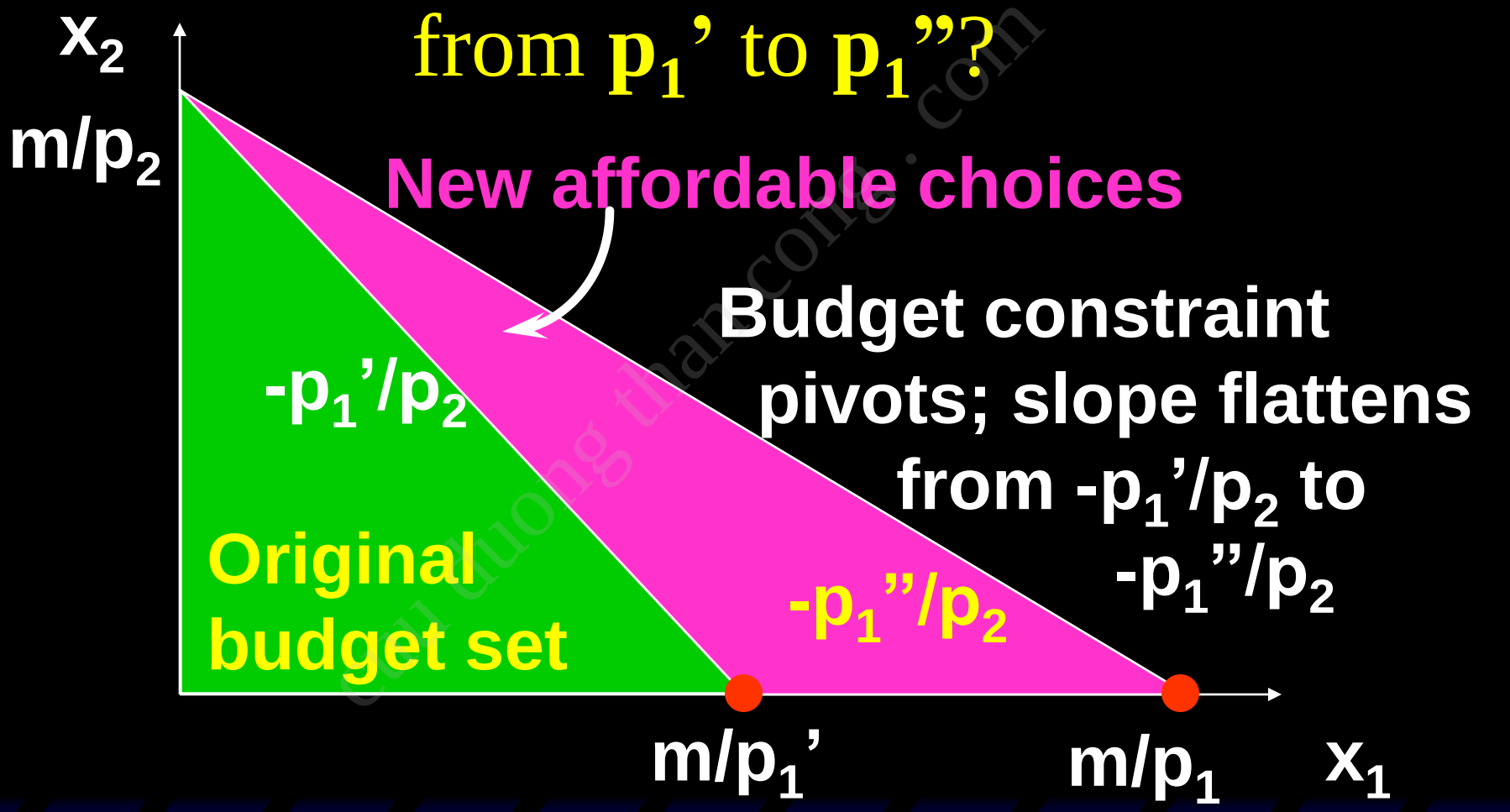


Budget Constraints - Price Changes

- **Reducing the price of one commodity pivots the constraint outward. No old choice is lost and new choices are added, so reducing one price cannot make the consumer worse off.**

Budget Constraints - Price Changes

- **Similarly, increasing one price pivots the constraint inwards, reduces choice and may (typically will) make the consumer worse off.**

Uniform *Ad Valorem* Sales Taxes

- An *ad valorem* sales tax levied at a rate of 5% increases all prices by 5%, from p to (1+0·05)p = 1·05p.
- An *ad valorem* sales tax levied at a rate of *t* increases all prices by *t*p from p to (1+*t*)p.
- A uniform sales tax is applied uniformly to all commodities.

Uniform *Ad Valorem* Sales Taxes

- **A uniform sales tax levied at rate *t* changes the constraint from**

$$p_1x_1 + p_2x_2 = m$$

to

$$(1+t)p_1x_1 + (1+t)p_2x_2 = m$$

Uniform *Ad Valorem* Sales Taxes

- **A uniform sales tax levied at rate *t* changes the constraint from**

$$p_1x_1 + p_2x_2 = m$$

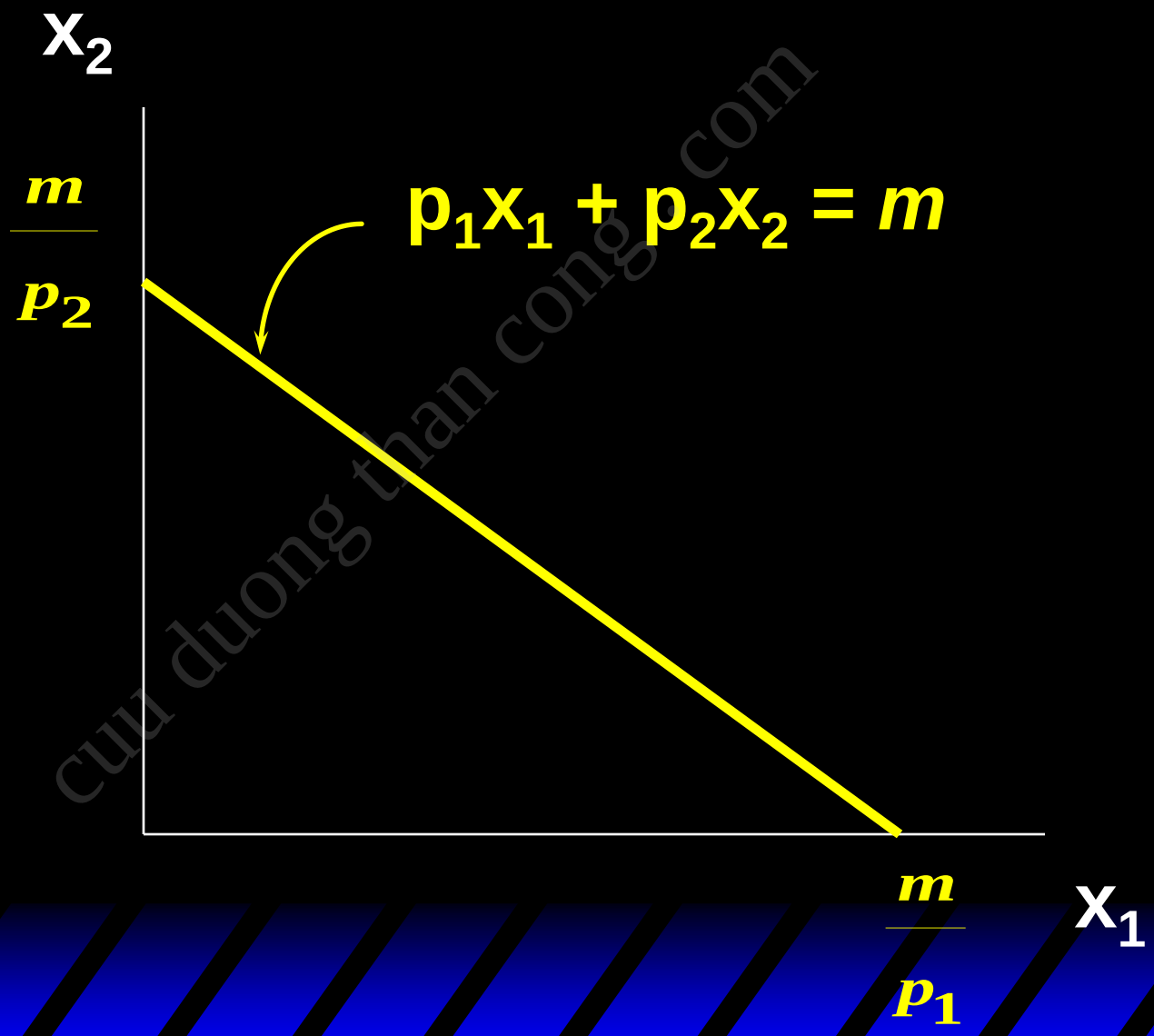
to

$$(1+t)p_1x_1 + (1+t)p_2x_2 = m$$

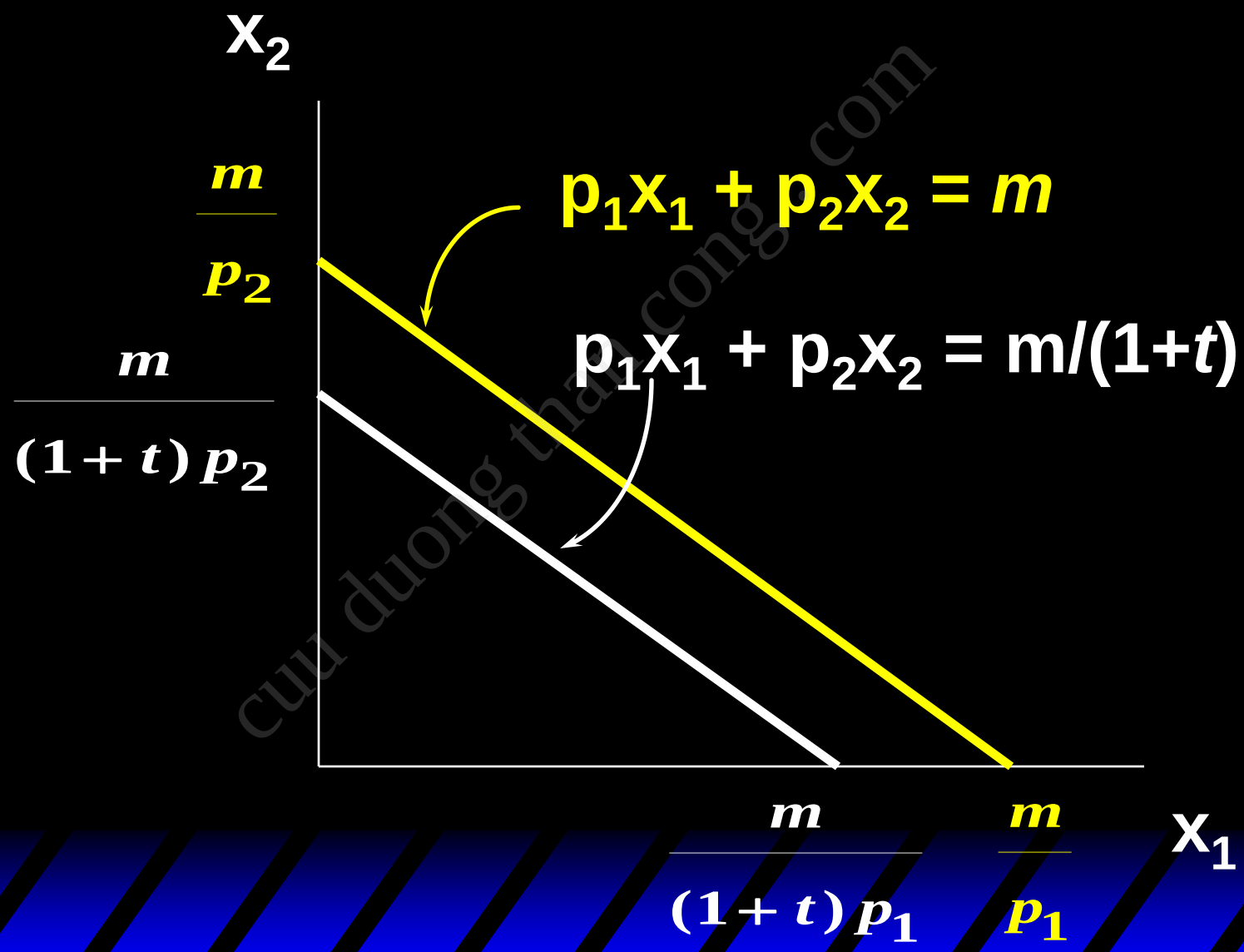
i.e.

$$p_1x_1 + p_2x_2 = m/(1+t).$$

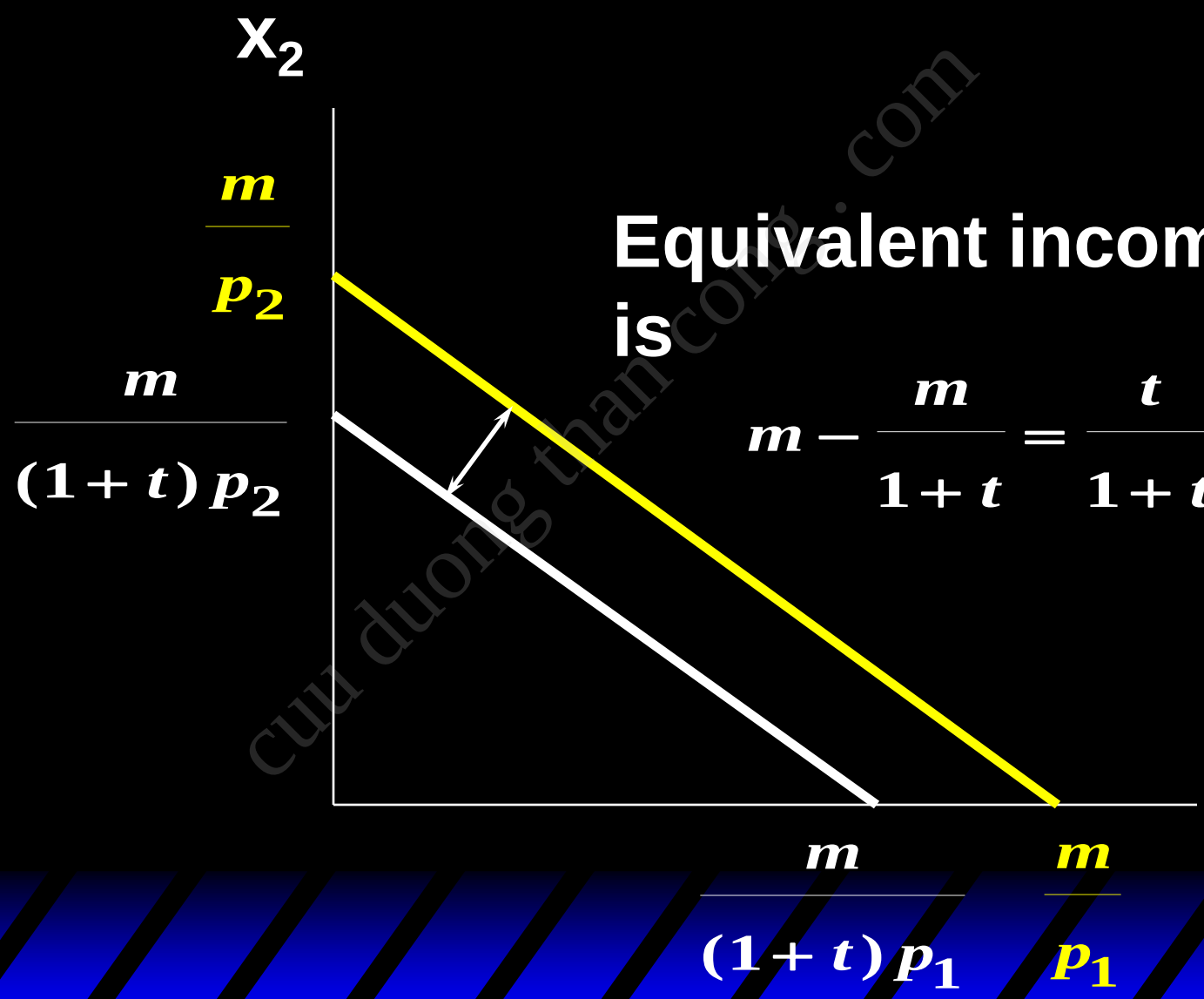
Uniform *Ad Valorem* Sales Taxes



Uniform *Ad Valorem* Sales Taxes



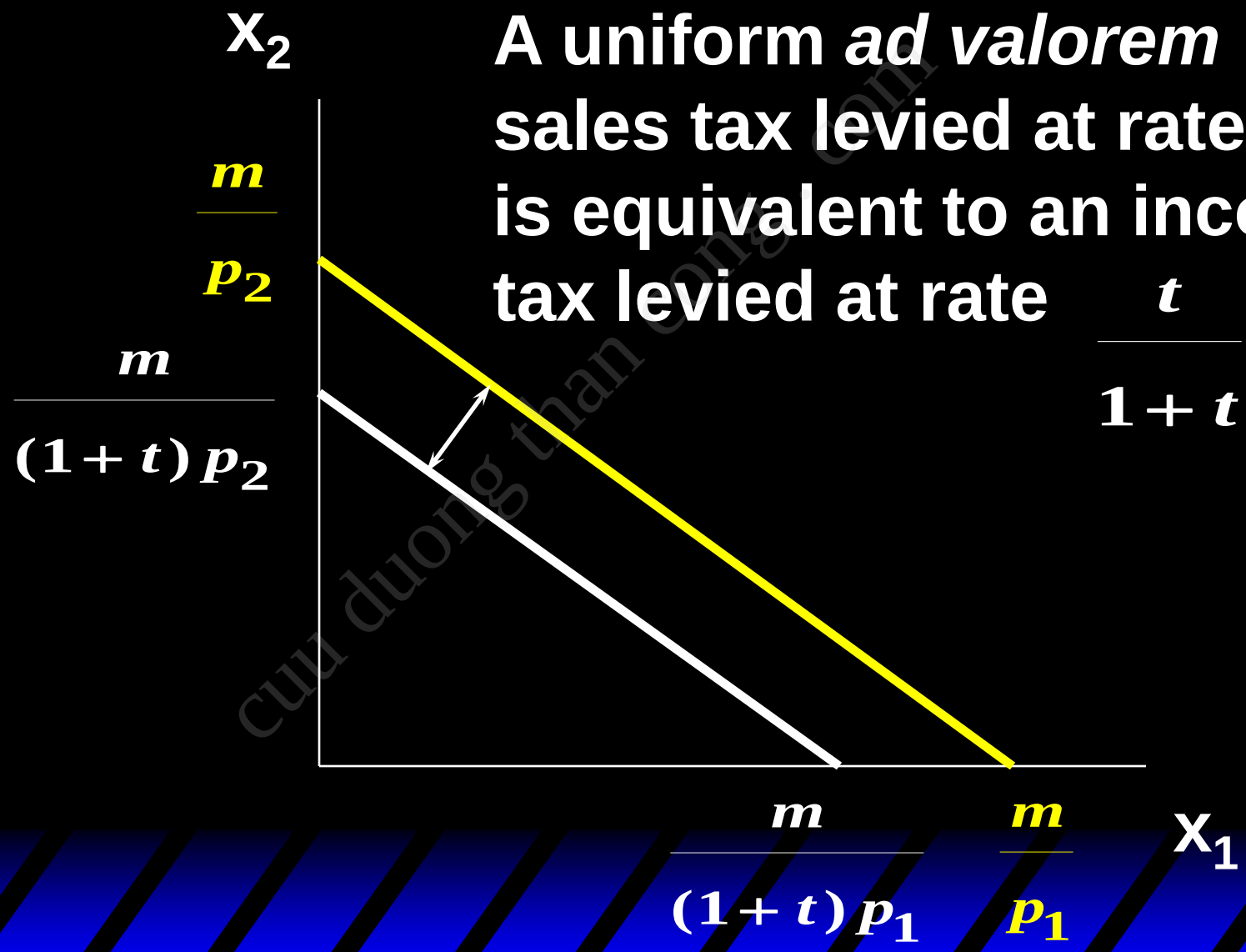
Uniform *Ad Valorem* Sales Taxes



Equivalent income loss is

$$m - \frac{m}{1+t} = \frac{t}{1+t}m$$

Uniform *Ad Valorem* Sales Taxes



A uniform *ad valorem* sales tax levied at rate t is equivalent to an income tax levied at rate $\frac{t}{1+t}$.

The Food Stamp Program

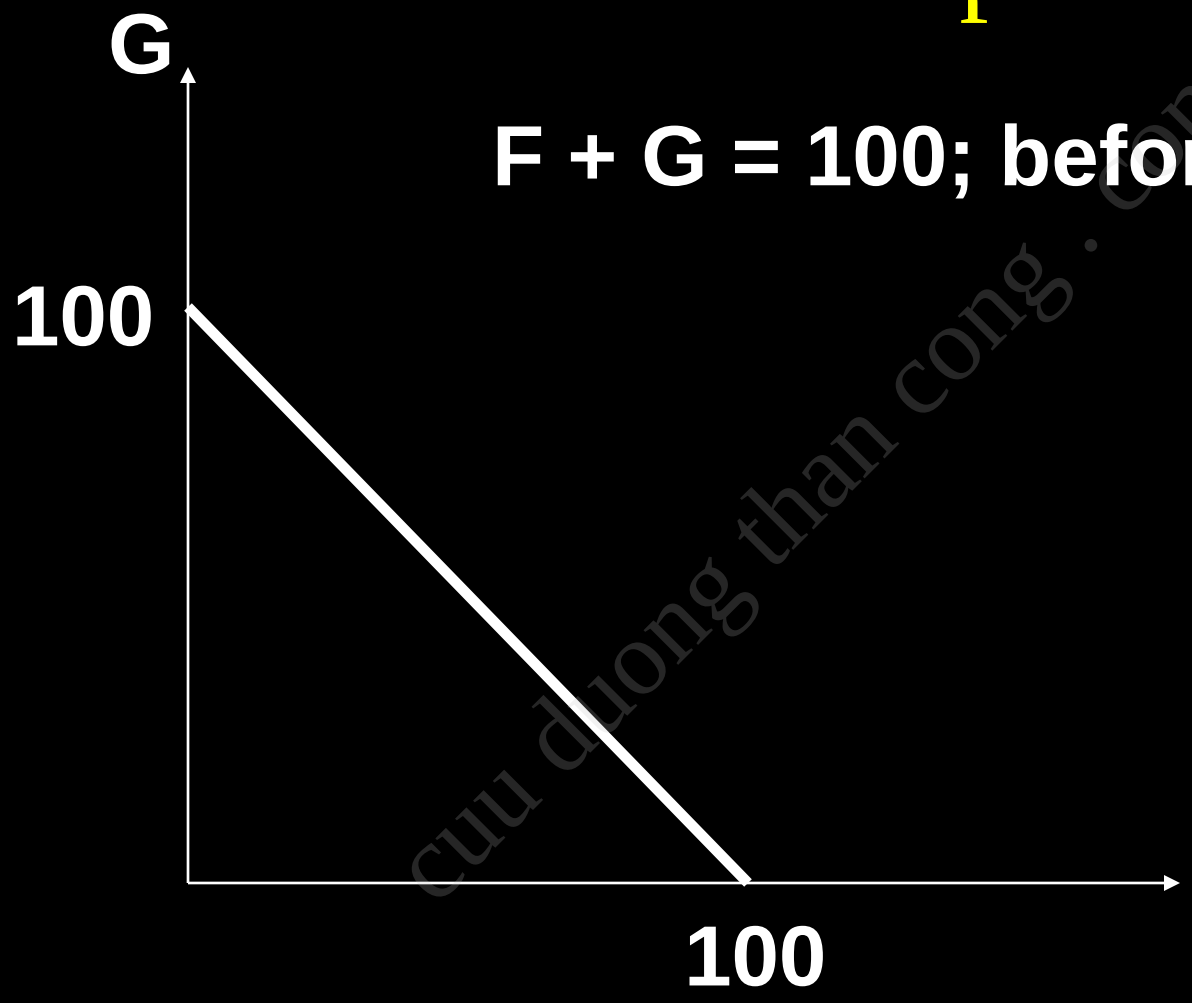
- Food stamps are coupons that can be legally exchanged only for food.
- How does a commodity-specific gift such as a food stamp alter a family's budget constraint?

The Food Stamp Program

- Suppose m = \$100, p_F = \$1 and the price of "other goods" is p_G = \$1.
- The budget constraint is then

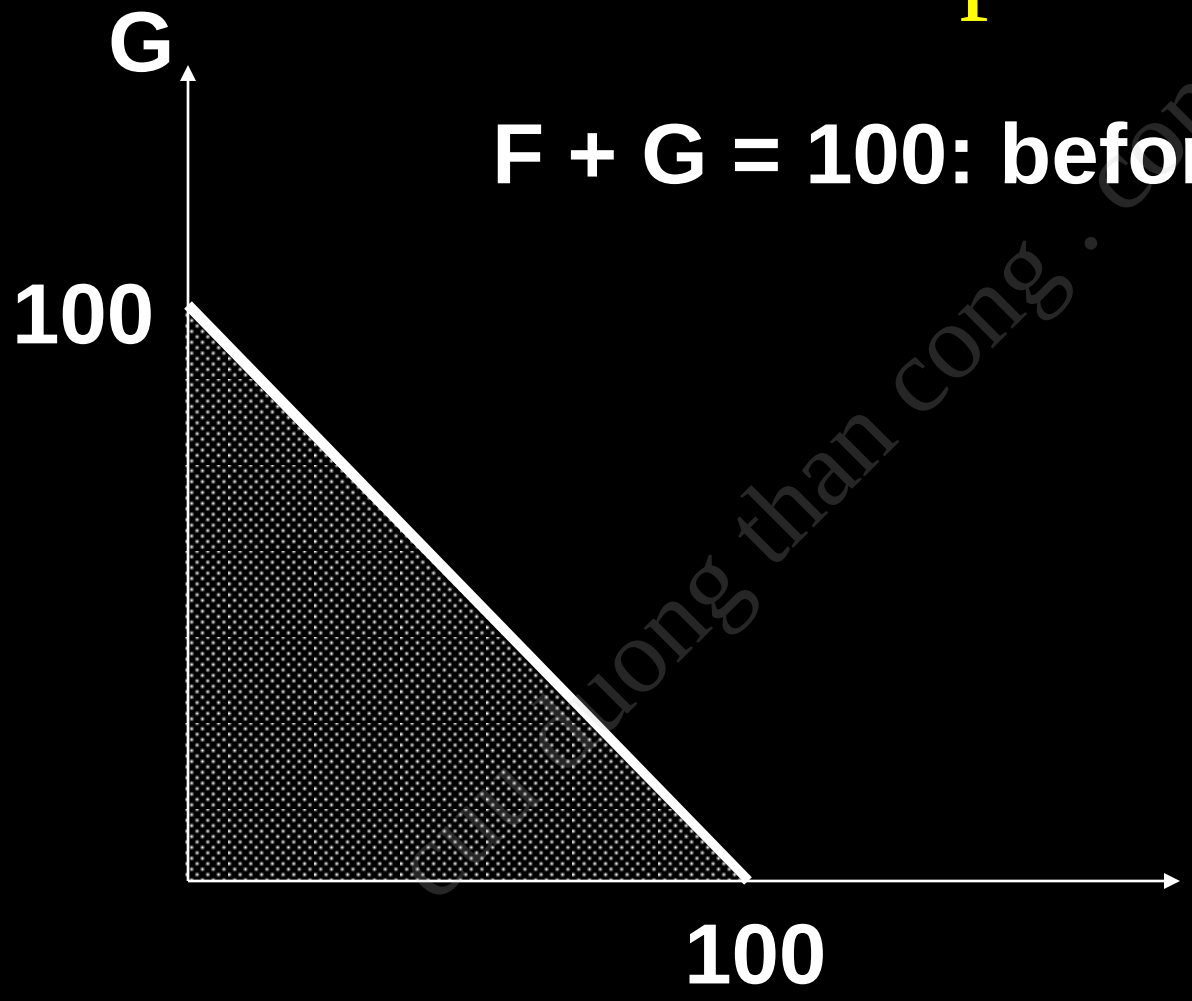
$$F + G = 100.$$

The Food Stamp Program



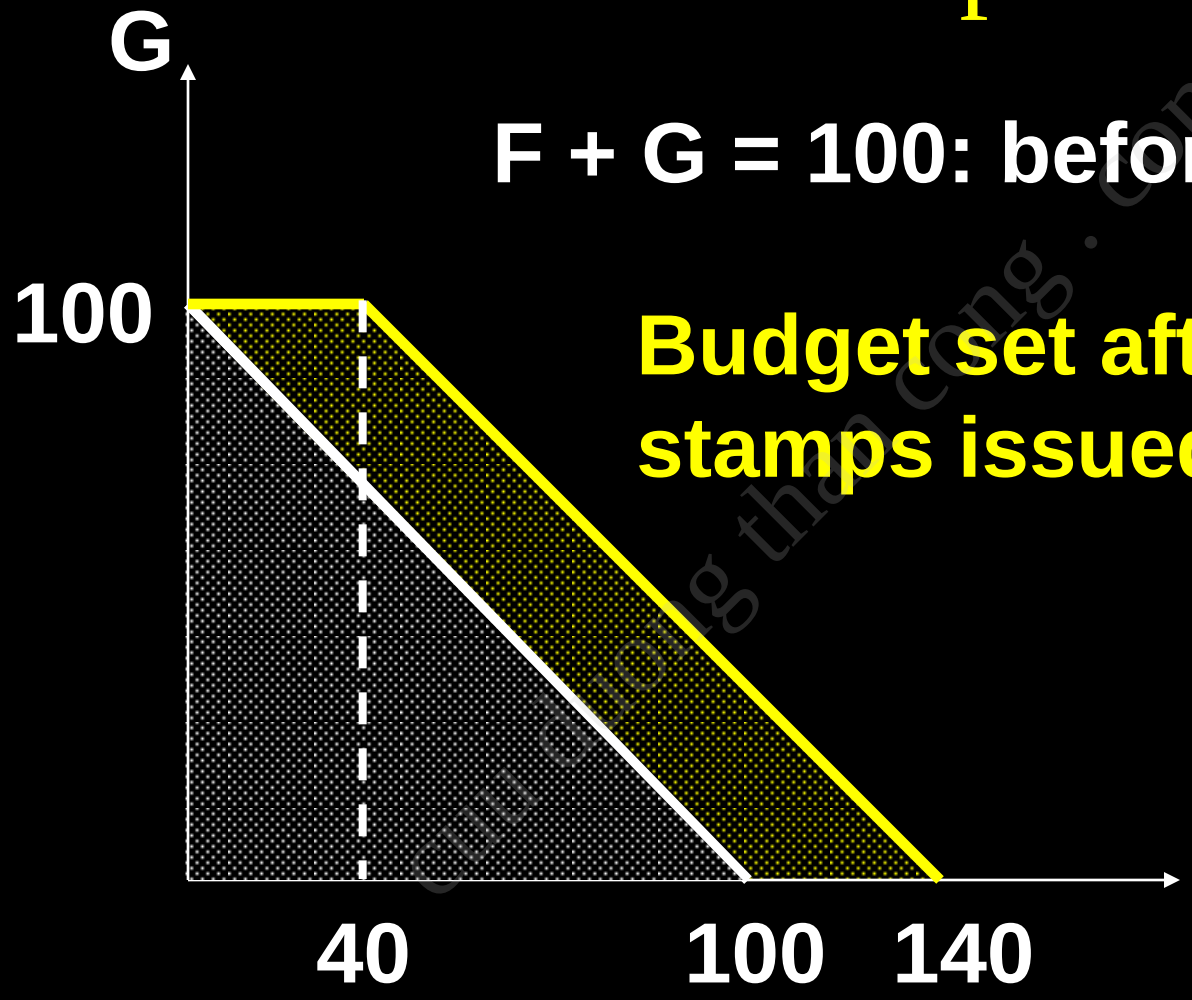
F + G = 100; before stamps.

The Food Stamp Program



F + G = 100: before stamps.

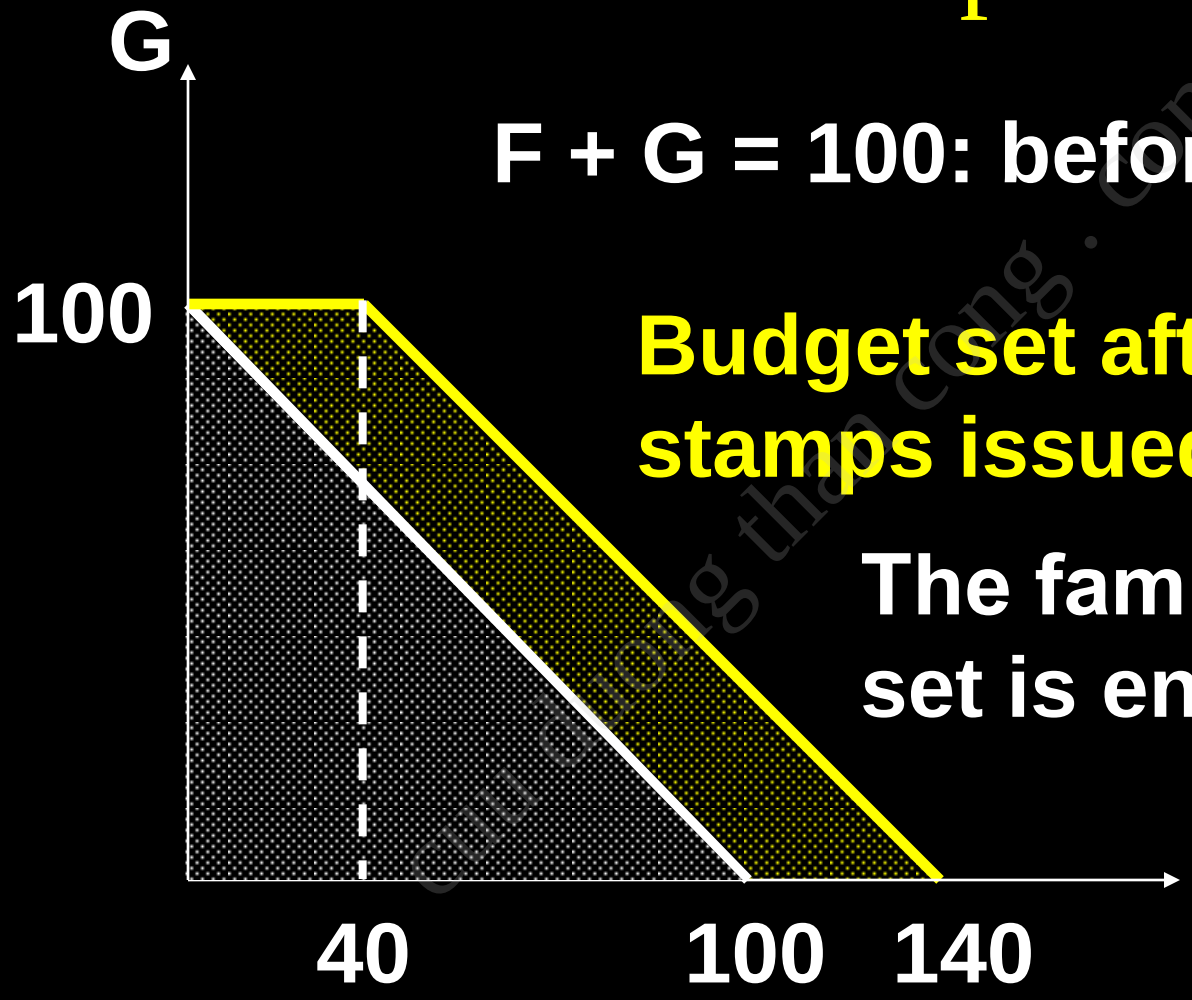
The Food Stamp Program



F + G = 100: before stamps.

Budget set after 40 food stamps issued.

The Food Stamp Program



F + G = 100: before stamps.

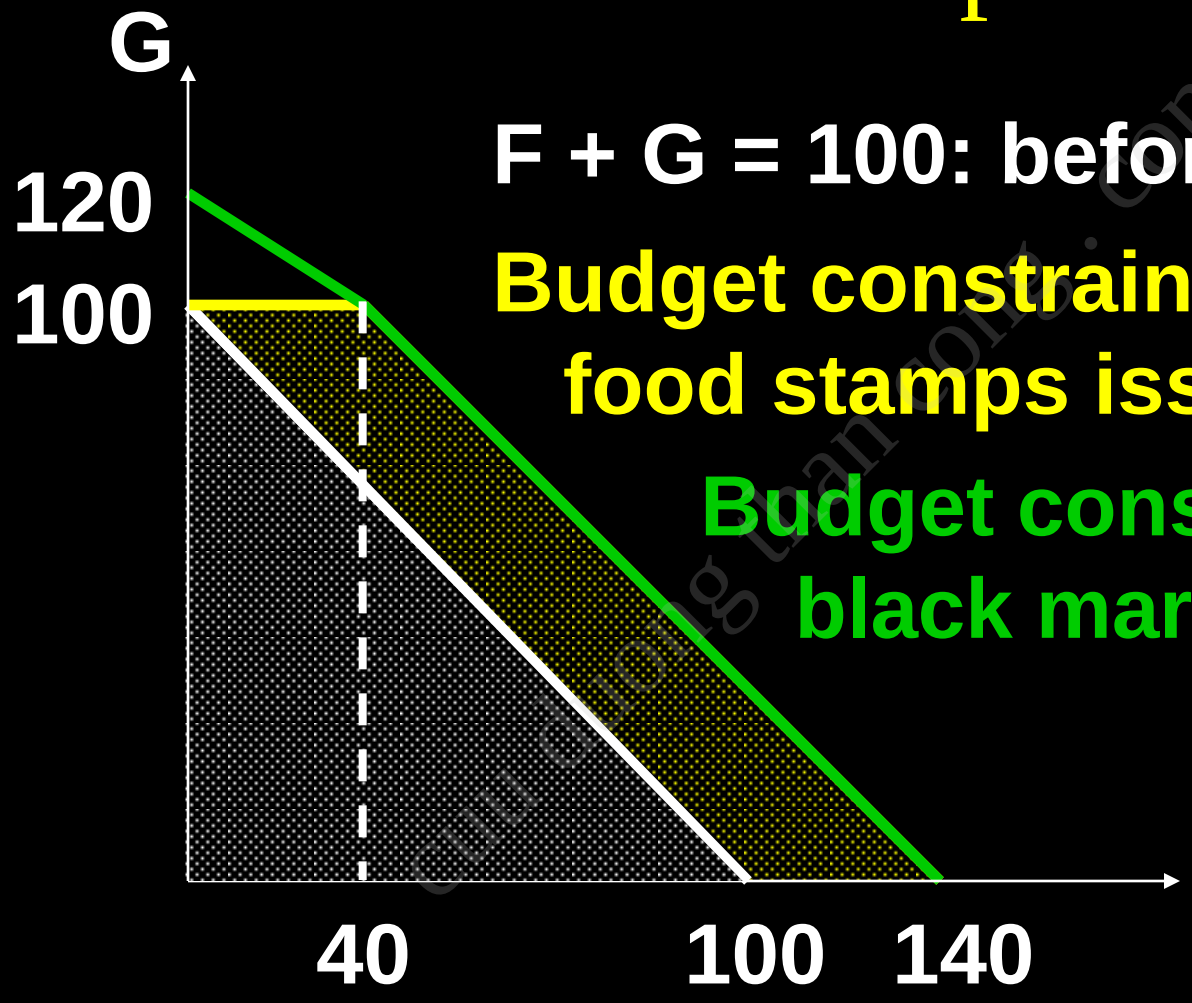
Budget set after 40 food stamps issued.

The family's budget set is enlarged.

The Food Stamp Program

- **What if food stamps can be traded on a black market for $0.50 each?**

The Food Stamp Program

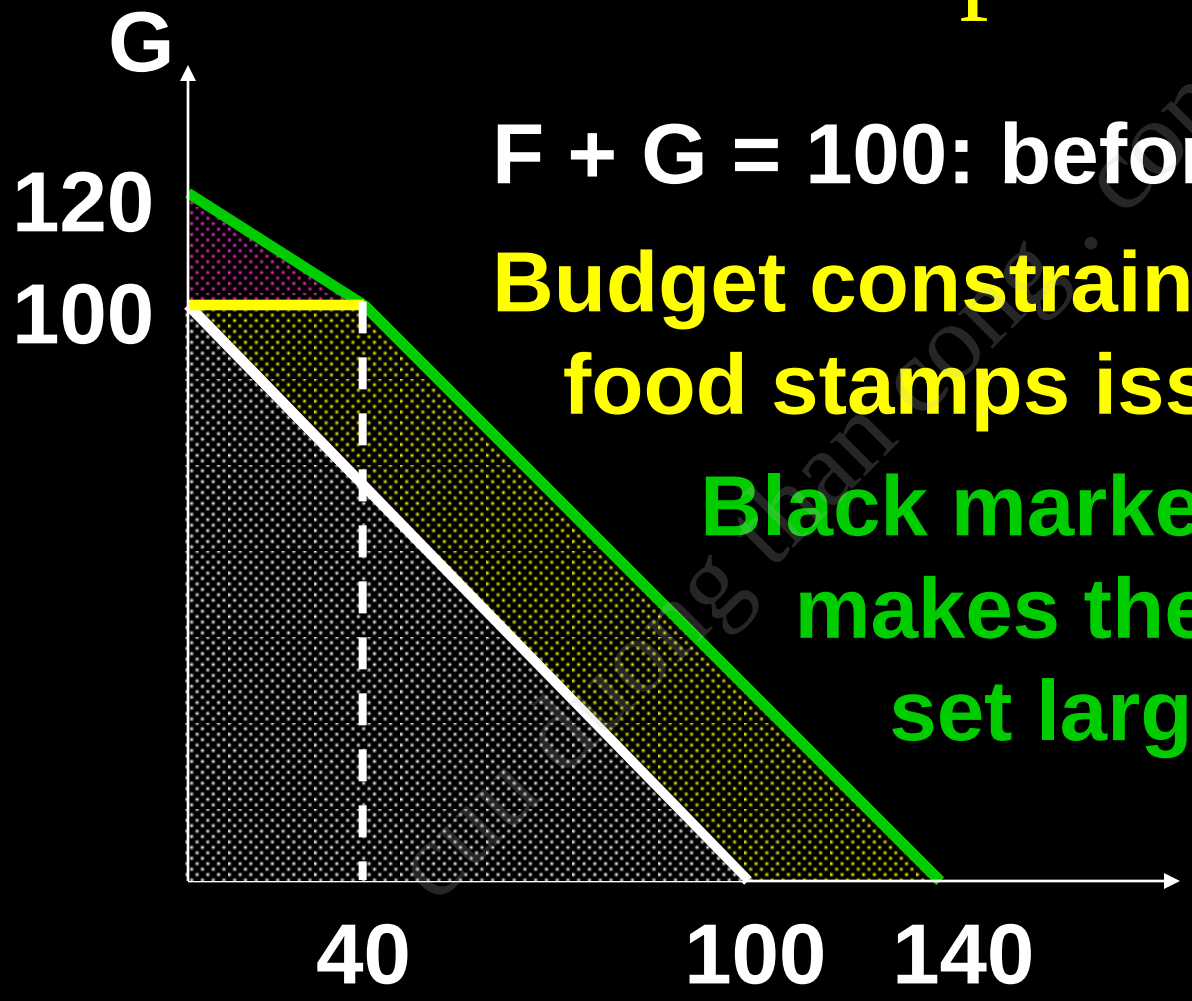


F + G = 100: before stamps.

Budget constraint after 40 food stamps issued.

Budget constraint with black market trading.

The Food Stamp Program



F + G = 100: before stamps.

Budget constraint after 40 food stamps issued.

Black market trading makes the budget set larger again.